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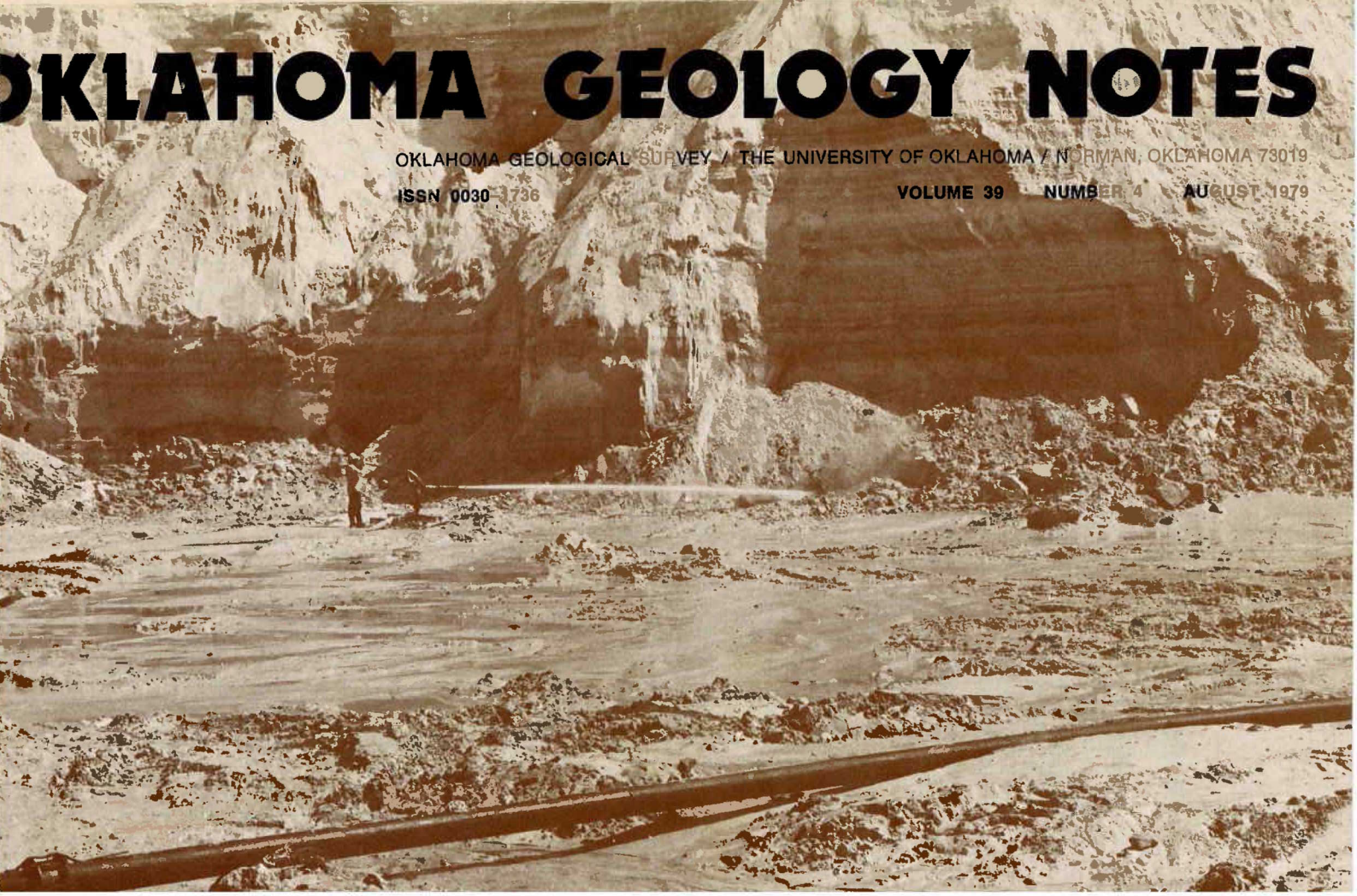

Cover Picture

HYDRAULIC MINING NEAR MILL CREEK, OKLAHOMA

High-purity silica sand, used primarily for glass manufacture, has been produced near Mill Creek, Johnston County, for about 60 years. In Pennsylvania Glass Sand Corp.'s quarry, SW¼ sec. 14, T. 1 S., R. 4 E., material from an approximately 50-foot-thick, loosely consolidated sandstone member of the Oil Creek Formation (Middle Ordovician) is removed hydraulically for processing (cover photograph).

