

**MECHANICS: AN ELEMENTARY
TEXT-BOOK, THEORETICAL AND
PRACTICAL, FOR COLLEGES
AND SCHOOLS. STATICS**

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Mechanics: An Elementary Text-Book, Theoretical and Practical, for Colleges and Schools.
Statics by R. T. Glazebrook

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R. T. GLAZEBROOK

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CAMBRIDGE NATURAL SCIENCE MANUALS

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MECHANICS

AN ELEMENTARY TEXT-BOOK

THEORETICAL AND PRACTICAL

FOR COLLEGES AND SCHOOLS.

STATICS

Richard Tetley BY

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PREFACE.

IT has now come to be generally recognized that the most satisfactory method of teaching the Natural Sciences is by experiments which can be performed by the learners themselves. In consequence many teachers have arranged for their pupils courses of practical instruction designed to illustrate the fundamental principles of the subject they teach. The portions of the following book designated EXPERIMENTS have for the most part been in use for some time as a Practical Course for Medical Students at the Cavendish Laboratory.

The rest of the book contains the explanation of the theory of those experiments, and an account of the deductions from them. This part has grown out of my lectures to the same class. It has been my object in the lectures to avoid elaborate apparatus and to make the whole as simple as possible. Most of the lecture experiments are performed with the apparatus which is afterwards used by the class, and whenever it can be done the theoretical consequences are deduced from the results of these experiments.

In order to deal with classes of considerable size it is necessary to multiply the apparatus to a large extent. The students usually work in pairs and each pair has a separate

table. On this table are placed all the apparatus for the experiments which are to be performed. Thus for a class of 20 there would be 10 tables and 10 specimens of each of the pieces of apparatus. With some of the more elaborate experiments this plan is not possible. For them the class is taken in groups of five or six, the demonstrator in charge performs the necessary operations and makes the observations, the class work out the results for themselves.

It is with the hope of extending some such system as this in Colleges and Schools that I have undertaken the publication of the present book and others of the Series. My own experience has shewn the advantages of such a plan, and I know that that experience is shared by other teachers. The practical work interests the student. The apparatus required is simple; much of it might be made with a little assistance by the pupils themselves. Any good-sized room will serve as the Laboratory. Gas should be laid on to each table, and there should be a convenient water supply accessible; no other special preparation is necessary.

The plan of the book will, I hope, be sufficiently clear; the subject-matter of the various Sections is indicated by the headings in Clarendon type; the Experiments to be performed by the pupils are shewn thus:

EXPERIMENT 1. *To verify by experiment the parallelogram of forces.*

These are numbered consecutively. Occasionally an account of additional experiments, to be performed with the same apparatus, is added in small type. Besides this the small-type articles contain some numerical examples worked out, and, in many cases, a notice of the

principal sources of error in the experiments, with indications of the method of making the necessary corrections. These latter portions may often with advantage be omitted on first reading. Articles or Chapters of a more advanced character, which may also at first be omitted, are marked with an asterisk.

I believe it to be desirable that a student should commence the study of Mechanics with Kinematics and Kinetics, and have therefore arranged the book on this plan. At the same time it will, I hope, be found that the Statics is independent of the other part of the subject, though at the cost of some repetition. It will be possible therefore for a teacher to take it before the Kinematics.

I have to thank many friends for help. Mr Wilberforce and Mr Fitzpatrick have assisted in arranging and devising many of the experiments. Mr Fitzpatrick has also read all the proofs. My pupil, Mr G. G. Schott of Trinity College, collected for me many of the Examples, while Mr Green of Sidney College has most kindly worked through all the Examples and furnished me with the answers.

