A LABORATORY MANUAL OF PHYSICS FOR USE IN HIGH SCHOOLS

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A Laboratory Manual of Physics for Use in High Schools by Henry Crew & Robert R. Tatnall

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A LABORATORY MANUAL OF PHYSICS

The Co.

A LABORATORY MANUAL OF PHYSICS

FOR USE IN HIGH SCHOOLS

BY

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Lamar Hood

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PREFACE

Our special objects in the preparation of this volume may be very simply stated. They are as follows: —

1. We have aimed not to describe classical experiments, but to illustrate the first principles of physics. The simplicity with which this can be done is to us a matter of constant surprise and delight.

2. Our purpose has been to supplement some of the excellent text-books already in use, most of which, however, were prepared with especial reference to the class-room rather than to the laboratory.

It will be observed that, almost without exception, the principles which we have sought to illustrate are discussed in each of the seven volumes to which we make reference.

3. One of our main objects has been to reduce to a minimum the expenditure of teaching energy. With this in mind we have placed a list of apparatus at the beginning of each exercise enabling the instructor to prepare quickly and confidently the entire outfit necessary for the experiment. To this end also we have made a special effort to state the "problem," not by merely giving the name of some instrument, but by stating the controlling principle and the point of view from which the entire experiment should be worked out.

Economy of teaching energy has also led us to suggest only apparatus which is simple, inexpensive, easily obtained, and easily duplicated. At the same time we have borne in mind the fact that apparatus is not necessarily simple because it is home-made. Indeed, apparatus can be considered cheap only when it combines economy of first cost with economy of thought on the part of the student and economy of energy on the part of the instructor.

4. We have endeavored to present a series of laboratory directions which in thought and method are so welded together as to form a continuous and homogeneous whole; and yet to make each exercise so self-contained that the scholarly teacher may select, say, thirty or sixty out of a list of more than ninety exercises, without calling upon the student to make any cross-references and without any serious break in the continuity of the subject.

5. We have tried to avoid the excessive use of blanks for the student to fill out with mechanically obtained data, and yet to introduce, *in the earlier pages*, a number of blanks sufficient to serve as a pattern for clear and concise records.

We gladly acknowledge our indebtedness to Professor A. B. Porter of the Armour Institute for a large number of scholarly and practicable suggestions, some of which are embodied in almost every exercise.

We take pleasure in thanking also Professor B. W. Snow, of the University of Wisconsin, Mr. W. F. Minium, graduate student at the University of California, Mr. F. J. Truby, of the Northwestern Academy, and Miss Caroline L. Crew, of Wilmington, Delaware, for able and helpful criticisms of the manuscript.

Any suggestions as to how these experiments may be more simply performed or more clearly and correctly described, will be very gratefully received.

HENRY CREW.
ROBERT R. TATNALL.

EVANSTON, ILLINOIS,
November 19, 1901.

TABLE OF CONTENTS

CHAPTER I. SOME PRELIMINARY EXPERIMENTS

EX.		PAGE
1.	Comparison of Lengths	1
	Estimation of Fractional Parts	2
2.	To represent Directed Quantities by Means of Straight Lines drawn on Paper	3
3.	Determination of π	5
	Variation of One Quantity with Another	6
4.	Measurement of Angles	7
5.	To make a Vernier Caliper	8
6.	Use of a Vernier Caliper	11
7.	Use of the Spherometer	12
8.	The Micrometer Caliper	15
9.	Use of Squared Paper for Plotting Points	17
	To represent graphically the Manner in which One Quantity varies with Another	18
10.	Curve Plotting	23
11.	Measurement of an Irregular Area	25
12.	A Study of Mass and Density	26
	Definition of Mass	27
	Definition of Density	28
13.	Another Determination of Density: Case of Solids	28
14.	Another Determination of Density: Case of Liquids	29
15.	The Slide Rule	31
16.	To Etch a Scale of Millimetres on Glass	34
	Note on Difficulty of Experiments involving Motion	36

CHAPTER II. GENERAL PROPERTIES OF MATTER

SEC. 1. ILLUSTRATIONS OF INERTIA

	The Inertia of Matter	37
	The Inertia Balance	37
17.	The Inertia Balance	39