

The Geological Survey of Wyoming

Horace D. Thomas, *State Geologist*

BIENNIAL REPORT
OF THE STATE GEOLOGIST
1953-1955

Laramie, Wyoming

January, 1955

January 19, 1955

To His Excellency
The Honorable Milward L. Simpson
Governor of the State of Wyoming
Cheyenne, Wyoming

Dear Sir:

Pursuant to the requirements of Article 12, Section 18-1204, Wyoming Compiled Statutes, 1945, the Biennial Report of the State Geologist for the years 1953-55 is herewith submitted.

Respectfully yours,

Horace D. Thomas
State Geologist

HDT:kml

Biennial Report of the State Geologist

of the

State of Wyoming

for

1953 - 1955

by

Horace D. Thomas, State Geologist

INTRODUCTION

This report covers the activities and accomplishments of the Geological Survey of Wyoming during the two-year period 1953-1955. The geological projects undertaken are briefly described, the various activities of the Survey are discussed, and the resulting publications are listed.

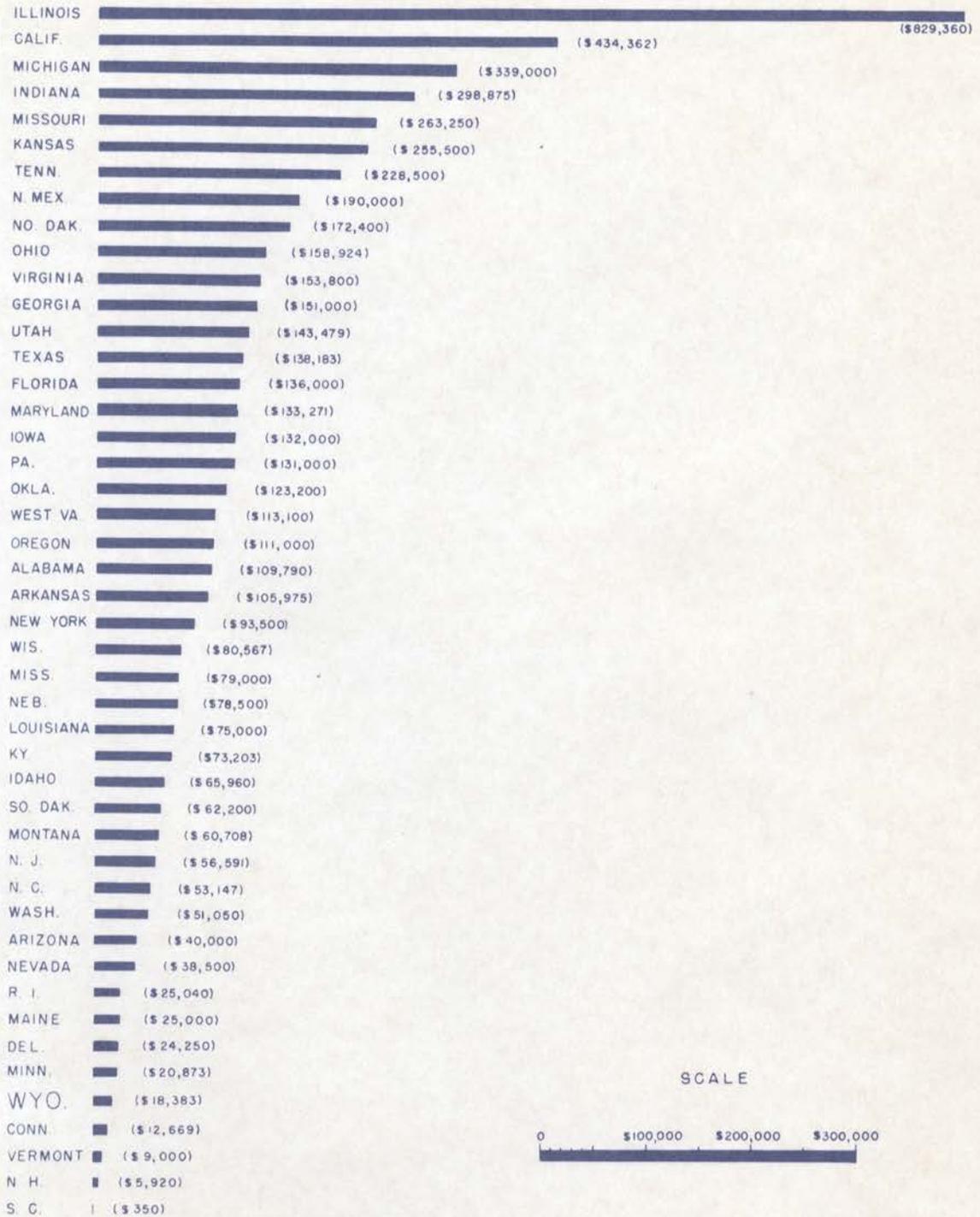
ORGANIZATION OF THE GEOLOGICAL SURVEY

All states but Massachusetts have geological surveys. Many are located at state universities or colleges and are commonly affiliated in some fashion with the department of geology. During 1953, the 47 state geological surveys employed 388 geologists (320 full-time; 68 part-time) and had a sum of \$5,901,383 available during the year (Fig. 1). It should be pointed out, however, that some of these surveys carry on programs similar to that of the Natural Resources Research Institute at the University of Wyoming, to that of the Wyoming State Oil and Gas Supervisor, and to that of the Wyoming State Mine Inspector.

The Geological Survey of Wyoming has been located at the University of Wyoming since 1933. Dr. S. H. Knight, Professor of Geology, served as State Geologist from 1933 to 1940. The incumbent, Dr. H. D. Thomas, Professor of Geology, has served since April, 1941. The State Geologist, by virtue of action of the University Administration, carries a half-time teaching load and devotes the other half of his time to the Geological Survey,

Fig. 1

FUNDS AVAILABLE TO THE STATE GEOLOGICAL SURVEYS
FOR THE YEAR 1953



* Data prepared by Association of American State Geologists

In 1951, for the first time, a full-time Assistant State Geologist was employed. Mr. William H. Wilson resigned from the Ground Water Branch of the U. S. Geological Survey to accept the appointment. He holds a B.S. degree from the University of Utah and an M.A. degree from the University of Wyoming, having specialized in economic geology (mineral deposits) and ground water geology. The addition of Mr. Wilson to the staff aided immeasurably in broadening the program and the services of the State Geological Survey. During the winter 1953-1954, he was granted a leave of absence to carry on additional graduate work in mining geology. Mr. Robert McGraw, a candidate for an advanced degree in geology at the University, was employed as Acting Assistant State Geologist while Mr. Wilson was on leave. During this period Mr. Wilson completed all the required course work for the Ph.D. degree and, in addition, was granted the professional degree of Geological Engineer. In June, 1954, he resumed his regular duties.