Widely spaced blast holes are drilled into a 30- to 90-foot section of sandstone. After the blasting program is completed and the overburden material removed, a device called a monitor directs a stream of water, up to 100 feet long, through a 1⅜-inch nozzle toward the base of the quarry face. This process creates a slurry of sand and water near the bottom of the pit wall. The slurry is channelized to a sump pump, where the material is transported by pipe (foreground) to a primary screening plant. The minus-¼-inch material is then pumped to the main processing plant, where the sand is washed, dewatered, and screened.

The sand is sold as melting sand in glass-making, as foundry sand, as a source of silica in making sodium silicate, as an abrasive, and (or) as inert filler. About 69 percent of the washed product is medium to fine sand (½ to ⅛ mm), and 26 percent is very fine sand (⅛ to 1/16 mm).

—*Kenneth V. Luza*

Editorial staff: William D. Rose and Elizabeth A. Ham

Oklahoma Geology Notes is published bimonthly by the Oklahoma Geological Survey. It contains short technical articles, mineral-industry and petroleum news and statistics, an annual bibliography of Oklahoma geology, reviews, and announcements of general pertinence to Oklahoma geology. Single copies, $1.00; yearly subscription, $4.00. All subscription orders should be sent to the address on the front cover.

Short articles on aspects of Oklahoma geology are welcome from contributors. A set of guidelines will be forwarded on request.

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Compiled by **Elizabeth A. Ham**[2]

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(Numbers refer to entries in bibliography)

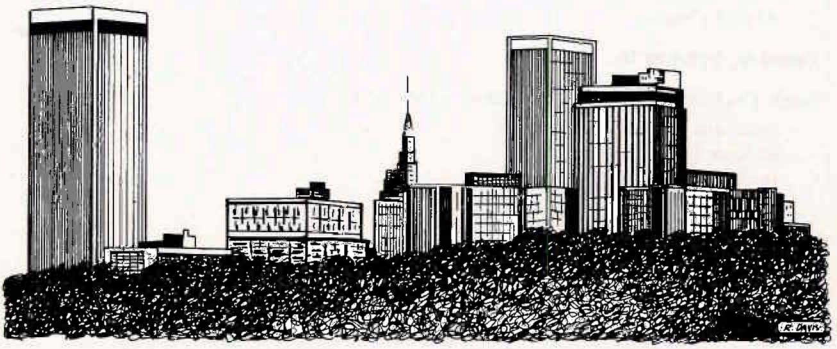
Oklahoma City to Host Water-Well Convention

The Myriad Convention Center in downtown Oklahoma City will serve as headquarters for the annual convention and exposition of the National Water Well Association October 7–10. The meeting will be highlighted by 25 practical workshops covering such topics as business, finance, law, and specific drilling techniques.

More than 300 booths, including many displays of heavy equipment, will present the ground-water industry's latest tools and techniques.

The registration fee for the meeting has been set at $25.00. For further information, contact Alice Vickerman, National Water Well Association, 500 West Wilson Bridge Road, Worthington, Ohio 43085 (phone, 614—846-9355).

Tulsa Locale Draws Earth-Science Editors



Editors, publishers, and writers in the earth sciences should make plans now to attend the 13th annual conference of the Association of Earth Science Editors in Tulsa October 14–17. Headquarters for the meeting is the recently restored Mayo Hotel, on the downtown Tulsa Mall, only a short walk from the new Williams Center complex, which includes the multi-theater Performing Arts Center, the Williams Plaza Hotel, and the Forum shopping center and ice rink. The conference is being sponsored locally by the Society of Exploration Geophysicists and The American Association of Petroleum Geologists.

General chairman for the meeting is Jerry W. Henry of SEG. Assisting Jerry with the local arrangements are Roy Graves of *Petroleum Abstracts* and Gary D. Howell of AAPG. William D. Rose, Oklahoma Geological Survey, is serving as program chairman, assisted by Robert E. Davis, U.S. Geological Survey; Jerry M. Henry, SEG; Ira A. Lutsey, AAPG; Judy A. Russell, Mobil Oil Corp.; and Nancy J. Tamamian, USGS.

