

# Building the Oil Industry

By Sigfrid Floren

**O** KLAHOMANS are accustomed to thinking of their state as one of the centers of the oil industry, but few realize what a dominant part the alumni of the University of Oklahoma have played in the development of this comparatively young but now world-wide industry.

O.U. graduates and former students are engaged in every phase of the oil industry, from the training of future technicians to the actual selling of finished products to the public.

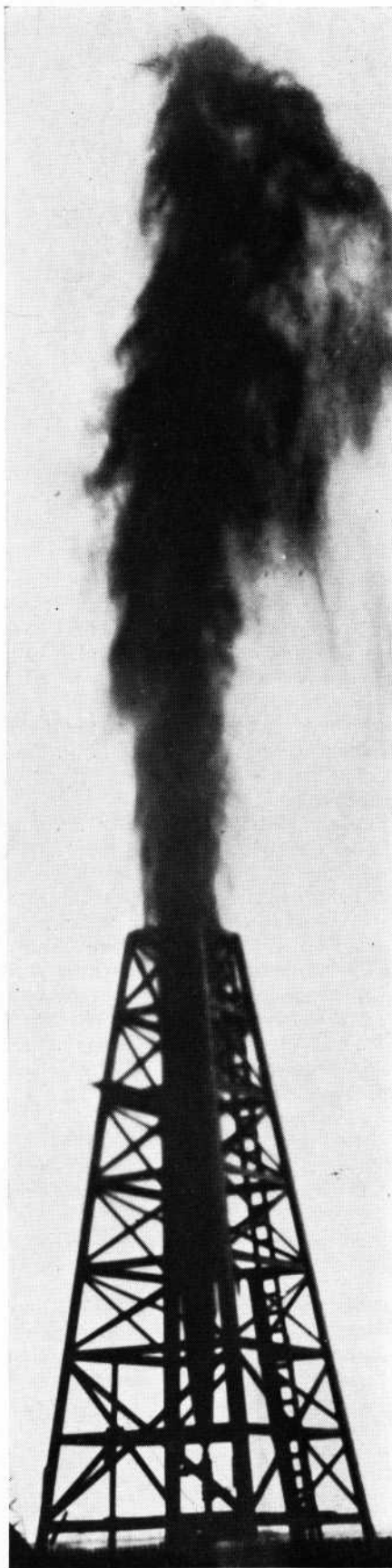
The University's part in petroleum development can be dated back to shortly after statehood when a number of "geology majors" were being employed during the summers and after graduation in exploration work by the few major companies that were beginning to realize the application of geology to the finding of oil.

Pierce Larkin, '09, was probably the first Oklahoma graduate to become a professional petroleum geologist. He worked with the Ora-Pierce Petroleum Company in the northwestern part of the state and secured basic information on sub-surface conditions in that region. During the next quarter of a century he extended his area of work to include the rest of Oklahoma and Texas.

About 1910 D. W. Ohern, then director of the Oklahoma Geological Survey at the University, and Frank Buttram, '10, '12 ma, his assistant, were conducting geological investigations in northeastern Oklahoma. During this investigation the Cushing oil structure came to their attention. Shortly thereafter they resigned their state positions and entered the field of commercial petroleum geology. Mr. Buttram later turned to actual oil production, and today is a national leader among oil men. He is president of the Independent Petroleum Association of America, as well as head of the oil company he founded in 1920.

In the period from 1910 to 1915 the number of O.U.-trained geologists undertaking independent petroleum exploration, or consulting work with oil companies, increased at a rapid rate. Some of the early faculty members of the University's geological department, notably Dr. Charles N. Gould, Dr. C. H. Taylor, Dr. Irving Perrine and Mr. Ohern, also were either doing consulting geological work with oil companies or taking full-time posts in the geological departments of these companies.

Two of the early graduates, Glenn C. Clark, '13, now chief geologist of Continental Oil Company at Ponca City, and Luther H. White, '14, chief geologist of Deep Rock, Tulsa, were instrumental in proving the importance of the now famous



Ordovician oil sands in recovery of oil from the ground.

Dr. Victor E. Monnett, '12, present director of the School of Geology at the University, was a leader in recognizing the significance of the "buried hill" type of sub-surface oil structure, such as is found in the Oklahoma City and Garber areas.