A full-time secretary, Mrs. Kathleen Lowry, is also employed. Her duties involve the maintenance of office records, the distribution of publications and maps, and the supervision of routine office matters.

Students in geology at the University are employed on a part-time basis to undertake specific geological assignments as geological draftsmen, to maintain collections of samples and cores from wells drilled for oil and the electric logs of deep wells, and in many other ways.

The general organization of the Geological Survey, its location at the University and its affiliation with the Department of Geology are sound. Because of its location at the University, it is possible to obtain the advice and part-time assistance of the 6 geologists on the staff of the University Geology Department. In addition, close cooperation is maintained with the University of Wyoming Natural Resources Research Institute, whose work is devoted to research on the utilization of Wyoming mineral resources. The Wyoming office of the Fuels Branch of the U. S. Geological Survey is located in Geology Hall, and close cooperation is held with that agency. The U. S. Bureau of Mines Petroleum Experiment Station and Oil Shale Laboratory is located nearby on the Campus. The advice, suggestions and assistance of chemists, physicists, engineers and other scientists on the Campus are readily obtainable. The laboratories and library facilities on the Campus are valuable aids in carrying on the work of the Geological Survey.

As an example of the effectiveness of this cooperation, the new revised colored geological map of Wyoming may be cited. Work on the map started in January, 1947, and eight years later, in 1955, the map was printed by the U. S. Geological Survey. Two hundred and seven

individual maps were used in the compilation. Of these, 60 were maps made in the field by graduate students in geology at the University of Wyoming; maps of 8 areas were made by members of the University faculty. The State Geological Survey had neither the personnel nor the physical facilities to prepare and print such a map. On the other hand, the map would have been much less valuable were it not for the mapping contributed by the Department of Geology and the State Geological Survey. The same situation exists in respect to the geological maps of Albany County and Carbon County recently issued by the State Geological Survey. Of the 24 individual maps used in compiling the Albany County map, 16 were prepared by students and staff members at the University. Of the 38 maps used to compile the Carbon County map, 26 were made by students or faculty members at the University.

