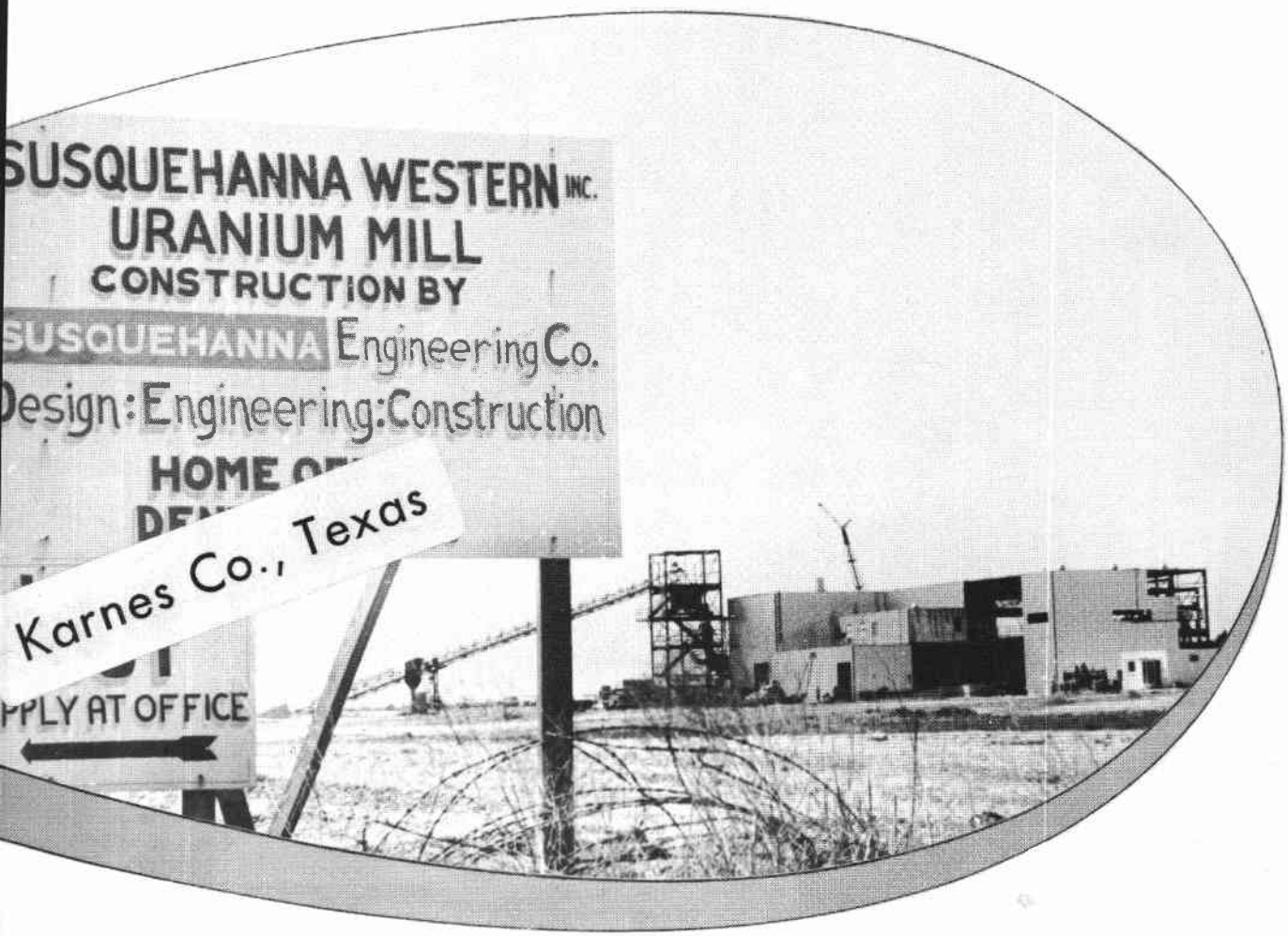
THE UNIVERSITY OF TEXAS



Bureau of Economic Geology

Report for 1961

THE BUREAU OF ECONOMIC GEOLOGY of The University of Texas carries out the functions of a State Geological Survey and its director fills the position of State Geologist. The research and service functions of a State Geological Survey are recognized by 47 states as necessary continuing functions to provide technical data vital to industrial development and to carry on basic research in earth science.

During 1961, Texas produced minerals valued at 4,219 million dollars to retain its position as the number one mineral-producing state. Nevertheless, the Bureau of Economic Geology is small compared to similar organizations in other states. Budgetwise, the Bureau ranks 23rd in available direct income and 16th in total income. The difference between total income and direct income lies in the Bureau's special-purpose endowment funds, publication funds, and project grants. These vary from year to year. However, in some of the states the geological survey organization carries on functions which in Texas are the responsibility of other State organizations and thus the comparison is not strictly accurate. It is of interest to note that among the states spending the most money for geological research and service are industrial states not regarded as particularly rich in mineral resources. In these states large sums are expended to develop non-metallic mineral resources, such as industrial sands, limestone and dolomite, and clays. This work needs to be accelerated in Texas.

The Bureau is engaged in both basic and applied geologic research and acts as a public information agency on mineral facts and problems in Texas. It compiles and publishes geologic maps with or without accompanying text, carries on studies in all fields of geology, particularly in economic geology, stratigraphy, and structural geology, and supports graduate instruction in geology at The University of Texas. The Mineral Technology Laboratory of the Bureau is a departmental analytical and testing laboratory concerned with commercial applications of Texas raw materials. The Well Sample Library maintains a collection of well samples and cores from all over the State which are accessible for study at the library. Publications of the Bureau cover all aspects of Texas geology; a list of reports and maps is available free on request.

