

THE UNIVERSITY OF TEXAS
Bureau of Economic Geology
May 23, 1936

MINERAL RESOURCE SURVEY
Circular No. 8

A mineral resource survey of Texas has been started by the Works Progress Administration, the Bureau of Economic Geology of The University of Texas acting as sponsor. The purpose of the survey is to assemble information and make it available to the public. Through a separate project, sponsored by the State Planning Board, the results of the survey, as they are received in Austin, are being assembled for publication. The mineral resource survey is helping in the location of mineral products, from some of which it is reasonable to suppose industries of value to the State may be developed. The following report is based on work in Limestone County.

REPORT ON CERAMIC PRODUCTS AND INDUSTRIES
AS A PART OF A MINERAL RESOURCE SURVEY
IN LIMESTONE COUNTY, TEXAS
by I. J. Broman, Supervisor

History

From early days in the history of Limestone County, a great deal of interest has been taken in the development of the native clays for brick and pottery making. The early settlers were constructively inclined both by virtue of necessity and by general interest in what could be produced from natural resources. Some were gifted with a practical understanding of the uses of such materials, and a few had what amounted to, in those days, a technical knowledge of how to utilize the natural resources at hand.

The result of this attitude was that some natural resources, which are now neglected, were then utilized within the limits of the then available capital and knowledge. A case in point is the early use of the native clays for pottery making purposes.

In the year 1870, an Englishman by the name of John Dimelow, after having studied the clays of the region and having investigated their possibilities, set up a ceramic laboratory near Kosse and attempted to organize a company for the purpose of making various products out of the native clays. Judging from such records as are obtainable, Dimelow was a man of considerable training as a ceramic engineer. His opinion of Texas clays in general and of the clays of Limestone County in particular can best be expressed by a letter written by him in 1875, in which he says as follows:

"Having found my way into Texas, I have for the last two years been diligently exploring, testing, and developing such minerals, as her fast growing cities and present encouraging conditions require, which 'Minerals' I am happy to say are all of the very highest quality, and character, equal to any yet discovered either in this or any other country in the world, existing in millions and tons of millions sufficient to supply (were there none else besides) all American commercial necessities in this respect for thousands of years to come, with plenty to sell, plenty to give, and plenty to spare."

"These minerals consist of the highest qualities of 'Fire Clay', or decomposed 'Feldspar', hematite iron of the highest quality lignite, coal, and other valuable minerals of a similar heavy commercial character, all of which, thanks to the 'Iron Horse' and his 'Rider,' are conveniently close to transportation."

"Having some six months ago been in the back woods of this State, I established myself a Laboratory where these minerals exist for the purpose of fully developing them and having in connection with my friend and protector, Mr. John W. Moss (farmer) built a test furnace of tolerable large dimensions, I am happy to state that I have been more than ordinarily successful in making such articles of a heavy Commercial Character, all of which are of the highest commercial values, for such purposes as 'fire bricks' which for beauty and quality are in every respect equal to the best Sourbridge, which are allowed by all consumers to be equal to, if not the best brick in the world. 'Gas Retorts', Crucibles of the highest and rare quality for melting 'wrought iron', and all kinds of Gas Apparatus, and fire proof goods of every description, 'Glass Coated Stone', 'Sanitary or Sewer Tubes', and all kinds of sanitary apparatus for City purposes."

If this quotation is of any value, it may be to show that some of the older generation were keenly alive to the possible uses to which some of our natural resources could be put, and it may be that the present generation could profit from their example. At any rate, a testing laboratory was established near Kosse, Limestone County, Texas, and evidently the experimental work had progressed to a considerable extent, for a price list of various ceramic products was published some time subsequent to 1870. The project fell through, however, because John Dimelow had trouble with one of his promoters, was assaulted, and forced to leave the county.

The making of pottery was evidently discontinued after Dimelow left, and a brick kiln was set up. This kiln furnished brick for the building of some of the older structures in Kosse. After some years, the making of brick was also discontinued.

At some time during the late seventies or early eighties a sample of the best clay was sent to a china manufacturing plant in New Orleans. Out of this clay some very fine specimens of china were made. One piece of this china remains in the possession of a gentleman residing in Kosse. In the opinion of the writer, this piece is a very fine example of hand-painted china. Samples of this early pottery making in Limestone County are few. There are still in evidence some glazed tile and vitrified brick and a glass retort.

The pottery making project near Kosse failed for some reason unknown to the writer, and the business was resumed in a new location called Pottersville, about 2 miles east of Oletha. A Mr. John Fowler set up a kiln about the year 1882. This kiln was taken from localities 1 mile south and about 2 miles southeast of Pottersville. In this pottery plant, all kinds of heavier stoneware were made, such as large crocks with covers, flower pots, stone jars, large and small size jugs, and similar articles. The glazing on the glazed ware is in excellent condition, and the product of this pottery seems to have been of a high quality.

Two other kilns were built near Kosse in the early days—one on the Mrs. Betty Hohn farm and another on the Southern Pacific Railroad right-of-way on, or near, the Cline estate. The writer has no records concerning these projects.

For information on these projects, the writer is indebted to Mrs. Laura Boney, Kosse, Texas, to the Rev. M. H. Sealy of Kosse, Texas, to Mr. Connaly, President of the Groesbeck Chamber of Commerce, and to Mrs. Whitcomb of Groesbeck, Texas.

