

ELEMENTARY SURVEYING

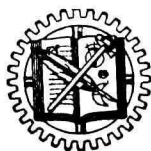
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PREFACE TO SECOND EDITION

With the publication of *Advanced Surveying*, it became desirable to make a number of changes in *Elementary Surveying* to render it a suitable companion text to meet the requirements of elective and required courses in surveying in the engineering schools. Accordingly, a number of articles have been added, or revised, and Chapter 16, *Land Surveying*, has been entirely rewritten.

Included in the new articles are those on the calculation of missing parts of a traverse, and of areas by the method of Double Meridian Distances. The latter method has become embodied in many civil service and registration examinations and should be available to students and engineers preparing for such examinations.

The subject of land surveying is yearly becoming more important, and the treatment of the subject in the surveying textbooks has been inadequate. Moreover, this treatment has been misleading for surveyors in the southern and middle-western states where the work of the U. S. Land Office was first begun. It is believed that Chapter 16 in this book supplies an improved presentation of this subject.

Brevity of treatment, consistent with completeness and clarity, so essential to effective teaching, remains a principal characteristic of this book.

The author is again indebted to the U. S. Naval Observatory, Washington, D. C., for supplying new data necessary for extending Tables I, IA, II and III.

W.H.R.

Urbana, Illinois.
May, 1943

PREFACE

Brevity is a principal characteristic of this book. The student is subjected to much confusion and distraction in the study of any text in which the more important principles are obscured in the discussion of less important details. Being designed for the student and engineer for whom the subject is of sub-ordinate importance, a better and clearer understanding of the subject will result, provided no essential material is omitted, if alternative methods and unimportant details are reduced to a minimum. For example, there seems to be no good reason why the student should be taught the adjustments of the wye level when the methods used for the dumpy, apply as well to both types; or that the somewhat cumbersome method of finding areas by the so-called "double-meridian-distance" method should be included while there is available the simpler and more widely applicable method of coordinates.

The book has been designed primarily for students whose requirements and elections in this subject include not over six semester hours. This group includes the non-civil engineering students in the larger engineering schools, and the landscape architects, architects, and liberal arts students of other colleges. It will also serve the needs of engineers in the field, whose practice includes the usual construction and site surveys of engineering projects.

The book is divided into three general divisions: Section I includes Chapters 1 to 5 which describe the use and adjustment of the instruments properly used to measure distance, direction, and elevation. Section II includes Chapters 6 to 15 which describe the procedure of conducting field surveys, together with the methods of computing and mapping necessary to such work. Section III consists of Chapter 16 which supplies that minimum information about land surveying which every engineer should know.

The subjects of errors, checks, and precision are fundamental. The general principles are discussed in Chapter I, and the applications of these principles to the various phases of surveying measurements, receive constant attention throughout the book.

Chapter 15 gives a simple procedure for determining true

azimuth by a thoroughly dependable method which, it is believed, reduces considerably, as compared with other texts, the time necessary to present this subject intelligibly to students.

The author desires gratefully to acknowledge the aid he has received in writing this book. Tables I, IA, II and III have been supplied by the Naval Observatory, Washington, D. C.; Table V is printed by permission of the International Textbook Co., Scranton, Pa.; and Tables IX, X, XI and XII, by permission of the heirs of the late Professor J. C. Nagle. The W. & L. E. Gurley Company of Troy, N. Y., furnished photographs of some of the equipment shown. He desires especially to mention the assistance given by Mr. George H. Dell, Associate in Civil Engineering at the University of Illinois, who has read the entire manuscript and whose suggestions and criticisms have been of great value.

This book results not only from the author's own experience both in practice and in teaching, but has benefited by the advice and judgment of many engineers and colleagues who, at different times, have given most helpful suggestions.

W. H. R.

Urbana, Illinois.

January, 1937

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