carefully and conscientiously will acquire a very satisfactory knowledge of the practical procedures in chemistry, and as these procedures are explained in their theoretical relations, such student will have also a good idea of the fundamental principles of the science. Eighty-eight pages are given to physical chemistry, in which important methods are elucidated, among which may be mentioned optical activity, electro-chemistry, spectroscopy and the phase-rule.

HENRY LEFFMANN.

A TEXT-BOOK ON SURVEYING AND LEVELLING. By H. Threlfall, M.Sc. Tech., Engineering Lecturer in the College of Technology, Manchester. 663 pages, illustrations, 12mo. London, Charles Griffin and Company, and Philadelphia, J. B. Lippincott Company, 1920.

The practice of surveying in this country is so different from that taught in England, that it is difficult to review an English work on this subject, and do justice to its author.

In this country, for instance, the chain is rarely used, except by the old-time county surveyor, the modern surveyor making his measurements either with steel tape and band, or in a rough country by the stadia method; the results obtained with the latter being as accurate as chaining, and at an economy of time and labor.

The use of the measuring rod for extreme accuracy, which apparently is stressed by Prof. Threlfall, has been practically abandoned in this country. Greater speed and as high a degree of accuracy is obtained by the use of steel bands, observing connections that reduce the percentage of error to such a minimum that the methods are employed in the measurement of U. S. primary base lines.

The description of the use of the Plane Table would be of little service to an American engineer, as his method and purpose in using this instrument are so radically different from those described by the author.

On the other hand, the chapters treating of "Cuttings and Embankments," and the adjustments for linear errors in a closed polygon survey, without affecting the angular measurements, contain some valuable information.

There is also a very excellent chapter on "Photographic Surveying" and the chapter on "Tacheometry," or as it is commonly called in this country, "Stadia Surveying," is complete and practical.

BENJAMIN FRANKLIN.

LABORATORY MANUAL FOR THE DETECTION OF POISONS. By Wilhelm Autenrieth, University of Freiburg i.B. Authorized translation by William H. Warren, Ph.D. Fifth American edition, 322 pages, contents, index and 25 illustrations, 8vo. Philadelphia, P. Blakiston's Son and Co. Price \$3.50.

This work has been so long before the chemical profession that it needs little more than a notice of the appearance of a new edition. It is a translation from the fourth German edition, the same as was used in the preparation of the fourth American edition, inasmuch as a revision of the German work has apparently not yet appeared. There is also a special British edition, in which some subjects not found in the German original were included and are also treated in the American edition. Among these is the vexing question of

"normal arsenic." For many years chemists were satisfied that arsenic is not a normal constituent of the human body. As the delicacy of tests increased, however, it became possible to detect extremely minute amounts of the elements, and Gautier, in 1841, asserted that he was able to find traces of arsenic in certain organs of the human body without there being any reason to assume its direct introduction. The subject was extensively examined, but the results given by Kunkel, as quoted in the book before us, are that whatever traces of arsenic occur in human organs they are too small to have any value in toxicologic examinations. It must also be borne in mind that in most cases of arsenic poisoning there is a symptomatology which aids in the diagnosis. It is to be noted that all the claims for the existence of arsenic normally in the body are from French investigators, and are all more than a dozen years old.

The American editor has wisely added a considerable amount of matter on methyl alcohol, now so prominent as a poison. Unfortunately, neither this name nor "wood spirit" appears in the index. Important literature on the subject has been cited, but Gettler's exhaustive investigation, published in *Journal Biol. Chem.*, seems not to have been used.

It is a puzzling question as to how far a translator should incorporate information local to the country for which the translation is intended. The practices of different nations are often very different and users of the book may be misled if the translation is made too close. In the present case, for instance, it is stated that strychnine nitrate is the salt commonly used in medicine, but the American practice gives preference to the sulphate. It is to be regretted that Reinsch's test for arsenic is not included in the list, for it is specially applicable as a preliminary test on stomach contents, vomited matters and other complex organic mistakes. It is, further, a delicate test, and when carefully carried out, reliable.

It seems a pity that the publisher has been put to the expense of printing the structural formulas of many of the alkaloids. These have no value in practical toxicology, which is essentially empiric in its methods.

HENRY LEFFMANN.

AN INTRODUCTION TO CHEMICAL PHARMACOLOGY. PHARMACODYNAMICS IN RELATION TO CHEMISTRY. By Hugh McGuigan, Ph.D., M.D., University of Illinois. vii + 407 pages and index, small 8vo. Philadelphia, P. Blakiston's Son and Co. Price \$4.00 net.

This work is an effort to bring together the data that bear on the relation between chemical composition and physiologic action. The author's view, as set forth in the preface, is perhaps more optimistic than the facts support, or as the book summarizes them. It is natural that the chemist should hold to the view that the composition of a substance should be the sole cause of its physiologic action, but such an opinion seems at present to be more a matter of faith than of demonstration. Dr. McGuigan holds that it is upon this phase of opinion, namely, reference of all physiologic action to composition, that science is entering. He asserts that the purely physiologic methods, in which changes of blood-pressure, respiration and heart rate are recorded, seem spent, and many are convinced that chemistry now offers the most hopeful method for the solution of many of the problems on pharmacology.