

*Elementary Machine Design.* By WILLIAM C. MARSHALL, Assistant Professor of Machine Design in Sheffield Scientific School of Yale University.

This book is prepared for the use of students who have not studied mechanics or mechanism. It is in reality a book of information and instructions for a course in drawing various machine details. The course as outlined would give a student familiarity with many of the details of machine construction and considerable practise in drawing them. No attempt is made, however, to give training which would enable the student to look at a problem in machine design in a broad way and to attack it understandingly. It seems fair then to call it a book of information rather than a text-book either of machine design or machine drawing. It would be a valuable handbook for a draftsman who is already familiar with the principles and methods of machine design.

The first chapter consists of a discussion of machine drawing, general in some respects and minute in others. The other chapters treat of rivets and riveted joints, piping, screws and bolts, shafting and shaft couplings, stuffing boxes, bearings, journals, hangers, pistons and piston rods, connecting rods, pulleys, belting, gearing, valves. Under the head of "Useful Information" are a number of convenient tables, and similar tables are scattered through the book.

W. H. JAMES

*Grundriss der Kristallographie.* By DR. GOTTLÖB LINCK. Third Revised Edition. Jena, Verlag von Gustav Fischer. Pp. viii+272. Figs. 631. Colored Plates, 3. Price 11.50 Marks.

The appearance of a third edition of this excellent text-book of crystallography only five years after the publication of the second edition is an indication that its author has succeeded in treating what is usually regarded as a dry subject in a way that has attracted many readers. A part of the popularity of the volume is due no doubt to the fact that crystallography is being studied abroad more and

more thoroughly by chemists and physicists since the spread of interest in physical chemistry. Unfortunately, in America the science has few followers, but in Germany and England it appears to be enjoying a renaissance. Crystallography no longer deals merely with the description of crystal forms and the calculation of crystal constants. In its modern phase it is more directly concerned with the relations that exist between the forms and properties of substances and the proper explanation of these relations. Crystallography is rapidly becoming a branch of physical chemistry. It is because the author has realized this tendency in the science and has given us a book that deals so fully with the fundamental conceptions of physical and chemical crystallography that his volume has been received with such universal favor.

Of the new edition, 96 pages are devoted to the discussion of crystal forms and the balance to the discussion of the physical and chemical properties of crystals. There is no difference in method of treatment in the second and third editions. There are 27 more figures and 18 more pages in the new edition, but these additions are simply expansions of a few of the topics treated in the earlier edition. The additional figures were introduced mainly to emphasize some of the statements concerning the mechanical and optical properties of crystals, and the additional pages are the result of a little more detailed discussion of their optical properties. Throughout the book, where necessary, the text has been changed to bring it up to date and a few paragraphs have been introduced to call attention to some of the recent new work on crystals. The new figures are all of the same high grade of excellency as those characterizing the second edition.

The new edition is unquestionably the handsomest, best proportioned, most concise and at the same time most comprehensive elementary text-book on crystallography in any language. It is readable because logical, and it is modern. Moreover, it is not burdened by the involved sentences and the otherwise atrocious style that characterize so many German science text-books.

W. S. BAYLEY