A TREATISE ON TRIGONOMETRY

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A Treatise on Trigonometry by J. E. Oliver & L. A. Wait & G. W. Jones

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J. E. OLIVER & L. A. WAIT & G. W. JONES

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ON

TRIGONOMETRY

BY

PROFS. OLIVER, WAIT AND JONES

OF

CORNELL UNIVERSITY.

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PREFACE.

This book is one of a series of text-books to be prepared by the department of mathematics of Cornell University, in accordance with the scheme of instruction now in force here. It was outlined and written mainly by Prof. Jones; but it has been carefully read by all of us, the general plan, and all difficulties, have been discussed together, the proofs have been submitted to all, and it goes out as our joint production. It is designed as a drill-book for class use; its leading features are:

The general definition of the trigonometric functions in terms applicable to all angles, without regard to sign or magnitude.

The expression of the functions of all angles in terms of the functions of positive angles less than a right angle, by direct reference to the definitions.

The graphical representation of functions.

The general proof of the formulæ for the functions of the sum and difference of two angles, of double angles, half-angles, etc.

The differentiation of trigonometric functions, their development thereby into series, and the computation of the trigonometric canon by means of these series.

The solution of oblique triangles by means of right triangles, as well as by the general properties of triangles; and by the use of natural as well as logarithmic functions.

An exhaustive discussion of the ambiguous and impossible cases of right and oblique triangles.

A careful choice and arrangement of topics, according to their relations to practical work and to the higher mathematics.

The exact statement of principles in the form of theorems and corollaries, and their rigorous demonstration.

Frequent reference of collateral matter to the reader for demonstration.

Copious and varied exercises.

In the preparation of the book, free use has been made of the works of other authors, particularly those of Briot and Bouquet, De Morgan, Todhunter, Peirce, Wheeler, Greenleaf, Loomis, and Chauvenet; and of collections of exercises representing Senate-house examination papers.

The careful reader will doubtless find many typographical and other errors in this first edition; he will confer a great favor if he will kindly communicate them to either of the authors. Any suggestions from practical teachers, looking to the improvement of the book in either matter or form, will be welcomed and esteemed of great value.

Among other such improvements now in contemplation is the addition of a chapter on the applications of spherical trigonometry to astronomy, geodesy and navigation, and one on imaginaries, and an alphabetical index to the whole.

The starred portions of the book may be omitted without breaking the continuity of the subject; and to such teachers as do not desire to take up the whole treatise the following abridgment is recommended:

I. §§ 1–23, except the note to § 18, and Note 4 to § 19; selections from Ex. 1–7, 9, 21–23, and 25–28.

II. §§ 1–3.

III. § 2; § 3, one method, and § 1 if the *second method* is chosen; Ex. 1–19 and 26–45.

IV. §§ 1, 2, 4, 5 and 6, one method, and § 3 if the *second method* is chosen, except Thms. 8–10; Ex. 1–26.

O. W. J.

ITHACA, N.Y., *April* 8, 1881.

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