Publications in 1961

In 1961, the Bureau of Economic Geology published two scientific papers in the Report of Investigations series and a guidebook designed for both geologists and non-professionals.

"Texas Gemstones," Report of Investigations No. 42, by Elbert A. King, Jr., was issued in February. This is a basic outline of Texas gemstones for geologists and non-professionals. The introduction features a chart of gem mineral properties, explains what makes gemstones valuable, and describes the properties. A large section of the text, illustrated with diagrams, explains how gemstones are cut and polished. Then follows a discussion and description of gemstones commonly found in Texas. Some interesting gems of history are included in these discussions, such as the single well-authenticated find of a diamond in Texas back in 1911; how the discovery of pearls in the Nueces River led to the original Spanish settlement of Texas; and how the United States' best known source of the mineral gadolinite, in Llano County, was completely flooded by the construction of Buchanan Dam in 1938. The author discusses some minerals which are not commonly found in Texas, such as beryl, because he feels that careful prospecting will uncover these gemstones in the State. The text is illustrated by photographs of many gemstones.

Report of Investigations No. 44, "Stratigraphic Names in the Midway and Wilcox Groups of the Gulf Coastal Plain," by William L. Fisher, will prove to be a useful reference for geologists concerned with the economically important Midway-Wilcox section of Tertiary rocks. In the past 100 years, more than 100 names have been used to designate parts or all of the outcropping Midway and Wilcox rocks. This paper presents a summary of these names, with brief statements about their history and usage, and shows the development of the present-day terminology of the Midway-Wilcox section. Because the validity of many of the names is questioned, the author designates generally accepted valid names; invalid, obsolete, or abandoned names; and doubtful or questionable names. The author points out that time, time-rock, and rock terms often have been used indiscriminantly, resulting in a terminology that is in part confusing and misleading. He suggests a method to define and distinguish time, time-rock, and rock units. The paper includes a diagrammatic cross-section of Midway and Wilcox rocks indicating time, time-rock, and rock categories. A chart shows the geologic framework in which Midway and Wilcox rocks occur. The paper was reprinted from Transactions of the Gulf Coast Association of Geological Societies, Vol. XI, pp. 263–295, 1961.

"Field Excursion, Central Texas," Guidebook No. 3, includes contributions by Robert L. Folk, Miles O. Hayes, and Thomas E. Brown; D. Hoye Eargle and Alice D. Weeks; and V. E. Barnes and S. E. Clabaugh. It was prepared for field excursions planned in conjunction with the 10th National Clay Conference in Austin October 14–18, but it also is of interest to those concerned with the general geology of central Texas. Topics discussed are the Tertiary bentonites of central Texas, uranium-bearing clays and tuffs of south-central Texas, and vermiculite deposits near Llano. Numerous maps show the stops during the excursions, and there are also several diagrammatic sections to show stratigraphic units. The road logs outlining the route include descriptions of points of geologic interest along the way. This makes the guidebook useful to a geologist studying the geology of clays and gives an educational purpose to a family out for a Sunday drive.

Publications in Press in 1961

Three publications in The University of Texas Publications series and two Reports of Investigations were in press at the close of the year. They are:

(1) "The Ouachita System," by Peter T. Flawn, August Goldstein, Jr., Philip B. King, and Charles E. Weaver, Publication 6120. This is a comprehensive study of a major subsurface structural feature extending through the State from northeast Texas to the Trans-Pecos. The five-year project included detailed petrographic studies of samples from wells which penetrated the belt. The main purpose of the project was to distinguish the major geologic elements within the belt and to evaluate the oil and gas potential of its frontal structures. Industry cooperation in this study was extensive.

(2) "Upper Cretaceous Ammonites from the Gulf Coast of the United States," by Keith P. Young. This is a monograph on ammonites, illustrated by 82 plates.

(3) "Annotated Bibliography, and Index, of Conodonts," by S. P. Ellison, Jr. This is an exhaustive review which will be of value in a specialized field.

(4) "Mineral Resources of South Texas: Region Served Through the Port of Corpus Christi," by Ross A. Maxwell, Report of Investigations No. 43.

(5) "Pleistocene Molluscan Faunas and Physiographic History of Pecos Valley in Texas," by A. Byron Leonard and John C. Frye, Report of Investigations No. 45.

Geologic forces in action. Hurricane Carla struck the Texas Coast in September and provided dramatic evidence of how natural forces shape the land. The photo shows a new channel cut through a paved road on Mustang Island.

Projects in Progress in 1961

New projects initiated in 1961 include:

(1) A study of the chemistry of Texas coals and lignites under the direction of Donald W. Kohls. This project will investigate the distribution of trace elements in coals and lignites to see if there are concentrations of the rare minor metals that might be of commercial interest. The United States Bureau of Mines is cooperating in the work.

(2) Geologic, mineralogic, and chemical studies of kaolin deposits in northeastern central Texas under the direction of W. L. Fisher and Donald W. Kohls. The project is in the planning stage.

Continuing projects include:

(1) A study of occurrence of high-calcium limestone and silica sand along the outcrop of Comanchean rocks from the Red River to the Rio Grande. This project, under the direction of Peter U. Rodda, involves extensive sampling and analysis and is scheduled for completion in 1962.

(2) Mapping and correlation of volcanic rocks northwestward from the Big Bend National Park into the Bofecillos Mountains of southern Presidio County. John W. Dietrich is in charge of this work.

(3) A report entitled "Texas Rocks and Minerals," the fourth in the Guidebook series, was in preparation by Roselle M. Girard during 1961 and is scheduled for publication in 1962.

