

REVIEWS

Advances in Colloid Science, Vol. II—Rubber.
Edited by H. Mark and G. S. Whitby. (Published by Interscience Publishers Inc., New York), 1946. Pp. 453. Price \$7.00.

The book is a result of Anglo-American collaboration in presenting an up-to-date review of physico-chemical studies on rubber and related high polymers. The book contains the following sections, each written by a specialist of established reputation on his subject:—(1) Second Order Transition Effects in Rubber and other High Polymers. (2) Crystallisation Phenomena in Natural and Synthetic Rubbers. (3) The Study of Rubber-like substances by X-ray Diffraction Methods. (4) The thermodynamic Study of Rubber Solutions and Gels. (5) Significance of Viscosity measurements of dilute solutions of High Polymers. (6) The Kinetic Theory of Rubber Elasticity. (7) Vulcanisation. (8) Rubber Photogels and Photovulcanisates. (9) Reinforcing and other Properties of Compounding Ingredients.

The contributors have all recognised the fact that the study of natural rubber forms only a part of the broad field of rubber-like polymers and have, accordingly examined their subject from a comprehensive point of view which has thrown light on rubber-problems as a whole. In natural rubber, the isoprene units are all united in a cis-configuration, in the 1,4-sense, while in synthetic butadiene polymers, there are both cis and trans-arrangements about the double bonds and also unions in the 1,4-, 1,2- and 3,4-sense. A thorough physico-chemical study of long-chain molecules in general can only give the clues which will some day enable the synthetic chemist to produce at his will macro-molecules having a predetermined length and configuration. This book reveals the worldwide attention which this problem is receiving and the rapid progress which has been made in recent years; indeed the day may not be distant when tailor-made molecules will be commonplace materials.

The contributors have taken much for granted from their readers. The experimental technique which have been used for the solution of problems of major significance, have rarely been described. Complicated mathematical equations have been assumed to be common knowledge. The reviewer feels that a few appendices giving detailed information on these points would have added to the value of the book.

The authors have not only summarised modern researches but have examined critically how far the results of different investigators support or contradict one another and have presented a clear picture of the gaps in our knowledge which remain to be bridged. The book will be welcome to all those who are interested in a scientific study of the subject of high polymers.

J. C. G.

Progress in Science. By W. L. Sumner. (Basil Blackwell, Oxford), 1946. Pp. 176. Price 8sh. 6d. net.

This is a book which will interest the layman as well as the expert who wishes to have a general knowledge of the outstanding achievements of science in fields outside his own. The author has given a clear and popular account of (1) electrons and their uses in electron microscope, radio-location, television, (2) release of atomic energy, (3) jet propulsion and the gas turbine, (4) plastics, (5) chemotherapy including the story of sulphonamides and penicillin, and (6) plantgenetics, mutation of genes and doubling of chromosomes by artificial means. These discoveries open up wonderful possibilities for the well-being of mankind. They indeed herald the dawn of a new age of plenty, health and happiness, if man only has the wisdom not to use them as tools for his own destruction. Whatever happens, researchers having the true scientific spirit will always pursue truth for its own sake, for the simple joy of discovery; and the author has done well in bringing out how advances in fundamental science have been responsible for the technological revolutions which we are witnessing to-day. The book is well worth perusal by persons who wish to have a cultivated mind.

J. C. G.

The Practice of Silviculture (5th edition). By R. C. Hawley. (John Wiley & Sons, Inc., New York; and Chapman & Hall, London), 1946. Pp. xi+354. 70 Figs. Price \$4.

Earlier editions of this excellent book appeared in 1921, 1928, 1934 and 1937. During these 25 years great additions to the knowledge and practice of American silviculture have been made and this present edition, revised, enlarged and largely rewritten, is very different from the first edition.

It is intended as a text-book and deals almost entirely with American conditions. It begins by stressing the difference between *silvics* which deals with the fundamental laws underlying the growth and development of single trees and of the forest as a biological unit, and *silviculture* which is the art of producing and tending a forest, that is the application of the knowledge of silvics in the treatment of a forest.

The author divides the book into three main parts: (1) Treatment of the stand during the period of regeneration or establishment including a consideration of reproduction methods, (2) treatment of the stand during that portion of the rotation not included in the period of regeneration (this is a consideration of intermediate cuttings), and (3) protection of the stand against injuries of all kinds. Under (1) the following methods are considered:—
(a) Clear cutting with both artificial and natu-

ral regeneration; (b) the seed tree method; (c) The shelter wood method; (d) the selection method; (e) the coppice method; and (f) the coppice with standards method.

