

# Engineering at the university

FROM 1904 TO 1933

**B**ETWEEN the founding of the college of engineering in 1904 and the annual engineering celebration in 1933 there extends a chronicle of nearly three whole decades. Important in itself, the age of the university's second largest college is but one element in a historical fabric of a generation and a half. The story of its adaptation to the needs of succeeding years of technical and industrial change in a fast-moving twentieth century is perhaps the more satisfying record to those who view success in the light of achievement.

The college of engineering had its beginning when the school of applied science was organized under Mr Majors in 1904. In 1905, Majors was succeeded by C. M. Jansky, who taught electrical engineering and physics. During the same year, J. H. Felgar, who was later to become head of engineering at the university joined the faculty as instructor of mechanical engineering. Two years later, Professor Jansky left the university to go to the University of Wisconsin, and Professor Felgar was named director of the school of applied science. In 1908, when the school of applied science was reorganized into the college of engineering, Felgar became its first dean, a position which he still holds in 1933.

To cope with the demand for engineering instruction in the early years of its existence, the college of engineering offered work in the schools of min-

ing geology, civil, electrical and mechanical engineering. As year succeeded year, the college adapted itself to the needs of the times, adding courses, organizing new schools, and enlarging the scope of its instruction. The story of its progress is essentially dynamic—of growth in man's industrial and mechanical world of the early twentieth century.

As the state grew, and the demand for competent mechanical engineers increased, the school of mechanical engineering grew. In 1909 the school had an enrolment of 10; 1933 finds it with 143 students, and the number of its graduates now totals 108. Scarcely less important than the general training the school has offered in the years since its founding is the manner in which the courses have been organized with a view to training students for service in the industries of Oklahoma.

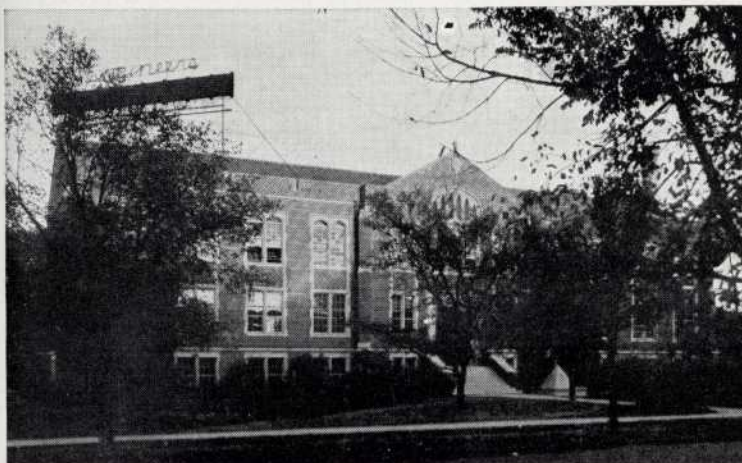
Electrical engineering, too, has attracted to it more and more students since its founding in 1908. As electricity rapidly encroached on steam in the twentieth century, the scope of electrical engineering instruction at the university broadened, coming in time to apply to most of the industries in which electricity now plays a part. In 1909, the school had an enrolment of 15; there are now 110 students taking work toward the degree of B. S. in electrical engineering. In the quarter century of its existence, the school has graduated 216 students.

The removal of the state's "frontiers" was due in no small part to the work of its builders in concrete and steel, its surveyors and road engineers, its railway builders and its municipal engineers. Oklahoma, unlike most other states, was able to train her civil engineers as she needed them. Fifteen students were enrolled in the school of civil engineering in 1909. As the years passed, the school increased in size, until in 1933 it has an enrolment of 86, and graduates numbering 161.

The fundamental engineering sciences were not limited to this list, as the fast-moving twentieth century soon came to learn. Man's horizon expanded from things seen to things not perceptible to the naked eye. And with this expansion, the chemical engineer came into his own. The school of chemical engineering was added to the college in 1912, with five students enrolled. The ever increasing demand of industry, impatient of the obstacles which the expert trained in chemistry alone could surmount, resulted in the steady progress of this school from its founding. Since 1912 the school has turned out 60 graduates, and at present there are enrolled 55 students. Many of the graduates in chemical engineering have found their places in the industries of the state; others have been called to the larger industries of the nation.

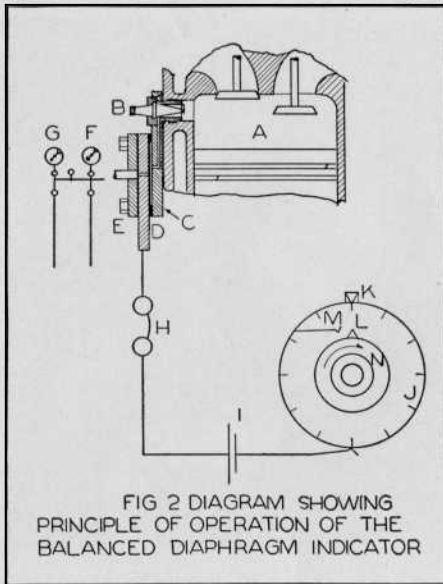
A state which decked its fertile land surface with grain and cotton found in the early years of its existence that its wealth underground was more fabulous than the gold mines of ancient Peru. The oil industry which developed in the years 1900-1915 soon found itself obliged to call the engineer into more intimate conference, and as the war years increased the demand for expertness in production, there resulted a more thorough study of the science of geology. In 1918, the school of geological engineering was organized, and since that time 65 students have received the degree of bachelor of

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The college of engineering building shown here is part of the plant of the college; across the street from it is the mechanical engineering laboratory, which was the old engineering building. The school of petroleum engineering occupies another building, while the refinery and gas measurement machinery of the school of mechanical engineering occupy a fenced-in portion of the campus.





an electrical insulator. Block D is insulated from block E by a suitable paper gasket and thus provides one side of the electrical circuit.