Dr. Monnett's immediate predecessor as geology director, Dr. J. B. Umpleby, and a young graduate, J. B. Newby, '12, were among the earliest to consider the potentialities of water-flooding of oil-bearing sands to increase the efficiency of recovery. Determining the feasibility of the application of this method in particular cases is now part of the work Mr. Newby is doing as a practicing petroleum geologist in Oklahoma City.

Lawrence E. Trout, '12, '13ma, as chief geologist for the old Marland Oil Company, was the first to map and drill what became the Oklahoma City oil field. The fact that the first well sunk was a dry hole did not, by any means, convince him that there was no oil there. The failure on the initial attempt was due to the shallow drilling methods in use at the time. An active geologist still, Mr. Trout lives in San Antonio.

Such graduates as George D. Morgan, '17, president of the Cardinal Oil Company, San Angelo, Texas, R. A. Conkling, '11, Oklahoma City geologist, Ebert E. Boylan, '17, geologist for the Caracas Petroleum Company at Caracas, Venezuela, and Everett L. DeGolyer, '11, aided the progress of the oil industry through its adolescence as presidents or geologists of early companies. During the decade beginning about 1915 practically every major student in geology became employed by some oil company or individual interested in the search for oil. It is impractical to attempt to list them all.

The work done by Mr. DeGolyer, however, has been especially noteworthy. Beginning in Mexico as geologist for the Mexican Eagle Oil Company even before receiving his degree, he applied his knowledge of practical geology by selecting the location for the well that proved to have the largest initial production of any well ever drilled anywhere in the world. The record has not been surpassed even today.

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*This picture of an early-day Oklahoma gusher with its squatty derrick comes from the files of the Oklahoma Geological Survey.*

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As chief geologist and consultant for the Mexican company for more than a decade, Mr. DeGolyer became expert in all known phases of oil discovery and production. He returned to the United States and formed several oil companies during the next ten years, giving to each organization the impetus of his knowledge and skill.

Most outstanding among the contributions to the industry's progress in which he had a part was the application of geophysics to oil discovery. The methods and apparatus were developed by him and Dr. J. C. Karcher, '16, soon after the World War. During the war Dr. Karcher had been employed in the Bureau of Standards on improving methods of submarine detection. There he and Dr. W. P. Haseman, first head of the department of physics at the University, began considering the possibility of using the same devices that detected the approach of enemy craft to determine geological structure by means of recording the tremors set up by artificially induced earthquakes.

Mr. DeGolyer, then president of Amerada Oil Company, met the physicist first in New York where the new methods were publicly explained. Later Mr. DeGolyer and Dr. Karcher met on the second floor of the Union Station, Kansas City, and there formed the Geophysical Research Corporation, which became the first company in America to do geophysical exploration for oil. Both men have become nationally famous for the success of that method.

Dr. Karcher is today managing the Coronado Oil Corporation, his production company, with headquarters in Dallas.

Mr. DeGolyer, recently awarded the Anthony F. Lucas gold medal for distinguished achievement in the oil industry, is engaged in further geological research and is teaching at the University of Texas in the capacity of "distinguished professor."

Before the innovation of geophysics into petroleum development, marked progress had been made by the geologists alone. With the influx of geology graduates from O.U. and from other universities into the industry, production had become more and more active.

One of the most constructive moves in the industry at the time was the formation of what became the American Association of Petroleum Geologists, the largest organization of geologists in the world. It had its beginning on the top floor of Old Science Hall on the University campus, due largely to the efforts of Dr. C. H. Taylor, then head of the department of geology.

It began as the Southwestern Association of Petroleum Geologists, including in its membership only geologists of the southwestern states. Within a few years it

became national in scope and assumed the present name. Today a large percentage of its members are residents of foreign countries. Since faculty members and alumni of the University were founders and have continued to serve as officers and directors, Oklahoma has exerted a profound influence on the progress of the whole national organization.