The belief that the placing of the State Geological Survey at the University was a wise move is reiterated. The situation is mutually beneficial to the Geological Survey and to the University. The Geological Survey benefits from the arrangement in that it is able to utilize the services or the facilities of the Geology Department, the other science departments, the Natural Resources Research Institute, the U. S. Geological Survey and the Bureau of Mines, all of which are located on the campus. In turn, the University gains the use of physical equipment of the Geological Survey, staff members of the Geology Department are given the opportunity to do research, and many students are employed on part-time technical jobs. It appears that a Geological Survey administered by a faculty member of the Geology Department of the University, but adequately staffed by non-teaching geologists, is a most effective manner of organization. To improve the service to the State, it is only necessary to enlarge the staff of the Geological Survey to the point where the numerous geological problems needing attention can be efficiently and effectively handled.

The completion of the new Geology Building on the campus, scheduled for August, 1955, will greatly aid the Geological Survey. For the first time we will have adequate office space, and space for the storage of records, maps, well logs and similar material. In addition, the Survey will gain the use of new laboratory equipment, such as spectrographic and X-ray analysis equipment. Should the Geological Survey staff ever be enlarged, there will be adequate quarters to accommodate any expansion.

ACTIVITIES OF THE GEOLOGICAL SURVEY

COOPERATION WITH THE U. S. GEOLOGICAL SURVEY

Informal cooperation is carried on with all branches of the U. S. Geological Survey. The State Geologist has brought to the attention of the U. S. Geological Survey certain geological problems needing attention and the Federal Survey has taken action on them. Conversely, the Federal Survey keeps us informed on the independent projects it is carrying on in Wyoming. This complete cooperation lends effectiveness and efficiency to the geological work carried on by both agencies in the State and prevents overlap or duplication of effort.

Formal cooperative agreements with the U. S. Geological Survey for the undertaking of geological investigations in Wyoming have been carried on since 1941. State and Federal funds are matched in equal amounts on specific projects. These agreements have enabled the State to obtain geological work for half the cost, and to take advantage of the highly skilled personnel of the U. S. Geological Survey. Projects have been carried on dealing with phosphate rock, titaniferous magnetite, anorthosite, cordierite, regional geology, ground water supply, and the examination of individual mineral deposits. The results of completed projects have been published either by the State Geological Survey or by the U. S. Geological Survey.

Fuels Branch. - Formal cooperation is maintained with the Fuels Branch, whose office is located in the same building as that of the State Geological Survey. Dr. J. D. Love, a 1933 graduate of the University of Wyoming, supervises this office. The Fuels Branch is concerned principally with the petroleum geology and fuel resources of Wyoming. As a result of this program, 28 maps or charts pertaining to the geology of Wyoming have been published by the U. S. Geological Survey and two bulletins have been printed by the State Geological Survey. As an added responsibility, the Laramie office has been placed in charge of certain phases of uranium exploration in Wyoming. As a result, four publications dealing with uranium occurrences in the State have been issued by the U. S. Geological Survey.

Mineral Deposits Branch. - In 1944, a long-range cooperative program was established to study the geology of the Laramie Range. Principal attention was paid to the alumina and titaniferous iron deposits, but during the course of the program a very large deposit of a rare mineral, cordierite, was discovered. Field work on the project was completed during the summer of 1952. Part of the results have been published -- one State

bulletin deals with the alumina rock, a second deals with the cordierite deposits. A preliminary report on the titaniferous iron deposits has been placed on open file where it is available for public inspection. Four additional reports will result from this project. These include a final report on the titaniferous iron deposits, one on the general geology of the Laramie Range, a theoretical paper on the gneisses, schists and related rocks, and one dealing with the theoretical aspects of the titaniferous iron deposits. The last two will be published in technical journals and reprints will be distributed as contributions of the State Geological Survey.

During 1954, a new cooperative project was begun on titaniferous sandstone deposits discovered in Hot Springs, Natrona and Albany counties. The investigation comprises a mineralogic study of the deposits which will be basic to their possible commercial utilization. The work is being done in Laramie by Mr. John Murphy, geologist of the U. S. Geological Survey, and Dr. Robert Houston, Instructor in Geology, University of Wyoming.

