

**PUTNAM'S ELEMENTARY  
SCIENCE SERIES.  
ELEMENTS OF ACOUSTICS,  
LIGHT, AND HEAT**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649570898

Putnam's Elementary Science Series. Elements of Acoustics, Light, and Heat by William Lees

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**WILLIAM LEES**

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Putnam's Elementary Science Series.

ELEMENTS  
OF  
ACOUSTICS, LIGHT, AND HEAT.

BY  
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With Illustrations.



NEW YORK:  
G. P. PUTNAM'S SONS,  
FOURTH AVENUE AND TWENTY-THIRD STREET.

1873.

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## P R E F A C E.

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THE following treatise has been prepared in strict accordance with the syllabus of the Government Department of Science and Art, as indicated by their scheme of instruction for the elementary stage examination, in the particular branches of Acoustics, Light, and Heat.

Having taught these subjects for several years to large classes, and that with encouraging success, as tested by the annual examinations of my students, I feel the less hesitation in complying with the request made to me by the Publishers, of giving an outline of the course which I have followed, in the hope that it may be found useful to others engaging in the discharge of similar duties.

While instruction in the branches referred to, or indeed in physical science generally, is essentially dependent for its thorough efficiency on extensive and minute experimental illustration, the possession on the part of the teacher of the requisite instruments and apparatus, is of course, a *sine quâ non*.

Special references, accordingly, are made to these, and such explanations given of them by means of diagrams

and otherwise, as will enable the student to understand their construction and use, and thus aid him towards acquainting himself with the leading principles of these important departments of science.

At the end of each subject are added a few general questions, similar in some respects to those that have been given at the May examinations.

In an Appendix I have made a selection of questions from some of the former Government papers, and have given also their solutions. These, it is to be hoped, will be of use to the student in the way of showing him how to set down his knowledge of the subjects for the examiner.

Though many excellent books on Physics have been written of late years, both in our own country and on the continent, I must own myself more especially indebted to the works of Tyndall, Ganot, and Deschanel. For a more extensive and complete knowledge of the subjects in question, the student would do well to refer to these works.

W. L.

LINKVALE LODGE, VIEWFORTH,  
EDINBURGH, *December, 1872.*

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