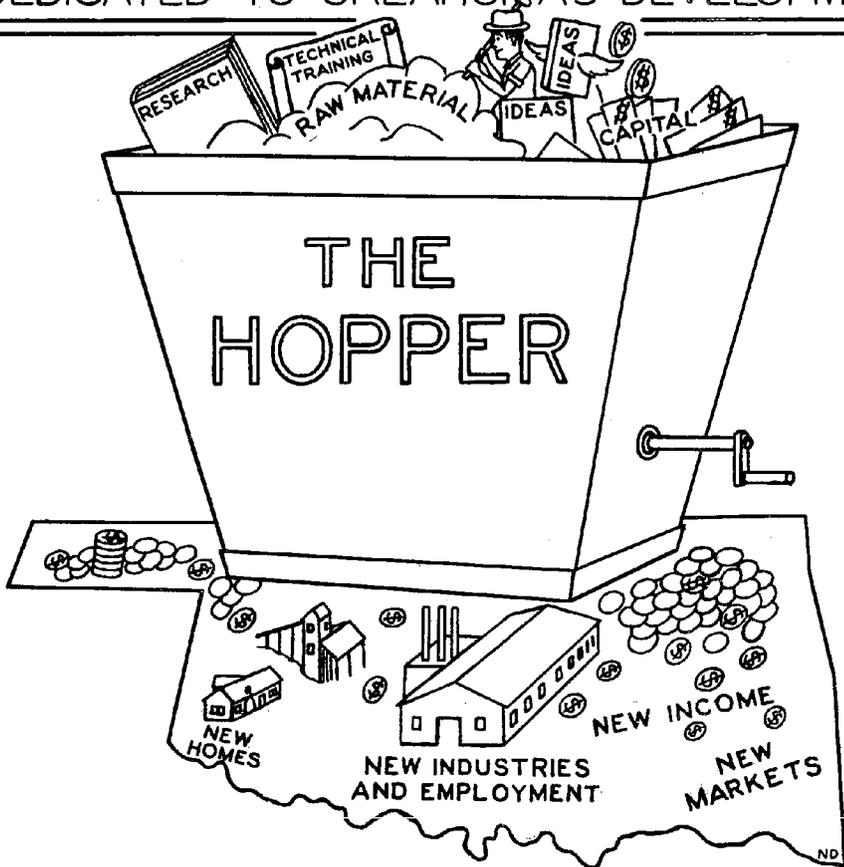


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GEOLOGIC FEATURES OF THE CLAREMORE AREA

by

Carl C. Branson
Director, Oklahoma Geological Survey

INTRODUCTORY STATEMENT

Many future numbers of THE HOPPER will carry articles about geology in and near communities of the state. The number issued in March is The Lawton Number. Claremore is selected at this time because there will be a field trip under the sponsorship of the Oklahoma City Geological Society and the Oklahoma Geological Survey in May and Claremore is central in the area to be seen and is headquarters for the overnight stop and dinner meeting. I have an especial affection for Claremore for the generosity its people showed graduate students working under my supervision. The mayor and fire chief, representing the people of Claremore, let Jack Tillman, Mark Hobbs, Bill Gruman, and Herb Ware use a room in the city hall as home and office during the time they were doing field work. Graduate students are not normally well financed, and the free quarters and the friendly hospitality they received made their work easier and much more pleasant.

SCENIC FEATURES

Features of geologic and scenic interest are numerous near Claremore. To the east, north, and west of the village of Tiawah, four miles southeast of Claremore on Oklahoma Highway 88, are steep isolated hills. These rise steeply more than 200 feet above the valley of Panther Creek and are covered by brush and trees. The hills are remnants of a former upland on the Chelsea sandstone, and when

streams cut through the resistant sandstone layer and widened valleys in the weak shales beneath, a few sandstone-capped hills were left. Close to the base of the sandstone is a light-gray, five-foot limestone bed, which has been named the Tiawah limestone.

Inola Mound, two miles east of Inola and 15 miles southeast of Claremore, was similarly formed. It is, however, a single, more isolated hill, and has a small upper cap of Taft sandstone and a bench below on the top of the Bluejacket sandstone.

Claremore Mound, scene of the historic 1817 battle between the Osages and the Cherokees, is another isolated hill. It is capped by a thick limestone layer, the oologah limestone. Lipe Mound and the other isolated hills north of Claremore have the same cap rock.

The rim rock of the valley of the Verdigris River is one mile west of the Will Rogers birthplace and it and the mound north of the house are of this same oologah limestone. The oologah limestone can be seen especially well west of the Verdigris River on Oklahoma Highway 20 at the rim of the hill.

Claremore itself is built upon the Chelsea sandstone, a reddish, iron-bearing, coarse sandstone. Many scenic rocky features in this sandstone can be seen along the shores of Lake Claremore. The Chelsea sandstone is the bed rock of the tree-covered hills northeast of Claremore to the Mayes County line. The Totem Pole is in these Chelsea hills.