Engineering Geology Branch. - Prior to 1951, cooperative projects were carried on with the Engineering Geology Branch, and as a result the Federal Government has issued two maps of Wyoming showing metallic and nonmetallic mineral deposits, and the State has issued one map showing sand and gravel deposits. No cooperative projects were carried on during 1953-55.

Ground Water Division. - Prior to 1951, the State Geological Survey cooperated formally in two ground water projects on which reports were issued. No formal projects were undertaken during 1953-55, but this office enjoyed the full cooperation of the Ground Water Division on minor problems pertaining to Wyoming ground water occurrences.

COOPERATION WITH OTHER FEDERAL AGENCIES

U. S. Bureau of Mines. - In 1953, the State Geological Survey entered into a formal agreement with the U. S. Bureau of Mines for the annual collection of basic data on Wyoming mineral production. Close, but informal, cooperation is carried on in other ways. Deposits of certain minerals which need core drilling, or other subsurface development, have been brought to the attention of the Bureau of Mines and, if warranted, that agency has carried on subsurface exploratory work. There has been a free interchange of information between the State Geological Survey and the Bureau of Mines.

U. S. Coast and Geodetic Survey. - The State Geological Survey supplies the Seismological Field Survey with data on the occurrence of earthquakes in Wyoming. Earthquake report cards are distributed to forest rangers, postmasters, and others over the State. These report cards are returned to the State Geologist with information regarding earthquake occurrences. The assembled data are then sent to the Seismological Field Survey. It is anticipated that a seismograph will be installed in the new Geology Building and an attempt will be made to establish a cooperative program whereby federal funds may become available to defray the cost of an observer.

Atomic Energy Commission. - The office of the State Geological Survey serves as one of the posting points established by the Atomic Energy Commission for the display of maps showing radioactivity anomalies detected through airborne surveys. So far as is known, this is the first posting point to have been established other than a Federal office. On the 15th of each month, at noon, maps prepared by the Atomic Energy Commission are placed on display at this office and at other points over the nation. These anomalies may indicate deposits of radioactive materials on the ground, and are valuable, therefore, in prospecting for uranium.

Other Agencies. - The State Geological Survey is called upon to supply geological information to many other Federal agencies, such as the Soil Conservation Service, the Grazing Service, the Reclamation Bureau, the Department of Commerce, and others. Data have been supplied to Congressional Committees and other Federal groups or committees.

COOPERATION WITH UNIVERSITY AGENCIES

Department of Geology. - The intimate inter-relationship of the Geological Survey and the Department of Geology has been pointed out earlier in this report. It should be pointed out further, however, that the field research undertaken by graduate students is of great value to the Geological Survey. These results are made available to us early. Many of the resulting theses have been published by the Geological Survey. In turn, the Geological Survey has assisted students in defraying field expenses on projects in which the Survey is interested, or by supplying thin sections or polished surfaces.

The graduate students constitute a valuable store of part-time assistance for the Survey. They have been employed to catalog oil well samples, plot oil well logs, draft geological maps and illustrations, and to undertake other assignments. The students, in turn, receive valuable experience in applied geology. If it were not for the high-quality part-time help available through the employment of graduate students, the full-time staff would have to be considerably larger.

Natural Resources Research Institute. - The Natural Resources Research Institute was established to carry on scientific research on the utilization of the mineral resources of the State. The Geological Survey and the Natural Resources Research Institute work in close cooperation and the State Geologist is a member of the executive committee of the Institute. The Geological Survey may bring to the attention of the Institute any mineral deposits whose quality or uses might be determined through laboratory investigations. In turn, the Institute supplies the State Geological Survey with needed analytical information on mineral specimens submitted as an aid in determining the potentialities of certain deposits.

COOPERATION WITH STATE DEPARTMENTS

Natural Resources Board. - The State Geological Survey stands ready to cooperate with the Natural Resources Board in any possible manner on the mineral resources of the State or in engineering or ground water problems on which geology has a bearing. The Geological Survey has supplied data on mineral deposits, made examinations of potential dam-sites, conferred on ground water problems, and participated in public conferences held over the State on uranium and on other mineral resources.

