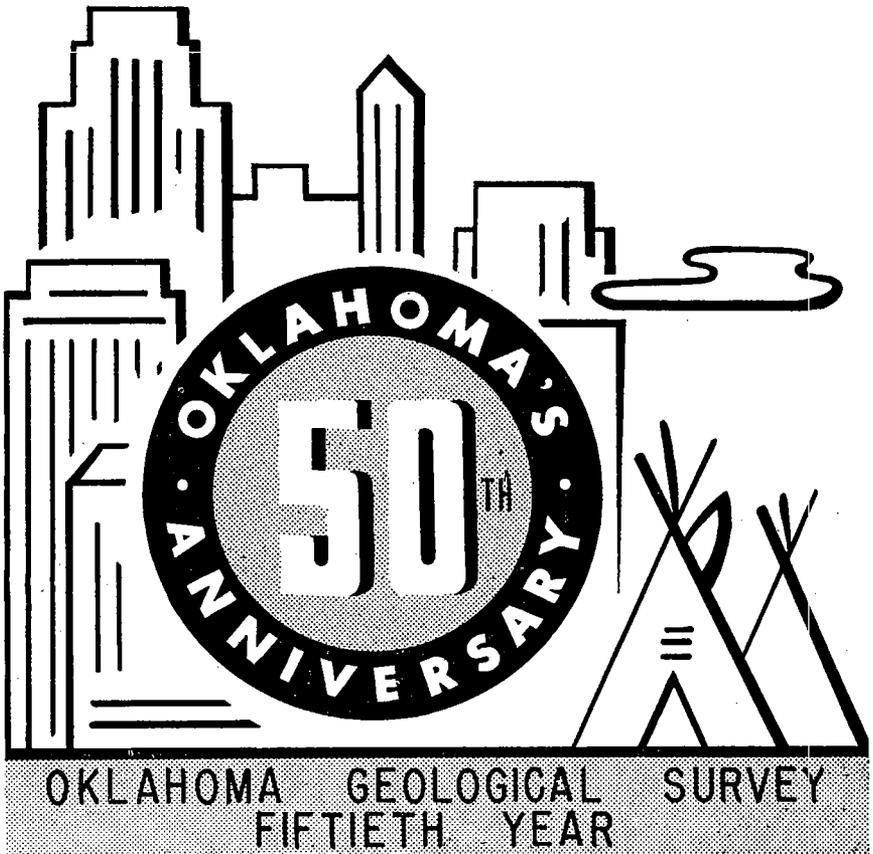


OKLAHOMA GEOLOGY NOTES



New Publications of Oklahoma Geological Survey

- Ostracoda of the Simpson group, by R. W. Harris. Bulletin 75, 333 pages, 10 plates, 4 charts, 19 figures, June 1, 1957. Bound in blue cloth, \$3.50, paper \$3.00.
- Stratigraphy and paleontology of the Hunton group in the Arbuckle Mountain region. Part 1. Introduction to stratigraphy. Circular 44, 57 pages, 4 figures. June 28, 1957. Bound in blue cloth, \$1.50, paper, \$1.00.
- Geology and gypsum resources of the Carter area, by George W. Scott, Jr. and William E. Ham. Colored geologic map available, scale 1:31,640. Price \$1.25. Report in press as Circular 42.
- A Pliocene vertebrate fauna from Ellis County, by David B. Kitts. Circular 45. Bound in blue cloth \$1.00, paper \$0.50.
- Geology of the flanks of the Ozark uplift, Northeastern Oklahoma, by G. G. Huffman. In press as Bulletin 77.
- Geology of the Lake Altus area, by C. A. Merritt. In press as Bulletin 76.
- The Mineral Industries of Oklahoma in 1955 and 1956, by Peter Grandone and William E. Ham. Mineral Report 32, 13 pages. May, 1957. \$0.25.

Conversion of Anhydrite to Gypsum

In nature, anhydrite under certain conditions is gradually changed to the mineral gypsum. Even under optimum conditions the rate of change is extremely slow. Anhydrite is, as the name implies, an anhydrous calcium sulfate, whereas gypsum is calcium sulfate molecularly combined with a definite amount of water. The formula for anhydrite is CaSO_4 . The formula for gypsum is $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$. The uses for anhydrite are relatively few in this country. Gypsum, however, is mined and consumed in tremendous tonnage, in the manufacture of plaster and plaster board, due to its property of parting with a portion of its combined water at a relatively low temperature to yield a product (plaster of Paris) which has the ability to re-combine with water and set to a firm mass.

