

Book Reviews

Maxwell, A.E.: Multivariate Analysis in Behavioural Research.

London: Chapman and Hall 1977. 164 pp. Soft bound £ 3.95

The goal of this reference work is to provide post-graduates and research workers with an insight into the theory underlying standard computer programs used for analyzing multivariate data, and to serve as preliminary reading material for more formal presentation in advanced texts (e.g. Kendall or Lawley and Maxwell). It is divided into 13 chapters covering the history of multivariate analysis, introduction to matrix techniques, principle component and factor analysis, multiple linear regression, canonical correlation, contingency tables and finally, an interesting separate chapter, written by B.S. Everitt, on cluster analysis. A literature list (94 citations) and an index are also included.

The text definitely achieves the goals stated and, though written in a simple and easy-to-follow style, it remains both responsible and dependably accurate. The examples are chosen from the behavioural sciences, but the basic text is applicable to many kinds of multivariate data - certainly including those commonly encountered by geneticists. Special features include carefully worked through numerical examples and sections outlining pitfalls.

Two minor drawbacks should be mentioned. The number of typographical errors in some sections is larger than it should be (e.g. pp. 47-79) and the continuity is occasionally broken by gaps which might be relatively easy to fill. For example, an intuitive notion of Karl Pearson's formulae (p. 75) could have been supplied simply by noting that $V_{21} = V_{22}V_{22}^{-1/2}V_{21} = V_{21}$ is estimated by $V_{21} = V_{22}U_{22}^{-1/2}U_{21}$. A similar brief description of V_{11} on the same page, reasons for the restriction $(p-k)^2 > p+k$ (p. 48) and for expression 6.7 and 7.5 might have been supplied. These errors and omissions are not serious, however, and it is very easy to predict that this fine book will become a standard reference in the geneticist's library.

L.T. Douglas, Nijmegen

Ghose, T.K.; Fiechter, A.; Blakebrough, N. (Eds.): Advances in Biochemical Engineering.

Berlin-Heidelberg-New York: Springer 1976. 172 pp., 87 figs., 14 tabs. Bound DM 60,--

The series "Advances in Biochemical Engineering" has been founded in order to keep bioengineers and microbiologists informed of the fundamentals and advances pertaining to the biochemical processes they need for the construction of bio-plants.

The four contributions of the recently published volume 4 cover a wide range of subjects concerning biochemical engineering. The author of the first paper "Transfer of Oxygen and Scale-Up in submerged Aerobic Fermentation" Y. Miura (from the Department of Biochemical Engineering of the Osaka University) deals with the different problems of oxygen transfer in cultivation of single-cell as well as multicellular organisms. The paper is of high relevance because submerged aerobic fermentation is now ubiquitous in the development of new antibiotics and in practically all other fermentations of industrial significance. A summary of the process of flocculation is given in chapter 2 "Microbial Flocs and Floccula-

tion in Fermentation Process Engineering" by B. Atkinson (Dept. of Chemical Engineering of the University of Manchester) and I.S. Daoud (Engineering College of the Baghdad University). The application of the combined analog/digital computer technique to microbial processes is reviewed by P.L. Rogers (University of New South Wales) in chapter 3 "Analog/Hybrid Computation in Biochemical Engineering". A survey of the several entrapping procedures in relation to the qualities of the resulting entrapped enzymes is given in chapter 4 by K.F. O'Driscoll from the Dept. of Chemical Engineering of the University of Waterloo in the contribution "Preparation and Properties of Gel Entrapped Enzymes".

This fourth volume is characterised by the same high level as the first three volumes and is very suitable to inform bio-engineers and microbiologists of basic principles and progress in the field of biochemical processes and to familiarize the biochemist with how the engineer thinks and proceeds in his work.

R. Piechocki, Halle/Saale

Shaltiel, S. (Ed.): Metabolic Interconversion of Enzymes 1975. 4th International Symposium, held in Arad (Israel).

Berlin-Heidelberg-New York: Springer 1976. 234 pp., 147 figs., 66 tabs. Cloth DM 72,--

In recent years rapid progress was achieved in elucidating the different mechanisms of reversible interconversions of enzymes and their significance in metabolic regulation. When this field was opened by the Cori and when E.G. Krebs and E.H. Fischer discovered in 1956 the phosphorylation-dephosphorylation cycle of phosphorylase nobody anticipated the general significance of this finding.

The interesting achievements in this area of biochemistry form the background for hitherto four International Symposia entitled "Metabolic Interconversion of Enzymes", the last of which having been held in Arad (Israel) April 27th-May 2nd, 1975 organized by S. Shaltiel and other outstanding Israelitic scientists.

The book under review is the outcome of this Symposium. It represents an excellent selection of first-class lectures having been delivered by internationally well-known experts in the field.