Oil and Gas Conservation Commission. - The State Geologist, by law, is a member of the Oil and Gas Conservation Commission. The Geological Survey is now receiving from the State Mineral Supervisor copies of electric logs of wells drilled in the State. Such logs have been difficult to obtain in the past and the arrangement facilitates keeping the electric log file complete.

Commissioner of Public Lands. - Prior to the issuance of permits for the collection of fossils in Wyoming, which are obtained from the State Commissioner of Public Lands, the endorsement of the State Geologist is necessary. During 1953-55, permits were endorsed for issuance to the following collectors: Charles H. Falkenbach, American Museum of Natural History, New York; James D. Bump, South Dakota School of Mines; William J. Berry, Western Michigan College; Robert G. Chaffee, Dartmouth College; Robert H. Dennison, Chicago Museum of Natural History; Harold Cook, Agate Museum, Nebraska; and Ralph Platt, Saratoga, Wyoming.

Also, the Geological Survey has been called upon to offer opinions on mineral associations in respect to State mineral leases. These are strictly geological matters and each one appears to constitute an individual problem.

State Highway Department.- The Geological Survey has cooperated with the Highway Department in the erection of roadside markers describing geological points of interest. The Geological Survey prepared the geological descriptions and the Highway Department supplied and erected attractive wooden signs. Descriptions of the geological features observable through Wind River Canyon have been placed at either end of the canyon to enable tourists and others to better understand the superb geological cross section of the earth's crust visible from the highway.

State Game and Fish Commission. - Over the years, the Geological Survey has assisted the Game and Fish Department on matters of water supply for hatchery use.

TECHNICAL INVESTIGATIONS

Mining Geology

Kirwin district, Park County. - The old Kirwin mining district, which was active in early days, has never been subjected to modern geological investigation. A long-range project has been undertaken by Mr. Wilson on the geology of the area and the nature of the ore deposits. Field studies were begun in 1951 and have continued each summer since that time. A preliminary report was completed in 1954 and placed on open file for public examination. The study will not only furnish basic data on mineralization in the area but will be a contribution on the volcanic history of northwestern Wyoming.

Hecla district, Laramie County. - Mr. McGraw carried on field studies in the old Hecla mining district during parts of 1952 and 1953 which resulted in the completion of an open file report. The study concerned the geology, mineralogy, and ore deposits, and will be useful in future exploration in the area.

Cooper Hill mineral district, Albany County. - Mr. Robert Schoen, a graduate student at the University, completed a study of the geology and mineralization of the old Cooper Hill mineral district under partial subsidization of the Geological Survey. A completed report has been placed on open file and is available to the public.

Gas Hills uranium district, Fremont County. - During 1954 studies of the geology and uranium deposits of the Gas Hills area were initiated and completed by Mr. Stanley Grant, a graduate student at the University, under partial subsidization of the Geological Survey. The study included the geological mapping of 22 square miles in the mineralized area and the X-ray and petrographic determination of the uranium minerals found there. The results will be published as a bulletin of the Geological Survey.

Hartville district, Platte County. - During 1954, Mr. Ballard Ebbett carried on field studies pertaining to iron ore mineralization in the Hartville Uplift. The expenses for this project were borne by the Geological Survey. The investigation comprises the geological mapping of deposits and a petrographic study of the ores.

Mineral Inventory

As a long range project, the Geological Survey has been compiling factual and reliable data on the known mineral deposits of the State. As a result of this program, Bulletin 45, "Wyoming Mineral Resources" was published during 1952. Although this is a valuable contribution, a great deal more study is necessary in order to obtain still more complete and reliable data. As a means toward this end, the following mineral deposits were examined by Mr. Wilson or Mr. McGraw during 1953-1954:

Bituminous sandstone, Big Horn County	Pumice, Sweetwater Co.
Gold, Fremont County	Silver, Park County
Lead, Park County	Uranium (5 deposits), Carbon County
Mica, Fremont County	Uranium (4 deposits), Fremont County
Molybdenite, Sublette County	Uranium (3 deposits), Park County
Nickel, Carbon County	

Ground Water

Helpful advice was given to many individuals, principally ranchers and others in Albany and Big Horn counties, on the possibility of obtaining ground water on their lands and on drilling depths to possible aquifers.

