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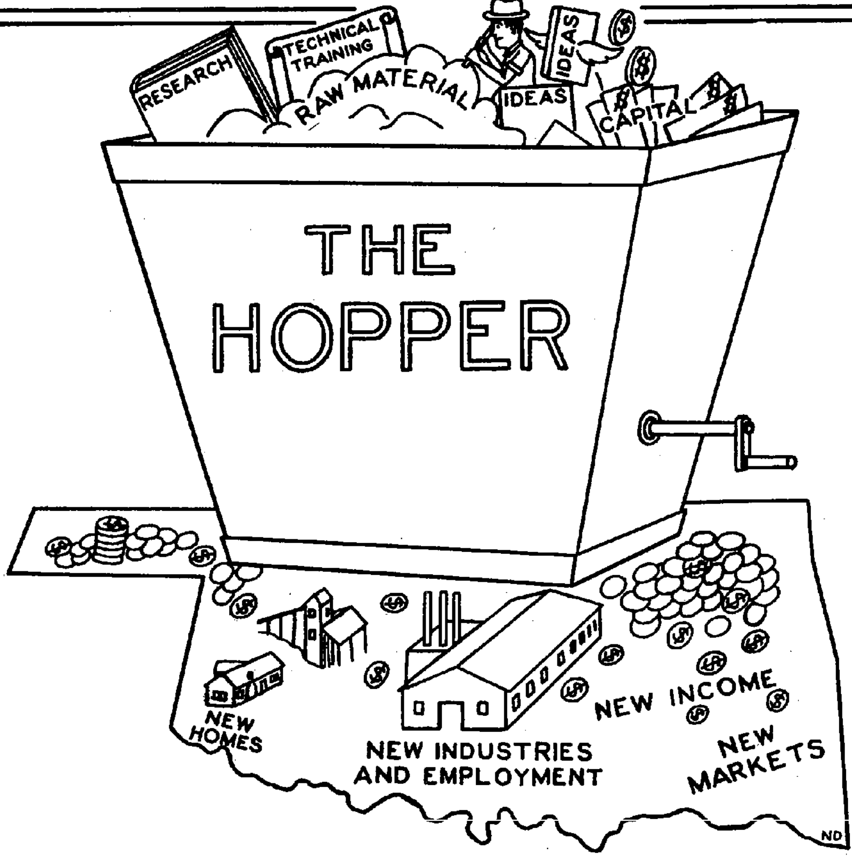

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TITANIUM MINERAL REPORT PUBLISHED

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Oklahoma Geological Survey Circular 30 entitled "Ilmenite in Alluvial Sands of the Wichita Mountain System, Oklahoma" by Gerald W. Chase has been received from the printer and is now available for distribution.

Ilmenite is one of the titanium minerals and the most important commercial source from which titanium dioxide is obtained. Mr. Chase has spent considerable time studying and mapping in detail the complex igneous rocks of the Wichita Mountain system. In the course of his investigations he made observations which led him to believe there was a chance of finding commercial deposits of ilmenite in a particular area. Test drilling was necessary to confirm or disprove this possibility. Several test holes were put down in the area and the samples subjected to exacting laboratory studies. The results indicated the deposit has potential commerical value.

The following excerpts are abstracted from Mr. Chase's report:

The presence of ilmenite occurring as intergrowths in magnetite has been known in alluvial deposits of the Wichita Mountains for a number of years, but little information was available as to details of occurrence and possibilities of exploitation as an ore. Gabbroic rocks cropping out in the area were known to contain ilmenite-magnetite intergrowths, and recent field work by the writer has resulted in the discovery of free ilmenite. Sediments derived from these rocks are thus a possible source of commercial deposits of ilmenite.

The investigation on which this report is based was undertaken to determine whether deposits of ilmenite-bearing sands have sufficient volume to offer economic possibilities. Studies also were made to determine the nature of the sands and their mode of occurrence, as a guide to future prospecting and possible exploitation.

The investigations of the alluvial sands in the Raggedy, Wichita, and Quanah Mountain groups were started in 1949. Sand samples were collected from all streams whose head waters originated in the gabbro hills of Kiowa and Comanche Counties. These samples were examined to learn whether free ilmenite occurs in the stream sediments and to trace this mineral back to potential ore deposits in the country rock contributing it. No commercial deposits in alluvial sands were found in this phase of the investigation.

The second phase of this work was an investigation of alluvium-filled valleys to evaluate the possibilities of commercial concentrations of ilmenite-bearing sands. One deposit near Lake Lawtonka was found by drilling to have commercial possibilities.

Ilmenite is a ferrous titanate and has the theoretical formula $FeTiO_3$. Ilmenite ranges in color from iron-black to brownish black and has a metallic to sub-metallic luster. The specific gravity ranges from 4.5 to 5. The mineral is very stable under normal weathering conditions. It occurs in basic igneous rocks generally associated with magnetite, or as detrital sand grains in beach sands derived from such rocks. Ilmenite in basic igneous rocks normally occurs intergrown with magnetite, and the separation of these two minerals by mechanical means is not commercially feasible. In a few places, where ilmenite and magnetite occur in intrusive bodies which chilled rapidly, the ilmenite is not entirely intergrown with the magnetite and may be mechanically separated.