The association has compiled some tables which the research committee states "might be considered as an index of the influence of the various schools on the thinking of our profession":

Highest ranking colleges in number of undergraduate members of the A. A. P. G. are:

1. University of Oklahoma.....	397
2. University of Texas.....	186
3. Stanford University.....	177
4. University of California.....	156

Highest ranking colleges in number of graduate members:

1. University of Chicago.....	147
2. University of California.....	92
3. Columbia University.....	78
4. University of Oklahoma.....	76

Highest ranking colleges in total number of undergraduates and graduates:

1. University of Oklahoma.....	473
2. University of California.....	248
3. Stanford University.....	245
4. University of Chicago.....	245

**B**OTH within and without the association, University graduates in geology have played prominent roles in the development of the oil industry. Alumni records now show a total of about 750 geology graduates connected in some capacity with the industry, including presidents of companies, vice presidents, chief geologists, district geologists, and so on down to the lowliest sample-washer.

In the field of geophysics in which Dr. Karcher, Mr. DeGolyer and their associates pioneered there are several hundred University graduates today, scattered over virtually every continent of the globe. Kenneth E. Dorcas, '38ms, is in Egypt in charge of the gravity meters of the Mott-Smith Corporation that are being used by oil companies there. Waynard D. Perry, '37eng, is in Trinidad as party chief of a seismograph crew of the Seismograph Service Corporation.

This corporation, a commercial seismograph prospecting company, with its offices and manufacturing laboratories in Tulsa, has representatives in Trinidad, in Poland, in South America, as well as all over this country. The seismograph equipment used by Rear Admiral Richard E. Byrd on a recent polar expedition was manufactured by the "S.S.C." The concern was organized by William G. Green, '24ex, and his brother, Jack Green, '33ex, both of whom specialized in the study of engineering physics at the University. A younger brother, Ted Green, '40eng, has joined the firm as junior computer since graduating in January.

Also among those whose work in geophysics has added to the development of that phase of the petroleum industry are

Reginald Sweet, '24, '37ms, and John E. Owen, '26, '28ms. Both began in seismograph prospecting with the Marland Oil Company. They later joined the Geophysical Research Corporation, the company founded by Dr. Karcher and Mr. DeGolyer. Mr. Owen specialized in laboratory work and has been made next in charge in the Tulsa laboratory. Mr. Sweet for a while remained in field work, but later, with his brother, George Elliott Sweet, '27, '29ms, formed the American Seismograph Company.

John A. Gillin, '33ms, and William B. Hogg, '30ms, together began the geophysics department of the Champlin Oil Company, Enid. They designed and built all of the equipment and operated it for more than a year before joining the Western Geophysical Company. Mr. Gillin has since become executive vice president of the National Geophysical Company of Dallas.

After specialization within the field of geophysics, Elton V. McCollum, '26ms, has become chief interpreter of gravity meter data for the Mott-Smith Corporation, Houston, the first gravity meter prospecting company in the United States. Until last spring he had been with the Continental Oil Company and had become skilled in torsion balance prospecting, magnetometer prospecting, refraction seismograph and reflection seismograph prospecting, as well as gravity meter work.

There are many others who deserve more attention than limited space can accord them. Dr. George C. McGhee, '33, a former Rhodes scholar with a doctor of philosophy degree in geophysics at Oxford, has become the third partner of the DeGolyer, McNaughton and McGhee firm in Dallas. The organization has thus been able to extend its consulting business to include more specialized petroleum geology and geophysics.

Geothe M. Groenendyke, '32eng, a physicist, has been forced to return to America from Germany since the beginning of the recent war. He was engaged in geophysical work in Germany for the Magnolia Petroleum Company.

Floyd Perkinson, '33eng, '34ms, is in Venezuela, South America, with the Consolidated Oil Company. He is using principally the torsion balance and magnetometer methods of geophysical prospecting.

C. G. McBurney, '31eng, who formerly was with the Western Geophysical Company, has since last spring been a vice president of the National Geophysical Company in Dallas.

The combination of geology *per se* and geophysics had carried the exploration for oil to a comparatively advanced stage by the middle of the twenties, at which time more attention began to be given to production and refining of the extracted crude. It was in 1924 when the facilities of the University of Oklahoma were extended to include training in these phases

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of the industry, the School of Petroleum Engineering being established under the direction of H. C. George. O.U. thus became the fourth university in the country to offer such training. Dr. V. E. Monnett, then director of the School of Geology, and Frank Buttram, chairman of the Board of Regents, were largely responsible for the addition.

