the standard work in English for the chemist of the last generation, so the new edition is destined to occupy the same position for the chemist of the present generation. ALEXANDER SMITH.

Thermodynamics of Technical Gas Reactions. By DR. F. HABER, Professor at the Technische Hochschule, Carlsruhe. Translated by ARTHUR B. LAMB, PH.D. Longmans, Green and Co. 1908. xix + 356 pp.

Haber's "Thermodynamik Technischer Gasreaktionen," which presented an exhaustive theoretical treatment of a number of gaseous reactions, appeared originally in 1905 as the result of a course of lectures. This translation not only includes all that appeared at that time, but the subject matter is brought up to date, special attention being paid to the new experimental researches of Nernst and of Haber himself and to the theoretical deductions of Nernst. The book is divided into seven lectures and three appendices under the following general headings: The Latent Heat of Chemical Reaction and its Relation to Reaction Energy; Entropy and its Significance in Gas Reactions; Another Derivation of the Formula Previously Obtained, and its Bearing on Reactions between Solids; Examples of Reactions which Proceed without a Change in the Number of Molecules; Some Examples of Reactions Involving a Change in the Number of Molecules; The Determination of the Specific Heats of Gases; The Determination of Gaseous Equilibria with a Theoretical and Technical Discussion of Related Questions. The Appendix to Lecture III summarizes the views developed recently by Nernst in his "Experimental and Theoretical Applications of Thermodynamics to Chemistry;" the Appendix to Lecture V includes much of the recent experimental work on gaseous dissociations and equilibria; the Appendices to Lecture VII describe some recent work bearing directly upon the lecture.

The translation is not entirely satisfactory, but without going into too great detail, the following points may be noted: On page 60, the reference to (1*a*) p. 49 should read (7*a*) p. 49; page 89, phenyl fluoride should be used instead of benzene fluoride; page 295, Fraunhofer in place of Frauenhofer. On page 339, the statement that H. v. Wartenberg demonstrated that the formation of water from hydrogen and oxygen and of carbon dioxide from carbon monoxide and oxygen are dimolecular reactions is incorrect. He concluded both to be trimolecular reactions. "Catalyzer" and "catalyst" appear to be used indiscriminately, in fact in one case the two appear in consecutive sentences (page 201), and in another in two successive paragraphs (pages 183–184) catalyst is used twice and catalyzer three times.

In spite of these criticisms, the book as a whole is a most valuable one and can be heartily recommended to all who desire to become more

intimately acquainted with the recent advances in this field, whether this desire arises from an interest in the technical or the theoretical side of the subject. K. G. FALK.

Stereochemistry. By A. W. STEWART, D.Sc., Carnegie Research Fellow, and Lecturer on Stereochemistry in University College, London. Text-Books of Physical Chemistry. Edited by Sir William Ramsay, K.C.B., F.R.S. Longmans, Green and Co. 1907. xx + 583 pp.

"Owing to the extent of the field which has been opened up by stereochemical research during the past decade, a full treatment of every branch of the subject was impossible within the compass of the present volume. But since Landolt's book on *The Optical Rotation of Organic Compounds* has been brought nearly up to date and translated into English, there seems no necessity to deal with this division of the subject in such detail as would at one time have been advisable. Moreover, in other fields so much work has been done in recent years that it appeared desirable to treat these investigations more fully than the problems of optical activity."

This extract from the preface of Stewart's "Stereochemistry" shows in a general way the plan underlying the treatment in this book. In pursuance of this plan, the subject is divided into two sections, *Stereoisomerism* and *Stereochemical Problems into which Isomerism does not Enter*. In the former, 125 pages are devoted to *Optical Activity*, an excellent account being given, and 180 pages to *Stereoisomerism without Optical Activity*, including geometric isomerism and a short summary of Werner's theory and the stereoisomerism in cobalt, platinum, and chromium compounds. In the second section, the phenomena of *Steric Hindrance* are treated in detail. The explanations put forward here do not seem altogether satisfactory, and it is a fair question whether many, if not all, the phenomena here described will not be found in time to depend upon or to be connected with such questions as the vibration of the molecule as shown by the isorropic band as described on page 419 in discussing the non-reactivity of the carbonyl group in certain substituted quinones. The reactions representing esterification as given on page 440 also require revision in view of the very recent work of Stieglitz and of Goldschmidt. The stability and configuration of cyclic and other compounds, including Baeyer's strain theory, are then treated, and finally the space formula of benzene is taken up together with all the attempts which have been made to solve this problem. The formula, or rather formulas given by Baly, Edwards, and Stewart based upon the absorption bands of benzene, at first sight appear unorthodox, to say the least, to the organic chemist brought up with the idea of the symmetrical character of the benzene hexagon. This changing of the