

## REVIEWS

**Modern Synthetic Rubbers.** By Harry Barron. (Chapman and Hall Ltd., London), 1942. Pp. viii + 274. Price 25/-.

The appearance of this book is most opportune. With the rubber cultivation of the world in enemy hands, the need for a synthetic rubber industry in Great Britain and in the Empire, particularly in India, is most vital. Dr. Barron has, therefore, rendered yeoman service by bringing out this book and although the get-up of the book and the treatment of the subject-matter could have been better, the fact that "all too often the pen has to be laid aside at the behest of the more urgent and irresistible call of the air-raid siren" explains fully that war-time economy and the strife of life under war conditions are responsible for the minor shortcomings one notices. The book is one which ought to be in all scientific and technical libraries and in the hands of all workers interested in rubber and plastic materials in general. As is well known to workers in these fields, the meanings attached to the word rubber have changed. Rubber no longer signifies merely a particular hydrocarbon material. In order to qualify as a rubber, the material should be able to be stretched readily to a considerable degree and after release return forcefully and quickly to almost its original size and shape.

The contents of the book have been divided into three parts. Part I deals with general considerations regarding natural rubber and synthetic-rubber-like materials. Part II takes into consideration the chemical and physical background of synthetic elastic materials and includes in it the question of terminology, historical background, chemical behaviour and structure of natural and synthetic rubber, raw materials, polymerisation, copolymerisation and emulsion and polymerisation.

Part III deals with the technology of synthetic elastic materials and elastomers; *S.K.B.* and *Bunas*, *perbunan*, *hycar* *O.R. chemigum* and *neoprene* have been fully dealt with. Polybutylene and butyl rubber are treated under the title "Elastenes". This is a new word coined by the author to denote the materials employed for the manufacture of rubber-like substances which are based on olefines and are virtually saturated. Thioplasts and ethenoid elastics have been given adequate treatment occupying 34 pages of the book (213-247). A whole chapter has been devoted to comparative properties of elastics which makes the book exceedingly useful from the practical point of view. These properties have been fully explained and in some cases, they are even diagrammatically brought out. A table has been provided to bring out the property of chemical resistance at 20° C. and is of great value to those who are interested in the application of synthetic rubber to container-problems.

The most remarkable feature of the book is the rather up-to-date information on the physical properties of the synthetic rubber. The X-ray diagrams showing the structure in the stretched and unstretched condition are excel-

lent, and are a great help in understanding the fundamental properties of synthetic rubber. It would have been useful if the author devoted a few pages to numerous plants other than the usual one from which the rubber latex is collected. This has been omitted largely because the treatise really deals at great length only with synthetic rubbers.

The reviewer is of the opinion that the synthetic rubbers have come to stay. Several properties which they possess make them indispensable to trade and industry. It will be a wrong policy for the British people and for us in India not to devote more attention to synthetic rubber because we can grow natural rubber. The natural rubber itself can be improved by admixture with plasticisers and synthetic rubber.

I must end by congratulating the author for producing this extremely useful and readable volume. The subject-matter is treated accurately and is not too difficult for a work-chemist who may not be familiar with the latest physical and chemical technique.

S. S. B.

**A Junior Book of Physical Chemistry.** By Dr. I. D. Shiva Rao. (Published by Jayantilal Vithaldas, Surat), 1943. Pp. 220 + vi + 7. Price Rs. 5.

The book is written primarily for the use of B.A. (HONS.) and B.Sc. (SUBS.) students of the Bombay University. The book is divided into eleven chapters; each chapter begins with a short summary of the main topics of the section and ends with a list of questions that have appeared on these topics at the Bombay University examinations. Throughout the author's ambition has been to coach up the student for the examination and in fact this book can be said to be his lecture notes in print.

In the opinion of the reviewer the value of the book can be considerably enhanced by drawing the attention of the author to the following points:—

(1) The printing is far from satisfactory. In several places (pp. 18, 19, etc.), 'degree' mark appears on serial numbers as though they represent temperature. The figures must be numbered and their neatness improved.

(2) It is highly desirable that standard symbols for absolute temperature, etc. (p. 27), should be employed to avoid confusion.

(3) A detailed account of certain elementary portions like Dalton's atomic theory, laws of chemical combination, Avogadro's hypothesis, vapour density determination, etc., may be omitted.

(4) Greater details about electro-chemistry—ppn. of conductivity water, transport numbers, etc.—would be very necessary as these portions will be learnt by the student for the first time.

(5) If the cost of the book is reduced further, greater section of the student population can reap the benefit of the labours of the author.

M. R. A.