Several coal beds have been stripped near Chelsea, some of them extensively. The highest and youngest of the coals is the Dawson coal, which was dug in and near Collinsville. The Iron Post coal is at the base of the two limestone beds that are on

the rolling hills west of Claremore. The two limestones and the coal can be seen 3-1/2 miles west of Claremore on Highway 20. The coal was dug commercially north of Bushyhead around the rim of a large hill.

The most important coal of the area is the Broken Arrow coal (Croweburg coal) which has been and is being stripped west of Sequoyah and east of Catoosa. Thirty feet below the Broken Arrow is the Sequoyah coal, which is erratic in thickness and has been dug at few places. Below the Chelsea sandstone is the Weir-Pittsburg coal, once dug south and east of Chelsea, and with one small pit in the Washington community 10 miles northeast Claremore.

A spot interesting to geologists is at the south pier of the old U. S. Highway 66 bridge over the Verdigris River. The exposure of a limestone 12 feet thick there is the outcrop from which the Verdigris limestone was named. Above the limestone is a thirty-foot bluff of sandstone. This is the Prue sand of subsurface, which where buried yields oil. Its irregular distribution can be seen here, for it is only 12 feet thick on present U. S. 66 and is entirely missing a mile to the east.

As one goes east from Claremore on Oklahoma Highway 20, he sees many scenic and geologically interesting outcrops. East of Dog Creek 1-1/2 miles is a deep road cut through an isolated hill. The bed at the top of the cut is the Tiawah limestone. Half a mile farther east, on the west slope of a steep hill, is a deep cut in which the Tiawah limestone is near the bottom and the Chelsea sandstone makes a cliff of reddish coarse sandstone at the top. East of this hill and 4 miles east of Claremore, the two conical isolated hills to the north are clay shale hills, one with pieces of Tiawah limestone on top. The wooded hills behind

them to the north are in Chelsea sandstone. Six miles east of Claremore are two small isolated hills capped by thin remnants of Taft sandstone. The Lorton ranch headquarters to the south is in a lovely basin cut below the sandstone by stream action. North of the small hills is the East Claremore pool, an old oil and gas pool now nearly depleted.

Just east of the Rogers-Mayes county line is a large hill with a deep road cut east of the crest. The rock exposed in the cut is the Bluejacket sandstone, here 55 feet thick. This sandstone is the Bartlesville sand of subsurface, and yields the oil of northern Rogers County, Nowata County, and much of that of Washington and some other counties.

The hills in the west part of Claremore which provide the beautiful sites for the Will Rogers Memorial and for Oklahoma Military Academy are there for geologic reasons. The main part of the city is on the Chelsea sandstone. Above the sandstone is 80 feet of soft shale and then a strong, siliceous limestone (Verdigris limestone) eleven feet thick. It is this limestone that makes the rim of the hills which make such an attractive setting for the institutions. The large isolated hill west of the tracks 2 miles southwest of Claremore has a Verdigris limestone bench, a cap of Breezy Hill limestone, and at the northeast end, a mound of Lower Fort Scott limestone.

For those who like to collect fossils, the region offers some good hunting. The lower ledges of the Oologah limestone in the cliff along Highway 20 west of the Verdigris River contains numerous brachiopods, bryozoans, and corals. In an abandoned road just west of the lane leading north from Highway 20 west of the Verdigris River bridge is good collecting from shale above the Lower Fort Scott limestone.

The fossils are clams, snails, brachiopods, cephalopods, corals, and sharks. There are four fossil zones in the Inola limestone along Highway 20 just east of the Rogers-Mayes County line.

Many fossils have been collected in the black shale above the coal in the strip pits at Collinsville. Well-preserved fossil plants can be dug from shales below the Verdigris limestone 3 miles north of Bushyhead. Fronds of seed ferns are common in this rock. Most of the limestone beds contain small fossils of the shape and size of rice grains. These are called fusulinids. They are important to geologists, and the Survey will publish a report on them within a few months.

Claremore is a city which lies in the midst of an unusual number of geologic and scenic wonders. We expect some 200 professional geologists to attend the field conference and to be in Claremore on May 15. Most of them wish to see the rocks so well exposed in Rogers County in order to picture conditions in wells to the west where these same rocks are deep underground.

Students of the University of Oklahoma working on Master of Science degrees have, with help from the Survey, mapped the geology of all of Rogers County. These students are Mark Hobbs, Bill Sparks, Jack Tillman, Herb Ware, Bill Cruman, Dick Alexander, Clarence Lhoman, and Red Morgan. The Survey will publish maps and a bulletin on the geology of Rogers County in late 1955.

NOTE ON 1953 OKLAHOMA OIL PRODUCTION

John H. Warren of our staff calls attention to The Monthly Petroleum Statement No. 374 of the U. S. Bureau of Mines, Mineral Industry Surveys, which states that the production of crude petroleum averaged 6,240,000 barrels daily in January, an increase of 2,000 barrels daily compared with December 1953.

