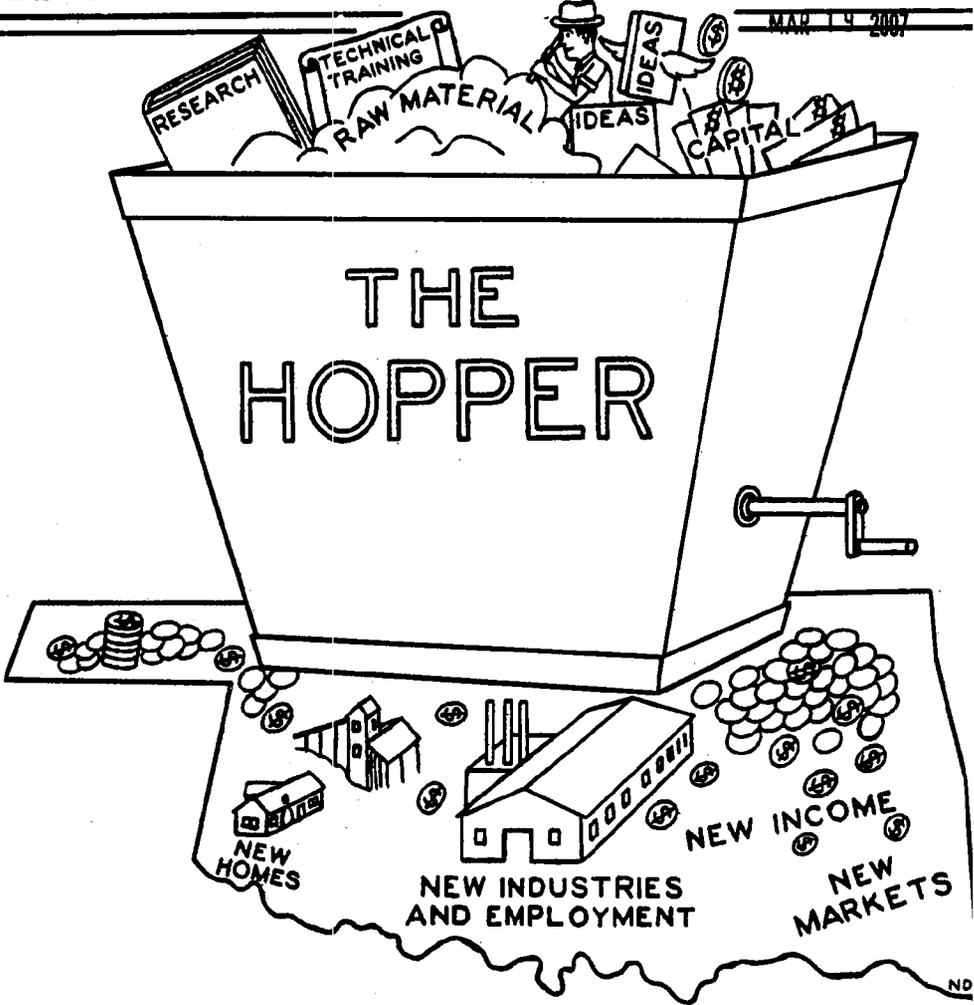


MAR 14 2007



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

GEOLOGIC MAP OF OKLAHOMA

The assembling of data for the new areal geologic map of Oklahoma has been in progress since September, 1947, as a joint project of the Oklahoma Geological Survey and the United States Geological Survey, with magnificent cooperation of geological departments of oil companies, universities, and individual geologists. Hugh D. Miser, Staff Geologist, U. S. Geological Survey, is in charge of the preparation of this map. He was the author of the first colored geologic map of Oklahoma, published in 1926 which has been out of print for five years.

Maps of this kind are designed to show the distribution of geological formations at the surface. The state map will be on a scale of 1:500,000, about 8 miles to the inch. Such maps are not designed to show structure nor the location of mineral deposits, but they are of basic value in beginning the study of the economic geology of an area. In areas where the rocks are steeply folded, structure may be interpreted from the distribution and arrangements of outcrops on the areal map.

Sources of new information include maps published by the State and Federal Surveys, the American Association of Petroleum Geologists, local geological societies, and other organizations, since 1923; unpublished mapping by members of the staff of the Oklahoma Geological Survey; unpublished maps of oil companies and individual geologists; and Masters' theses and Doctors' dissertations of graduate students at the University of Oklahoma, University of Tulsa, and University of Wisconsin.

