ARITHMETIC OF ELECTRICITY

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Arithmetic of Electricity by T. O'Conor Sloane

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Arithmetic of Electricity

A PRACTICAL TREATISE ON ELECTRICAL CALCULATIONS OF ALL KINDS REDUCED TO A SERIES OF RULES, ALL OF THE SIMPLEST FORMS, AND INVOLVING ONLY ORDINARY ARITHMETIC, EACH RULE ILLUSTRATED BY ONE OR MORE PRACTICAL PROBLEMS, WITH DETAILED SOLUTION OF EACH, FOLLOWED BY AN EXTENSIVE SERIES OF TABLES.

BY

T. O'CONOR SLOANE, A.M., E.M., Ph.D.

AUTHOR OF

Standard Electrical Dictionary, Electricity Simplified, Electric Toy Making, etc.

TWENTY-FIRST EDITION

NEW YORK:
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PREFACE.

The solution of a problem by arithmetic, although in some cases more laborious than the algebraic method, gives the better comprehension of the subject. Arithmetic is analysis and bears the same relation to algebra that plane geometry does to analytical geometry. Its power is comparatively limited, but it is exceedingly instructive in its treatment of questions to which it applies.

In the following work the problems of electrical engineering and practical operations are investigated on an arithmetical basis. It is believed that such treatment gives the work actual value in the analytical sense, as it necessitates an explanation of each problem, while the adaptability of arithmetic to readers who do not care to use algebra will make this volume more widely available.

In electricity there is much debatable ground, which has been as far as possible avoided. Some points seem quite outside of the scope of this book, such as the introduction of the time-constant in battery calculations. Again the variation in constants as determined by different authorities made a selection embarrassing. It is believed that some success has been attained in overcoming or compromising difficulties such as those suggested.

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Enough tables have been introduced to fill the limits of the subject as here treated.

The full development of electrical laws involves the higher mathematics. One who would keep up with the progress of the day in theory has a severe course of study before him. In practical work it is believed that such a volume as the Arithmetic of Electricity will always have a place. We hope that it will be favorably received by our readers and that their indulgence will give it a more extended field of usefulness than it can pretend to deserve.

PREFACE TO TWENTY-FIRST EDITION.

The steady progress of electrical science in conjunction with a continued demand for this work have made advisable a revision and extension of this book.

The author feels that in the matter which has been added much more could have been said on the subjects treated of, but, since a full exposition of each theme would alone fill a volume, it is hoped that the practical value of the rules, etc., will atone for the brevity of the text.

In the preparation of this edition the author would express his indebtedness to A. A. Atkinson's excellent work on Electrical and Magnetic Calculations and also to the instruction papers of the Electrical Engineering Course of the International Correspondence School of Scranton, Pa. He would also express his thanks to Henry V. A. Parsell, for his valued advice and assistance in the preparation of the manuscript.

THE AUTHOR.

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