

**LABORATORY MANUAL  
OF FIRST YEAR SCIENCE  
FOR HIGH SCHOOLS**

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Laboratory Manual of First Year Science for High Schools by Joseph L. Thalman & Ada L. Weckel

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**JOSEPH L. THALMAN & ADA L. WECKEL**

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OF FIRST YEAR SCIENCE FOR  
HIGH SCHOOLS

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**PREFACE.**

Because of the present general demand for a course in first year science in the high school, this manual has been prepared. As stated in the introduction by Principal J. C. Hanna, the father of the elementary science idea as embodied in this manual, "these exercises are the result of twelve years of experiment and search for interesting and fundamental scientific matter adapted to the age and preparation of pupils entering the high school." In their present form, they have been used in this school the past two years.

A child's first knowledge of science does not deal with the differentiated sciences as such. He comes in touch with science in all its phases. This course aims to acquaint him with some of the elementary truths of the physical, as well as the biological, sciences with a unified body of knowledge, by a logically arranged series of experiments.

All experiments, unless marked "Demonstration," are performed by the student, who thus gains his knowledge first-hand from the experiment.

The history of the course has been given by Mr. Hanna in the introduction. The authors wish to emphasize the obligations they are under to those teachers who have in any way assisted in this work, especially to Messrs. Robison and Large, for the great part they have had in carrying this experiment through its various stages, and to

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express their appreciation in having the opportunity of collecting together the "loose ends" into a unified whole.

All available material has been used in the preparation of these exercises. The figures have been prepared by students and were drawn from the apparatus.

We hereby extend to Mr. J. C. Hanna our sincere thanks for writing the introduction to this course, and for his sympathetic interest and faith, which have made this manual possible.

OAK PARK, ILL.,  
1911.

J. L. T.  
A. L. W.



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