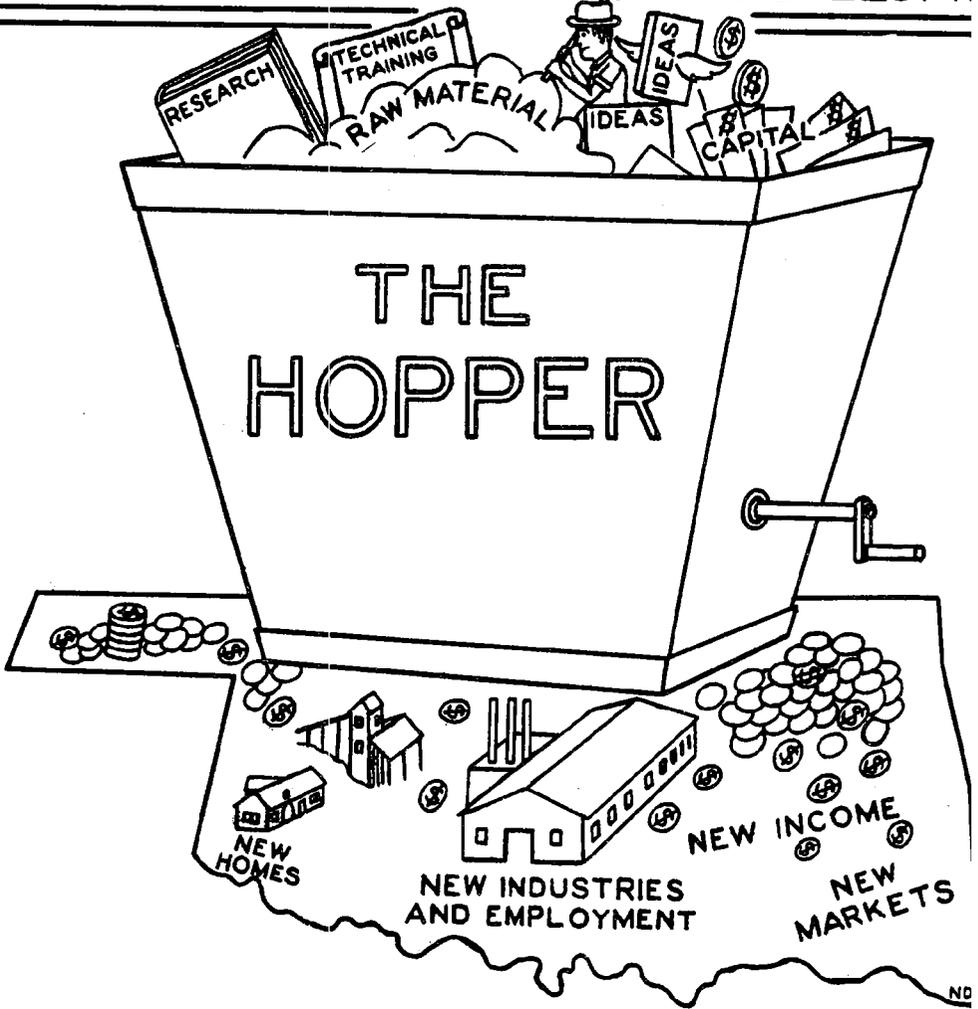


DEDICATED TO OKLAHOMA'S DEVELOPMENT



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SUMMER IN THE OKLAHOMA GEOLOGICAL SURVEY

by

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The new Geological Map of Oklahoma continues as a major project of the Oklahoma Geological Survey. The assembling of data for the new areal map has been in progress since September, 1947, as a joint project of the Oklahoma Geological Survey and the U.S. Geological Survey. The map preparation is ending its fourth year; the dead-line date for completion of remaining field work on new mapping is set at December, 1951.