Following a welcoming reception Sunday evening, Monday morning's session will be called to order by Robert W. Kelley, New Mexico Bureau of Mines and Mineral Resources, as AESE president. The official welcome will be delivered by Charles J. Mankin, OGS director and Oklahoma state geologist. An outline of the program follows.

Monday, October 15

Session: Innovations in Editing and Publishing
- Judy A. Russell, chairman
- William Kauffman
- Craig W. Brown and Nancy Firestone
- Diane Schnabel and Barbara M. Hillier

Annual Business Meeting

Panel: AESE and Geowriting Education
- Helen E. Hodgson, chairman
- Robert A. Day
- Wendell Cochran
- John F. McGuire

Panel: Challenges of the Elected Editor
Robert L. Bates, chairman
James H. Shea
Alan H. Coogan

Tuesday, October 16

Panel: The Editor and the User of Geoscience Information
Aphrodite Mamoulides, chairman
Jo Anne DeGraffenreid
Jay Fussell
Kenneth S. Johnson

Session: Update '79
Thomas F. Rafter, Jr., chairman
Julia A. Jackson
Jean E. Thyfault

Session: New Developments in Graphics
Nancy J. Tamamian, chairman
James Pinkerton
Brian Fine

Field Trip: Geology and Tulsa's Urban Development
Gary D. Howell, leader

Reception and Annual Banquet
Paul L. Lyons, speaker

Wednesday, October 17

Workshop: Direct-Mail Marketing of Geological Publications
Ronald L. Hart and Gary D. Howell

In addition to the formal program, optional tours can be arranged for visits to such places as Petroleum Publishing Co., AAPG headquarters, *Petroleum Abstracts* offices, Oral Roberts University, and the Gilcrease and Philbrook art museums.

Ample display space is available in the Mayo Hotel, and participants are encouraged to bring samples of their publications and compare styles and formats.

By registering before October 1, those planning to attend can save $10.00. The preregistration fee for members is $40.00, and for nonmembers, $50.00. The fee includes the welcoming reception, one luncheon, the field trip, the reception and annual banquet, and refreshment breaks each day.

For further information, contact Jerry W. Henry, P.O. Box 3098, Tulsa, Oklahoma 74101 (phone, 918—743-1365).

ICCP MEETS IN URBANA, ILLINOIS

The International Committee on Coal Petrology (ICCP) held its annual meeting on the campus of the University of Illinois, in Urbana, May 18–19, 1979, two days before the International Congress of Carboniferous Stratigraphy and

Geology (IX-ICC) convened. Sixty ICCP participants hailed from 16 countries. Highlights of the meeting follow.

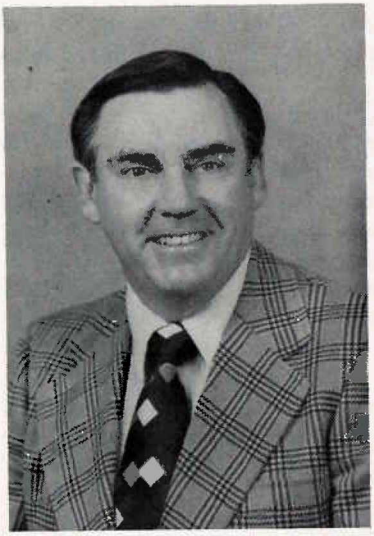
1. Additional copies of the second edition (1963) of the *Glossary of Coal Petrology* will be made available as soon as they can be obtained from the stock of a French publisher.
2. *The Textbook of Coal Petrology* (Stach and others, 1975) will have some 50 pages added and will be reprinted with corrections. These 50 pages might be available as a separate supplement.
3. Differentiation of coal macerals (i.e., vitrinite, exinite, and inertinite) from bitumenite (i.e., gilsonite and asphaltite) by microsolubility, fluorescence, and reflectance techniques was confirmed by tests on identical samples by 12 laboratories. Recommendations to improve standards and techniques of differentiation of these organic constituents of sedimentary rocks included shortening the time from sample collection to analysis and the exclusive use of optical analysis. Immersion oil and benzene dissolve gilsonite, it was noted. Classification of bitumens is based on the solubility of wurtzilite, which moved as a fluid and was consolidated without bacterial action in sedimentary rocks in the Uinta Basin of Utah.
4. Reflectance or rank of macerals was found to vary with time. Thus rank is not exactly a measurement of paleotemperature but a measurement of maturation. Therefore, paleotemperatures cannot be measured precisely. (Some researchers at petroleum laboratories may be interested in this conclusion, because of their own efforts to make a positive correlation.)
5. Reflectance differentiation between vitrinite and inertinite in particles of very fine size (less than 120 mesh) is difficult because of overlapping reflectance ranges.
6. (Metallurgical) coke strength generally is highest if the coal contains 50 percent vitrinite. But if a coking coal contains less than 50 percent vitrinite, exinite and grain size also affect the coke strength. Australian coal that contains low-rank inertinite decreases coke strength and induces increased shrinkage during coking.