It is interesting to note that in some areas a bed cropping out as a high grade gypsum will be found to be mainly anhydrite at places where overburden is 30 feet or more in depth. Evidently exposure to the elements, especially to surface moisture, has over a long period of time altered the original anhydrite to gypsum. This fact is of economic importance and must be taken into account in estimating gypsum reserves. Many quarry sites are abandoned as soon as the gypsum is depleted, and operations are moved farther and farther from the processing plant. Obviously, the operators would be pleased if a quick inexpensive process could be developed to change anhydrite to gypsum.

The patent literature as far back as 1923 shows that research was in progress to convert anhydrite to gypsum and at least two investigators noted that alkali-metal sulfates accelerated the conversion. More recently, Leninger, Conley, and Bundy of the Geological Survey of Indiana have conducted an investigation "directed toward evaluating quantitatively the effects of parameters that control the conversion of anhydrite to gypsum" and the development of a rapid process suitable for commercial application. The results have been published in the May 1957 issue of *Industrial & Engineering Chemistry*. It appears that the presence of a small amount of gypsum in the anhydrite is desirable to act as "seed," and that potassium sulfate is the most effective activator but sodium sulfate may be used, and that the rate of conversion is controlled predominantly by the concentration of the activator, the temperature (less than 30°C), and the particle size of the anhydrite. It is interesting to note that the activator solution may be recycled. The unwashed product, where sodium sulfate is used, carried about 0.5 percent sodium, but this may be easily reduced to below 0.03 percent by washing (the maximum allowable for production of plaster).

In Indiana the proven reserves of gypsum are shrinking and the problem warrants attention. In Oklahoma, the proven reserves of gypsum are enormous, yet if a process can be devised that is economically feasible even in the face of our large gypsum reserves, it would be welcome because anhydrite finds very little use at present.

—A. L. B.

Some Oklahoma Microfossils in Indiana

In 1930 Galloway and Ryniker described a fauna from the Atoka formation near Red Oak, Latimer County. One of the species identified and figured was *Endothyranella minuta* (Waters), originally described from the shales between the Joliff limestone and the Otterville limestone of Carter County. Joseph St. Jean, Jr., in a paper on a foraminiferal fauna has named these forms *Endothyranella pugnoidea*, and he uses specimens from the Staunton formation of Indiana for his description and figures. In this same Staunton faunule he finds *Endothyra whitesidei*, *Globivalvulina biserialis*, *Tetrataxis concava*, *T. corona*, *Ozawainella ciscoensis* of the Atoka faunule near Red Oak, *Polytaxis laheei* of the Wewoka formation and the Homer limestone lentil in the Holdenville formation of Okmulgee and Pontotoc Counties, *Pseudostaffella atokaensis* and *Profusulinella fittsi* of the Atoka formation of Coal County, Oklahoma, *Fusulina novamexicana* of the Spaniard limestone of Muskogee County, *Fusulina haworthi* of the Black-jack Creek limestone member of the Ft. Scott in Craig County and *Wedekindellina euthusepta* of the Fleming coal cap rock of southern Kansas.

A comparison of the facies with Oklahoma occurrences indicates that the Staunton formation is of Senora age. The smaller Foraminifera seem to be of long-ranging species and to be of no value in distinguishing Atokan from Desmoinesian rocks.

The article is "A Middle Pennsylvanian foraminiferal fauna from Du-Bois County, Indiana," Indiana Geol. Survey, Bull. No. 10, 66 pages, 5 plates, February 1957.

Geology Field Trips and Scheduled Meetings

Geologists of this region are to have a busy Fall season. The following organized field trips have been scheduled.

Rocky Mountain Association of Geologists, North and Middle Park Basins. August 21-24. Write Robert R. Munoz, Continental Building, Denver, Colorado.

New Mexico Geological Society. Eighth Annual Field Conference. Durango-Silverton-Ouray area, southwestern Colorado. September 5-7.

Wyoming Geological Association. Twelfth Annual Field Conference. Southwestern Wind River Basin. September 12-14. Headquarters, Lander, Woming. Write Mike S. Johnson, Box 2249, Casper, Wyoming.

Ardmore Geological Society. Field conference in the Criner Hills. September 13 and 14. Leaders: E. A. Frederickson and Hugh E. Hunter. Registration September 12 at Lake Murray Lodge. Write R. B. Harrington, Ohio Oil Company, Box 1099, Ardmore, Oklahoma.

Kansas Geological Society. Twenty-first Field Conference. Abnormalities in Permian and Pennsylvanian rocks of southern Kansas. September 19-21. Write Tom Bush, Lane-Wells Co., 808 Central Building, Wichita, Kansas.