Dr. Hugh D. Miser, Staff Geologist of the United States Geological Survey, in charge of the preparation of this map, was also the author of the 1926 geologic map, the first colored geologic map of Oklahoma to be published. Dr. Miser, a native of Pea Ridge, Arkansas, began learning the geology of Oklahoma and Arkansas more than 40 years ago; first, as a student at the University of Arkansas with summer field work for the Arkansas and the U. S. Geological Surveys, and later, as a geologist of the U.S. Geological Survey. A part of his time for over thirty years has been devoted to problems of Oklahoma geology. In addition to compiling the Oklahoma Geological Map, Miser has written several papers dealing with Oklahoma geology.

Dr. Miser, in addition to the office work in Norman, is engaged in the acquisition of additional maps from oil companies to supplement the information previously acquired from them which covers the mapping of one-half the state of Oklahoma. He is checking the field work of many geologists, chiefly Masters' theses work; checking alluvium, terrace deposits, and other surficial deposits from soil maps and mapping by the Bureau of Reclamation and the Soil Conservation Service.

Data have been compiled from many different sources including: maps published since 1923 by the State and Federal Surveys, the American Association of Petroleum Geologists, local geological societies, and other organizations; unpublished mapping by members of the staff of the Oklahoma Geological Survey; unpublished maps of oil companies and of individual geologists; Masters' theses and Doctors' dissertations of graduate students at the University of Oklahoma and the Tulsa University; and information on surficial deposits contributed by Soil Survey Maps, by Agriculture Experiment Station, the U. S. Soil Conservation Service, and the Bureau of Reclamation.

Dr. Miser estimates that eighty percent of the area of the state will be represented by revised mapping as compared with the map of 1926. Approximately 50 percent of the new state map will be compiled from files of oil companies; 30 percent of the new map will be covered by field work of the past four years and by maps printed in the past twenty-five years; and some 20 percent of the new map will be taken with little or no change from the old state map of 1926.

Field work of the past four years has been done by some 70 geologists, of whom 53 were graduate students. All field work instigated primarily for purposes of solving revision problems of the new map is under the general supervision of Dr. Miser. The work of the graduate students is under the supervision of members of the Geology Faculty of the University of Oklahoma and Tulsa University, and under staff members of the Oklahoma Geological Survey. Dr. Miser has assisted in checking the field work of about 40 graduate students. Thirty field geologists are mapping areas during this calendar year. The mapping of areas not covered by oil geologists, by State maps or by Federal maps is made possible by the fine cooperation of the departments of geology of the University of Oklahoma and the University of

Tulsa with the Oklahoma Geological Survey coordinated by Miser. In addition, independent work on long term problems is being done by two staff members of the Oklahoma Geological Survey, Dr. William E. Ham (Arbuckle Mountain area) and Mr. Gerald Chase (Wichita Mountains area), which will contribute to the revision of these areas for the new state map.

Several staff members of the O.G.S. are working on special projects which will contribute directly to the new map. Dr. William E. Ham, appointed Assistant Director of the O.G.S. as of July 1, is completing the mapping of units of the Arbuckle Group in the Arbuckle Mountains. With the completion of this major project, Dr. Ham will devote the remainder of the summer and fall to the remapping of younger formations in the Arbuckle Mountains. Mr. Myron McKinley, formerly Junior Geologist, for the O.G.S., was appointed full time Assistant Geologist, effective July 1. He is mapping the Arbuckle Group in the Hunton anticline. When this is completed, Mr. McKinley will map the Simpson and younger beds on the south flank of the Arbuckle anticline.

Mr. Malcolm Oakes, Geologist of the Survey Staff, has traced the boundary between the Virgil and Missouri series from the Kansas-Oklahoma state line to the Arbuckle Mountains; has reached a conclusion on the problem of correlation of formations between the Calvin sandstone and the Seminole formation across Arkansas River in Okmulgee, Muskogee, and Tulsa Counties; and is currently working on the upper Boggy, Thurman, Stuart, and Senora formations between the Canadian and the Verdigris Rivers. Field work in Okfuskee County is practically completed. Mr. Oakes is supervising Wayne Grimes, whose thesis problem is the upper part of the Wewoka formation in Okmulgee County; O.D. Weaver, whose dissertation problem is the geology of Hughes County; and W.E. Tanner, Jr., whose dissertation problem is the geology of Seminole County.