A great honor came to the ICCP when one of its most active members, Dr. Peter A. Hacquebard, was selected by IX-ICC on May 26 as the recipient of the Rheinhardt Thiessen Medal for outstanding research contributions to Carboniferous geology. Dr. Hacquebard has worked for many years as a coal petrologist at the Geological Survey of Canada, is a past chairman of the Coal Geology Division of The Geological Society of America, and has lectured at the past five annual short courses on Coal Geology Fundamentals, convened by S. A. Friedman of the Oklahoma Geological Survey and cosponsored by OGS and the Oklahoma Center for Continuing Education at The University of Oklahoma.

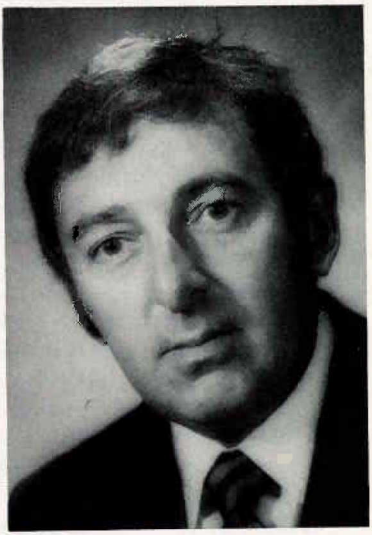
The next annual ICCP meeting has been scheduled for Ostrava, Czechoslovakia, April 14–19, 1980. The new secretary is R. Noël, INIEX, Liège, Belgium.

—S. A. Friedman

AAPG's New Executive Committee Takes Office



Herbert G. Davis, DPA president



Myron K. Horn, AAPG editor

John D. Haun took office July 1 as incoming president of The American Association of Petroleum Geologists, together with his fellow officers. The association is the largest organization of geologists in the world, numbering more than 22,000 members.

President Haun is a professor of geology at the Colorado School of Mines in Golden as well as a consultant in the Rocky Mountain area. He is a former president of both the American Institute of Professional Geologists and the Rocky Mountain Association of Geologists. He has been an AAPG member since 1950.

Also taking office is AAPG's new president-elect, Robey H. Clark. A member of AAPG since 1947, Clark is group vice-president for exploration and production with Diamond Shamrock Corp., Amarillo, Texas.

Serving as AAPG vice-president is D. Keith Murray, vice-president of the Research Institute at the Colorado School of Mines, formerly of the Colorado Geological Survey.

Myron K. (Mike) Horn is beginning a 2-year term as the association's editor. He is director of exploration and production research for Cities Service Co. in Tulsa. Mike took over from another Oklahoman, John W. Shelton, Oklahoma State University, Stillwater, who just completed his second 2-year term as editor.

Rounding out the AAPG executive committee are Donald R. Boyd, secretary, an independent from Corpus Christi, Texas; George B. Pichel, treasurer, an exploration geologist with Union Oil Co. of California; and Louis C. Bortz, Amoco Production Co., Denver, chairman of the House of Delegates.

Another Oklahoman holding an important AAPG office is Herbert G. Davis, an Oklahoma City consultant, who has just begun a term as president of the Division of Professional Affairs. Serving with Herb are Richard G. House as the division's vice-president and Donald R. Hembre, secretary-treasurer.