The total production for the year 1953 averaged 6,466,000 barrels daily or a gain of 3.4 percent compared with 1952. The record production for the year of 2,360,000,000 barrels showed a gain of 70.2 million barrels over 1952, the largest gains being 16.9 million for Wyoming, 12.1 million for Oklahoma, 11.8 million for Louisiana, 11.7 million for New Mexico, 5.5 million for California and 3.6 million each for North Dakota and Nebraska.

A. LITTLE-KNOWN EARLY ARTICLE

ON THE OKLAHOMA COAL BASIN

by

Carl C. Branson

It is customary to cite the 1898 paper of Noah Fields Drake as the first important article on the geology of eastern Oklahoma. There is, however, an earlier, and a remarkably good, short paper dating from 1890. This is "Geology of the Choctaw Coal-Field," by H. M. Chance, published in the Transactions of the American Institute of Mining Engineers, Volume XVIII, pages 653-661, with maps as Plates I and II. This short paper has no foot-notes, no list of references, and presumably there was no previous work or mapping. The work was done for the Choctaw Coal and Railway Co.

Henry Martyn Chance was an engineer with geologic leanings. He was the author of 36 articles on geologic subjects, published between 1878 and 1908. One was on the anticlinal theory of natural gas: another on the origin of coal.

Chance and his party made a base map and traced the coal beds from a point west of McAlester to Poteau. They made a topographic map and sketched the geology of what Chance called the Grady Coal Basin (now Hartshorne Basin) with remarkable accuracy. Their distances were recorded by an odometer on a buckboard wagon. Chance was amazed at the great thickness of the coal-bearing strata, which he assigned a total thickness of 8500 feet. He measured and described a geologic section containing 13 coal beds, 6 of them workable.

Chance mapped and named several workable coals and he measured the geologic sections. His named units in the order he gave them, and their equivalents in present usage are:

Mayberry coal = Secor coal, lower in section
(Chance was in error here)

Secor coal = Secor coal of present usage

Norman coal = Cavanal coal

McAlester coal = Stigler coal

Flat-top sandstone = Warner sandstone

Adams coal = Unnamed coal in the McCurtain
shale

Grady coal = Upper Hartshorne coal

Tobucksy sandstone = Hartshorne sandstone

Since the upper 4692 feet of his section duplicates the same rocks he measured for the lower part, the total thickness he actually found in the Hartshorne area was about 3,000 feet.

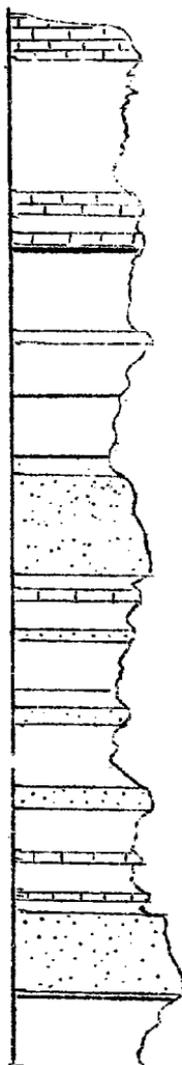
The geographic names of that time were quite different from those of the present. Bell Starr Mountains then were called Long Mountain, Little Mountain, and Round Top. Gowen was Grady Camp No. 2. The stream south of Red Oak is spelled Fourche Melane. Frinks is on the map four miles south of McAlester. Haileyville and Wilburton did not exist.

We would like some help from people familiar with the area. Chance shows on his map a "gas spring", which appears to be in $SE\frac{1}{4}$ sec. 12, T. 5 N.,

R. 13 E., (about six miles west and a mile south of McAlester). Is there a gas seep there now? If so, Exactly where?

The name Tobucksy, given to a sandstone by Chance is apparently derived from the name of a creek, a hill, a town, a mine, or some geographic locality. We would appreciate any information we could get on the origin of the name. Dr. Sears of the University of Oklahoma Department of History found that the word "tobacksy" is Choctaw for coal pit.

The McAlester coal was named for the town; the Mayberry coal for the Mayberry mine on the north side of Cavanal Mountain; the Adams coal apparently is named for the Adams farm in sec. 30, T. 5 N., R. 17 E., 1/2 mile east of the outcrop of the coal. We can find no origin of the name Secor or of the name Norman. Will anyone who knows of such places or former places please write me and let me know about them?



Oologah limestone

Lower Fort Scott limestone
 Breezy Hill limestone
 Iron Post coal

Verdigris limestone

Croweburg coal

Sequoyah coal

Chelsea sandstone

Tiawah limestone

Weir-Pittsburg coal
 Taft sandstone

Lower Taft sandstone

limestone

India limestone

Bluejacket sandstone
 coal