Mr. Gerald Chase, Associate Geologist, Survey Staff, is completing mapping of the basic rocks of the Wichita Mountains. In connection with this, he is making a master file of the type igneous rocks of the Wichitas. In this permanent collection each specimen "set" will include: a weathered specimen, a polished specimen, a fresh fracture specimen, and a thin-section and the rock from which the thin section was cut. The polished blocks are cut to a uniform size, 2 inches by 2 3/4 inches, with the thickness varying from 1/4 to 1/2 inch depending on the crystalline type of the rock. They will be filed as cards would be filed, with the pertinent data on the back of the polished specimen. This collection, when completed, will contain over 300 sets of specimens, and will be a very valuable addition to the Survey. Mital Tolgay, a graduate student from Turkey, is doing the actual work of sawing and polishing the specimens. Mr. Chase is supervising additional drilling on altered anorthosite deposits which are partly kaolinized, and is doing laboratory study of the altered anorthosite samples. He is also conducting laboratory work to determine the ilmenite content of "black sands" obtained from drilling.

Mr. John H. Warren, Assistant Geologist, Survey Staff, is working on a stratigraphic problem with emphasis on the Fort Scott limestone and its relation to the Labette formation in Craig, Nowata, and Rogers Counties. Mr. J. O. Beach, Survey Staff, is mapping inliers of the Jackfork sandstone in the Trinity formation, in Pushmataha and Choctaw Counties.

Mr. Leon V. Davis, Geologist, Water Resources Division, Ground Water Branch, U.S. Geological Survey, has completed the geology of Grady County, with the report in its final stages of assembling for publication. He will begin an investigation of ground-water resources of Caddo County and small portions of adjacent counties (Comanche, Washita,

Elaine, and possibly Custer Counties). Emphasis will be placed on the Rush Springs sandstone, which is the best source of ground water in a large area, and has been tapped for irrigation purposes in western Caddo County (see Mineral Report, O.G.S., No. 22) for municipal supplies of several small towns, and for general domestic and stock use on farms. Davis will be assisted in the field by Carl Steele. The project is part of the program of ground-water investigations sponsored cooperatively by the State and Federal Geological Surveys.

Robert Dunham, Geologist, Fuels Branch of the U.S. Geological Survey, is starting a revision of the estimation of the coal reserves of Oklahoma. He is mapping the Henryetta coal and associated rocks in Okmulgee County this summer.

Mr. Clyde Beckwith, instructor at Oklahoma City University, is mapping for the Survey the high level terraces (probably of Pleistocene age) of Southwestern Oklahoma, in and near the Wichita Mountains and as far northeast as Apache. The mapping of the Pleistocene deposits of Harper, Roger Mills, and Ellis Counties is the dissertation problem of Arthur Meyers, graduate student of the University of Michigan. Mr. Robert H. Dott, Director of O.G.S. and Dr. Miser will assist in supervising and checking his field work. Dr. A.B. Leonard, Geology Faculty, University of Kansas, will investigate, during July and August, the LaVerne formation in Beaver County. Emphasis will be on mapping the formation and on the fauna contained.

Dr. George G. Huffman, Dr. Carl C. Branson, and Dr. Kaspar Arbenz of the Geology Faculty of Oklahoma University are now supervising and directing field work of graduate students. Professor Arbenz is supervising the field work of Martin P. Gillert whose graduate problem is mapping the Simpson formation on the northern and eastern flanks of the Hunton anticline.

