ENGINEERING ELECTRICITY

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Engineering Electricity by Ralph G. Hudson

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RALPH G. HUDSON

ENGINEERING ELECTRICITY

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WORKS OF

PROFESSOR RALPH G. HUDSON

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ENGINEERING ELECTRICITY

BY

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PREFACE

This book was written primarily for technical students not specializing in electrical engineering but may also serve as an introductory text for electrical engineering students. It contains an outline of the lectures given by the author to junior and senior students at the Massachusetts Institute of Technology, specializing in civil, mechanical, mining, chemical and general engineering, physics, naval architecture and engineering administration respectively. The subject is discussed in twenty lectures extending in some courses over ten weeks and in others over twenty weeks. Each lecture is followed by one or more recitations and the assignment of relevant problems. An independent laboratory course covering the same ground follows the lecture course and in some cases is given simultaneously. In some instances the course is succeeded by other courses in which various industrial applications of electricity are discussed in greater detail.

Although the keynote of such instruction is brevity, it is believed, nevertheless, that it should be rigorous in view of the maturity of the students involved. An important aim of the course is to develop the reasoning power of the student rather than to encourage the accumulation of disconnected facts. The student while engaged in a course of mental training is expected to become familiar with the general principles of electrical engineering and their practical applications. Descriptive matter is included only to the extent that the student may visualize the practical devices which illustrate applications of the fundamental principles. Recourse is made to mathematical methods of development only when the direct exposition of the subject appears to be more involved.

The course is intended to cover the general principles of electricity and magnetism most frequently applied in engineering practice. The principles of electrochemistry, illumination, electrostatics and the wireless propagation of energy are not considered for obvious reasons in such a short course. No use has

been made of footnotes and appendices and the general reading matter has been reduced to a minimum so that the student may give his undiverted attention to the understanding of the basic principles. Most of the formulas are derived so that they may be more clearly understood. The recitation periods are devoted principally to questions and problems designed to interpret and expand the text. While the text may be used by others with a different educational objective the author's use of the text is described briefly so that the reader may understand the educational motive which prompted its preparation and arrangement.

The photographic reproductions of electrical apparatus appearing in Chapter XVII were supplied generously by the General Electric Company, the Westinghouse Electric and Manufacturing Company, the Crocker-Wheeler Company, the Weston Electrical Instrument Company, the Leeds and Northrup Company and the General Radio Company.

RALPH G. HUDSON.

CAMBRIDGE, MASS.
June, 1920.

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