Extent and location of clays

In general, the potter's clay deposits conform with, or are to be found within, the limits of the Simsboro division of the Rockdale formation of the Wilcox. The western boundary of these clays occurs as follows: 2½ miles east of Kosse northeastward to a point about 7 miles southeast of Groesbeck and north to a point about one-half mile east of La Salle and Fallon respectively. The formation enters Freestone County at a point nearly 17 miles from the Leon-Limestone County line. The width of this deposit is about 3 miles. It may be worthwhile to call attention to the fact that there is a repetition of these characteristic sands and clays farther towards the southeast in the county. This repetition takes place from a line drawn 2 miles west of Oletha to a point about 3 miles northwest of Farrar. Unless this means an almost exact duplication of the lithological characteristics of the Simsboro higher up in the section of the Wilcox, which is improbable, it must mean that the section has been thrown up by a fault cutting across the southeast part of the county.

The approximate position of this fault would be from a point about 2 miles west of Oletha through Union to a point between Personville and Oak School on the Personville road.

Some of the best exposures of these clays are to be found in the southeastern part of the county. The width of this belt is from 2 miles near Oletha to about 3 miles going northeasterly.

The best exposure of these potter's sands and clays is to be found on the Cline estate about 6 miles southeast of Kosse. This clay was used in a pottery kiln located near the deposit and near the Southern Pacific Railroad. The section is as follows:

	Thickness in feet
Dark grayish clays ranging into pure white clays at the bottom	6 (<i>maximum</i>)
Gray sands and clays consisting of very fine sand grains loosely cemented together by and embedded in clays	20
<i>Balls of pure clay occur in the lower 20 feet of this deposit.</i>	

The percentage of sand and clay in this deposit has not been determined, but there is not far from 50 percent of each in the combination. The pure white clays, free from sand, are not abundant and would probably not make up more than 1 foot, on the average, of the section.

Another exposure of this clay is to be found on the Laura Boney farm about 2 miles east of Kosse.

In this section about 2 feet of clay overlies about 10 feet of the gray sand and clay mixed. The quality of the clays is about the same as in the preceding section. This clay and sand were mixed and used in the making of pottery by John Dimelow.

The third exposure of this deposit was found about 2 miles west of Oletha and 1 mile south of Pottersville.

This section consists of about 4 feet of clay of a very high quality, resting upon a strata of gray sand and clay mixed. The entire bed measures about 20 feet in thickness.

From these clays a very good grade of pottery was made in the kiln at Pottersville.

The fourth deposit is to be found about one-half mile south of the twin bridges on the Twin Bridges road. This bed consists of about 8 feet of good clay with some sand intermixed.

Good deposits are found south of Center and about 2 miles east of La Salle on Turkey Creek. These deposits consist of clay and sand mixed.

As a general rule it may be stated that the best deposits of clay occur in the southern part of the county, east and southeast of Kosse and west of Oletha.

Quality and quantity

The term kaolin is a generic term applied to very soft fine clayey material which crumbles to powder when pressed between the fingers. This term can be applied to all the finer clays found in Limestone County. These clays are associated with very fine-grained sand, and in this combination the percentages of sand and clay vary greatly in the same formation within the same area and in wider distribution. The value of the clays is determined by their purity or freedom from foreign materials—organic or mineral. The presence of such foreign materials affects the fusibility of the clays as well as the color and porosity of the manufactured products. The value of any clays, therefore, must be determined by chemical analysis of the material and by experimental burning in furnaces designed for the purpose. Such necessary tests can best be made by those trained in the art, and it does not come within the province of the writer of this report to pass on the quality of the clays found save in a rather general way.

The time allotted for a survey of the clay resources of Limestone County was far too limited to allow of more than a cursory examination of such resources. It can be positively stated, however, that clays of very fine quality do exist in the county. The finest quality clays are limited in quantity and constitute probably less than five percent of the total. The clay deposits of lesser purity are to be found in great quantities which, with washing or other treatment, can be utilized in the manufacture of products for which there may be a ready market.

Two probable outlets for the disposal of this material suggest themselves: first, the manufacture of pottery products on the ground at sites conveniently located with reference to fuel, water, and transportation; second, the mining and the sale of the clays to manufacturing concerns that may need these types of clays. As the industry has become highly technical and specialized, the sale of these clays to such concerns may prove more profitable than their local manufacture.

Brick making and brick clays

As before stated, the pottery business in and around Kosse, Texas, was succeeded by brick making. The first brickyard in the county was located near Kosse and turned out a fair grade of common building brick, samples of which are to be seen in some of the older buildings of the town. This yard ceased operation several years ago.

The second brickyard to be operated was located near Mexia. This yard turned out a good grade of building brick both for local use and for sale outside the county. The operation of this yard ceased about 15 years ago, and it has been dismantled and the site taken over by the town of Mexia.

The third brickyard is now in operation near Groesbeck and is one of the yards being operated by the Barron Brick Company of Palmer, Texas. This yard has a daily capacity of 40,000 brick. The quality is a good grade of building brick. This company is furnishing brick for the erection of the new high school now under construction in Groesbeck. The product of this yard has a wide market distribution.

The clays, from which brick has been made in Limestone County, are taken from the lower Wills Point division of the Midway formation. These clays are slightly yellowish in color and siliceous in content. They burn to a bright red color and when handled properly make a good building brick.

In quantity these clays extend throughout the county northeast and southwest over a workable belt about 2000 feet wide and 20 to 25 miles long with a depth of about 50 feet. For ordinary brick-making purposes, there is enough of this clay in Limestone County to last for centuries.