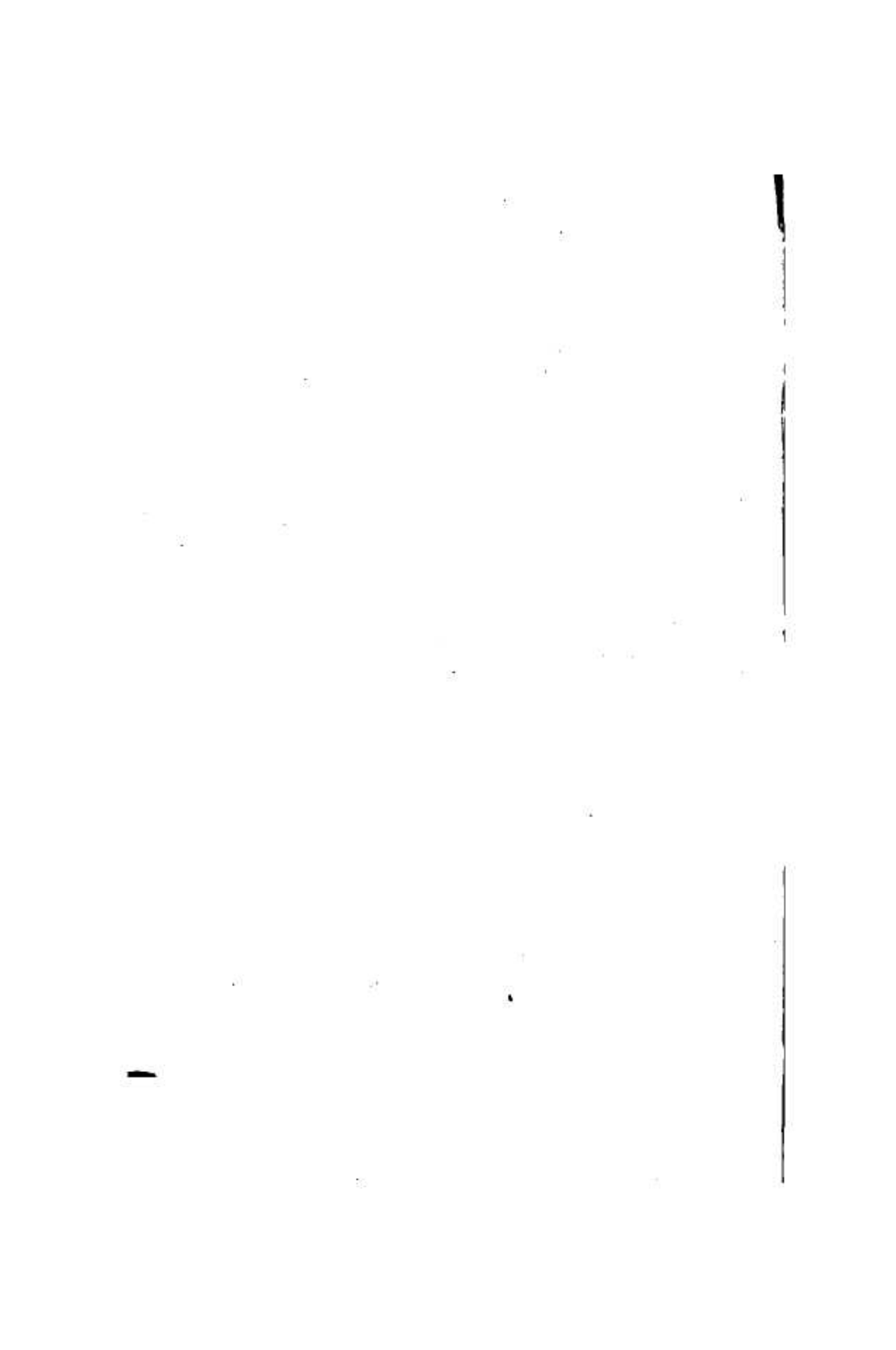
The illustrations have for the most part been drawn by Mr Hayles from the apparatus used in the class.

R. T. GLAZEBROOK.

CAVENDISH LABORATORY,
January, 1895.

THE issue of a Second Edition has given an opportunity for the correction of various misprints. In other respects the book is unchanged.

November, 1895.



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