(4) Geology of the Big Bend National Park, by Ross A. Maxwell, John T. Lonsdale, John A. Wilson, and Roy T. Hazzard.

(5) A study of rocks of the Cambrian system in central Texas, by Virgil E. Barnes and W. Charles Bell, Department of Geology, The University of Texas.

(6) A study of possible commercial sand deposits in central Texas, by Virgil E. Barnes and Daniel A. Schofield.

(7) A study of the stratigraphy of the Washita group in Grayson County, by Peter U. Rodda.

(8) The annual compilation of Texas mineral production statistics, by Roselle M. Girard. This important and continuing Bureau service is in cooperation with the United States Bureau of Mines.

(9) Geologic mapping of the Ocotillo, Presidio, and Ochoa quadrangles in Presidio County, by John W. Dietrich.

(10) Geology of the Eagle Mountains in Trans-Pecos Texas, by James R. Underwood, Jr., graduate student in geology at The University of Texas.

The Bureau also publishes high-quality manuscripts by geologists not on the Bureau staff. Awaiting processing is "Geology of Eastern Half of Kent Quadrangle, Culberson, Reeves, and Jeff Davis Counties, Texas," by John P. Brand and Ronald K. DeFord. The manuscript, "A Stratigraphic Datum, Cisco Group (Upper Pennsylvanian), Brazos and Trinity Valleys, North-Central Texas," by Leonard F. Brown, Jr., was completed in December and will be sent to press early in 1962. These projects were in part supported by the Bureau.

Staff Activities

During 1961, *Dr. Peter T. Flawn* spoke before the Abilene, Corpus Christi, Dallas, Houston, South Texas, and West Texas Geological Societies and the Geology Club of Texas A. & M. College. He also presented a paper before the Southwestern Federation of Geological Societies in El Paso and before La Asociación Mexicana de Geólogos Petroleros in Mexico City.

He attended the meetings of the American Association of Petroleum Geologists in Denver. As a visiting scientist sponsored by the American Geological Institute through the National Science Foundation, Dr. Flawn visited San Jose State College, California, and Mackay School of Mines, University of Nevada, Reno, and delivered a series of lectures. He also was active in committee work with the Research Committee and the Basement Rocks Project Committee of the American Association of Petroleum Geologists, the Texas Mapping Advisory Committee, and the Texas Advisory Committee on Conservation Education. Dr. Flawn was appointed to the Policy and Administration Committee of The Geological Society of America. He also was named a director of the newly formed Texas Coast Mining and Metallurgy Section of the American Institute of Mining, Metallurgical, and Petroleum Engineers.

Dr. Virgil E. Barnes returned to Austin in February after an around-the-world field trip which took him to England, Norway, Denmark, France, Russia, Czechoslovakia, Germany, Italy, Egypt, Saudi Arabia, Pakistan, India, Singapore, Malaya, Australia, Indonesia, Thailand, Cambodia, Vietnam, and the Philippines. The trip was a part of Dr. Barnes' tektite study under a two-year National Science Foundation grant.

He traveled to Washington twice, once in March to attend the Cratering Symposium at the Geophysical Laboratory, and once in April to give a talk on meteorite craters at the meeting of the American Geophysical Union. He also attended the April meeting of the American Association of Petroleum Geologists in Denver. During June and July, Dr. Barnes visited Peru, Colombia, and Ecuador in connection with tektite studies. In September he attended the "CERN Conference on Fission and Spallation Phenomena and their Application to Cosmic Rays" held in Geneva and presented a paper on the temperature of tektite formation. He also visited most of the Texas Geological Societies, attended the Gulf Coast Association of Geological Societies meeting and field trip, Southwestern Federation of Geological Societies meeting, and San Angelo and West Texas Geological Societies field trip to develop cooperation in obtaining data for the Texas Geologic Atlas Project.

During 1961, Dr. Barnes wrote six reports on tektites, including tektite surveys in Cambodia and the Philippines. Other articles appeared in *Scientific American*, the *International Council Scientific Unions Review*, and *GeoTimes*.

John W. Dietrich during the summer completed two three-weeks courses in programming the Control Data Corporation 1604 Computer for statistical calculations on the measurements of fossils. During the fall, Mr. Dietrich accompanied Department of Geology faculty and students on a field trip into the Davis Mountains where they examined field relationships of volcanic rocks. Mr. Dietrich also gave several talks on geology to the science classes of Rosedale Elementary School in Austin and helped the students identify their rock collections.

Dr. William L. Fisher completed requirements for the Ph.D. degree in geology from the University of Kansas in November. That same month in Cinncinnati, Ohio, at The Geological Society of America meeting he presented a paper about the evolution of the *Athleta petrosa* stock in the Eocene of Texas. He attended the American Association of Petroleum Geologists meeting in Denver in March. In October he attended the Gulf Coast Association of Geological Societies meeting at San Antonio and participated in the Association's field trip through the southern Edwards Plateau. "High-Calcium Limestone and the Leakey Section," an article by Dr. Fisher and Dr. Peter U. Rodda, is published in the guidebook for the field trip.

Roselle M. Girard, geological assistant to the Director, was active in mineral information public service work and the compilation of mineral statistics. She also is in the process of cataloging the geological library which the late Dr. E. H. Sellards, Bureau Director from 1932 to 1945, presented to the Bureau. Miss Girard and Dr. Ross A. Maxwell collaborated in writing a review of Dr. Maxwell's forthcoming report on the Corpus Christi trade area. This review, entitled "Mineral Resources of South Texas," appeared in the *Texas Business Review*, Vol. XXXV, No. 12, December 1961.

