

# School of Engineering Physics

By DEAN HOMER L. DODGE, Director

**T**HE school of engineering physics was organized in 1924 to meet the needs of students who are interested in preparing for positions in which a knowledge of the fundamentals of engineering and of advanced physics is desirable. An inspection of the curricula of any engineering college will show that a knowledge of elementary physics is regarded as essential in all fields of engineering but it is not generally understood that physicists are not content with having laid a substantial scientific basis for the various branches of engineering, but are making new discoveries, day by day, which almost invariably are applied later to improve the physical comfort and promote the happiness of mankind.

Up to a few years ago there was no well organized way by which the discoveries of physics were made available in useful form. There were physicists interested in "applications" and engineers watching for the latest developments in physical science, but for the most part the work of the two had little direct connection after the completion of the introductory courses in college.

During the last fifteen years the situation has changed and what may be properly called "engineering physicists" have found their place in industrial work. In 1930, more than two hundred sixty industrial laboratories in the United States included on their payrolls employees classed as physicists. In their laboratories, as well as in others, are many employees who are trained physicists but who appear on the payrolls as engineers of one type or another. To the extent that industry has realized that physical science can contribute to its progress the demand for physicists has increased.

The curriculum in engineering physics is designed for the student who wishes to prepare himself for basic research and development work in industrial laboratories such as those of the Bell Laboratories, American Telephone and Telegraph company, General Electric company, Westinghouse Electric and Manufacturing company, Eastman Kodak company, and Goodrich Rubber company; and in scientific laboratories such as the United States Bureau of Standards, United States Weather Bureau, United States Bureau of Mines, United States Coast and Geodetic Survey, United States Geological Survey, Department of Agriculture, Carnegie Institution

of Washington, and Smithsonian Institution. In recent years the exploration for petroleum and minerals has required the services of men well trained in physics. In such work, now termed applied geophysics, are employed gravitational, seismic, electrical, and magnetic apparatus and methods.

The curriculum in engineering physics includes a selection of basic courses in the general field of engineering, physics, mathematics and chemistry. Courses in mechanics, strength of materials, descriptive geometry, engineering drawing, and shop work are required, while many courses in the fields of electrical engineering, mechanics, and mechanical engineering are elective. In the field of physics the courses cover the properties of matter, heat and thermodynamics, acoustics, electricity and magnetism, optics, x-rays, radio-activity, ions and electrons, electrical conduction

through gases, photoelectricity, vacuum tubes, atomic structure, and applied geophysics. One course in physical chemistry and mathematics through calculus are required. For those who wish to go into geophysical work a special curriculum is outlined. In both this and the general curriculum the provision for electives is so generous that courses in physics, mathematics and chemistry may be included to suit the student's special needs and interests.

In many instances students who show a special aptitude for physics and mathematics continue work for the master's degree or the doctor's degree and become eligible for advanced research positions in industrial and scientific laboratories as well as positions as teachers in engineering schools, colleges, and universities.

All of the members of the staff of the physics department teach courses which are included in the curriculum in engineering physics. Dr. William Schriever teaches the course in applied geophysics and other related courses. Mr. H. C. Roys is concerned, principally, with electrical measurements and modern physics. Dr. Duane Roller also teaches an advanced course in modern physics, while Dr. J. Rud Nielsen and Dr. G. A. Van Lear are more concerned with theoretical physics. Dr. F. W. Crawford comes in contact with all students through the elementary laboratory through which pass all students in physics.



Dr. Homer L. Dodge is usually thought of as the dean of the graduate school but his work as director of the school of engineering physics is one that consumes much of his interest and time. The rising importance of physics during recent years has found Doctor Dodge sending more and more graduates well prepared into the field.