

subject. Each section includes a survey of definitions and fundamental concepts. The data are classified by a rational system, which enables the desired information to be located with ease. They are accompanied by indications of the methods used in their determination and critical observations, which are of the greatest value. It is claimed that the complete literature is cited on every subject. While no bibliography yet produced has attained that perfection, this one is surely very comprehensive. Another commendable feature is that articles are not ignored because their titles do not indicate them to be sources of new constants. Moreover, the printing and compact arrangement of the material are everything to be desired.

The work is the only publication which furnishes

periodically new physical, chemical, physicochemical and technical data, with comments and comprehensive references to the literature. In this way it renders services which are performed by no other collection of numerical data. It is designed for all who make use of quantitative values of the properties of substances and magnitudes occurring in biological, chemical or physical phenomena, whether in pure or applied science. The work should find a place in every library that caters for such needs, where it should be given a position on the shelves in the reading room, easy of reach and near a table, and not be relegated to an inaccessible book store. The individual monographs on special subjects are indispensable to scientific workers for their everyday use.

S. C. BRADFORD.

Properties of Matter in Modern Guise

Elasticity, Plasticity and Structure of Matter
By Dr. R. Houwink. With a Chapter on the Plasticity of Crystals, by Dr. W. G. Burgers. Pp. xviii + 376. (Cambridge: At the University Press, 1937.) 21s. net.

THE title of this book, although a little lengthy, describes its contents with accuracy; it is essentially a study of structure approached through the phenomena of elasticity and plasticity. To give an adequate impression of the wealth of information which it contains is very difficult; perhaps the best way is to state that the substances discussed range from brass to bakers' dough. But, materials apart, the author (with the help of Dr. Burgers) has produced a remarkable treatise upon molecular physics, showing at every step how directly observable quantities like viscosity, tensile strength and so forth are connected with the type of structural unit in complex bodies, especially those of technological importance. It is the outlook of the physicist, sharply focused upon the chemist's problems. This point of view suggests something of the penetration of Kelvin, combined with a touch of Mendeléeff's power for anticipating the unknown.

The treatment is naturally to some extent synthetic, since the researches of a large number of workers are reviewed, and at frequent intervals their compatibility or otherwise is appraised. Though the bibliography is extensive, the authors have achieved far more than a mere account of the results obtained by other people. For example, Houwink has developed a theory to account for

the difference between the theoretical and observed stress-strain relationships in resin macromolecules, akin to Smekal's *Lockerstellen*. He points out that the actual number of CH₂ 'bridges' present may not be equal to the number theoretically possible; again, the chance that a single molecule can be added at each active spot of a growing complex obviously diminishes as the molecule about to be added itself begins to increase in size. Many factors of this kind occur in compounds of high molecular weight, and lead to discrepancies between the 'ideal' and the 'actual', as in crystallography.

In a different connexion entirely, the appearance of this volume is particularly opportune. This is on account of the interest which is now taken by those concerned with the technical side of art in the polyvinyls, lacquers and other rheological products. For them, these pages are of great significance. Thus, a relationship is suggested—on very reasonable assumptions—between the depth and width of a brush mark (in paint), the surface tension and the yield value, in order to obtain satisfactory levelling. In this, and a number of other instances, the property of thixotropy, or the re-coherence of a substance after shaking or stirring, is of consequence, and its effects receive detailed consideration.

It is almost impossible to imagine any investigation into the properties of existing materials, or the quest for new ones, which would not be advanced by consulting this book.

F. IAN G. RAWLINS.