Maps published by the State and Federal Surveys since 1923 cover Cimarron and Texas Counties, Washington County, small parts of western Rogers and Wagoner Counties, and the eastern Oklahoma coal field which extends from Coalgate to

Muskogee and eastward to Poteau and Heavener, a small area in the northeastern part of the Wichita Mountains, and five small areas in the central Arbuckle Mountains. Other published maps include the Ardmore basin, from a guidebook of the Ardmore Geological Society, and several areas in central Oklahoma from the Bulletin of the American Association of Petroleum Geologists.

Manuscript maps of the Oklahoma Geological Survey include projects that were interrupted by the war, ground water investigations carried on in cooperation with the U. S. Geological Survey, and projects undertaken specifically in connection with the new map. Geological departments of oil companies and individual oil geologists have been most cooperative in making maps of their work available, especially for western Oklahoma. Without such cooperation the 1926 map would have been impossible, and contribution of the oil industry to the present project is greatly expediting the completion of the new map. The information thus provided is of such high quality as to challenge those in charge to attempt to map in detail some of the areas in which the oil geologists have not been interested, in order that the whole map will be of uniform high standard. It is the earnest hope of the sponsors that the new Oklahoma map will be the best of its kind in existence.

Efforts to obtain new mapping for areas not covered by oil geologists and State and Federal Survey maps involve the fine cooperation of the departments of geology of the University of Oklahoma, University of Tulsa, Oklahoma A. and M. College, and special projects of the Oklahoma Geological Survey.

During the summer of 1949, Prof. George G. Huffman, of the University of Oklahoma, and H. D. Miser supervised seven theses in the Ozark portion of northeastern Oklahoma, principally in an area

that now is flooded by the reservoir behind the Ft. Gibson dam. The rocks involved are middle and upper Mississippian in age and have received little attention, except for one small area, since the early part of the present century. These rocks pose many interesting problems not only in connection with that particular area of outcrop, but also related to outcrops in the Arbuckle Mountains and in the subsurface of most of the state. Had this work not been done last summer, much valuable information and many significant clues would have been lost forever under the water of Ft. Gibson reservoir.

During the course of these investigations several discoveries were made of exposures of rocks not heretofore known in the area. Of greatest interest was an excellent section of pre-Mississippian rocks including the Cotter dolomite, Burgen sandstone, Tyner formation, Fite limestone, Fernvale limestone, Sylvan shale, St. Clair limestone, Sallisaw sandstone, Sylamore sandstone, and Chattanooga shale. This exposure is in a faulted dome near the settlement of Qualls about midway between Ft. Gibson and Marble City. The St. Clair and younger rocks have long been known near Marble City and the Cotter through Fernvale formations had been known north of Tahlequah. Fortunately, the Qualls section is above the proposed water level of the Tenkiller Ferry reservoir, and is destined to become the classic section for study of these formations in northeastern Oklahoma. The Cason shale, age equivalent of the Sylvan, crops out along the south margin of the Ozarks in Arkansas, and the Sylvan has been traced in subsurface from the Arbuckle exposures to within a short distance of the Oklahoma Ozarks, but this is the first report of exposures of this formation in the Oklahoma Ozarks.

Students from the University of Tulsa completed mapping in areas from Spavinaw and Tahlequah to the Arkansas-Oklahoma state line, and another

student from the same institution completed a thesis in the Wichita Mountains. Other graduate students from the University of Oklahoma have contributed maps in parts of the Arbuckle Mountains, Ardmore basin, Wichita Mountains, southeastern Oklahoma, Okfuskee County, and part of Sequoyah County.

Recent work by the Geological Survey staff members includes mapping of the beds above and below the boundary between the Missouri and Virgil series from the Kansas-Oklahoma line to the Arbuckle Mountains by M. C. Oakes; subdivision and mapping of the Arbuckle limestone in the western and southern Arbuckle Mountains by W. E. Ham; the basic igneous rocks of the Wichita Mountains by G. W. Chase; Grady County by L. V. Davis; southern McCurtain County by C. L. Fair; inliers of Stanley shale and Jackfork sandstone south of the Ouachita Mountains in Pushmataha County by J. O. Beach; and the Pawhuska limestone in Central Oklahoma by J. H. Warren.