Dr. Donald W. Kohls joined the Bureau of Economic Geology staff in October after receiving his Ph.D. degree in economic geology at the University of Minnesota. Since then he has begun two projects. One study concerns trace elements in Texas coal and lignite deposits, and the other is a study of sand-kaolin in the Wilcox Group of northeastern central Texas.

Dr. Ross A. Maxwell was guest speaker in September at the annual meeting of the National Conference on State Parks in Oklahoma. He attended the Southwestern Federation of Geological Societies meeting in November at El Paso and went on a field trip in Coahuila, Mexico, during the Easter holidays. Dr. Maxwell continued to be active in public-service work. As the Bureau representative to the Board of Science Education of the Texas Academy of Science, he confers with other board members on science classes in Texas schools. He also gives talks about geology to science classes in Austin schools and is a leader in the nature science activities of the Boy Scouts. He wrote the memorial to Dr. John T. Lonsdale which appeared in *The State Geologists Journal.* Assisted by Roselle Girard,

Dr. Peter U. Rodda examines an exposure of the Manning Formation (Jackson Group) in northeastern Walker County in connection with geologic studies in the Texas Gulf Coastal Plain.

Dr. Maxwell prepared a review of his forthcoming Bureau publication, "Mineral Resources of South Texas," for the December issue of *Texas Business Review.*

Dr. Peter U. Rodda presented a paper about the evolution of the Eocene gastropod *Athleta petrosa* at a summer meeting of the Austin Gem and Mineral Society. During the spring he attended the Denver meeting of the American Association of Petroleum Geologists. In November he attended the Gulf Coast Association of Geological Societies meeting at San Antonio, participated in the field trip, and contributed to the field-trip guidebook on the southern Edwards Plateau.

Dr. Rodda is continuing preparation of a catalog of type specimens of invertebrate fossils at the Bureau.

Daniel A. Schofield, accompanied by Mrs. Schofield and their son, left Austin on December 14 for a five-weeks visit with relatives in Lima, Peru. Although Mr. Schofield will be traveling as a tourist, he plans to bring back mineral samples.

Texas Geologic Atlas Project

After conferences with industry and professional groups, the Bureau of Economic Geology on September 1 began compilation of a new State geologic map. The compilation will be in the form of a geologic atlas of 37 sheets. Geologic information from published sources, unpublished theses and dissertations, and oil company files will be compiled on the new Army Map Service base on a scale of four miles to the inch (1: 250,000). These maps constitute a series of 22 x 38-inch sheets, each encompassing an area of one-degree latitude by two-degrees longitude. Each map shows topography and roads as well as cities, towns, railroads, and other cultural objects.

To finance the project, oil companies and professional geological groups contributed more than $41,000 to the Bureau's Petroleum Industry Fund, and the Bureau pledged its own special endowment funds to bring the total to over $50,000. Moreover, many oil companies are contributing geologic data which have an enormous dollar value. Total cost of the project will be about $500,000; monies from the sale of the first published sheets will be used to finance additional compilation.

The project is under the direction of Dr. Virgil E. Barnes who will work closely with advisory committees in the professional geological societies of Texas and with company representatives. Work has already begun on the first group of maps which will include Palestine, Tyler, Waco, Abilene, Laredo, San Antonio, and Van Horn sheets. Priorities are determined in part by the amount of high-quality geologic mapping available in a particular area, partly by the demand for the maps, and partly by special financing available for the area. Some of the project funds will be used for new geologic mapping in areas of Texas where there is no high-quality coverage. In part these funds will be used to support graduate student and faculty mapping projects at various colleges and universities in Texas.

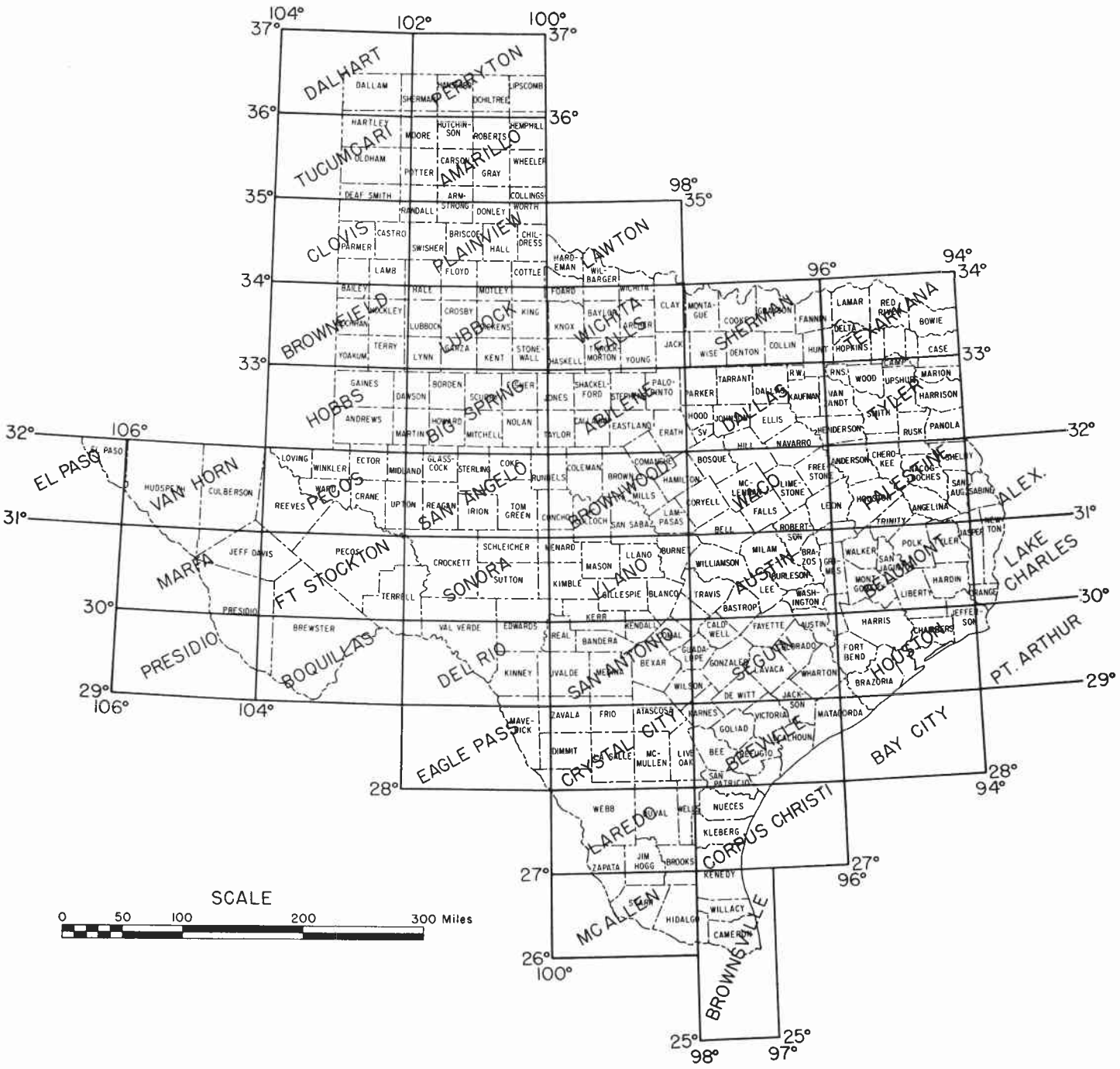
The completed maps will be published in a memorial edition honoring the late Dr. John T. Lonsdale, Bureau Director from 1945–1960, under whose direction the project was initially conceived.

