

SURVEYING

THEORY and PRACTICE

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PREFACE TO THE FOURTH EDITION

In the fourth edition, the distinguishing qualities of logical arrangement and thoroughness have been maintained in order that the text will be useful not only for teaching but also as a reference for practicing engineers and surveyors. Both the *how* (the practice) and the *why* (the theory) are given. The text has been critically reviewed in detail, and many sections have been entirely rewritten. Many of the illustrations have been redrawn, and new drawings and photographs have been added. The numerical problems have been reexamined, many revised, and new ones added. References to more detailed publications have been brought up to date. Some noteworthy changes from the third edition are as follows:

The chapter on errors is rewritten to clarify the use of weighted observations in simple and usable form for engineering work, with examples.

Throughout the text, emphasis is placed on the distinction between "precision" and "accuracy" of observations.

Summary tables of errors in chaining and errors in leveling are given.

To clarify the adjustments of the level and the transit, line diagrams show the desired relations between principal lines of the instruments. Alternative methods of two-peg test are given.

The text on adjustment of compass traverses is expanded to explain the adjustment for both local attraction and errors of observation.

Index error of the transit is redefined to include the effect of three sources of error, which are illustrated with line diagrams.

A systematic procedure for taking side shots with the plane table is tabulated. Strength of triangulation figure is discussed in greater detail, with tabular data and examples.

The chapters on field astronomy are brought up to date and simplified, and the general tables are extended to the year 1960.

The chapter on photogrammetric surveying is entirely rewritten by Colonel B. B. Talley, and latest types of instruments are shown and described.

Account has been taken throughout of suggestions offered by the many users of the book, and grateful acknowledgment is made to them. Special acknowledgment is also made to the authors' colleagues at the University of California, particularly to Profs. Harmer E. Davis, H. D. Eberhart, S. Einarsson, Bruce Jameyson, Milos Polivka, and C. T. Wiskocil. Professor J. W. Kelly rendered most valuable service in preparation and editing of the manuscript.

Much of the material for illustrations and tables in the several editions has been taken or adapted from publications of, or material furnished especially by, public agencies, including the U.S. Air Forces, U.S. Bureau of Land Management (formerly the General Land Office), U.S. Coast and Geodetic Survey, U.S. Corps of Engineers, U.S. Geological Survey, U.S. Naval Observatory, California Division of Highways, and Topographical Survey of Canada. Also much of the illustrative material was furnished by manufacturers of surveying equipment including the Abrams Aerial Survey Corporation, AERO Service Corporation, Wm. Ainsworth and Sons, C. L. Berger and Sons, Brock and Weymouth, Chicago Aerial Survey Co., Fairchild Aerial Surveys, Fairchild Camera and Instrument Corporation, W. and L. E. Gurley, Keuffel and Esser Company, A. Lietz Company, H. C. Ryker, Inc., and H. Wild. Credit is due to John Wiley & Sons, Inc., for permission to use Tables IX and X.

Raymond E. Davis
Francis S. Foote

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