

**THE ELEMENTARY  
PRINCIPLES OF  
ELECTRIC LIGHTING**

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The Elementary Principles of Electric Lighting by Alan A. Campbell Swinton

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**ALAN A. CAMPBELL SWINTON**

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ELEMENTARY PRINCIPLES.  
OF  
ELECTRIC LIGHTING.

By A. A. CAMPBELL SWINTON.

OPINIONS OF THE PRESS ON THE FIRST EDITION.

"This little book may be heartily recommended to all who wish to understand the principles of electric lighting without entering into the mass of technical and mathematical detail which usually encumbers works on the subject of which it treats."—*Knowledge*.

"A model of compression and lucidity."—*Scientist*.

"Anyone who desires a short and thoroughly clear exposition of the elementary principles of electric lighting cannot do better than read this little work."—*Broadford Observer*.

"As an introductory primer, Mr. Swinton's little book will be useful."—*Building News*.

"Is a useful little work for those who desire to obtain an elementary knowledge of the primary principles of electric lighting."—*English Mechanic*.

"Fulfills a useful purpose."—*Machinery Market*.

"As a stepping-stone to treatises of a more advanced nature, this little work will be found most efficient."—*Bookseller*.

"In its pages the elements of electric lighting are dealt with in the simplest possible language, so as to be easily understood by workmen and by unscientific people."—*Nottingham Daily Guardian*.

"It is well written, and the explanations and illustrations are such as to be comprehended by almost everyone."—*Iron and Coal Trades Review*.

"Contains a full, clear, accurate account of the principles and of the chief details of the arc and incandescent lights. A briefer and better sketch in plain language has not yet been published of the means by which so many public and private buildings are now lighted."—*Birmingham Daily Post*.

"A singularly clear and lucid explanation of the elementary part of the subject. It is intended for the use of workmen and other persons who take up the subject for the first time, and has the great recommendation that it makes the subject clear enough for anyone to understand it."—*Colliery Guardian*.

LONDON: CROSBY LOCKWOOD & SON.

THE  
ELEMENTARY PRINCIPLES  
OF  
ELECTRIC LIGHTING

BY  
ALAN A. CAMPBELL SWINTON  
ASSOCIATE OF THE INSTITUTION OF ELECTRICAL ENGINEERS

With Sixteen Illustrations.

SECOND EDITION, ENLARGED AND REVISED.

*Library of the  
Phys. Lab.*



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## PREFACE.

THE aim of the author has been to supply the requirements of those who are anxious to obtain an elementary knowledge of the primary principles of Electric Lighting, but who have neither the time nor the inclination to read the subject at the length at which it is generally treated in text-books, and who moreover have not the mathematical aptitude and acquaintance with mechanical terms and methods that are indispensable to anyone who desires to grasp the complete theory and full details of this important though comparatively new branch of science.

As a stepping-stone to treatises of a more advanced and elaborate nature, this little work may likewise be found useful by those who purpose making a more extended study of the subject.

In the following pages the mere elements of Electric Lighting are dealt with in the simplest possible language, and the author trusts that what is given will be of service to workmen and unscientific persons, who in the first instance,

at any rate, require everything put before them in as brief and intelligible a manner as is consistent with the peculiarities of electrical phenomena and the difficulties necessarily pertaining to the principles involved.

NEWCASTLE-ON-TYNE,  
*February, 1886.*

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#### PREFACE TO SECOND EDITION.

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IN preparing a second edition of this little book it has been considered advisable to amplify considerably several of the descriptions, and also to afford the reader some idea of the principles and construction of Transformers, which are now coming extensively into use in connection with electrical distribution from central stations.

2, PRINCES MANSIONS,  
VICTORIA STREET, S.W.  
*December, 1888.*

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