Mineral Technology Laboratory

The Mineral Technology Laboratory provides quantitative analytical and testing data to support Bureau research projects. It also performs analyses and tests as a public service.

In 1961 a proposal to expand and modernize this laboratory to include rock analysis, mineral separation, mineral processing, and spectrographic sections was submitted to the University Administration. Daniel A. Schofield, chemist in charge of the laboratory, states that the number of samples submitted has increased five-fold in the past three years. During 1961, about 1,000 samples were submitted in comparison to the 200 samples submitted four years ago.

The laboratory continued testing silica sands to determine their suitability for use in Texas glass industries. It also continued tests of limestone and dolomite as part of the high-purity limestone project. By the time the project is complete, 1,300 samples of limestone and dolomite will have been tested.



INDEX MAP OF TEXAS SHOWING 1°x2° BASE MAPS FOR TEXAS GEOLOGIC ATLAS PROJECT

Well Sample Library

The most important addition to the Well Sample Library during 1961 was 6,206 feet of core from the United States Bureau of Reclamation. The closely spaced test borings are from areas where dams are to be constructed. More new storage units for cores were added in 1961 so that the Well Sample Library now has an additional 8,000 square feet of space for core storage.

The usefulness of the library's collection of old cores was recently illustrated when two professors of geology from the University of New Mexico came to Austin for a month to study and photograph varves of a core from a well drilled in 1913. Philip S. Morey, geologist in charge of the library, points out that it is difficult to find samples from wells drilled before 1934 in most well sample collections.

An index to samples and cores is being completed for publication in 1962 as a revision of Publication 5015, *Index to Well Samples*, originally published in 1950.

Need for Detailed Systematic Geologic Quadrangle Mapping Increases

Since the time of the early geological surveys, geologic mapping in Texas has been done by a number of State, Federal, and private organizations, mostly on a project basis according to the needs of the performing agency. The principal State and Federal organizations engaged in geologic mapping in Texas have been the Bureau of Economic Geology of The University of Texas, the United States Geological Survey, the International Boundary Commission, and the United States Bureau of Mines. Recently, the Texas Board of Water Engineers has been active in this field. In general, the program has lacked planning and coordination, and with one exception has not included systematic geologic quadrangle mapping. Also in the public realm, but not published, is the geologic mapping done by graduate students in geology at the various colleges and universities in Texas. This material is available in theses and dissertations in college and university libraries. At the present time, the only agency with a program of systematic areal geologic mapping is the Bureau of Economic Geology of The University of Texas. Since 1935 this Bureau has mapped some 17,000 square miles, of which 3,000 square miles was effected through support of graduate student and faculty mapping projects. At the present time detailed geologic mapping on a scale of one inch equals one mile or larger is available for less than 13 percent of the State. Moreover, modern geologic maps of many of the State's metropolitan and industrial areas are lacking.

Geologic maps are basic tools for engineering and scientific studies that deal with the earth. Texas' rapid advance toward a technological and industrial economy requires that the State make such preparation as is needed for the development forecast for the coming decades. This preparation includes geologic mapping. Maps are needed by (1) those trying to control and utilize the natural erosive and constructional processes that shape the surface of the land; (2) those involved in the planning and construction of surface and subsurface structures, such as highways, buildings, dams, tunnels, etc.; (3) those prospecting for mineral deposits, including water and construction materials; (4) those concerned with soils, their use and development; and (5) those attempting to interpret land forms and surface conditions for military purposes.