It is refreshing to see this simple classification, for modern forestry has tended to consider modifications of these main methods as entirely separate methods and this tends to confuse the student.

Section 2 on intermediate cutting includes notes on thinnings, improvement and salvage cuttings, pruning and methods of control. Section 3 is comprehensive on all types of protection and is not usually found in text-books on silviculture.

A very welcome inclusion is a list of common and botanical names of the main American tree species.

Of great interest to Indian foresters are the changes of opinion which have occurred from edition to edition. One of the most striking is that in the 1921 edition the statement was made that "A general rule is not to make the first thinnings until the receipts will at least pay expenses". Craib's work on wattle thinnings in S. Africa has obviously had a lot to do with the change to the opinion in this present edition that the first thinnings should be carried out as soon as they are needed provided it appears that subsequent returns will justify the investment.

Some of the facts given in the first and last chapters are important. For example it is not generally realized that scientific American forestry is a very new thing and is still in an elementary stage as is shown by the fact that out of 509 million acres available for timber production only 21 per cent. is under "some technique of timber production" and only 6 per cent. is under fairly intensive management. As the author says, "Most of the forest area is still without any application of silviculture or else under a very simple form of forest management". He rightly stresses the need for the technical training of forest officers and for the education of the general public.

The book, as is usual in American publications, is well printed and well produced and illustrated with clear simple diagrams. It is complimentary to Toumey and Korstian's *Foundations of Silviculture upon an Ecological Basis* (1937) and these two books should be in the library of every forest officer.

A. L. GRIFFITH.

An Introduction to Textile Bleaching. By J. T. Marsh. (Chapman & Hall, Ltd., Essex St., London.) First edition, Demy 8vo. Pp. 512 + 154 Illustrations. 23sh. net.

The publication of this extremely useful book fulfils the long-felt need of a co-ordinated account of the extensive research work carried out by different investigators and the large amount of experience gained in the wet processing of textiles. The author has incorporated most of the important information available in scientific journals. The book is a comprehensive survey in what latest advances and the earlier researches have been carefully blended. The sequence of processes is suitably arranged and carefully developed so as to bring out

most of the practical and theoretical aspects of this important branch of textile technology.

The book is divided into six parts and each part deals with a specific subject in textile bleaching.

Part I gives an up-to-date account of the chemistry of the various textile fibres and covers 101 pages. The physics and chemistry of cellulose and other textile fibres is so fully treated in the author's own book, *An Introduction to the Chemistry of Cellulose* that this might have been largely omitted from the present volume but for those portions directly related to the bleaching processes. This is followed by Part II dealing with wetting and detergency. A large amount of information has been included in this section but one feels the lack of a systematic arrangement of the various aspects of wetting and detergency.

The scouring and bleaching of cellulosic fibres are dealt with in Part III. A note on the evaluation of desizing agents and on the examination of Kier boiling efficiency would have been welcome. A diagrammatic illustration of a modern gas singeing machine should have been included in the portion of 'Singeing'. Bleaching of coloured goods has been summarily disposed off without proper justice and deserves greater attention.

The chemical technology of the most important animal fibres, wool and silk forms the subject matter of Part IV. The physico-chemical aspect of degumming of silk has been well reviewed. The scouring of wool appears to be incomplete without a reference to the useful work of Dr. Zakarias in the field of Collective Chemistry.

The fifth part deals with drying of textiles. The modern development in drying machinery have been reviewed and well illustrated. The sixth section deals with damage to textile fibres and its evaluation. The inclusion of this section is very appropriate and useful from the point of view of the processor.

The book is well illustrated with neat sketches and photographs of most of the important machines used in wet processing of textiles. A chapter dealing with different types of drives, bearings and their lubrication common in such machines would have increased the usefulness of the book all the more. Nevertheless, the book is of great value not only as a text-book but also as a reference book to the processor and the research worker. Mr. Marsh has made a very valuable contribution to textile chemistry literature.

G. M. NABAR.

Fruit Fall and Its Control by Synthetic Growth Substances. By M. C. Vyvyan. (Imperial Bureau of Horticulture and Plantation Crops. Technical Communication No. 18), 1946. Pp. 1-72. Price 3sh. 6d.

One of the serious problems that confront orchardists all over the world is the loss in yield due to pre-harvest drop of fruits. If this loss, which at times could be considerable, be checked the orchardists would benefit a great deal. The causes of abnormal shedding of blossom, of young fruit, and of nearly mature fruit, has engaged the attention of several of