The standing which the University had already gained in petroleum development was greatly enhanced by the rapid progress of the new school. Students began to be attracted from all over this country and from other oil producing areas of the world. After receiving degrees, they again scattered throughout the United States, to far off Sumatra, Java, the Isle of Bahrein in the Persian Gulf, Argentina, and to the nearer countries Canada and Mexico.

Until 1925, however, most of the production men of the industry were not college men. This was especially true of the newer petroleum regions of mid-western United States, since most of them had learned the technique in the oil fields of the East and had migrated West. With the advent of college-trained men from Oklahoma and from other schools, some notable contributions were made, including, in addition to those already mentioned, perfection of equipment whereby it became possible to drill to 15,000 feet instead of the former limit of 3,000; conservation of gas; and increased efficiency in recovery of oil from sands through gas-lift.

The entire petroleum industry today stands a monument to engineering progress. That progress is continuous, aided in no small measure in all its phases by graduates of the University of Oklahoma. The best thing to do, of course, would be to visit each oil field, refinery, pipeline system, home office, research laboratory, manufacturing plant and sales organization to see how these alumni are doing their part to locate, produce or process crude petroleum. Since that is impossible, it is interesting to observe some of the graduates considered outstanding in the various phases of the industry by officials of the College of Engineering.

Before he can be of real service to the industry, a man must be trained. That requires men with a store of knowledge and experience in their fields. Among the graduates of the University engaged in the teaching profession are Sylvan Cromer, '30eng, '37ms, professor of petroleum engineering, Louisiana State University; Dr. Richard L. Huntington, '17, director of the School of Chemical Engineering, University of Oklahoma; Jack I. Laudermilk, '34, '38eng, former production engineer for Gulf Oil Corporation, now instructor in petroleum engineering, University of Texas; G. L. Yates, '34eng, '35ms, professor of oil and gas engineering at the University of Pittsburgh; and E. L. DeGolyer, already mentioned as distinguished lec-

turer in the department of geology at the University of Texas.

Several United States Government agencies have made valuable contributions to the progress of the industry. Their personnel, composed of research engineers, testing engineers and others, includes a number of Sooners, among whom are Ludwig Schmidt, '21, '24eng, petroleum engineer for the United States Bureau of Mines Laboratory, Bartlesville, Oklahoma; William K. Ritter, '28, '29eng, whose principal assignment has been in the development of fuels during the ten years he has been with the National Advisory Committee for Aeronautics, Hampton, Virginia; and B. H. Murphy, '29eng, who has been active with the United States Geological Survey for several years.

Private industrial research has commanded the attention of a large body of Oklahoma graduates. Some of them have reached high positions in research divisions or have perfected some device or mechanism to put the industry one step farther ahead in its progress. Earl Bartholomew, '21, '22eng, '23ms, is executive director of the engineering laboratories of the Ethyl Gasoline Corporation, Detroit, Michigan. He has been engaged in developing gasolines to be used in high-compression engines which, in turn, will increase efficiency and reduce fuel consumption. G. W. Rusler, '25, '26eng, is in charge of the design of special equipment in the Gulf Company's research department, Pittsburgh, Pennsylvania. J. A. Lewis, '31eng, is research engineer for Core Laboratories, Incorporated, Dallas, Texas. E. F. Glasgow, '33eng, is research engineer for motor fuels, Phillips Petroleum Company, Phillips, Texas.

W. D. Owsley, '32eng, who developed and supervised the manufacture of a heavy-duty pump to be used in cementing deep oil wells, holds a responsible position with the Halliburton Oil Well Cementing Company at Duncan, Oklahoma. I. F. Bingham, '34eng, realized the necessity of perfecting a slow-setting cement which could be used in oil wells where high temperatures are encountered. His research brought forth such a product, now manufactured by the Universal Atlas Cement Company, Waco, Texas, and sold under the trade name of "Uniflow."

George H. Weber, '34eng, is serving the petroleum industry by disseminating technical information. He is district editor of *The Oil and Gas Journal*, Shreveport, Louisiana. Other O.U. engineers, while not members of any editorial staff, have written articles published in scientific, technical and trade journals. One such article by Richard Ducker, '38eng, '39ms, and Dr. R. L. Huntington, '17, appeared in a January issue of *The Oil and Gas Journal*.