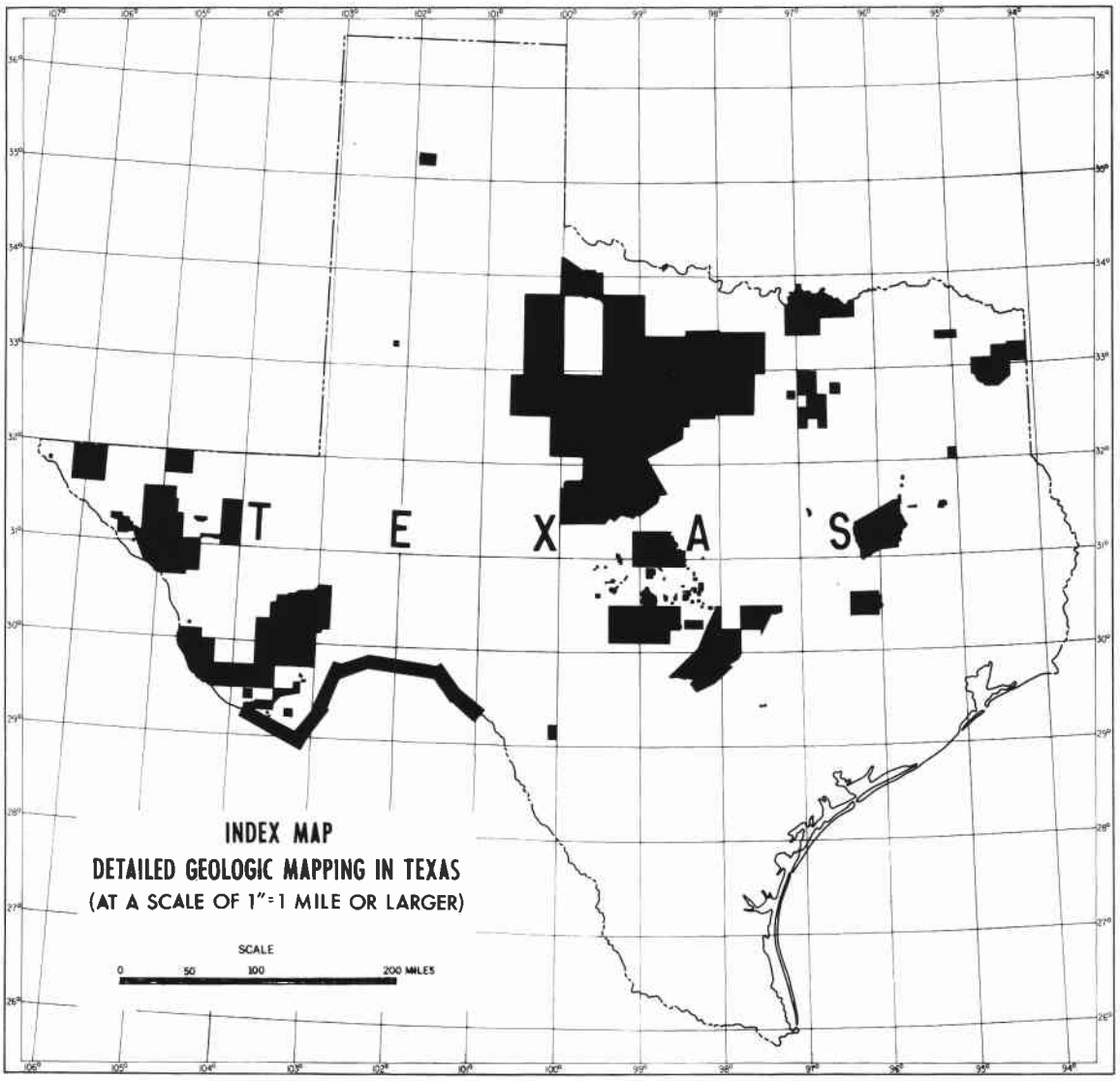
The greatest need is for:

(1) Large-scale detailed geologic maps of metropolitan and industrial areas. These maps are badly needed for engineering studies and to assure future supplies of low-cost high-volume mineral commodities, such as construction materials and water.

(2) Large-scale detailed geologic maps of the many reservoir sites that are to be inundated in the coming decades.

(3) Systematic geologic quadrangle mapping in areas where geologic information is scanty so as to provide data necessary to sustain intelligent mineral exploration.

Of less urgent need is the geologic mapping of areas to provide scientific information needed for a complete understanding of the geology of the State. These basic data, although not directly applicable to economic problems, are of immense value to a state such as Texas which has a mineral-oriented economy. In an area with a long history of mineral exploration and production, new discoveries depend on continued refinement of geologic interpretations.



Texas Mineral Industry News

Based on preliminary figures, the value of Texas mineral production in 1961 increased 2.5 percent to $4,219,000,000.[1] Mineral fuels (oil, gas, and natural gas liquids) accounted for about 93 percent of the total. In the oil and gas industry, value of petroleum production was more or less unchanged over 1960 while the value of natural gas and natural gas liquids produced increased slightly. The value of other mineral commodities produced in 1961 was close to $320,000,000. In the non-metallic mineral industry (7 percent of total) production of cement, sand and gravel, stone, and sulfur increased; production of clay, gypsum, lime, and salt declined.

Helium production increased substantially.

Oil and gas.—During 1961 important discoveries were made in many parts of the State. In west Texas deep discoveries in the Delaware and Val Verde basins resulted in renewed drilling and seismic prospecting activity in that area. Coke County listed a new producing formation (Swastika formation) with completion of Western Petroleum Company's No. 1 H. B. Wendland Estate.

In east Texas the Fairway field, astride the Henderson-Anderson County line, was classed as "a giant" by the Oil and Gas Journal. By September, 40 square miles of the James reef had been delineated and proved, and it was estimated that by the end of 1961 there would be about 100 wells in the field. In northeast Texas there were eight new fields producing from the Smackover and Cotton Valley by mid-year, and the southwestern limit of production had not been determined.