Engineering Geology

During 1953-1954 the Geological Survey assisted the Natural Resources Board by making geological examinations of four proposed reservoir and dam sites in connection with possible water leakage and foundation conditions. The locations are as follows:

North Piney Creek, Sublette Co.	Redman Draw, Johnson County
Chugwater Springs, Platte Co.	Red Fork of Powder River, Johnson County

Paleontology

Studies in paleontology conducted by two graduate students at the University were published during the biennium (see Publications). Other studies, which resulted in open file reports were initiated by graduate students on Cambrian trilobites from the Big Horn Mountains and on the Cambrian invertebrate faunas of the Wind River Mountains. A study of an unusual Cambrian sponge from the Sweetwater has been completed by Mr. Wallace Bell, graduate student, and has been accepted for publication. Reprints will be distributed as Contribution No. 15 of the Geological Survey of Wyoming.

Regional Geology

During 1953-1954, graduate students at the University completed the geological mapping of 2700 square miles in Carbon, Goshen, Platte, Albany, Big Horn, Sublette, Natrona, Hot Springs and Fremont counties. Maps have been drafted and copies are available through the State Geological Survey. These maps are in demand because of their use in petroleum exploration, uranium prospecting and ground water developments.

Stratigraphy

During 1953-1954 stratigraphic studies were completed by seven graduate students at the University on sedimentary rocks in the Bighorn Basin, along the Wind River Mountains, along the Bighorn Mountains, in the Powder River Basin, in the Laramie Basin, and in the Ferris Mountains - Freezeout Hills area. The stratigraphic charts and sections which resulted have been made available through the State Geological Survey.

Mineral Identification Service

The Geological Survey maintains a free mineral identification service designed to be of value to prospectors, amateur rock collectors, and the general public. If the submitted specimens appear to have possible economic importance, they are turned to the Natural Resources Research Institute for assay or analysis. Several potentially important mineral deposits in the State have been brought to light through this service in the past.

With the great increase in prospecting brought about through the discovery of uranium in Wyoming, there has been a much greater demand for this service and at times the Assistant State Geologist has been hard pressed to keep ahead of the specimens delivered in each day's mail. As a result of this intensive prospecting, valuable minerals other than uranium have been and will be discovered.

Oil Well Sample Library

The Geological Survey has in its oil well sample library the most important representative collections of Wyoming oil well samples in the Rocky Mountain region. The collection has been accumulated through the cooperation of oil companies operating in Wyoming, who have donated samples and cores with the belief that they will be properly cataloged, cared for, and preserved for the future at the University. The present available storage space, a metal warehouse adjacent to Geology Hall, is now completely filled and samples are stored at various places on the campus. As a result, the cataloging of samples has temporarily been discontinued. There will be adequate storage space in the new Geology Building, however. It is estimated that the collection now represents nearly a thousand wells, principally wildcats, scattered over the Rocky Mountain region and that they aggregate about 800 miles of drilled hole.

Electric Logs of Drilled Wells

The Geological Survey has available a fairly complete collection of electric logs of deep wells drilled in the State and it is estimated that the logged footage exceeds 20 million feet, or 4,000 miles, of drilled hole. The file is being kept complete through the cooperation of the State Oil and Gas Supervisor who sends the Geological Survey one copy of all logs filed with him. Such a file of electric logs is invaluable in geologic research and is used not only by staff and students at the University, but by many other geologists.

Earthquake Reports

Reports on earthquakes in Wyoming are made to the Seismological Field Survey of the U. S. Coast and Geodetic Survey by the State Geologist, who serves as Collaborator in Seismology. Data on earthquake frequencies are valuable in the determination of equitable insurance rates and in connection with the erection of large structures, such as dams, and the excavation of underground workings, such as tunnels and mines. Wyoming is quite stable seismically and in the 12 years of reporting, there have been no earthquakes of any but minor intensity. Most earthquake reports have come from Yellowstone National Park and adjacent areas, but within the past two years there have been noticeable temblors in Albany and Natrona counties. The installation of a seismograph in the new Geology Building will aid immeasurably in an understanding of the seismicity of Wyoming, as well as in serving to pinpoint the location of earthquakes, or violent man-made explosions, at other places in the world.

Public Education

Wyoming industrial rock and mineral sets. - Sets of 16 important Wyoming rocks and minerals have been prepared in special compartmented boxes. Composition, properties, uses and occurrences are given inside the lid. These sets are available to Wyoming secondary schools for instructional purposes. A simplified brochure on Wyoming mineral resources is being prepared for use in conjunction with the sets of specimens.

