BOOK REVIEW

INDUSTRIAL GUMS. Polysaccharides and Their Derivatives. Edited by Roy L. Whistler. Pp. xi + 766 (including Index). Academic Press, 1959. New York ($25.00); London (173s. 6d.).

This book is a reference work on gums with especial emphasis on production, properties, economics and industrial application, but also contains useful information on their chemistry. Obviously some definition of "gum" is necessary in view of the indiscriminate use of this term in commerce. Resins, rubber products, and chicle, are excluded by the definition used, namely, "plant polysaccharides or their derivatives which are dispersible in either cold or hot water to produce viscous mixtures or solutions". A surprising number of products is included in this definition and equally surprising are the large amounts used; it is estimated that the annual consumption in the U.S. alone is about 500,000 tons.

The introductory chapter gives an interesting general account of the economic factors affecting costs, and the physico-chemical factors affecting the industrial application of gums. This is followed by informative chapters on seaweed products, agar, alginates, carrageenan, fucoidan and laminaran; well known gums such as acacia, ghatti, karaya and tragacanth; the seed gums, carob, quince, psyllium, linseed and tamarind. Four chapters are devoted to cellulose derivatives, and one each to pectins, dextrins and dextrans. Among the lesser known products which may have important uses in the future are, chitin and its derivatives, amylose, amylopectin, wheat hemicelluloses, guar gum and Ti (derived from an Hawaiian plant).

Since 32 authors have contributed different chapters there is naturally some uneveness in treatment. Thus acacia is given 86 pages, whereas the more costly product tragacanth which "is still widely used today in foods and drugs" is dismissed in 4½ pages, less than half the space devoted to laminaran. The account of the formation and preparation of tragacanth is very brief, although such information is not without importance to the chemist and would explain the fact that electron microscope studies "show that gum tragacanth solutions contain cellulose microfibrils". Traces of cellulose walls occur because the gum is produced from the whole tissue of the pith and rays; they are normally visible under an ordinary microscope. On p. 215 the surprising statement is made that catechu and cutch are varieties of gum arabic as they come from *Acacia* species. However, this is a small slip in an otherwise full and informative chapter.

It would be impossible to deal adequately in a review with the wealth of information contained in this book, which is indeed a well-documented reference work on the industrial aspects of gums.

J. W. FAIRBAIRN.