In the petroleum industry, as in any other, there are a number of professional and trade associations, which have been organized to advance the interests of the group. As has already been stated, Mr.

Buttram is president of the Independent Petroleum Association of America. It is recognized for its effective work on behalf of the independent producer. Another trade organization is the Mid-Continent Oil and Gas Association, of which Robert S. Kerr, '16ex, Oklahoma City, is first vice president. Its general secretary is also a Sooner alumnus, C. B. Mapes, '22eng, Tulsa. A petroleum engineering graduate, R. H. Maples, '31eng, is staff engineer at Dallas for still another association, the American Petroleum Institute.

Carefully prepared papers or addresses of O.U. alumni make up important parts of the programs of such organizations at their small meetings or large conventions. For example, the petroleum division meeting of the American Institute of Mining and Metallurgical Engineers was held at Galveston, Texas, last fall, and of the twenty-two papers presented, five were those of Oklahoma graduates.

Government regulatory bodies, with duties pertaining to the production of oil, have employed graduates from the University of Oklahoma. Felix A. Mendoza, '37eng, holds an important position with the Ministry of Economy at Bogota, Columbia, in South America. J. A. Delgado, '33eng, is an inspector of hydrocarbons in the Maracaibo lake region in Venezuela. Dick Wegener, '39eng, is with the Michigan State Conservation Department, Grand Rapids, Michigan. B. P. Stockwell, '18eng, formerly oil and gas engineer with the Oklahoma corporation commission, now holds a similar position with the corporation commission of West Virginia. W. J. Armstrong, '14, '16law, is conservation officer for the Oklahoma Corporation Commission.

The maze of machinery and materials necessary in drilling and producing oil, in building a gasoline plant or pipeline system and in constructing huge refineries, is, by and large, the result of the work of engineers. Many are the O.U. alumni practicing their profession with the manufacturers who supply this equipment. A few of them are Curtis Mayes, '36eng, developmental engineer for the National Supply Company, Toledo, Ohio; A. C. Frampton, '35eng, equipment engineer for the Frick-Reid Supply Company, Tulsa; R. R. Bloss, '12ex, vice president, International Derrick and Equipment Company, Beaumont, Texas; H. J. Evans, '33eng, '34ms, application engineer, Pittsburgh Equitable Meter Company, Pittsburgh, Pennsylvania; M. E. Creech, '29eng, '30ms, design engineer, Black-Sivalls and Bryson, Oklahoma City; D. E. Fields, '25eng, vice president of the Tulsa Boiler and Machinery Company, Tulsa; J. H. Adkison, '30eng, Dowell Incorporated, a Tulsa oil well chemical company; and C. D. McWade, '34eng, Continental Supply Company, Dallas, Texas.

After the machinery has been designed and manufactured, technical facts concerning the specifications of materials and the operating characteristics of the machinery

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must be passed on to the engineers employed by the producing companies. This function is performed by a large corps of sales engineers in the service of the various manufacturing concerns. These sales engineers are also called on to supervise field tests of newly developed equipment. Some Sooner graduates in this work are R. D. Ewing, '36eng, with the Oil Well Supply Company, Vandalia, Illinois; E. L. Harder, '37eng, with the National Supply Company, Centralia, Illinois; H. W. Harms, '35eng, with the Hughes Tool Company, Eunice, New Mexico; W. H. Miner, '34eng, with the Lufkin Iron and Foundry Company, Odessa, Texas; and H. B. Wilson, '34eng, with the Reed Roller Bit Company, Clay City, Illinois.

James D. Collett, Jr., '32eng, of Houston, Texas, and Harry D. Easton, '33eng, Shreveport, Louisiana, are two of the University alumni who are engaged in assisting independent producers through private consulting practice. Engineering is an exact science and as wells are being drilled to greater depths, there is demand for the elimination of guess work and increasing need for men with special training in drilling practices.