Tourist information. - Many tourists planning to visit Wyoming are amateur mineralogists and prior to their visits ask for information on the occurrence of mineral specimens in the State. A pamphlet on rock and mineral localities has been prepared to fill such requests.

Geological roadside markers. - Cooperating with the State Highway Department, the Geological Survey has prepared 100-word descriptions of geological phenomena visible along Wyoming highways. These are being incorporated on attractive roadside markers erected by the Highway Department, and many are already in place. Wyoming has a diversity of well-displayed geological features and this is an excellent way to familiarize the public with glacial, erosional, structural, mineralogic, and paleontologic examples.

Public Services

Office callers. - Almost every day representatives of oil and mining companies or other individuals interested in mineral resources call at the Geological Survey offices. One of the most effective points in handling such callers is that here in one building such persons may take advantage of advice and information available from the staffs of the State Geological Survey, the U. S. Geological Survey and the Department of Geology of the University. In addition, it is possible for such persons to confer also with other agencies located on the campus, such as the Bureau of Mines, the Natural Resources Research Institute, the Engineering College, or other departments.

Correspondence. - A large volume of inquiries seeking information on Wyoming mineral resources, petroleum geology, and geology in general is received daily by the office. Properly answering this mail constitutes a rather imposing chore.

Topographic sheets. - The Geological Survey carries a supply of the topographic maps covering Wyoming. These are useful to hunters, fishermen, campers, prospectors, ranchmen and others, and many copies are distributed each year.

Air photos. - The entire State has aerial photographic coverage, but because of the cost of such photos, it has been impossible to purchase more than a fraction of all the available ones. It is hoped that by adding to the air-photo library from time to time, it will eventually be possible to obtain complete coverage. These photographs are very useful to anyone seeking information on surface features, or the geology, of specific areas. Many persons consult the collection.

Publications, Maps and Reports

Geological examinations have little value unless the accumulated information is made available to the public. Every effort has been made to publish printed reports on the results of projects of any magnitude. About 400 copies of each publication are deposited in libraries in the United States and foreign countries. Other copies are distributed to individuals, corporations, agencies, and others on request.

Along with increased activity in petroleum exploration in Wyoming and with the intensive prospecting for uranium, there has been an increased demand for our publications. Many of the earlier ones are now out of print and not available for distribution.

Printed documents. - The following documents were published by the Geological Survey of Wyoming during 1953-1954:

"Fusulinids of the Casper formation of Wyoming", Bulletin 46.

"Radioactive fossil bones in Teton County, Wyoming", Report of Investigations No. 4.

"Faunas and age of the Amsden formation in Wyoming", Contribution of the Geological Survey of Wyoming.

"A Permian fauna of the Casper formation of Southeastern Wyoming", Contribution of the Geological Survey of Wyoming.

U. S. Geological Survey cooperative publications. - Since the beginning of cooperative work with the Fuels Branch of the U. S. Geological Survey, 28 maps and charts pertaining to the geology of Wyoming have been printed. Those issued during the period 1953-54 are:

"Geology of the Riverton area, Central Wyoming", U.S.G.S. Oil and Gas Investigations Map 127.

"Geology of the Long Creek-Beaver Divide area, Fremont County, Wyoming", U.S.G.S. Oil and Gas Investigations Map 140.

"Geology of the Crazy Woman Creek area, Johnson County, Wyoming", U.S.G.S. Oil and Gas Investigations Map 142.

"Geology of the Steamboat Butte-Pilot Butte area, Fremont County, Wyoming", U.S.G.S. Oil and Gas Investigations Map 151.

"Stratigraphic sections of Cody shale, younger Cretaceous rocks and Paleocene rocks in the Wind River Basin, Wyoming", U.S.G.S. Oil and Gas Investigations Chart 49.