The largest sources of ilmenite in this country are from Pre-Cambrian ilmenite-magnetite deposits such as at Tahawus, New York, and from beach sands such as those found along the coast of Florida and in Los Angeles County, California. The largest supplier of ilmenite to the United States is India, from beach sands at Travancore.

Ilmenite is the major source of titanium dioxide, which is industrially important as a white pigment that is widely used in the manufacture of paint, paper, floor coverings, coated fabrics and textiles, and rubber. Titanium dioxide also is used in alloys and as a carbide, in welding-rod coatings, and in ceramics.

The most promising area appeared to be around Lake Lawtonka, which was created as a water reservoir for the City of Lawton by damming Medicine Creek in the northern part of sec. 18, T. 3 N., R. 12 W. The lake covers parts of secs. 6, 7, 8, and 18, T. 3 N., R. 12 W.; the eastern half of sec. 1, T. 3 N., R. 13 W.; and parts of secs. 35 and 36, T. 4 N., R. 13 W. It is a catch basin for sediments carried by that part of Medicine Creek located above the lake.

Along the north shore of Lake Lawtonka is a flat area that antedates the lake. This area was chosen for test drilling because it apparently was a site of deposition for sediments brought down in fairly recent geologic time by Medicine Creek, and is easily accessible to drilling equipment.

On the basis of 9 holes, the volume of sand contained in this valley is estimated to be approximately 180,000,000 cubic feet and represents on dry basis 7,620,000 long tons. The overburden ranges from 4 to 16 feet in thickness and contains such a small percentage of heavy minerals that it has no value as a source of ilmenite. Ancient tributaries flowing southward from the limestone hills north of Lake Lawtonka cut channels across the sand body, replacing a part of the ilmenite-bearing sands with limestone sand and gravel. In general, where the overburden is more than 8 feet thick, it is composed of these types of sediments.

The average percentage of ilmenite recoverable from this body of sand, based on test holes drilled, is 4 percent.

The test holes drilled in the flat plain on the north shore of Lake Lawtonka has revealed the presence of an estimated 370,000 short tons of ilmenite and is the only large body found to date. The ilmenite concentrates contain 44.1 percent titanium dioxide, which is about average for ilmenite concentrates being processed by industry today.

Chemical Analysis of Ilmenite and Ilmagnetite Concentrates

Lab. No.	10030	10031	A
TiO_2	44.14	9.84	44.78
Fe	37.04	62.42	33.15

10030 - Ilmenite concentrates from Hole E. A. L. Burwell, analyst.

10031 - Ilmagnetite concentrates from Hole E. A. L. Burwell, analyst.

- Ilmenite concentrates from Wetherill Mine, Tahawus, New York. A. L. Burwell, analyst.

Based on the investigations by Mr. Chase and the results of these investigations as reported in Circular 30, it seems evident that the deposits in the alluvial sands near Lake Lawtonka should have economic value. Circular 30 is now available for distribution from the offices of the Oklahoma Geological Survey at $0.60 by mail or $0.50 at the Survey offices.

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NEW QUARTERS FOR OKLAHOMA GEOLOGICAL SURVEY

Approximately three hectic weeks were spent recently in moving from our old quarters in the Old Geology Building, the first move for the Oklahoma Geological Survey in some 32 years. We are now located in the new south wing of Gould Hall (Geological and Mineral Industries Building), west of Owen Stadium, and we are quite proud of our much needed space.

After a few preliminaries, such as hauling shelving materials, installing a new PBX switchboard, etc. to the new quarters, the serious business of moving office furniture, equipment, and files was started August 11. Trucks and personnel of the hauling division of the Department of Physical Plant, University of Oklahoma, were on the job the first two weeks without interruption moving everything except the chemical laboratory.

Twelve truckloads (several tons) of publications were moved along with 25,000 aerial photographs covering about half the state; about 40 file cabinets containing field data, correspondence, field pictures, maps, indices, specimens, and miscellaneous information; maps representing more than 40 man-years of work to be compiled into the new geological map of Oklahoma (80 percent of which will be revisions and new mapping); hundreds of thousands of mineral and rock samples; and office and technical equipment needed for the 10 full-time employees of the Survey and employees on the co-operative Ground Water program to carry on their work.

Final transfer of laboratory equipment and some miscellaneous book collections was completed September 18.

As is normal with most major moving tasks, some phases went forward rather rapidly, such as moving the offices; others, such as moving the tons of Survey publications in stock, were rather slow and tedious. Samples and some of the equipment now in dead storage on the North Campus remain to be moved as need requires and space is available. The new building, however, designed primarily as an office building and chemical laboratory, will not be adequate for all equipment and materials formerly housed on the South Campus.

For the first time in many years office space is about adequate for the Survey staff. The new quarters give the Survey some 16,000 square feet of floor space rather than the crowded six offices and small basement they occupied in the Old Building.