Air pressure from a suitable source acts through the lines (shown schematically) on the opposite side of the diaphragm. The pressure is regulated by a needle valve and the amount of the pressure is read on gage G. During the time a new charge is being taken into the cylinder, the pressure in the cylinder is less than the atmospheric pressure. Thus, to study conditions at this part of the cycle, it is necessary to have a vacuum on the opposite side of the diaphragm. The amount of the vacuum is read on gage F.

The operation is as follows: Increasing pressure in the cylinder deflects the diaphragm until it touches block D thus completing the electrical circuit and causing a click in the head phones H. The deflections occur rapidly causing a series of clicks. Air pressure is now admitted to the opposite side of the diaphragm pushing it away from block D and stopping the clicks. At the pressure at which the clicks fade out or can no longer be heard, the air pressure is equal to the pressure in the engine cylinder and can be read on gage G.

The disc N which is grounded to the engine, rotates at one-half engine speed and electrical contact is made at points L and M. Disc J can be set by pointer K at any angle through 720 degrees or two revolutions of the engine shaft. This permits a study of any part of the cycle of operations since electrical contact must be had at the diaphragm and at points L and

M at the same time in order to complete the electrical circuit and cause a click in the head phones. By taking pressure readings at increment angles through 720 degrees, data is had to construct an indicator card or for other studies.

This type of indicator has a negligible inertia lag and results represent an average of hundreds or even thousands of cycles, whereas low speed indicators are usually run for a few dozen cycles at the most and so cannot begin to represent average conditions as well.

The indicator is used in one of the experiments in internal combustion laboratory. Due to the difficulties which are inherent in all high speed indicator work, precise results are difficult to attain with students, but when the instrument is carefully adjusted, reliable data can be had.

To the knowledge of the writers, this is the only instrument of its kind in the middle west.



## THE EDUCATIONAL EXECUTIVE ORDER

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to resume its study under the direction of Governor Murray.

It is not expected that the action of the governor and the economy committee will prevent the holding of the scheduled summer session of the university

NOTE: Alumni of the university have offered their services to and are gladly working with the governor's committee, trusting that they may be of some assistance in eliminating duplication and effecting a more sound educational system for the state.

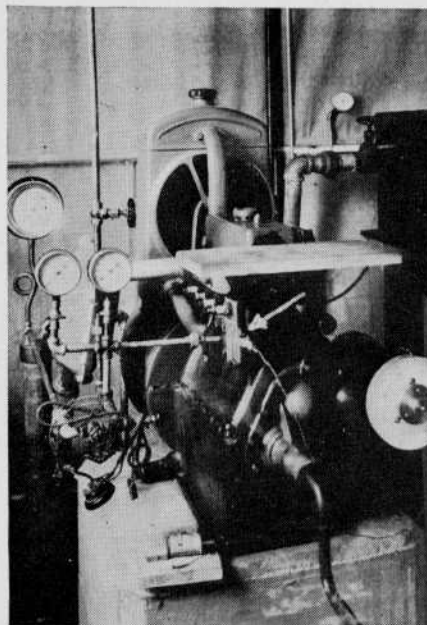


Figure 1—high speed indicator

## ENGINEERING AT THE UNIVERSITY

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science in this particular branch of engineering. The school usually has an enrolment of 35 students.

Scarcely less necessary than the specialist in particular branches of engineering is the specialist in physics who carries on research for the industrialist and the engineer. Since the World War research in industry has increased by leaps and bounds, and much of this research is of necessity highly theoretical. To make it possible to meet the demands for men with training for research, the school of engineering physics was organized in 1924 with an initial enrolment of five. In the brief space of time since its founding, the school has graduated four students, and now has an enrolment of ten. The story of the founding of this school again illustrates the process by which the college of engineering has been adapting itself to the new needs of the technical age.

In the same year that this school was founded, the school of petroleum engineering came into existence. The eight years of its existence have witnessed a growth in importance that has been little short of phenomenal. In its first year, the school had four students who planned to make its courses their major work; in 1933, there are 162 enrolled. One hundred and forty students have been graduated in petroleum engineering since 1924. The attention this school has drawn throughout the nation is one significant test of its value in an intensely specialized engineering world.

Finally, architectural engineering came into its own in 1927, after architectural courses had been offered at the university for a period of seven years. The name of the school was changed this year to the "school of architecture," and 60 students are enrolled.

Like so much of the history of Oklahoma, the history of the college of engineering is a chronicle of rapid progress. From small beginnings, it has grown to great stature, meeting as it has grown, the manifold problems of a pioneering state that has had to carve out for itself a place in industrial America. It has played no small part in the building of Oklahoma.



### Soonerland in brief

Sigma Chi fraternity has initiated into its Norman chapter Major H. J. Malony, commandant of the R. O. T. C. at the university.

The state house of representatives killed a bill proposed by Tom Z. Wright, '29bus, of Beaver, requiring entrance examinations in state schools.