County map series. - Although the Geological Survey prepared geological maps of 16 Wyoming counties long ago, they were never printed. Blueprint copies of the maps have been available to the public. A new revised series is being prepared and three maps were printed during the biennium. The ultimate publication of maps of all the Wyoming counties on a standard scale will take many years. The new maps issued are as follows:

Geological map of Albany County, Wyoming
Geological map of Carbon County, Wyoming
Geological map of Natrona County, Wyoming

Colored geological map of Wyoming. - The new colored geological map of Wyoming, which has been in preparation since 1947 by the U. S. Geological Survey in cooperation with the Geological Survey of Wyoming and the Department of Geology, University of Wyoming, is now being printed and should be available for public distribution soon after March 1, 1955. The completion of the map will mark a milestone and fill a long-felt need. As an aid to the usefulness of this map, the State Geological Survey has printed an index map which shows by township and range the authors and source of the 207 maps used to compile the geology of the State. This map is identified as:

"Index map of Wyoming (showing sources of maps used in compiling a new geologic map of Wyoming)", Geological Survey of Wyoming Map No. 3.

Circulars on uranium in Wyoming. - A number of circulars dealing with uranium occurrences in Wyoming have originated in the Laramie office of the U. S. Geological Survey. Those issued during 1953 and 1954 are:

"Preliminary report on uranium deposits in the Miller Hill area, Carbon County, Wyoming", U. S. Geological Survey Circular 278, J. D. Love.

"Summary of investigations of uranium deposits in the Pumpkin Buttes area, Johnson and Campbell Counties, Wyoming", U. S. Geological Survey Circular 338, J. D. Love.

"Preliminary report on uranium in the Gas Hills area, Fremont and Natrona Counties, Wyoming", U. S. Geological Survey Circular 352, J. D. Love.

"Uranium in the Mayoworth area, Johnson County, Wyoming", U. S. Geological Survey Circular 358, J. D. Love.

Unpublished thesis maps. - Unpublished maps and charts from 137 theses prepared by graduate students at the University of Wyoming are made available to the public through the sale of black line prints. These large scale maps have been in great demand by oil companies, uranium prospectors and others and thousands have been distributed. During the biennium, 23 graduate students completed theses and the resulting maps and charts are being distributed to the public on demand.

Unpublished mineral reports. - When warranted, formal reports or memoranda based on field examinations of individual mineral deposits are placed on open file for public inspection. Most of these are not of sufficient scope to warrant publication, but the information contained in them is of great value. Photocopies are available to interested persons. During the biennium, a number of such reports were added to the files.

U. S. Geological Survey open file reports. - In order to make geological information available as early as possible, the U. S. Geological Survey has made the Geological Survey of Wyoming a repository for unpublished reports pertinent to Wyoming or adjacent states. During the biennium open file reports dealing with uranium, phosphate rock, and regional geology have been made available to the public. The U. S. Geological Survey has also used this method for making available to the public the results of airborne radiometric surveys which may indicate uranium deposits on the ground, and a number of these maps have been placed on open file.

Technical Meetings

In order to keep abreast of new geological or technological developments, the staff has participated in or attended numerous technical meetings. During the biennium, the State Geologist served as chairman of the membership committee of the Geological Society of America; was nominated for the vice presidency of the American Association of Petroleum Geologists;

and was appointed for a three-year term to the 15-man American Commission on Stratigraphic Nomenclature. The following regional or national meetings were attended by either the State Geologist or the Assistant State Geologist:

National Western Mining Congress; 1953, 1954
American Chemical Society; 1953
Rocky Mountain Section, American Association Petroleum Geologists;
1953, 1954
Wyoming Geological Association Field Conference; 1953, 1954

The following papers or talks were presented by the State Geologist during the period 1953-1955:

"Geological history of the Rocky Mountain region in relation to chemical resources:", American Chemical Society, 1953, Los Angeles

Address of welcome, American Association Petroleum Geologists, Rocky Mountain section, 1953, Casper

"Sources of information pertinent to uranium exploration in Wyoming", Natural Resources Board Uranium Congress, 1953, Casper

"Uranium in Wyoming", National Western Mining Congress, 1954, Denver

"Uranium in Wyoming", Wyoming Engineering Society, 1953, Casper

"Mineral Resources of Sweetwater County", Southwestern Wyoming Committee on Industrial Development Conference, 1954, Rock Springs

"Uranium in Wyoming", 27th Annual Carbon County Agricultural Conference, 1954, Rawlins

"Geologic information pertinent to uranium exploration in Wyoming", Natural Resources Board Uranium Seminar, 1954, Rock Springs

"Geological problems of the Casper area", Wyoming Geological Association 9th Annual Field Conference, 1954, Casper

"Wyoming mineral resources", Chemistry Institute, University of Wyoming, 1954