Exploration activity continued along the deep Wilcox and Edwards trends in the Texas Gulf Coastal Plain. Discovery of the Vienna field (Lavaca County) at 16,400 feet set a depth record for Wilcox production. A major gas discovery was made in Zapata County.

[1] Mineral production statistics in Texas are collected by the United States Bureau of Mines and Bureau of Economic Geology, The University of Texas, under a cooperative agreement. A preliminary report on "The Mineral Industry of Texas in 1961" was prepared in December 1961 by F. F. Netzeband and T. R. Early, of the U. S. Bureau of Mines, and Roselle M. Girard, of the Bureau of Economic Geology. Copies of this report are available on request.

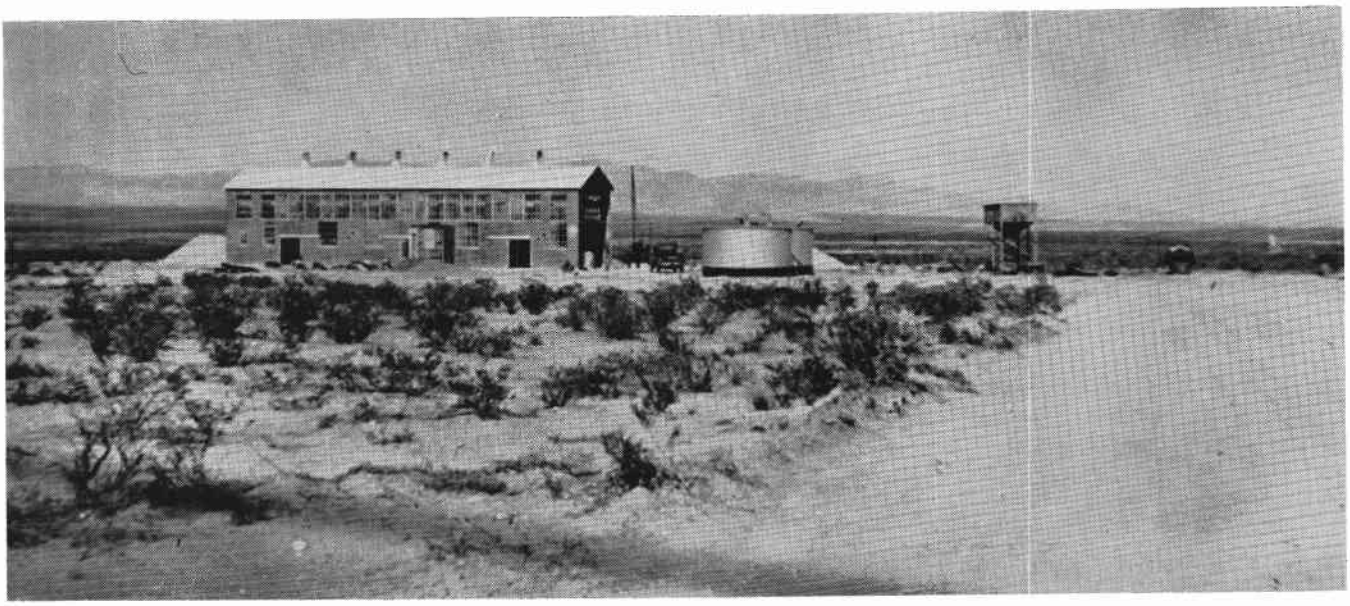
In the Panhandle a discovery in Hansford County extended the Hansford-Cleveland gas field. Ochiltree County recorded a new gas discovery. Farther southeast, new fields were found in Hardeman, Foard, and Childress counties.

The industry recorded a number of technological achievements in 1961 as well as celebrating the 60th year of production of Jefferson County's famous Spindletop. Texaco Inc. No. 1 McIntosh, Matagorda County, was completed in 1961 as the world's first septuple producer. The first major one-operator field automation system was put into operation by Gulf Oil Corporation in the Keystone field, Winkler County; the system will monitor and test 148 wells. Gulf also completed Texas' deepest producing gas well (17,180 to 17,200 feet) in Reeves County.

Helium.—Helium made news in Texas in 1961. As a result of the Government's Helium Conservation Program, Department of Interior approved a contract with Phillips Petroleum Company involving purchase of 15.7 billion cubic feet of helium over a 22-year period at a cost of $13.7 million per year. Phillips will build two recovery plants—one in Moore County, the other in Hansford County. The Linde Company planned construction of a 600-gpd liquid helium plant at Amarillo.

Water.—The 1-million gpd saline water conversion plant at Freeport, Brazoria County, was completed in April and went into full operation in June. Sabine River Authority began planning a $60 million dam and reservoir near Weirgate with construction scheduled for 1962. The U. S. Study Commission's report on development of Texas' water resources was delivered to Governor Daniel in October and is now being evaluated by the Texas Board of Water Engineers and Texas Water Conservation Association.

Non-metallics.—Continental Minerals constructed a mill east of Van Horn to process barite ores from their Seven Heart Gap properties in Culberson County. International Minerals & Chemical Corporation's barite processing plant in Houston began operation in October.