New officers of the association's Energy Minerals Division are Frederick R. Scheerer, president; John A. Pederson, vice-president; and Robert L. Fuchs, secretary-treasurer.

OGS Issues Publications on Custer County, Earthquakes and Its Own Maps and Reports

Several publications have been issued recently by the Oklahoma Geological Survey. All can be obtained from the Survey's offices at 830 Van Vleet Oval, Room 163, on The University of Oklahoma campus, or by writing to the address on the front cover. Prices for each are given under individual descriptions.

Geology of Custer County

Bulletin 114, *Geology and Mineral Resources (Exclusive of Petroleum) of Custer County, Oklahoma*, is divided into three main sections: Part I, covering stratigraphy and general geology, and Part II, on economic geology, were prepared by Robert O. Fay, OGS geologist. Part III is a section on ground-water resources by D. L. Hart, Jr., a hydrologist with the U.S. Geological Survey, Water Resources Division, in Albuquerque, New Mexico, formerly of Oklahoma City. An appendix of measured stratigraphic sections completes the 88-page report.

Accompanying the book are three large, folded plates in a separate map case, all prepared by Bob Fay. Plate I consists of a geologic map and sections of Custer County at a scale of 1:62,500, or about 1 inch to the mile; also shown on the plate is the approximate route of the historic Whipple expedition of 1853. Plate 2 presents a series of maps showing the thickness and structure of several stratigraphic units within the county. Plate 3 shows two east-west stratigraphic correlation sections that incorporate information from sample and geophysical well logs.

Custer County embraces an area of about 1,000 square miles in central western Oklahoma, which includes Foss Dam and Reservoir. Principal cities are Weatherford and Clinton.

Most of the stratigraphic units that crop out in Custer County are Late Permian in age. In addition, blocks of the Early Cretaceous Kiowa Formation and Dakota Group are present as isolated outliers in the western part of the county. Extensive Pleistocene terrace deposits blanket the central and western areas, and recent alluvium is present along major streams.

Aside from petroleum resources, which are not treated in this study, Custer County's geologic resources that have been developed commercially include clay, volcanic ash, gypsum, and ground water. Additional resources of minor economic potential are salt, sandstone, dolomite, and sand and gravel.

Bulletin 114 sells for $8.50 paperbound and $12.50 hardbound.

Earthquake Map and Report

Earthquake Map of Oklahoma, with an accompanying 15-page text entitled *Inventory, Detection, and Catalog of Oklahoma Earthquakes,* has been released as Map GM-19 by the Survey. The map offers a complete tabulation of known earthquakes, keyed to map localities, with relative intensities and magnitudes indicated. The map scale is 1:750,000, or 1 inch equals approximately 12 miles. The earthquake epicenters are divided into four major color-coded categories and arranged according to intensity values and time periods.

The publication shows that 182 earthquakes are known to have occurred within the State since 1900 and that most of these have been recorded since 1952. The most memorable and widely experienced earthquake occurred April 9, 1952. Centered in Canadian County, west of Oklahoma City, and known as the El Reno earthquake, the tremor affected most of the State and was felt in surrounding states and as far away as Iowa and Nebraska. The first shock had a magnitude of 5.5 on the Richter scale and an intensity of VII on the modified Mercalli scale and was followed by five aftershocks extending into August of 1952. The El Reno area has experienced other, lesser earthquakes right up to the present time.

Another area of earthquake activity, beginning in 1974, centers around Wilson and encompasses parts of Carter and Love Counties in southern Oklahoma.

Since 1961 the State's seismic disturbances have been recorded by the Oklahoma Geophysical Observatory at Leonard, near Tulsa. One of the world's most complete centers for the study of the interior of the Earth, the facility was built in 1961 for Jersey Production Research Co. and was presented to The University of Oklahoma in 1965 by what is now Exxon Corp., when the center became known as The University of Oklahoma Earth Sciences Observatory. Since July 1, 1978, the observatory has been a part of the Oklahoma Geological Survey's research program.