The mapping program for the summer of 1950 that has been assigned to graduate students working under Prof. Huffman is of equal importance to that of last summer, because of the approaching completion of the Tenkiller Ferry dam on Illinois River near Gore. Part of the area mapped last summer lies in this reservoir basin, but several townships not yet mapped will be inundated. Other portions of the Ozark region also will be investigated in the general program of studying the whole problem of middle and upper Mississippian stratigraphy of northeastern Oklahoma.

In addition to the projects of Prof. Huffman and his students, two other members of the geology faculty of the University of Oklahoma have joined the Survey staff for summer work. These are Dr. Carl Branson, who begins teaching this fall and who is now mapping Pennsylvanian rocks in northeastern Sequoyah County, and Oscar D. Weaver, Jr., who is

mapping Hughes County for his Doctor's dissertation. William F. Tanner, of Oklahoma Baptist University, Shawnee, is mapping Seminole County as a Doctor's problem, and Edward R. Ries is completing a similar project on Okfuskee County. M. C. Oakes is completing a study of the area south of the Arkansas River in northeastern Okmulgee County and adjacent parts of Tulsa, Wagoner, and Muskogee Counties--an area of perplexing facies changes that have puzzled geologists for forty years. Oakes and Branson are supervising a graduate student in western Sequoyah County and later in the summer will attempt to carry certain marker beds of the lower Pennsylvanian northward from the vicinity of McAlester to the Kansas-Oklahoma state line.

Gerald W. Chase, of the Survey staff, is completing mapping of the basic igneous rocks and their contained titanium-bearing iron ores in the Roosevelt and Meers areas of the Wichita Mountains; and W. E. Ham, assisted by Myron McKinley, will complete the mapping of the formations of the Arbuckle group in the eastern and northern portions of the Arbuckle Mountains and will also attempt to revise existing mapping of the Simpson group and younger formations on the margins of the Arbuckles.

All these projects are under the general supervision of H. D. Miser, whose wide experience in Oklahoma and Arkansas is of invaluable assistance to the men working on the various problems. The projects are pointed specifically to information needed for completion of the new map, but many of them are planned with the ultimate objective of preparing larger-scale maps and comprehensive reports on counties and larger areas. It is hoped that the major mapping projects will be completed by the end of the calendar year.

Maps that are accumulated are drawn on a variety of scales ranging from $\frac{1}{4}$ inch per mile to over 3 inches per mile. They range in area from single

townships or less to assembly maps covering many counties. Reduction to the uniform, compilation scale of 1:300,000 or about 5 miles to the inch is accomplished by draftsmen working for the Oklahoma Geological Survey. Complexity of the maps depends on thickness of units, width of outcrops, and structure. In many instances, generalization is necessary in order to obtain final copy that will be legible, and this involves tracing off such lines as are to be preserved. Such tracings are reduced photographically to the compilation scale, or in some instances, to an intermediate scale for additional generalization. In other instances, the outcrop patterns are sufficiently simple that the draftsman can reduce the maps by eye. After all the maps are in, a system of classification involving the correlation and grouping of formations will be set up and the compilation map finally agreed to. At least a year will be required for drafting of final copy for printing. This probably will be done by the U. S. Geological Survey and will involve many separate drawings for patterns to be printed in different colors. It is estimated that printing will take another year.

* * * * *

SUMMER PROGRAM OF SURVEY
INCLUDES ADDITIONAL CHEMIST

Prof. A. C. Shead of the Department of Chemistry, University of Oklahoma, has been employed by the Oklahoma Geological Survey for the summer and is making analyses of titanium-bearing iron ores and anorthosite from the Wichita Mountains, limestones, and other materials that have been collected during the past year. Dr. Shead was a member of the Survey staff from 1918 to 1923 and has worked here several times during recent years.

A. L. Burwell, Industrial Chemist, is engaged in experiments on nitrating Oklahoma coal and is

still playing around with expanding volcanic ash and beneficiation of clays, as well as troubleshooting on industrial problems of some of the state's mineral producers and manufacturers.

* * * * *

INDUSTRIAL MINERALS DIVISION, A.I.M.M.E.,
TO HOLD REGIONAL MEETING IN OKLAHOMA

The Industrial Minerals Division of the American Institute of Mining and Metallurgical Engineers will hold a Southwest regional meeting in Norman in October. The Executive Committee of the division accepted an invitation extended through the Oklahoma Geological Survey to come to Oklahoma this year for a regional meeting. Two days, Tuesday and Wednesday, October 17 and 18, will be spent in technical sessions at the Extension Study Center, North Campus, University of Oklahoma; followed by a two day field trip in the Arbuckle Mountain region October 19 and 20.

