A Manual of Topographic Methods. By Henry Gannett, Chief Topographer U. S. Geological Survey. Washington, Government Printing office. Quarto, xiv+300pp. 18 plates.

Whatever may be thought of the advisability of the publication of scientific manuals or text-books by the government, there is probably little question but that a bureau is justified in issuing volumes or bulletins which are in the nature of instructions to its officers and employees. Some publications of this kind, issued as parts of the reports of scientific bureaus, have been of great value to surveyors and engineers on account of the new facts and methods that they contain. The preface of this work states that it was primarily prepared for the information of employees, and furthermore that it 'describes the stage of development reached at present.' Hence it should presumably be of interest and value to all topographers who are acquainted with the excellent maps issued by the Geological Survey. Of the eighteen plates in the volume twelve give beautiful illustrations of types of topography, and these form its most useful and attractive feature.

The 300 pages of the manual include 130 pages of text, 168 pages of tables and 2 pages of index. Although the form is quarto, the size of the printed page is only $5\frac{1}{4}$ x $7\frac{1}{2}$ inches, and being in large type it includes but little more matter than a common octavo page. Chapter I. devotes 14 pages to historical and general information, chapter II. has 26 pages on astronomical determinations, and chapter V. is an interesting geological essay of 25 pages on the origin of topographic features. Thus only 65 pages remain for the discussion of methods of topography, a space entirely inadequate to do justice to the subject.

On base line measurements with the steel tape the corrections due to inclination, temperature and elevation above sea level are explained, but nothing is said about the sag of the tape, which as well known always makes the recorded distance too long, and the effect of varying intensity of pull is also unnoticed. The subject of primary triangulation is presented more fully than any other topic, the general methods of the Coast and Geodetic Survey being adopted, with somewhat different but excellent instructions for measuring angles. No statement as to the allowable probable errors of angular measurements is made, and the remark that the average length of lines in primary triangulation is 12 or 16 miles, leaves a confused idea as to what class of work is really under discussion.

On topography proper 5 pages are devoted to the plane table, 3 to traverses, $1\frac{1}{2}$ to stadia measurements and 9 to barometers. It is difficult to ascertain from these the details of the methods recommended or used, and it is safe to say that the excellent maps now being issued by the Geological Survey were not made without the application of principles and methods of which this volume gives no adequate explanation. It abounds, however, in useful generalities, such as "Stations for sketching should be selected with the utmost freedom;" "Under certain circumstances it is found advisable to use the stadia method for measuring distances instead of the wheel;" "Constant communication must be had between the chief of party and his assistants," etc.

The main feature of a small-scale topographic map is, of course, the contours. In chapter IV. references to the determination of heights by the barometer and stadia are made, but no forms of field notes are given, and the fact that these heights are to be used for locating contours is scarcely mentioned. In chapter V., however, one page is devoted to the subject, the essence of which is that contours are sketched in the field by the chief of party. It is stated that this 'is artistic work,' that "it is impossible

that any map can be an accurate, faithful picture of the country it represents," that the topographer must be able to generalize through his knowledge of geological processes of origin, and that he should be able to decide, "where details are omitted, what to put in their places in order to bring out the dominant features." These are dangerous doctrines. The earth exists, the duty of the topographer is to map it truly, and the study of the origin of its features should come later. It is not a function of the surveyor to interpret nature, and the geologic discussions of Chapter V. seem out of their proper place in a manual of topography.

The book does good service in dwelling upon the important idea that a topographic survey must necessarily be based upon a triangulation, so that an effective control of accuracy may be everywhere at hand. This is set forth with clearness as a sound established principle.

It is difficult to understand why one government bureau should republish tables issued by other bureaus unless they be out of print or not easily accessible. Pages 163–174 and 190–224 give the well-known geodetic and astronomical tables issued by the Coast and Geodetic Survey, and others are taken from the publications of the Corps of Engineers. Of the 168 pages of tables only 24 appear to have been prepared by the Geological Survey. Table XI., for the reduction of stadia readings, gives merely differences of altitude, the reduction to the horizontal being only mentioned in the four lines of text on page 93, where it is said 'tables for this reduction are to be found in Bulletin.' We know, however, of no author of this name who has published stadia tables.

Still more difficult is it to understand why a government bureau should republish a set of logarithmic tables prepared by a foreign author, thus committing a moral if not a legal piracy. Pages 232–298 constitute a reprint of the well-known five-place tables of F. G. Gauss, which are for sale in all bookstores. If the slightest improvement in type or method of arrangement had been introduced some excuse might be seen for this procedure, but as a matter of fact the type employed is far inferior to the original, while the black rules between the columns will prove an injury to the eyes of all who make use of the tables. Moreover, the marks indicating whether the last decimal figures have been increased or not are in all cases omitted; the reprint is thus rendered a most unsatisfactory counterfeit of the excellent original.

This Manual of Topographic Methods is offered for sale by the Geological Survey at one dollar per copy. It is an advantage for many persons to be able to buy a government publication, instead of attempting to beg it through a member of Congress, but in this case it is to be regretted that the value of the contents is so much less than the price demanded. As a presentation of actual field methods, as a manual for the instruction of the employees of the Geological Survey, and as a contribution to science, this volume occupies a low plane compared to what should be expected from a bureau that has done and is doing topographic work of high excellence.

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Degeneration. By MAX NORDAU. New York, D. Appleton & Co. 1895. 8vo. Pp. 560 + xiii. Price, $3.50.

This is an English translation from the second edition of the original German, the first edition of which was published in 1893, and a French translation of which appeared in 1894.

The author is a pupil of Lombroso, to whom he dedicates his work, and he states that its object is to apply the methods em-