



The School of Geology and Geophysics
at the University of Oklahoma reshapes its goals and academic orientation.

A BREAK TOWARD DIVERSIFICATION

It isn't number one yet, but it's on the way!

In a national academic rating prepared by the American Council on Education in 1969, the graduate program of the University of Oklahoma School of Geology and Geophysics was ranked among the top 32 earth science graduate programs in North America and one of the two highest of all graduate programs on the OU campus. In 1965 the Council rated the School's graduate program as slightly better than adequate.

Historically, the School has been a leader in the training of petroleum geologists and has pioneered a number of applications of geology to mineral resource exploration. For many years its primary goal was to educate geologists for a single objective—exploration for petroleum—and many geologists left OU with only a bachelor's degree.

However, in the early 1960s the faculty began to reshape the School's goals and academic orientation. Recognizing the problems associated with diversification of the petroleum industry into other energy resources and mineral commodities and the growing need for graduate degrees in geology, the faculty made a number of decisions.

Four major programs have been put into effect. A strong program in secondary school earth science teacher preparation in geophysics was expanded, the graduate program in geology and geophysics was also expanded, and the Alumni Advisory Council for the School of Geology and Geophysics was formed.

Many of the innovative changes occurring in the School have come about through the impetus of Dr. Charles J. Mankin, director of the School, and his associate directors.

Prior to 1961, nearly 87 per cent of the degrees conferred by the School were bachelors' degrees, while masters' degrees numbered a mere

13 per cent, and only .50 per cent were doctorates. Since 1961, bachelors' degrees have dropped to 45 per cent, whereas masters' degrees have risen to 44 per cent and doctorates to 11 per cent.

Dr. George T. Stone, associate director for graduate studies in the School, believes that the best jobs in the geosciences are going to professionals with masters' or doctoral degrees. "It became apparent even during the 1960s that the petroleum industry and other companies were hiring graduate degree candidates almost exclusively," Stone said.

According to Stone, history shows that the kinds of job opportunities for geologists and geophysicists change; therefore, the path chosen for the graduate program was one of diversification offering a reasonably broad background to students.

"By emphasizing the fundamental aspects of geology and geophysics, we prepare students to specialize in any number of fields," Stone said. The OU School is unusual in this respect. Most geoscience schools are highly specialized, and their graduates are prepared for only a narrow range of work.

"This School has tremendous potential. By continuing to build graduate studies on our traditionally strong foundation of fundamental geology and geophysics, we will be able to serve the needs of our students and the geoscience professions even better than in the past," Stone said.

Along with other plans and changes made during the mid 1960s, the School made a commitment to expand its work in geophysics. A limited program in geophysics existed, but the emphasis had been on exploration geophysics. The plans for expansion of geophysics at OU involved placing an emphasis on the general scope of geophysics rather than specialization.

As a part of this expansion program, the School received in 1965 the Earth Sciences Observatory at Leonard, 25 miles southeast of Tulsa, as a gift from the Humble Oil and Refining Company. Following this, an endowed chair in geology and geophysics was established by Kerr-McGee Oil Company to support the Observatory.

"These two gifts enabled us to give a greater emphasis to a program in geophysics, which had been staffed formerly by one man," said Mankin, "and the School of Geology was officially renamed the School of Geology and Geophysics."

Dr. Robert L. DuBois, director of the Earth Sciences Observatory, is the first to hold the Kerr-McGee endowed chair.

"The application of physics to problems of mineral exploration is only one important facet of geophysics. The solution of many problems in geology today involves geophysics. For this reason, geology and geophysics are together at OU, in order that faculty and students can observe and participate in both areas. This offers educational opportunities not available in other schools where the two are separated or geophysics is with physics," said DuBois. "The natural interaction of the two disciplines makes a knowledge of geology to geophysicists and a knowledge of geophysics to geologists quite important."

The Earth Sciences Observatory and the paleomagnetism-archeomagnetism research and teaching facility on the north campus are the two main laboratory facilities for the geophysics program. There are few places in the world where so many earth variables are being monitored at a single installation as at the Observatory. This measuring of multiple parameters makes the Observatory unique. An international reputation has already been established, with continuous copies of its records being recorded by data centers throughout the world.

All paleomagnetic, archeomagnetic and rock-magnetism studies are conducted at the Paleomagnetic Laboratory by faculty and graduate students in geophysics. This facility contains a working complement of instruments adequate to support much basic research.

The School now offers a bachelor of science degree in geophysics with options in exploration geophysics and planetary geophysics. A master's degree in geophysics is also available, and as the facilities expand, the School looks toward offering a Ph.D. degree in geophysics.