The Institute is one of the oldest engineering societies in the country, with a very large membership. Because of the diversity of interests within the membership, the organization is divided into three main branches: Metals, Petroleum, and Mining; and each branch comprises several divisions and subdivisions, the Industrial Minerals Division being part of the Mining Branch. The Petroleum Branch is the principal organization in the country for petroleum engineers, and consequently, that branch is well represented in Oklahoma, whereas there are only a small number of members affiliated with the Industrial Minerals Division.

Membership in the Industrial Minerals Division is made up of geologists and engineers connected with companies producing and using non-metallic minerals; members of state geological surveys, the U. S. Geological Survey, and the U. S. Bureau of

Mines; and members of faculties of colleges and universities, mostly in the eastern United States and on the Pacific Coast. Regional meetings have been held recently in Columbus, Ohio; St. Louis, Missouri; Tampa, Florida; and in California. This will be the first meeting of the division in the Southwest.

The program for the regional meeting is designed to acquaint members of the division with the position of the Southwest with regard to production and reserves of industrial mineral materials. It will include papers on the following general topics: trends in industrial minerals in the southwest, by Harold B. Foxhall, State Geologist of Arkansas; geology and industrial minerals in Oklahoma, by Robert H. Dott, Director, Oklahoma Geological Survey; chemical grade limestone and dolomite in Oklahoma, by Homer Dunlap, President, St. Clair Lime Co., Oklahoma City; the industrial minerals of the Arbuckle Mountains, Oklahoma, by William E. Ham, Geologist, Oklahoma Geological Survey; and clay materials of the Wichita Mountains, Oklahoma, by A. L. Burwell, Industrial Chemist, Oklahoma Geological Survey. A symposium on titaniferous iron ores will include a paper on the titaniferous ores of the Wichita Mountains, Oklahoma, by Gerald W. Chase, Geologist, Oklahoma Geological Survey and one on the occurrence of titaniferous iron ores in the Adirondacks, New York, by George Wunder, Plant Manager, and Paul Allen, Assistant Plant Manager, National Lead Co., Tahawus, New York; followed by a discussion of titaniferous ores by several experts in the field.

Other papers already scheduled will include: Kansas salt, by Earl K. Nixon, State Geological Survey of Kansas; geology and ceramic possibilities of the Wilcox clays of Arkansas, by Norman F. Williams, Arkansas Geological Survey; Texas sulfur, by A. G. Wolf, Texas Sulphur Co. Additional papers on

other states are being solicited by Robert C. Stephenson, Chairman, Papers and Programs Committee.

A dinner will be held Tuesday evening, October 17, with Hugh D. Miser, Staff Geologist, U. S. Geological Survey, who is now engaged in preparing a new geologic map of Oklahoma, as speaker. His subject will be "Making a Geologic Map of Oklahoma."

The two-day field trip in the Arbuckle Mountains will be led by W. E. Ham. One day will be spent visiting the principal operations producing such industrial minerals as glass sand, dolomite, limestone, asphalt, and cement; and the other day will be devoted to studying the interesting geology of the Arbuckle Mountains. Mr. Ham is continuing his work on the stratigraphy and structure of the Arbuckle group and will point out some of his recent findings. He recently was co-leader on a trip sponsored by the Ardmore Geological Society, in which about 250 geologists participated.

Dr. Richard M. Foose, Department of Geology, Franklin and Marshall College, Lancaster, Penn., is Chairman of the Industrial Minerals Division. Robert H. Dott is Chairman of the Mining Geology Committee and was recently elected a member of the Executive Committee.

* * * * *

SURVEY PUBLICATIONS

Circular 27, "Cellular Products from Oklahoma Volcanic Ash," by A. L. Burwell and W. E. Ham, has attracted considerable attention. This came off the press early this spring and is available for \$0.85.

Bulletin 68, "Geology and Coal and Natural Gas Resources of Northern Le Flore County, Oklahoma," by M. M. Knechtel, Geologist, U. S. Geological

Survey, is now available at \$0.85. This report is accompanied by a geologic map of the area covered.

Reports in manuscript stage that are expected to be published this year include water resources of the Roubidoux sandstone in Ottawa County; pumping tests in the alluvium of the Arkansas River near Ft. Gibson; irrigation from the Rush Springs sandstone in Caddo County; titanium-bearing iron ores of the Wichita Mountains; and mineral production of Oklahoma, 1885 to 1948.