The new Survey wing of Gould Hall consists of three above-ground floors plus the basement. A modern ramp of red concrete leads to the entrance of the building on the east side of the south wing, just west of Owen Stadium. Dark green tiled halls lead to the various offices.

In the basement is a large fire-proof vault for publications and maps, an individual room to house the high school collections of rocks, minerals, and fossils, a room for office supplies, and storage areas for miscellaneous samples and other supplies.

The main floor consists of three individual staff offices, a conference and work room, and a group of administrative and clerical offices with a room for files and records centered around the reception area. Large spacious glass doors and glass panels provide an inviting entrance to the reception area where the Director's office and other administrative offices are located. Sand-colored tile flooring bordered with a dark brown border blends well with the red brick and green-tinted concrete block walls. Glass bricks combined with large modern windows provide ample lighting for the entire building.

Second floor is devoted to the drafting department of the staff, individual staff offices, the Ground Water offices for the cooperative program between the United States Geological Survey and the Oklahoma Geological Survey, a photographic darkroom, and a lapidary room for making thin sections.

In two of the geological staff offices, individual laboratories for rock and mineral studies have been built including work cabinets, sinks, and hoods. These will be used primarily for petrographic and mineralogical investigations of samples taken in conjunction with field studies and mapping. A small semi-dark room, adjoining both offices, is provided for microscopic work so that special lighting can be available for specialized work.

The chemical laboratory is on third floor. A small room provides office space for the Industrial Chemist, but the rest of the floor is devoted to the laboratory. New work cabinets, sinks, hoods, and storage shelving have been built. Facilities are now available for analytical work and some types of experimental research. The laboratory is set up at present primarily for work with inorganic materials.

In addition to the new work cabinets, the dark green acid-proof tile flooring and new fluorescent vapor-proof light fixtures are of special interest in the laboratory.

Although much work has been done toward readying the new quarters for the staff, there remains a considerable amount to be done before all phases of activities can be restored to a normal operating basis. Even then, some activities will have to be greatly curtailed or eliminated as the present quarters were designed primarily for office use, except for the chemical laboratory on the third floor. At the time the building was started and under construction the Survey had ample quarters in buildings on the South Campus for sample storage, general utility work and storage areas, sample preparation, and the larger scale experimental industrial research. At the beginning of the year the Navy returned to Norman and most of the equipment and other materials that were in use on South Campus are now in dead storage. Until suitable quarters can be found, some of the activities formerly carried on at the South Base will be greatly handicapped.

The Oklahoma Geological Survey extends to each of our readers a cordial invitation to visit us and see our new working quarters. We shall be happy to tour you through our building.

It is tentatively planned to have an open house early next year if it can be arranged. No details concerning dates, plans, or programs have been worked out. Announcements will be made as soon as some of the details can be arranged.

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TULSA COUNTY BULLETIN IS NOW AVAILABLE

Oklahoma Geological Survey Bulletin 69 entitled "Geology and Mineral Resources of Tulsa County, Oklahoma" by Malcolm C. Oakes with sections on Oil and Gas by Glen S. Dillé and Water Resources by John H. Warren has just been issued by the Oklahoma Geological Survey and is now available for distribution at the Survey offices.

This Bulletin is a result of detailed investigations and mapping of the geology of Tulsa County started more than ten years ago by Mr. Oakes but interrupted during the war when Mr. Oakes was assigned to special wartime problems. Later Mr. Oakes, as well as other members of the staff, was engaged in gathering information for the new Geologic Map of Oklahoma.

Bulletin 69 contains detailed discussions of the surface geology of Tulsa County. Each outcropping formation is described in detail. Stratigraphic relations and correlations with other areas are discussed. There is a section on general subsurface geology by Mr. Oakes.

In the section on economic geology the oil and gas geology in Tulsa County including subsurface geology is discussed by Mr. Glen S. Dillé of Tulsa. This section includes correlations and descriptions of the oil sands and discussions of the principal producing areas by districts.

Water resources are discussed by John H. Warren of the Survey staff. This includes a brief discussion of the composition of ground waters and a description and discussion of the water-bearing formations underlying Tulsa County.

Other mineral resources of Tulsa County are discussed by Mr. Oakes and include brief sections on coal, limestone, sand and gravel, clay and shale, building stone, oil field brines, and phosphate.

Appendix A of Bulletin 69 consists of a large number of measured stratigraphic sections. These give lithologic descriptions of individual beds as measured in the field by Mr. Oakes.

Appendix B is composed of driller's logs of wells drilled for water in Tulsa County and Appendix C is a table of records of wells and springs in Tulsa County.

The report is accompanied by a detailed geologic map of Tulsa County and parts of adjacent counties printed on a scale of one inch to one mile. This map is printed in 6 colors. It is the first time that a detailed geologic map on this scale has been printed for that area. A subsurface structure map compiled by Mr. Dillé also accompanies Bulletin 69. These maps together with a map showing oil-producing areas and a composite outcrop section of Tulsa County are assembled in a separate map packet which accompanies the Bulletin.

Price of Bulletin 69 including the map packet is $2.15 by mail or $2.00 when picked up at the Survey offices.

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