Recognizing the great need for better prepared secondary school teachers of earth science, the School became increasingly involved in this educational process. "We now have one of the nation's strongest programs in this field," said Dr. Edward C. Stoever Jr., professor and associate director for undergraduate studies in the School and director of the Cooperative Oklahoma Earth Science Teacher Education Program (COESTEP).

"In the mid 1960s it was realized that most earth science teachers at the secondary level had only minimal training in this field. Most had taken geography or geology only on the introductory level. Most appalling was the fact that only nine Oklahoma schools were teaching an earth science course in 1960," said Stoever.

The program began to develop in 1964 with an Academic Year Institute. Through the cooperation of the National Science Foundation (NSF), the program has grown into COESTEP, which sponsors institute programs for earth science teachers and provides tuition and stipends for the participants as well as operation costs.

COESTEP was formalized this fall and was granted \$151,353 in November by the NSF. The program represents a plan for pooling state educational resources and sharing in coordinated efforts aimed at improving the education of Oklahoma children.

"Through COESTEP we have been able to re-orient the target of all the institute programs, allowing us to focus more on local needs. This program has been heartily endorsed by President Sharp," said Stoever. "He feels the desire to involve all levels of the educational system in Oklahoma with the University is consistent with the direction the University wants to emphasize in the decade of the 1970s."

Four institutes comprise the program. The NSF Academic Year Institute, which has operated since 1964, brings secondary teachers to the School for a full school year of on-campus study in earth sciences and cross-disciplinary fields related to education.

Only one-third of the 60 returning participants of the NSF Summer Sequential Institute are Oklahoma teachers; however, it is hoped to increase this proportion in the future. This institute, operated since 1966, provides up to four summers of on-campus academic work in the earth sciences. This program is especially beneficial to teachers who are unable to attend during the academic year.



Gould Hall, home of the OU School of Geology and Geophysics.

The NSF Summer Field Institute has brought secondary science teachers to the Oklahoma Geology Camp near Canon City, Colorado, for eight weeks each summer since 1965. The program involves the teachers in interdisciplinary field study in astronomy, geology and meteorology. A special effort is being made to include Oklahoma teachers who are lacking in earth science background.

The fourth program is the NSF In-Service Institutes and Workshops. Weekly meetings are held throughout the academic year at various secondary school districts and at OU. The workshops vary in length, frequency of meetings and objectives to meet the needs of working teachers.

Stoever feels that his program has had tremendous impact on the quality of instruction in secondary schools and at OU. "Faculty are not concerned only with their knowledge of subjects they teach,

they also are concerned about the way in which teaching occurs. This has led to a number of healthy changes in our own instructional program," he said.

In addition to his duties as director of the School, Mankin is director of the Oklahoma Geological Survey. A state agency, the Survey was founded at statehood and is included in the state's constitution. The Survey is one of very few state surveys which are structured in this manner. When the State Regents for Higher Education were established as a coordinating body, the Survey was officially placed under the supervision of the OU Board of Regents. The Survey is responsible for investigating the state's mineral, water and energy resources and must publish reports and general information about its investigations. The staff of 13 professional geologists, some of whom have joint positions in the Survey and the School, can make recommendations and provide basic information to regulatory agencies, but the Survey has no regulatory responsibility.

In 1966, an Alumni Advisory Council for the School of Geology and Geophysics was formed. The Council, consisting of 40 members who serve six-year terms, is an effective bridge of communication between alumni and the School. Alumni

have a receptive forum for their ideas through the Council; consequently, curriculum and faculty requirements can be evaluated in the context of the present and projected needs of earth science. Recruiting outstanding students is another important function of the Council.

"Our plans have been, in large part, a result not only of faculty decisions but also a result of the Council's deliberations. Our Advisory Council preceded the establishment of the University Board of Visitors by several years and has since been incorporated into the Board of Visitors," said Mankin. "The members of our Council are tops in the academic and professional activities of this country."

Strong financial support from the School's alumni has aided the School of Geology and Geophysics in its commitment to reach its ultimate goal—achieving the reputation as one of the nation's top schools of geology and geophysics, not only at the undergraduate level but also the graduate level. "The staff and faculty of the School have pledged themselves to dedicated effort in reaching our objective. But this commitment requires even more than our sustained and dedicated efforts. We will most assuredly need the continuing effective and active support from our alumni," Mankin stated. **MEB**



Dr. Mankin and Bill Bellis, head of the Oklahoma Geological Survey x-ray laboratory, provide assistance to an oil company in the identification of a specimen's unknown minerals.



Dr. Charles J. Mankin, director of the School of Geology and Geophysics.