

than any of the others. Thus the complex acids derived from sulphur, and from sulphur and nitrogen, are described, and also the application of Werner's theory to the structure of complex silicates. Many of the common elements, on the other hand, have received very scant attention. The last section of the volume is concerned with the developments arising out of Werner's work on co-ordination compounds of various types.

Selection of the material is necessarily very difficult, and naturally a large amount of attention has been paid to German periodicals, but there are also frequent references to English, American, French, and Italian publications, and the volume will be found to form a readable and useful supplement to the standard text-books.

Reaktionskinetik gasförmiger Systeme. Von. C. N. Hinshelwood. Übersetzt und erweitert von Dr. Erich Pietsch und Dr. Gertrud Wilcke. Pp. xii + 246. (Leipzig: Akademische Verlagsgesellschaft m.b.H., 1928.) 16 gold marks.

ENGLISH chemists will be glad to see that Mr. C. N. Hinshelwood's admirable book on the "Kinetics of Chemical Change in Gaseous Systems" has now been made available to a larger public by the appearance of a German translation. For the most part this translation follows the English text exactly, but the appendices to the English edition have now, with advantage, been incorporated into the body of the book. Further, the translators, with the consent of the author, have introduced a certain amount of new matter dealing with recently published results, but in doing so have been careful to leave unimpaired the original method of treatment.

The book has been made more valuable by the inclusion of a classified index (thirty-nine pages) of the most important gaseous reactions of which the reaction kinetics have been investigated. Under each reaction an alphabetical list of authors, with references, is given, and there is further a section (thirteen pages) containing references to papers "of general and theoretical importance." This index, evidently the product of much painstaking work, is itself a contribution of no small value to the literature of the subject, deserving the attention of all who are interested in the problems of reaction kinetics.

The format of the German edition, though inferior to that of the original, is not unsatisfactory, and the figures and formulæ are clearly set out. Drs. Pietsch and Wilcke are to be congratulated on the production of a worthy translation of a notable book.

A Text-book of Inorganic Chemistry. Edited by Dr. J. Newton Friend. (Griffin's Scientific Text-books.) Vol. 10: *The Metal-Ammines.* By Miss M. M. J. Sutherland. Pp. xxv + 260. London: Charles Griffin and Co., Ltd., 1928.) 18s. net.

THE appearance of a separate volume on "The Metal-Ammines," in Friend's "Text-book of Inorganic Chemistry," suggests the prospect of a book of marked individuality, dealing with one of the most exciting sections of modern inorganic chem-

istry. This prospect has not been realised, since the text of Miss Sutherland's volume contains even less readable matter than the average of this series.

The book contains three introductory chapters, covering about 28 pages, but even these show a singularly poor response to the inherent interest of the subject, and, with the exception of a page on the electronic theory, they might all have been written during the confused pre-War period, when even Werner himself did not appear to be sure whether principal and subsidiary valencies are identical or different. It is indeed almost a *reductio ad absurdum* that the author gives more space to the cyclic formulæ suggested by the editor in 1908 than to the whole of the modern work on valency. The remaining seven-eighths of the book are occupied by a catalogue of ammines arranged according to the periodic classification, but here again the pre-War character of the text is shown by the fact that the index contains no reference to any of the poly-ammino-compounds described by Pope and Mann in a series of papers from 1924 onwards.

The book can, however, be commended without hesitation as a compendium of the earlier literature, summarised from the view-point of the earlier period, and entirely unspoiled by any electronic heresies.

Engineering.

Engines: a Book founded on a Course of Six Lectures (adapted, in the old phrase, to a Juvenile Auditory) delivered at the Royal Institution of Great Britain. By Dr. E. N. da C. Andrade. Pp. xv + 267 + 36 plates. (London: G. Bell and Sons, Ltd., 1928.) 7s. 6d. net.

PROF. ANDRADE'S book is founded on the Christmas lectures delivered by him at the Royal Institution last year. Not a little difficult is it for the author of such a work to decide just how far to go in the development of his subject. It is clearly necessary, after the broad principles have been carefully enunciated, to show how they are applied in actual engines, and since they are applied differently in different types of engine, it is obviously necessary to trace the operative principle in each type. This is very effectively done without any suggestion of over-development.

There are one or two misstatements of fact which might be put right in a new issue. For example, it is unfortunate that the impression should be given that practically all marine boilers are of the water-tube type, particularly at a time when attempts are being made to overcome the difficulties associated with the use of water-tube boilers on ships. Again, it is suggested that in a De Laval turbine nozzle the divergence at outlet determines the pressure drop, whereas it is merely provided to improve the efficiency, and the pressure drop is determined by the area of the throats of the nozzles of the successive stages. Nozzles with no divergence at outlet are quite commonly used in pressure compounded impulse turbines for velocities greater than the velocity of sound; in such cases the steam jet diverges after leaving the nozzle.