

Homer L. Dodge is dean of the graduate school and director of the school of engineering physics. Also, he is head of the department of physics.



## Engineering Physics

By Dean HOMER L. DODGE

Director

**I**N *The Next Hundred Years—The Unfinished Business of Science*, an interesting volume which has just come from the press, the author, Professor Furnas of Yale University, refers to the "rather sanctimonious attitude of physicists" with respect to the practical applications of their science and mentions the numerous fields in which there is a crying need for the help of physicists.

Over ten years ago this need was recognized by the physics staff of the University of Oklahoma and, with the cooperation of Dean Felgar of the college of engineering, a curriculum in engineering physics was arranged. As far as is known, this institution was the pioneer in this field and was the first to offer a program of work leading to the degree of Bachelor of Science in Engineering Physics.

The physics department was interested in applied physics sometime before the school of engineering physics was organized. For example, Forrest K. Harris, B. A. (Physics) '21, M. S. in Physics, '23, was placed in the U. S. Bureau of Standards, Washington, D. C. where he worked on an industrial fellowship supported by the Munsel Color Co. While at the Bureau he was engaged in part-time graduate study in physics at Johns Hopkins University from which institution he received the Ph. D. degree. Doctor Harris has been advanced in rank and salary a number of times and is still at the Bureau of Standards working in the high voltage laboratory.

The following year Enoch Farrell, B. A., '20, B. S. in E. E., '21, M. A. (Physics) '24, who had been an instructor in the department of mathematics, received his master's degree. His thesis dealt with short electromagnetic waves and this proved fortunate, for, on becoming an "engineering physicist" in the Bell Telephone Laboratories, he soon found him-

self among the small group of men who developed the circuits for short-wave trans-Atlantic telephony and for ship-to-shore talk.

The first students who were definitely listed as having majors in engineering physics were B. E. Richert, B. S. in Engr. Physics, '27, and J. A. Diffendaffer, B. S. in E.E., '26, M.S.E. (Engr. Physics) '27. Just before completing his work for the master's degree, Richert gave up graduate study to take charge of magnetometer field work for the Magnolia Petroleum Co. At present he is doing similar work for the Sun Oil Co. Diffendaffer's first position was with the Western Electric Company in Chicago. Later he went to the General Electric X-Ray Corporation, Chicago, which manufactures the "Victor" line of x-ray equipment. In both organizations, Mr. Diffendaffer has worked as a development engineer.

Among the students who have completed the regular undergraduate curriculum in engineering physics, are G. M. Groenendyke, B. A., '32, B. S. in Engr. Physics, '32, who is now in geophysical work; Roe W. Carson, B. S. in Engr. Physics, '32, who is in the geophysical department of the Continental Oil Co., and E. J. Handley, B. S. in Engr. Physics, '33, who is instrument man for a party of the Continental Oil Co., operating the recording truck of a seismograph party and in charge of the field party. The latter two men had almost completed their work for master's degrees in engineering physics when the lure of sure jobs in depression times drew them away. Another seismograph instrument truck of the Continental Oil Company is in charge of Roland E. Hughes, B. S. in E. E., '26, M. S. E. (Engr. Physics), '33. After several years of successful service at the Westinghouse Electric and Manufacturing Co., Pittsburgh, Mr. Hughes re-

turned for graduate study in the fall of 1932.

Among the students who took work approximating that in the regular engineering physics curriculum and who went into applied physics, are Elton V. McCollum, B. A., '25, M. S. in Physics, '26, who entered the research department of the former Marland Oil Company immediately after receiving the master's degree and is now assistant to the superintendent of the geophysical department of the Continental Oil Co., Ponca City; William ("Bill") Green, ex '26, who, after exciting times in Mexico as chief radio expert for the Mexican army, returned to Oklahoma and now heads his own company, the Seismograph Service Corp. of Tulsa; John A. Gillin, B. A., '31, M. S. '33, who with William B. Hogg, B. S. in Educ., '23, M. S., '30, started the geophysical department of the Champlin Oil Co., and designed and built all the instruments, and later became section chief of the Western Geophysical Co.; and the Sweet brothers, R. C., B. A., '24, and G. Elliott, B. S. in Chem., '27, M. S. (Physics) '28, who with one other, are owners and operators of the American Seismograph Co.

Many of the graduates who have been listed, became interested in applied physics too late to take the entire curriculum in engineering physics. In recent years, now that it has been found that even the depression has not stopped the demand for trained men in geophysical work, more and more students interested in physics have planned their work from the beginning in such a way as to complete the curriculum leading to the bachelor's degree in engineering physics which can then be followed by the master's degree with an additional year of work.