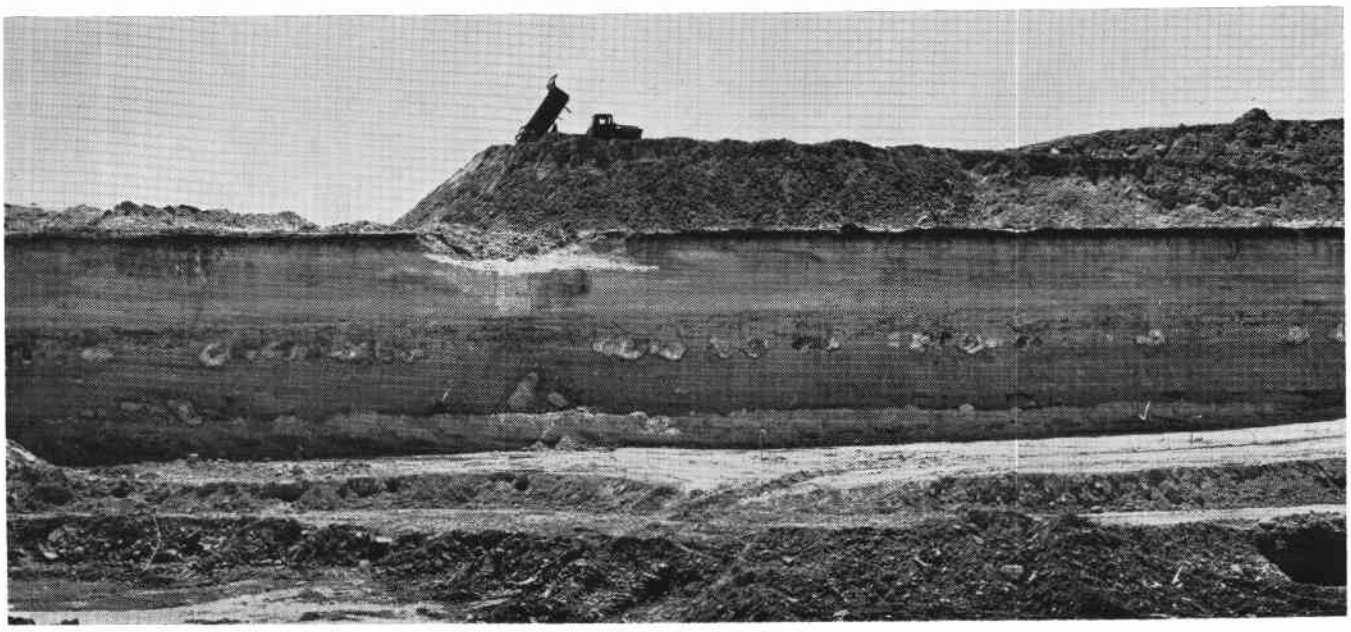
Continental Minerals' new barite mill near Van Horn, Texas, processes ores from the Seven Heart Gap area of Culberson County.

The McDonough Company began construction of a 1.5 million barrel per year wet process cement plant near Houston. Texas Gypsum Company's wallboard and plaster plant in El Paso went into operation early in 1961. Bentonitic clays were processed at Flatonia by Balcones Minerals Corporation to produce absorbent materials.

Late in 1961 Texas Construction Materials Company, Houston, was exploring dolomite marble deposits in Marble Canyon, north of Van Horn in Culberson County, to evaluate their potential for production of dimension stone.

Uranium. — Susquehanna-Western, Incorporated's uranium mill near Falls City began processing Karnes County ores in 1961 (see cover). Developed orebodies were mined and stockpiled. Exploration in Live Oak County resulted in discovery of a small high-grade orebody on the Mabel New ranch.

Beryllium.—During 1961 the United States Bureau of Mines and several mining companies were exploring for beryllium in Trans-Pecos Texas.



Luckett open-pit uranium mine, Karnes County. Large calcareous concretions occur in clay of the Stone's Switch Sand just above the ore zone; the floor of the pit is on Conquista Clay.

National Science Foundation Grants in the Bureau of Economic Geology

Two Bureau of Economic Geology staff members are receiving National Science Foundation support for research projects that transcend boundaries of the State.

Dr. Virgil E. Barnes and Dr. F. Earl Ingerson, of the Department of Geology, together received a grant of $36,000 for a two-year research project on the composition and origin of tektites. This research, which has been in progress for a year and a half, involves a field study by Dr. Barnes of tektite localities throughout the world. All known tektite localities, except in the Ivory Coast, Africa, have been visited, and microscopic and chemical studies are in progress. When the newly acquired solar furnace becomes functional, Dr. Ingerson will perform melting experiments to attempt to duplicate the melting history of tektites. Facets of the study have been published in *GeoTimes*, *Scientific American*, and in the abstracts of the "Conference on Fission and Spallation and their Application to the Study of Cosmic Rays" held by the Central European Nuclear Research Organization Conference at Geneva, Switzerland. A manuscript requested for the International Council Scientific Unions Review was submitted December 1.

Dr. Peter T. Flawn and Dr. Earle F. McBride, of the Department of Geology, together received a grant of $18,000 for a two-year study of igneous rocks in the south Gulf Coastal Plain in Texas and northern Mexico. The project will involve studies of both fragmental volcanic rocks of Eocene and Miocene age in south Texas and of Tertiary intrusive igneous rocks in Nuevo Leon, Mexico. The latter part of the work is in cooperation with the Institute of Geology of the National University of Mexico.

DR. E. H. SELLARDS, Director of the Bureau of Economic Geology from 1932 to 1945 and Director Emeritus from 1945 until his death, passed away on February 4, 1961. Death was due to complications following an operation and to infirmities of age.

Dr. Sellards came to the Bureau in 1918 from the post of State Geologist of Florida and during his tenure as Director also served as Director of the Texas Memorial Museum. He pioneered in Texas geology and authored the well-known volumes on *The Geology of Texas* (Bulletins 3232 and 3401) with their accompanying geologic and structural maps.

BUREAU OF ECONOMIC GEOLOGY

Director
DR. PETER T. FLAWN

Administrative Assistant
MISS MARY JOSEPHINE CASEY
Technical Reports Editor
MRS. CAROL NATION

Consultants
PROF. RONALD K. DEFORD
DR. F. EARL INGERSON

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