Panhandle Geological Society. Field conference in Wichita Mountain area. October 17-19. Leaders W. E. Ham, C. A. Merritt, E. A. Frederickson. This is a re-run of the May 2-4 trip which was caught in heavy rains.

- Indiana Geological Survey and University of Indiana Department of Geology. Mississippian-Pennsylvanian contact. October 4-6. Leader: Henry H. Gray.
- Four Corners Geological Society. Gallup, New Mexico. October 17-19. Write Box 615, Albuquerque, New Mexico.

GEOLOGISTS' SCIENTIFIC MEETINGS ARE:

- Oklahoma Academy of Science, Earth Sciences Section, W. E. Ham, chairman. December 13, 14, Phillips University, Enid.
- American Association of Petroleum Geologists, Midcontinent regional meeting. October 31, November 1. Tulsa, Oklahoma.
- Geological Society of America. Annual meeting. November 4-6. Atlantic City, New Jersey.
- American Institute of Mining, Metallurgical, and Petroleum Engineers. February. New York City.
- American Association of Petroleum Geologists. April. Los Angeles, California. Annual meeting.
- American Association for the Advancement of Science. National meeting. Indianapolis, Indiana. December 26-31.

Significant Uranium Deposit at Cement, Caddo County, Oklahoma

The U. S. Geological Survey has just released a report describing the interesting uranium deposit at the town of Cement, in Caddo County (TEI-640, pp. 208-216). As part of their studies for a report on uranium occurrences in "red bed" sedimentary rocks of Permian age, the authors, E. J. McKay and H. J. Hayden, investigated the uranium deposit at Cement. Pockets of uranium mineralization, in the form of tyuyamunite and perhaps carnotite, occur along a northwest trending joint in the upper Rush Springs sandstone of late Permian age. The joint has a southwest dip of 80 degrees where exposed at the surface. The sandstone in the ore zone is stained dark brown, and diffusion bands of white, brown, yellow-brown, and red sandstone parallel the joint. Hematite nodules and compact calcareous concretions are also present throughout the ore zone. The entire deposit is about 150 feet long, 3 to 5 feet wide, and has been worked to a depth of 3 to 6 feet.

The deposit occurs almost exactly on the axis of the Cement dome of the Cement anticline. The area of closure of the Cement anticline coincides with that of an altered yellow and gray zone in the normally red Rush Springs sandstone. This sandstone is gray, highly calcareous, and pyritic near the crest of the anticline, and patches of the Cyril gypsum remaining near the axis have apparently been entirely replaced with calcium carbonate. There is one such patch of replaced Cyril gypsum immediately adjoining the uranium deposit.

The authors tentatively suggest that the events leading to the formation of the ore deposit were: (1) alteration and pyritization by oil, gas, and/or reducing waters associated with oil reservoirs on an anticlinal structure; (2) further folding accompanied by carbonation due to ascending solutions; (3) fracturing in soft sediments adjacent to well-indurated sediments; and

(4) uranium deposition, pyritization, and hematitization from solutions ascending along joints on the Cement anticline. It is further suggested that similar fractures and faults on other folds in the Anadarko Basin might be favorable for uranium prospecting. Maps of the Cement area and of the uranium deposit are included in the report.

Further investigation of the Cement deposit is presently being carried on jointly by the Oklahoma Geological Survey and the Atomic Energy Commission.

—E. C. S. Jr.

Goddard Brachiopods Described

The *Journal of Paleontology*, volume 31, number 3, dated May, 1957, but issued in June, contains the second section of Elias' study of the fauna of the Redoak Hollow member of the Goddard formation. Thirty-three brachiopod species are identified, ten of which are new species, four new varieties. Many of the illustrations are unusually good.

As in the previous section, Elias' described species depart markedly from his list of nude names given in *Petroleum Geology of Southern Oklahoma* (1956), pages 86, 87. The deviations are:

1956 nude names	1957 names
Productella recens	P. recens
Marginifera ardmorensis	not described
Productus muirwoodi (sic)	P. stehlii
Diaphragmus fasciculatus pipilus	D. fasciculatus bipilus (bipulus on expl. text-figs. 18-20)
Pseudokeyserlingina fredericksi	not described
P ? watsoni	not described
Acanthospirifer dunbari	Acanthospirina sp. A

The brachiopods indicate an age relationship with the Chester rocks, but they have some Morrowan affinities.

The new name *Eumetria matheri* is given to *Eumetria vera* of Mather (not Hall) from the Brentwood limestone member of the Bloyd shale.

—C. C. B.

