couples is not dealt with in the present volume, which also does not discuss its use in alloy with platinum as an ammonia oxidation catalyst. A good example of the care taken to include modern work is the full discussion of the sulfides, taken from a publication of 1935. This section of the *Handbuch* is very satisfactory.

J. R. PARTINGTON.

Kurzes Lehrbuch der physikalischen Chemie. By H. ULICH. 24 x 15 cm.; xvi + 315 pp. Dresden and Leipzig: T. Steinkopff, 1938. Price: 12 RM.

The author has attempted, by a careful choice of material and by the omission of purely physical sections, to produce a book of moderate size which yet gives a satisfactory view of physical chemistry up to a standard suitable for students of other faculties, such as engineers, physicists, and biologists, and such as will form a basis of further study for chemists. He has been successful in dealing with all the important branches of the subject in a way which is not at all superficial and is in accord with modern requirements. Particular emphasis is laid on thermodynamics, in which the modern methods are used throughout. The approximate calculation of equilibria by a method not previously published, which depends on the choice of suitable mean heat capacities, is noteworthy, and the numerical examples given throughout the book are a special and valuable feature. English and American work is most carefully taken into account, even to the extent of giving the English technical terms, since the author believes that an increasing use must be made in Germany of publications in that language. The short bibliographies at the ends of the sections are well chosen. The only drawback the reviewer can see to the popularity of the book among students who can read German is the use of different fonts of German cursive type for symbols; these are sometimes difficult to distinguish. The book is one that can be warmly recommended as giving in a limited space a very adequate view of modern physical chemistry.

J. R. PARTINGTON.

The Phase Rule and its Applications. By A. FINDLAY. Eighth edition, revised with the assistance of A. N. Campbell. 21 x 14 cm.; xv + 327 pp. London, New York, and Toronto: Longmans, Green and Company, 1938. Price: 12s. 6d.

There is no need to describe the character of this work, which has been a standard book on the subject since the first edition appeared in 1904. In the new edition some material has been dropped, including the experimental appendix, the contents of which can now be found in books on practical physical chemistry, some sections have been modified (e.g., that on intensive drying), and some material has been added. There comes a time when a book needs to be completely rewritten, since the mere addition of footnotes giving references to newer literature cannot keep a book up-to-date. The reviewer feels that, although many sections have been revised, some are in need of extensive revision. This applies, for example, to the sections on the palladium–hydrogen system (which is now quite out-of-date), the iron–carbon alloys, and liquid crystals. The new edition will continue to provide an excellent introduction to the subject, as the former ones did, and when the time comes for a further edition it is to be hoped that the whole text will be dealt with and the book reset. The present edition has been reproduced by the Novographic process and the old and new matter are often clearly distinguishable both in the text and footnotes, the appearance being far from pleasing.

J. R. PARTINGTON.

Photographic Chemicals and Solutions. By J. I. CRABTREE AND G. E. MATTHEWS. 9¼ x 6¼ in.; 95 figures; 13 tables; vii + 360 pp. 353 Newbury Street, Boston, Massachusetts: American Photographic Publishing Company, 1939. Price: $4.00.