Scott limestone. The students and their areas are as follows:

- Charles D. Claxton. Welch area
(near Welch, northern Craig County)
- Louie P. Crisman. Big Cabin area
(between Welch and Vinita)
- Clarence Lowman, Jr. White Oak area
(includes Vinita and Chelsea)
- G. A. McEwen Foyil area
(in Rogers and Mayes Counties,
north of Claremore and Pryor)
- Jack L. Tillman Tiawah area
(in Rogers and Mayes Counties,
south of Claremore and Pryor)
- Mark A. Hobbs Inola area
(between Wagoner and Claremore, in
Rogers, Mayes, and Wagoner Counties)

To supplement the State Map of 1926, Dr. C.N. Gould, then Director of the Survey, published O.G.S. Bulletin 35, "Index to the Stratigraphy of Oklahoma!" A lexicon of stratigraphic names of Oklahoma Geology is now being prepared at the O.G.S. under the direction of Virginia Butcher, to be published at the same time as the new State map. It is intended to contain a complete list of all surface names which have appeared in the literature describing Oklahoma geology--those in active use, obsolete, and questionable usage. It will contain such critical data as: nomenclator, original description, area of outcrop, thickness, key fossils, history of usage of the term, etc.

In the laboratory of the Survey, Mr. Burwell, Staff Chemist, is doing analytical work on feldspars derived from several of our granites and from altered granites. From a research standpoint, Burwell is working on a modification of known methods for using gypsum and anhydrite as a source of sulfur, with special reference to production of ammonium sulphate. Dr. Charles D. de Vries, Chemistry

Faculty, University of Oklahoma, is working for the Survey on chemical analyses of titaniferous ores and "black sands" carrying appreciable quantities of titanium.

The drafting room at O.G.S. is always a busy place. Draftsmen change as they complete degrees or change place of residence due to any number of reasons. Seven draftsmen have worked for varying lengths of time on the State Map to date doing compilation work for Dr. Miser. Robert Owen, graduate student who has had several years experience drafting for oil companies and consulting geologists, is in charge of the O.G.S. drafting. 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, which 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 draftsmen 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.

Natural Resources Contribute One-Third of State Tax Revenue

Importance of mineral resources to the economy of Oklahoma is indicated in a study of sources of tax revenues to the State. The figures were compiled by Dr. Francis R. Cella of the Bureau of Business Research, University of Oklahoma. The tabulation made by Dr. Cella also includes the contributions of the mining industries of Oklahoma to salaries and wages paid to employees for the year 1949.

The percent of tax revenues collected by the State of Oklahoma from the natural resource group of industries and the percent of total wages and salaries paid by the mining industries in Oklahoma are much higher than the national average. Two of the factors contributing to the high rank of minerals in the economy of Oklahoma are: (1) Oklahoma is a higher than average mineral producing State on a square mile basis and (2) industrial development has not yet caught up with the rapid growth of raw material production.

The following paragraphs are quoted from information supplied by Dr. Cella:

"Total tax collections for the fiscal year 1948-49 for state government of Oklahoma were \$138,317,404. Gross production taxes were \$21,444,140 (which is 15.50 percent of the total), petroleum excise taxes were \$196,662 (which is 0.14 percent of the total), and estimated corporation income taxes of the natural resource group were \$3,063,492 (which is 2.20 percent of the total). The group of corporations classified by the Oklahoma Tax Commission as natural resource represented 33.52 percent of the total state income tax liability of corporations paying income taxes in Oklahoma.

The tax collections from gross production petroleum excise, and estimated corporate income taxes for the natural resource group were 17.84 percent of total tax collection by the state unit of government in Oklahoma.

Gross wages and salaries paid to employees in the mining industry for 1949 before any deductions for social insurance were \$133,800,000. This is 10.2 percent of total gross wages and salaries for the state.

The yearly average non-agricultural employment for Oklahoma for 1950 was 472,916 workers. The yearly average for metal, coal, and other mining plus crude petroleum production was 42,883.

In Oklahoma the mineral industries employ 9.1 percent of the non-agricultural workers."

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