Status of Survey Projects

- Geology and ground-water resources of Southern McCurtain County, Oklahoma. Leon V. Davis. Map and manuscript completed in 1955. On open file.
- Ground-water in terrace and alluvial deposits of Canadian County. J. L. Mogg, S. L. Schoff, E. W. Reed. Manuscript complete, approved by Federal editors.
- Geology and ground-water resources of Beaver County. S. L. Schoff. In abeyance while the geologist is in Peru. To be completed in 1959. In cooperation with U. S. Geol. Survey, Ground Water Branch.
- Geology of Creek County. Malcolm C. Oakes (surface) and Louise Jordan (subsurface). Mapping completed. Project to be finished and report ready for press in 1958.
- Geology of Okmulgee County. Malcolm C. Oakes, with Lawrence Miller, Donald Leitner, Charles Manhoff, Virgil Whitesides, Glenn C. Luff,

- and W. D. Pitt. Mapping nearly completed, report in form of master's theses finished.
- Geology of McIntosh County. Malcolm C. Oakes, with Frank Webb, David Campbell, Ralf Andrews, and Robert Meek. Mapping completed. Manuscript complete in form of master's theses.
- Geology of Noble County. Mapping complete. Manuscripts complete, but not edited. Report consists of a study of the Wellington formation by Gilbert O. Raasch, map and thesis by Roger L. Billings on the eastern part of the county, map and notes on stratigraphy of western part of county by W. F. Tanner, theses on subsurface geology by students working under Carl A. Moore.
- Geology of Harper County. Arthur J. Myers. Mapping completed. Map and manuscript in the form of a doctoral dissertation for the University of Michigan.
- Atoka formation north of McAlester Basin. Jack G. Blythe. Mapping completed. Report completed as doctoral dissertation. Mapped area is mainly in Wagoner and Mayes Counties.
- Subsurface study of Mississippian rocks of north-central Oklahoma. Louise Jordan, with graduate students. Five projects under way, two completed.
- Geology of Blaine County. Robert O. Fay. Field work started July, 1956.
- Geology of Lincoln County. Carl C. Branson, with Alvin West, Kenneth Masters, William Morgan, Leland Pownell. Three parts completed.
- Geology of Payne County. Philip Chandler. Mapping nearly completed. Being prepared as a doctoral dissertation. Eastern part mapped by Eugene Nakayama and Anthony Fenoglio.
- Pliocene stratigraphy and vertebrates of western Oklahoma. David B. Kitts. Two field seasons completed. Manuscript on felines complete. Snails collected and being sent to Dwight Taylor.
- Geology of Osage County. Carl C. Branson, with W. F. Tanner, Clark Taylor, James Carter, Patrick Shannon, David Vosburg, Orville Russell, Henry Fisher, Joseph B. Carl, David Bryant, William Gardner. Studies completed. Tanner's part published as Circular 40.
- Geology of Pawnee County. Paul B. Greig. Completed. To be published as a bulletin.
- Brachiopods of the Haragan marlstone. Thomas W. Amsden. Manuscript ready in August. Probably available in November as Bulletin 78. Plates in press.
- Limestones of Northeastern Oklahoma. Edward C. Stoeber, Jr. Project begun in October 1956. Complete study will take several years.
- Geology of the Potato Hills. Kaspar Arbenz, Donald Seeley, Charles Roe, Buster W. Miller. Mapping completed. Report being prepared for printing.
- Catalog of Cambrian and Lower Ordovician fossils. E. A. Frederickson.
- Geology of Kay County. Charles Noll, A. Hruby, directed by Carl C. Branson. Eastern half of the area completely mapped and manuscripts on file.
- Geology of Western Pittsburg County. Raymond Govett and Jackson Jones, directed by G. G. Huffman. Mapping completed and reports written.

- Geology of Cavanal Mountain. Philip Webb. Field work complete. This area has never been mapped for publication.
- Geology of San Bois Mountains. Dearl Russell. Master's thesis. Field work completed. An area never before mapped.
- Geology of Bryan County. Neville M. Curtis. One month's work done on sections and samples for facies studies.
- Ground-water resources of the Rush Springs sandstone. Leon V. Davis and Harry Tanaka. About one year's work completed.
- Ground-water of the Garber sandstone, Cleveland and Oklahoma Counties. Lee Burton. To be completed in 1957.
- Subsurface stratigraphic names, by Louise Jordan. In press as Guide Book VI.
- Uranium-bearing carbonaceous nodules of southwestern Oklahoma, by James W. Hill. In press as Mineral Report 33.
- Gypsum resources of the Clinton-Weatherford area, by William E. Ham and Neville M. Curtis, Jr. Ready in 1957.