

This amount of acreage represented 27 per cent of the thirty-three million acres in the state. During this period there was paid to the land owners in the state each year on bonuses, \$44,685,000; rentals, \$6,765,000; and royalties, \$37,897,000; a total of bonuses, rentals, and royalties annually of \$89,147,000. It is estimated that even under present conditions the total of bonuses, rentals and royalties in the year 1934 paid to the land owner was not less than \$50,000,000, which was approximately equal to one-fourth of the total value of the crude oil produced in Oklahoma during 1934. This money which was paid to the land owners was free from any production costs or expenses to them.

To the oil producer, however, the above payment to the land owners was a cost or an expense and, in addition to these costs

incident to discovery and development, the oil producer must, after oil has been discovered, pay production costs and other miscellaneous expenses. Those producers who have been fortunate enough to make a profit from their operations in the earlier fields have reinvested their profits and capital in the searching for and development of the later fields of the state. The proceeds from the sale of oil produced from the oil fields of today will be invested along with new millions attracted to the state of Oklahoma in the finding and development of the fields of tomorrow. Thus, we have a cycle which is certainly a very happy one, and which has as its principal by-product the advancement of other lines of business in the state and the continual progress of Oklahoma commercially, agriculturally and industrially.

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Geological Engineering

By V. E. MONNETT, Director

THE school of geological engineering at the University of Oklahoma was originally called the school of engineering geology, and had its beginning in 1917. In the earliest part of the petroleum development of Oklahoma it was recognized that knowledge of the geological features of each area was essential to the proper development of an oil pool. So many of the earth's materials besides oil have been found in abundance in Oklahoma that it seemed advisable to train students in that branch of engineering which emphasized the occurrence of all of these natural mineral resources. The first engineering geologists were accordingly trained in the broader aspects of geology with special emphasis upon the various types of minerals and rocks of economic importance. At the same time they were given the same fundamental training in engineering subjects as is required of students enrolled in other branches of the college of engineering.

Some of the graduates have gone into mining engineering; others have gone into petroleum engineering; while a large percentage have, of course, become petroleum geologists. The geological engineering course was originally designed and has been purposely kept as a broad fundamental course. Before the establishment of petroleum engineering and mining engineering curricula in the University, students interested in these associated lines of work were receiving most of the essential training in the geological engineering course.

The University of Oklahoma was one

of the first schools in the United States to introduce a complete and separate curriculum of geological engineering. Now more than two dozen colleges and universities offer such a course.

The number of graduates from the school of geological engineering has always been very small, but there has been a marked tendency in recent years for students to elect the geological engineering course because of the recognition of the value of men with engineering training in nearly all phases of geological work. The training in mathematics and physics which the engineering student receives has made it possible for him to play a prominent part in the geophysical work which has attracted so much attention in the past ten years. A larger number of the graduates of geological engineering have entered this line of work in the past three years than into any other phase of the petroleum industry. The geological engineer is peculiarly fitted for carrying on work of this type which requires careful geological interpretation of physical and mathematical data.

Graduates of the University of Oklahoma school of geological engineering have not only helped locate many new oil pools of the Mid-continent field but have seen service in Venezuela, Java, Sumatra, Colombia, Ecuador and many other foreign areas. They have been prominent in solving many of the perplexing problems of petroleum production in older pools of Oklahoma, Texas, and Kansas and have helped make the name of the University known in far corners of the earth.