Compilation of the earthquake map became feasible when the observatory and the Survey began a cooperative 5-year grant program in 1976 with the U.S. Nuclear Regulatory Commission and the States of Kansas and Nebraska to study the seismicity and tectonic relationships of the Nemaha Uplift. At this time the existing seismograph network in Oklahoma was expanded to give adequate statewide coverage, especially for detection and location of small local earthquakes. Presently 10 stations are recording earthquake data in Oklahoma.

Authors of the map and text are James E. Lawson, Jr., and Paul H. Foster, geophysicist with the Oklahoma Geophysical Observatory; Robert L. DuBois, Kerr-McGee research professor with the OU School of Geology and Geophysics; and Kenneth V. Luza, engineering and environmental geologist with the Okla-

homa Geological Survey. The authors feel that the map and text provide basic data to help evaluate the earthquake potential of the State. The data should be especially useful in determining selection of sites for major construction projects.

GM-19, including the 15-page booklet, can be obtained for $5.00.

Comprehensive Publication List

A comprehensive *List of Publications of Oklahoma Geological Survey, 1902–1978* covers the total published output of the Survey. The 75-page typescript volume was compiled by Elizabeth A. Ham, OGS associate editor, and Claren M. Kidd, assistant professor of bibliography and geology librarian with The University of Oklahoma.

The book contains a bibliographic listing of both available and out-of-print bulletins, circulars, mineral reports, guidebooks, maps, hydrologic atlases, educational publications, and miscellaneous items, with accompanying indexes to authors, counties, and commodities.

Some of the publications included were issued prior to Oklahoma's acceptance into the Union as a State in 1907 and therefore antedate the Oklahoma Geological Survey as such, which was established by constitutional mandate in 1908.

This complete listing of the Survey's publications can be purchased for $2.00.

AAPG Mid-Continent Section to Meet in Tulsa

The Tulsa Geological Society will host the Mid-Continent Section meeting of The American Association of Petroleum Geologists in Tulsa October 7–9. The program has been arranged in the form of a Symposium on Pennsylvanian Sandstones of the Mid-Continent Area. According to Harrison L. Townes, general chairman for the meeting, the economic importance of this topic is expected to draw some 800 geologists, which would set a new attendance record.

On Sunday, October 7, Allan P. Bennison, a Tulsa consultant, will lead a field trip to view outcrops of numerous Pennsylvanian sandstones that produce oil and gas in the subsurface.

Co-chairmen for the technical program, which will be held Monday and Tuesday, October 8 and 9, are Ralph W. Disney and Norman J. Hyne. In addition to abstracts of the papers presented, which will appear in the printed program booklet, plans call for publication of the complete papers in a special edition of the *Tulsa Geological Society Digest*. This volume can be purchased at the meeting as well as later.

The headquarters for the meeting will be the Williams Plaza Hotel in downtown Tulsa, adjacent to the Williams Center Forum, which offers unique shops, an Olympic-sized skating rink, and several restaurants.

For detailed information about the meeting, including registration fees and the price of the meeting proceedings, contact Harrison L. Townes, 1510 Fourth National Building, Tulsa, Oklahoma 74119 (phone, 918—587-2419).

OGS Welcomes Bob Eutsler

Charles J. Mankin, director of the Oklahoma Geological Survey, has announced the appointment of Robert L. Eutsler to the Survey staff as minerals geologist.

Bob is working under a grant project administered by Bendix Field Engineering Corp. for the U.S. Department of Energy's NURE (National Uranium Resource Evaluation) program. He is assisting Salman Bloch, OGS uranium geologist, in a survey of uranium occurrences in the $1° \times 2°$ Enid quadrangle, covering Osage, Kay, Noble, and Pawnee Counties; most of Grant and Garfield Counties; and parts of Tulsa, Creek, Payne, Logan, and Kingfisher Counties. James J. Myers, who joined the staff earlier, is working on a similar survey of the Clinton quadrangle.

Bob's assignment involves mapping the surface geology in the Enid quadrangle specifically for uranium prospects, with the goals of evaluating known deposits and generating ideas about possible locations of economic deposits. Bob reports that much of the oil recovered in the area is radioactive, which is an indication of uranium in the subsurface. He states that more information on the subsurface in the area is needed in order to make a valid evaluation of possible economically recoverable deposits.

