

Comprehensive biochemistry

ability was not without national advantage, even if not to the shareholder. There is no doubt whatever, that, over the period here dealt with, ICI was actuated by a high sense of public responsibility. At no time was this better expressed than during the war when the company's resources, not only in production but in very able manpower, was put at the nation's disposal to an extent far beyond the call of duty, with profit as a secondary consideration.

Failures there may have been, but there were resounding successes too, among them polythene and Terylene. Apart from such highlights, however, the substance of the tale told here is one of solid, if unspectacular, achievement over a vast industrial field covering non-ferrous metals, pharmaceuticals, dyes, paints, fertilisers, plastics, fibres, and many other products.

There is one field of ICI's activities deserving greater mention than is given by Reader, and that is the field of publicity and public relations. The company, under the late Sidney Rogerson, pursued an enlightened policy which set new standards. Works were commissioned not only from established artists but also from younger aspirants yet to make their name. Equally high standards were set for the literary style. Older readers will recall such outstanding series of advertisements as 'Ancestors of an Industry', 'Equipment of an Industry', and 'Portraits of an Industry' (from the last of which, incidentally, eight of the illustrations of the book are taken, though the source is not mentioned). Another series, the 'Colours of Chivalry', was ultimately made available as a book which is now a collectors' piece. No mention is made either of *Endeavour*, an international scientific review in several languages, which was started during the war and afterwards established itself as an accepted part of the world's scientific literature. Equally, no reason of modesty should have prevented much fuller mention of the company's enlightened policy towards the universities.

The Postdoctoral Fellowship Scheme, begun in 1944 and only just terminating, gave a start in professional life to well over a thousand able young scientists. Many of them have gone on to outstanding careers in science, and they include two Nobel Laureates.

It is, of course, very easy to criticise a work of this kind on points of detail. Unquestionably, however, this is a masterly account of the formative years of a vast supranational company. Others might have done it rather differently, but it would be difficult indeed to have done it better.

T. I. Williams

Medizinische Biochemie: Lehrbuch für Studierende und Ärzte. 6., Völlig neu bearbeitete Auflage. By S. M. Rapoport. Pp. xxvii+1023+14 tafeln. (Volk und Gesundheit: Berlin, Jena 1975.) DM53.

Comprehensive Biochemistry. Vol. 31: A History of Biochemistry. Part 3: History of the Identification of the Sources of Free Energy in Organisms. By Marcel Florkin. Pp. xx+475 (plates 64-120). (Elsevier Scientific: Amsterdam, Oxford and New York, 1975.) Dfl.130; \$54.25.

OF its kind Rapoport's is one of the best German textbooks of biochemistry for medical students. The book is too detailed for mere preparation for preclinical examinations but is very suitable for keen students, especially those in their clinical years and beyond, who wish to read about the biochemical background of diseases. The material is well selected with special reference to the practice of medicine. The fact that the book has reached its sixth edition since it was first published in 1962 is a measure of its popularity. The new edition is brought up to date with the help of several close collaborators.

What makes the book attractive is its coherence and readability. This is achieved by linking general comments, often of a highly original character, and by avoiding the mere assembly of factual information. The interest of the medical student and medical graduate is maintained by continually relating the biochemical information to normal and pathological organ function. Selected references for advanced reading are given. More frequently than is usual in western treatises are references to Russian investigators and to the importance of their contributions to the progress of the subject.

The text is occasionally interspersed with references to Marxist philosophy—for example, by quoting (on page 35) Engels' formulation of the nature of life: "Life is the manner of existence of protein, the chief property of protein being the continuous exchanges of material with the external environment the cessation of these exchanges causes the decomposition of proteins". This statement is taken to relate to the dynamic state of proteins, predicted in this passage by Engels many decades before it was experimentally established.

FLORKIN's work is the first comprehensive effort since Lieben's *Geschichte der Physiologischen Chemie* (1935) covering a field which has grown to vast dimen-

sions in recent decades.

This is the second of four volumes planned as the last section of the 33 volumes of the reference work *Comprehensive Biochemistry*, edited by Marcel Florkin and Elmer Stotz. Florkin, who is writing all the four volumes, is well qualified to undertake this difficult task as he is a biochemist who has researched in many areas, especially in comparative biochemistry and has had the unusual distinction of having been president of the International Union of Biochemistry—an indication of his standing as a biochemist, president of the International Academy for the History of Medicine and vice-president of the International Academy of the History of Science, on account of several major publications on historical aspects of medicine and science.

The present volume is concerned with the history of the sources of energy in living organisms, that is, fermentations, glycolysis, biological oxidations and photosynthesis. The narrative is detailed, giving the key references to the original papers, quoting literally many telling passages, and reporting the story of the complex ways by which the edifice of knowledge gradually took shape—a process which involved not only construction but a fair amount of demolition. Individual scientific publications often give an impression of a continued series of successful experiments because all the disappointing failures (although they may have been essential and unavoidable steps) have been omitted from the final presentation. At a different level this is also true for the history of scientific developments. Florkin illustrates this by relating many of the aberrations which are part and parcel of the steady progress of science.

Students of science are nowadays often disinclined to concern themselves with the historical development of their subjects. They feel that there is so much to read and to learn about the present state of affairs that there is no spare time for concerning themselves with how the knowledge was arrived at, and in particular with reading about aberrations which led to dead ends. Understandable though this attitude may be, for the proper appreciation of scientific knowledge it is essential, especially for those engaged on research, to know how knowledge was arrived at.

The way in which Florkin writes makes it pleasant and easy to get glimpses of the historical background of present knowledge. I feel confident that the book will be enjoyed by many readers, and as a source-book it will remain a standard reference work for a long time to come.

H. A. Krebs