The wide range of opportunity that is open to engineering physicists is indicated by the fact that a recently published bulletin of the National Research Council lists 1562 industrial laboratories and states that one-seventh of them include on their payrolls employees who are classed as "physicists." In these laboratories, as well as in others, there are many other employees who are trained physicists but who appear on the payrolls as engineers of one type or another. Among the more familiar companies employing physicists are the following: Bell Telephone Laboratories, General Electric Company, Westinghouse Electric and Manufacturing Company, Aluminum Company of America, American Optical Company, Armstrong Cork Company, Brooklyn Edison Company, Carnegie Steel Company, Chevrolet Motor Company, du Point de Nemours and Company, Eastman Kodak Company, Goodyear Rubber Company, Humble Oil Company, Johns-Manville Corporation, Montgomery Ward and Company, R. C. A. Radiotron Company, Shell Petroleum Corporation, Standard Oil Company, and Western Union Telegraph Company.

In these and other organizations, physicists are assisting in solving the most varied types of problems—problems arising in the development and application of linoleum floor coverings; acoustical wall coverings; heat insulators, dyes and inks; paints, lacquers, and varnishes; steam boilers; x-ray equipment; incubators and brooders; incandescent lamps; television equipment; road surfacing materials; wire-photo equipment; canning of food products; the refining of petroleum; air conditioning; sugar refining and coffee processing; farm machinery; airplanes and airships; methods of geophysical exploration for petroleum and other minerals; photographic equipment; mechanical refrigeration; radio and telephone equipment; optical goods; toilet preparations; and last but not least, furnaces and stoves.

In addition to the extensive group of industrial laboratories, there exists another group of laboratories, not connected with educational institutions, in which physicists are employed. Many of these are maintained by various branches of the Federal Government such as the Bureau of Standards, Bureau of Mines, Patent Office, Weather Bureau, Coast and Geodetic Survey, War Department, Navy Department, Department of Agriculture, and the Inspection Service.

Among these might be classed various privately endowed institutions such as the Smithsonian Institution, the Carnegie Institution of Washington, the Bartol Research Foundation and others.

It is to prepare students for work in such organizations as have been listed above that the curriculum in engineering physics is planned.

Almost half of the students majoring in physics go into industrial work. Because of our location, because of the exceptional opportunity afforded for training in a number of courses in the field of geophysics, and especially on account of the splendid reputation already made

in geophysical work by our graduates, recent graduates have had little difficulty in securing positions with the various oil companies and geophysical organizations. For this reason the majority of those who have sought industrial positions have gone into geophysical work.

James C. Davis is head of the department of mechanics and professor of mechanics.

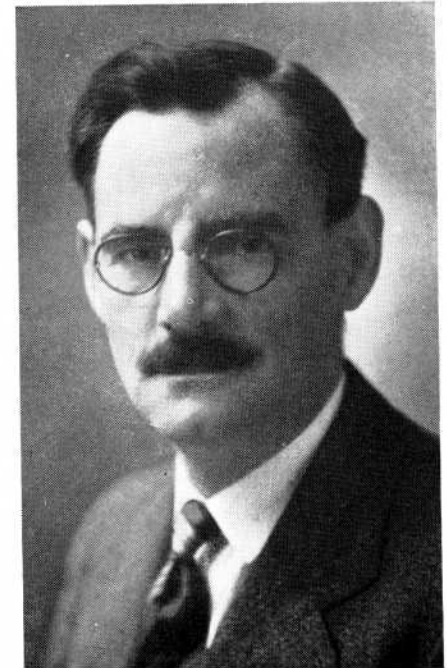
## General Engineering

By JAMES C. DAVIS  
Director

**A** FEW years ago a course in general engineering was introduced into this school. Its aims and purposes have been to supply a well balanced course in the field of engineering without over specialization in any specific branch of the profession.

The requirements for the freshman year are the same as those for mechanical, electrical, civil, chemical, and geological engineering students. The sophomore, junior, and senior engineering schedules embody the same studies in mathematics, physics, chemistry, English, and mechanics. The general engineering course requires additional courses in chemistry—general metallurgy, in mechanics—materials of engineering, in mathematics—theory of equations, in English—American literature, in American government or history, and in public speaking. Basic courses are also required in economics, accounting, and engineering contracts.

In order to bind the work thoroughly to professional engineering five hours of fundamental subject matter are required from electrical engineering, seven hours from civil engineering, seven hours from mechanical engineering. Fifteen hours



are also available for technical elective subjects. These subjects may be chosen from any or all of the professional courses of the various schools. Eight hours are also available for the pursuance of non-technical subjects such as English, modern languages, and history.

This course in general engineering seems to be supplying a real need. Some are taking it because they wish the more general training; others are taking it with a view to entering the design or research field; still others with a view to entering sales engineering.

Those who have completed this course have experienced no difficulty in securing positions and all seem to have been able to compete on equal terms with those who have taken a more specialized training.

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### Martin Is League Speaker

William Martin, '32law, Mayes county attorney, was a speaker before the University League of Young Democrats recently. Martin was a candidate for the state presidency of the League of Young Democrats.