

Biotechnology: A Textbook of Industrial Microbiology

by W. Crueger and A. Creuger

Sinauer Associates/Blackwell Scientific Publications, Oxford, 1984

308 pages. £24 50

This book provides a complete cover of the microbiological basis of industrial fermentation processes. An introductory section deals with microbial genetics covering strain development, metabolite screening and genetic engineering applications. An understanding of basic biochemistry appears to be assumed and the fundamental aspects of the biochemistry and regulation of cell metabolism are not considered. Growth kinetics precede discussion of fermentation systems which are treated in standard chemical engineering terms of stirring, gaseous exchange, mass transfer, etc. The level of presentation should be readily understood by the non-engineering qualified reader although the section of instrumentation and computer control is too brief and non-specific to be of real value.

The bulk of the remaining text, about two-thirds of the book, is a concise review of current industrial microbiological fermentation processes. Commercially important microbial biosynthetic pathways, fermentation conditions and product processing are systematically dealt with for the range of biofermentations covering organic and amino acids, enzymes and vitamins, antibiotics and single cell protein. This section of the book contains many examples of fermentations which are illustrated by well-chosen relevant data.

Antibiotic production naturally receives the most extensive treatment. Typically, each group of antibiotics is considered systematically in terms of sources, mode of action, biosynthesis and regulation, strain development and production methods.

Most references in the book refer to publication between 1975–1983 which is reasonable given that the authors regard the book primarily as a student-orientated textbook.

The book concludes with a review of sewage treatment, leaching and a consideration of future developments in biotechnology.

In general the book covers industrial microbiological aspects of biotechnology in a brief but concise manner. There may have been room for expansion of certain topics, it is clearly difficult to present chemical engineering aspects of large scale fermentation in 30 pages of text, and some topics have received scant treatment, e.g., principles of multivariant computer control of fermentation processes.

However, within the 305 pages the authors have successfully filled a library requirement in providing an excellent up-to-date textbook covering an increasingly important subject.

To paraphrase the Editor of this English translation, I can recommend this book "not only to students... but also to research scientists .. and industrial microbiologists" who seek a clear and concise presentation of the key principles and major processes of industrial microbiology.

The book as supplied to the reviewer cost £24.50 in hard cover. Since it is clearly student orientated one hopes that an appropriately priced edition may be forthcoming in the near future. It would be welcomed.

G.H. Fynn

The Basics of Biotechnology. Textbook. Tomsk: TPU Press, 1999, pp.91. This textbook consists of ten chapters devoted to the some problems of biotechnolog. Biotechnology can utilize techniques derived from chemistry, microbiology, biochemistry, chemical engineering and computer science (Fig.1.1). It must also aim at achieving a close working cooperation between other related fields such as medicine, nutrition, the pharmaceutical and chemical industries, environmental protection and waste process technology. The main types of industrial fields involved with biotechnology can be placed in seven categories (Table 1.2). A key factor in the distinction between biology and biotechnology is their scale of operation. Biologists usually work in the range