

**THE SCIENCES: A READING BOOK FOR  
CHILDREN: ASTRONOMY, PHYSICS--  
HEAT, LIGHT, SOUND, ELECTRICITY,  
MAGNETISM--CHEMISTRY,  
PHYSIOGRAPHY, METEOROLOGY**

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The sciences: a reading book for children: astronomy, physics--heat, light, sound, electricity, magnetism--chemistry, physiography, meteorology by Edward S. Holden

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ASTRONOMY, PHYSICS—HEAT, LIGHT, SOUND,  
ELECTRICITY, MAGNETISM—CHEMISTRY,  
PHYSIOGRAPHY, METEOROLOGY

BY

EDWARD S. HOLDEN



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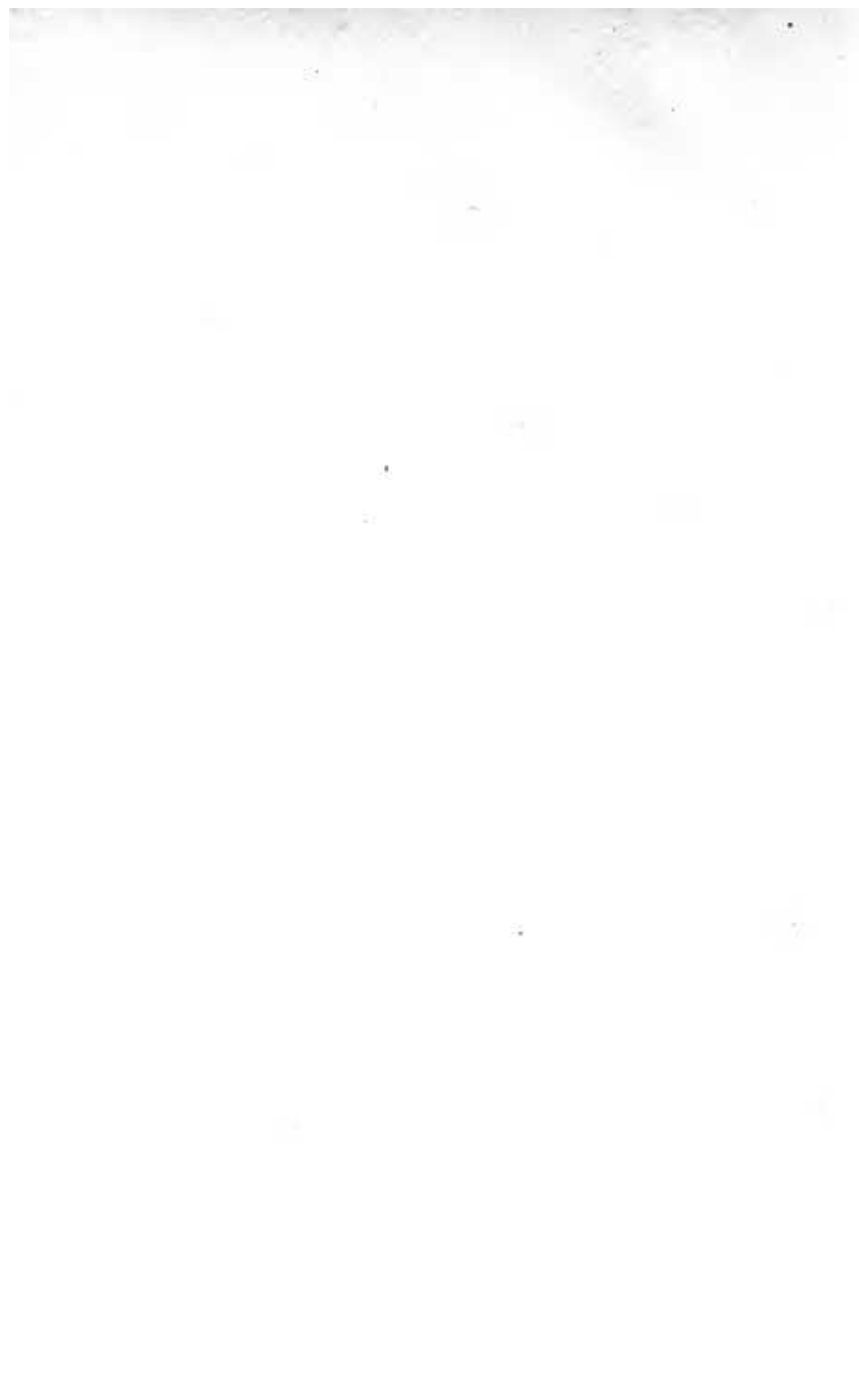
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TO  
MY YOUNG FRIEND  
Mildred Greble

190795





## PREFACE

THE object of the present volume is to present chapters to be read in school or at home that shall materially widen the outlook of American school children in the domain of science, and of the applications of science to the arts and to daily life. It is in no sense a text-book, although the fundamental principles underlying the sciences treated are here laid down. Its main object is to help the child to understand the material world about him.

All natural phenomena are orderly; they are governed by law; they are not magical. They are comprehended by some one; why not by the child himself? It is not possible to explain every detail of a locomotive to a young pupil, but it is perfectly practicable to explain its principles so that this machine, like others, becomes a mere special case of certain well-understood general laws.

The general plan of the book is to waken the imagination; to convey useful knowledge; to open the doors towards wisdom. Its special aim is to stimulate observation and to excite a living and lasting interest in the world that lies about us. The sciences of astronomy, physics, chemistry, meteorology, and physiography are treated as fully and as deeply as the conditions permit; and the lessons that they teach are enforced by examples taken from familiar and important things. In astronomy, for example, emphasis is laid upon phenomena that the child himself can observe, and he is instructed how to go about it. The rising and setting of the stars, the phases of the moon, the uses of the telescope, are explained in simple words. The mystery of these and other matters is not magical,

as the child at first supposes. It is to deeper mysteries that his attention is here directed. Mere phenomena are treated as special cases of very general laws. The same process is followed in the exposition of the other sciences.

Familiar phenomena, like those of steam, of shadows, of reflected light, of musical instruments, of echoes, etc., are referred to their fundamental causes. Whenever it is desirable, simple experiments are described and fully illustrated,<sup>1</sup> and all such experiments can very well be repeated in the schoolroom.

Finally, the book has been thrown into the form of a conversation between children. It is hoped that this has been accomplished without the pedantry of *Sandford and Merton* (although it must be frankly confessed that the principal interlocutor has his knowledge very well in hand for an undergraduate in vacation time) or the sentimentality of other more modern books which need not be named here. The volume is the result of a sincere belief that much can be done to aid young children to comprehend the material world in which they live and of a desire to have a part in a work so very well worth doing.

EDWARD S. HOLDEN.

THE CENTURY CLUB,  
NEW YORK CITY, January, 1903.

<sup>1</sup> Illustrations have been reproduced from many well-known books, especially from the reading books of Finch and Stickney, Frye's geographies, Davis' physical geography and meteorology, Gage's text-books of physics, Young's text-books of astronomy, etc. To the authors of these works the writer begs to express his sincere thanks.

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