Bob is a native of Manassas, Virginia, but he moved with his family to Springfield, Ohio, at the age of 12 and attended Ohio schools. He received a B.A. degree in geology from Wittenberg University at Springfield in 1965 and an M.S., also in geology, from Bowling Green University in 1970. His master's thesis is a study of a supratidal algal stromatolite from the Florida Keys.

He served in the U.S. Army from 1966 to 1968. While stationed at Fort Eustace, Virginia, he served as an unpaid sample preparator and assistant in instructing an evening class in geology at the nearby College of William and Mary. He received an early release from the service to teach eighth-grade earth-science courses.

In the summer of 1969 he worked for the exploration division of New Jersey Zinc Co., doing field investigations and geophysical exploration in the Ely, Nevada, region.

Bob was a teaching fellow from 1970 to 1975 at George Washington University, instructing introductory labs and mineralogy and petrology courses while earning his Ph.D. degree. His dissertation is entitled "Petrology of the Keyser Formation (Upper Silurian–Lower Devonian) of the Central Appalachians."

Prior to coming to the OGS Bob acted as a consulting geologist to engineering and mining companies, doing work involving ERTS (now LANDSAT) imagery analysis of copper porphyry and related ore bodies in northern Mexico and lead-zinc exploration in northern Newfoundland. The project in Newfoundland entailed a study of the lithofacies controlling ore deposition of sphalerite in dolomite, with the goal of predicting the locus of ore deposits. Seven months of field work supervising a geological and drill crew proved his evaluations to be correct.

Bob has published on recent marine carbonates. In fact, his first choice for a dissertation study was lithification processes of the upper structure of reefs off the coast of Jamaica, but after intensive investigation this turned out to be an effort that required the use of heavy equipment that was unobtainable for economic reasons.

Also, disaster set in. He had been named expedition leader of a Jamaica project sponsored by the National Geographic Society and partially funded by The Geological Society of America. Bob and a small crew set sail in his boat from Annapolis—destination Jamaica—but east-southeast of Cape Hatteras they were shipwrecked. After five days at sea in a partially submerged vessel, the party was rescued by the U.S. Coast Guard, to whom Bob says he will be eternally grateful.

One of Bob's hobbies, incidentally, continues to be sailing. To that outdoor pursuit he adds three others: rock climbing, camping, and skiing.

It is a pleasure to have Bob Eutsler with us.

Annual Missouri Energy Conference to Meet in Rolla

The sixth annual conference and exposition on energy to be sponsored jointly by the University of Missouri at Rolla and the Missouri Department of Natural Resources is scheduled to convene October 16–18 in Rolla at the university.

The meeting's theme is "Energy Alternatives: an Assessment!" No doubt the exclamation point means that the participants will settle down right away to the business at hand and won't leave until they *make* an assessment. Certainly the theme is timely in view of President Carter's proposed program of alternate-energy development.

The conference has been designed to meet the particular needs of social scientists, scientists, and engineers. Topics to be covered include nuclear, solar, and wind energy; fusion; fuel economy in transportation; biomass resources; building energy usage; waste-heat utilization; and the economics, management, and storage of energy.

Several short courses will be conducted in conjunction with the meeting: "Electrical-Energy Conservation," "Solar Cells—Status and Promise," and "Solar Space Heating and Cooling."

An exposition of available energy technology will be set up near the conference site and is open to all organizations interested in taking part.

For further information about the energy conference, including registration fees and housing, contact J. Derald Morgan, Department of Electrical Engineering, University of Missouri at Rolla, Rolla, Missouri 65401 (phone, 314—341–4718).

Corrections

A bunch of gremlins must have monkeyed around with our cover-picture descriptions for the last two issues of the *Notes*. We herewith set the record straight:

In the cover description for April 1979 (v. 39, no. 2, p. 50), "bicentennial" in line 1 should read "centennial." Also, Clarence King, not P. B. King (line 8), was the first USGS director. (Let's face it, Phil King hasn't been around *that* long.)

In the cover description for June 1979 (v. 39, no. 3, p. 82), "Hill Creek" in line 8 should, of course, read "Mill Creek."

OKLAHOMA GEOLOGY NOTES

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