

**FIRST BOOK IN NATURAL  
PHILOSOPHY FOR THE  
SCHOOLS AND  
ACADEMIES**

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First Book in Natural Philosophy for the Schools and Academies by J. A. Gillet & W. J. Rolfe

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**J. A. GILLET & W. J. ROLFE**

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PHILOSOPHY FOR THE  
SCHOOLS  
AND ACADEMIES**



FIRST BOOK  
IN  
NATURAL PHILOSOPHY

FOR THE USE OF

**Schools and Academies.**

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## PREFACE.

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THE authors have endeavored to present in this little book a brief, simple, and accurate statement of those facts and principles of natural philosophy with which every one ought to be familiar, and which may at the same time serve as a foundation for a more extended course, in case the student has time and inclination to pursue the subject further. They have thus sought to make the book really what it claims to be in name,—a first book in natural philosophy.

Great pains have been taken in the selection and arrangement of topics, and in giving due prominence to each. In order to make the book sufficiently brief, and at the same time to do justice to the recent remarkable advancement in our knowledge of the forces of Nature and in their practical application, it has been necessary to omit certain illustrative matter which some teachers will be likely to miss. We believe, however, that the illustrations and experiments given are all that are needed to make the text clear. Others can of course be added by the teacher, according to the condition of his pupils and the supply of apparatus at his disposal;

and they will come from his lips with a force which no printed statement can give them. Our experience has been, that one of the best methods of reviewing a subject in natural philosophy is to illustrate it by some experiment not given in the book, and then to question the pupils upon it. A few familiar examples of such experiments are given in an appendix.

The subject has been carefully divided into topics, and these subdivided into chapters and sections. Each chapter closes with questions, calculated to test the pupil's knowledge of its contents.

The greatest care has been taken with the cuts designed to illustrate the text; and it is believed that they will compare favorably with those in any similar text-book yet published. Many of the cuts are from the French edition of Ganot's "Elementary Physics."



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# FIRST BOOK IN NATURAL PHILOSOPHY.

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## I.

### MATTER, FORCE, AND MOTION.

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#### CHAPTER I.

##### MATTER.

307:1  
1. **The Senses.**—We have five *senses* by which we perceive objects about us; namely, *sight, hearing, touch, taste, and smell*. It is by means of these senses that we obtain all our knowledge of the world around us.

2. **Matter.**—Every thing that occupies space, and is capable of being perceived by our senses, is composed of *matter*.

—*Matter* may be defined as that which occupies space, and is capable of being perceived by the senses.

—A *body* is a distinct portion of matter. This term is usually applied only to those portions of matter which have a sensible size.

—The different kinds of matter are called *substances*.