The drilling contractor undertakes the job of "sinking" the wells, for which he requires the service of innumerable assistants from drilling supervisors to "rough-necks." Among the University graduates in the contracting business are Lloyd Noble, '21ex, Ardmore, president, Noble Drilling Company; G. P. Livermore, '31eng, president, Livermore Drilling Company, Odessa, Texas; and R. D. Robey, '30eng, president, Robey Drilling Company, Tulsa.

After the well is drilled in, the production engineer takes over the job of producing the oil in an economical manner. The majority of the graduates of the School of Petroleum Engineering are engaged in production. A cross-section of them might reveal such names as these: George T. Noble, '39eng, with the Oklahoma Oil Corporation doing repressuring work and water-flooding in some of the older oil fields near Nowata, Oklahoma; J. A. McCutchin, '28geol, '31eng, '32ms, chief petroleum engineer of the British American Oil Producing Company, Tulsa; C. W. Peery, '33eng, district engineer of the Venezuelan Gulf Oil Company, Ciudad Bolivar, Venezuela; C. E. Reistle, Jr., '22eng, recently made chief engineer of Humble Oil and Refining Company at Houston, Texas; M. J. Cueto, '34eng, petroleum engineer, Yacimientos Petroliferos Fascales, Republica de Argentina, Buenos Aires; L. H. Mack, '36eng, petroleum engineer, Bell Oil and Gas Company, Tulsa; Arthur Maddox, '30eng, International Petroleum Company, Negritos, Talara, Peru; A. P. Callahan, '38ex, district engineer, Sinclair Prairie Oil Company, Kenbro, Kansas; C. D. Alworth, '28eng, Romano-Americana, Teleajen Works, Ploesti, Roumania; and J. L. Gordon, '34eng, N.K. P.M., Soengei Gerong, Sumatra, Netherlands Indies.

The transportation of petroleum, another phase of this vast industry, is receiving the attention of several University engineers, among whom are F. B. Henry, '34eng, with the Great Lakes Pine Line Company, Ponca City, Oklahoma, and F. E. Warterfield, '20eng, chief engineer of the Oklahoma Pipe Line Company, Tulsa.

Refineries, which make up still another part of the industry, have personnels that include a large number of Oklahoma graduates. Some of these, both in the United States and abroad, are W. H. Creel, '24eng, chief engineer, refinery division, Phillips Petroleum Company, Bartlesville, Oklahoma; N. V. Lamb, '38eng, with the Standard Oil Company, Aruba, Netherlands West Indies; L. P. O'Neill, '29eng, refinery engineer, Lion Oil Refining Company, El Dorado, Arkansas; B. I. Scoggin, Jr., '31eng, asphalt technician, Col-Tex Refining Company, Oklahoma City; Foad Ashraf, '34ms, Anglo-Iranian Oil Company, Abadan, Iran, Persia; V. W. Garton, '30eng, '34ms, refinery engineer, Gulf Refining Company, Port Arthur, Texas; and L. S. Emanuel, '30eng, fuel testing and research engineer for the Humble Oil and Refining Company, Baytown, Texas.

Another phase of the oil industry that should be considered is the important task of selecting engineers for a particular job. The qualifications of each applicant must be carefully analyzed and evaluated. This is the work of the personnel department of a concern. Some University graduates holding this type position are J. H. Porter, '27eng, who is assistant to the personnel director, Stanolind Oil and Gas Company, Tulsa; Foster Whiteside, '31eng, assistant to the personnel manager of the Carter Oil Company, also in Tulsa; and H. B. Wilson, Jr., '29eng, director of public relations, Standard Oil Company of Venezuela, Caracas, Venezuela.

The final phase of the oil industry's branches is perhaps the distribution and sale of the products, though this is a field that is likely to attract graduates of other schools than engineering.

Wesley I. Nunn, '17ex, has made an outstanding record in the merchandising of oil products and is now advertising manager for the Standard Oil Company of Indiana, Chicago, Illinois.

It is no exaggeration to say that University of Oklahoma graduates have participated in every phase of the petroleum industry, and have had a dominant role in its development from the earliest days of oil exploration in the mid-continent.

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#### Heads theater men

Orville von Gulker, '31, operator of a theater at Okeene, has been elected president of Allied of Oklahoma, a state association for independent theater owners. This is a unit of a national organization, one of the projects of which is the advancement of legislation against the compulsory block booking system of motion picture distribution.

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