Into the center of interest the interconversions of the enzymes involved in glycogen metabolism have been moved. Really, enormous progress in understanding has been achieved in the multivalent phosphorylation of the participating enzymes. Whereas the "classic" glycogen phosphorylase represents a "simple" case, because only one site of phosphorylation is involved, other systems are phosphorylated at two or more sites (phosphorylase kinase, glycogen synthetase, pyruvate dehydrogenase and histone F_1). In phosphorylase kinase it could be shown how a secondary phosphorylation can control the rate of dephosphorylation of the primary site, not only by altering the conformation of the enzyme itself, but also by enabling an extra enzyme to be introduced into the dephosphorylation process.

To the further topics discussed during the Symposium belonged the assembly, function and control of pyruvate dehydrogenase, theoretical aspects of the cascade regulation systems by covalent modification,

the physiological significance of futile cycles, the ADP-ribosylation of elongation factor 2 by exotoxin A and diphtheria toxin, the protein-ADP-ribosylation system of mitochondria, and *E. coli* RNA polymerase modification after T-phage infection. In other chapters the phenomena of specific intracellular proteolysis as a possible regulatory device and the problems concerned with the exploration of enzyme regulation in situ have been debated. Finally lectures are included about histidine decarboxylase, regulation of chloroplast enzymes by light and the behaviour of enzymes in aging cells.

Needless to say, this report about the Fourth Meeting on Metabolic Interconversion of Enzymes as the foregoing volumes represents a milestone and provides valuable and solid knowledge about the newest results in this rapidly expanding field.

The reviewer is sure that this well-equipped book, well worth the money, will find wide circulation.

E. Hofmann, Leipzig

Demerly, Y.: Génétique et Amélioration des Plantes.
Paris: Masson 1977. 304 pp., 175 figs. Bound
160, -- FR

The book is divided into 3 sections: (1) Expression of the genotype in higher plants. After the almost ob-

ligatory quotation of phages and the bacterial operon, a chromosomal genetics of higher plants is presented. This is, as to be expected and necessary, mostly directed to population genetics. (2) Reproduction systems in higher plants. In this section also various systems of fertilization and ways of alternation of generations are treated. (3) Methods of plant breeding. Emphasis is put on a detailed description of classical selection methods and on the applications of polyploidy. It is a pity that in this voluminous section the hybridization by using haploid protoplast is treated with only a few lines.

This book, concentrating exclusively on the breeding of higher plants, gives, so far as the reviewer saw, no hints for the breeding of edible mushrooms or other important microorganisms for industrial application. The text is written prolix. It comprehends, as the author emphasized, numerous hypothesis and speculations, which are explained by figures and schemes. But no photographic documentation is included. Considering the fairly high price a better presentation (printing, paper quality, reproduction of illustrations) could have been expected. This book can hardly be expected to be read outside the french speaking area.

K. Esser, Bochum

Announcements

FEBS 12th Meeting Dresden, GDR, 2-8 July 1978

The Biochemical Society of the German Democratic Republic invites all members of FEBS to participate in the 12th FEBS Meeting. It is the aim of the organizers to provide optimal opportunities for scientific and social contacts for all participants, particularly for young scientists. The Scientific Program will include plenary lectures, symposia, colloquia, round table discussions and poster sessions.

Symposia

- 1 DNA-protein interactions
- 2 Gene expression
- 3 Protein structure and assembly
- 4 Structure and function of enzymes
- 5 Bioenergetics
- 6 Processing and turnover of proteins and organelles in the cell
- 7 Cyclic nucleotides in cell regulation
- 8 Regulation of secondary plant product and hormone metabolism

Colloquia

- 1 Technology of genetic engineering
- 2 Molecular immunology
- 3 Molecular diseases
- 4 Macromolecular changes and neuronal function
- 5 Technical enzymology
- 6 Investigation of biopolymers with scattering methods
- 7 Cytochrome P-450
- 8 Biochemical Education
- 9 Xenobiochemistry

For further information, write to: 12. FEBS Meeting Dresden, DDR-806 Dresden, P.O.B. 313

A Post-Congress FEBS-Symposium on "Antimetabolites in Biochemistry, Biology and Medicine"

will be held in Prague, Czechoslovakia, July 10-12, 1978, jointly organized by the Biochemical Societies of Czechoslovakia and of the German Democratic Republic, the Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences and the Central Institute for Molecular Biology of the Academy of Sciences of the German Democratic Republic.

The program of this symposium will include the following topics:

1. Antimetabolites as tools in enzymology
2. Consequences of analogue incorporation into nucleic acids
3. Aspects of selective antiviral action
4. Rational approach to the use of antimetabolites in combination cancer chemotherapy and in immunosuppression
5. New types of compounds, their synthesis and mechanisms of action

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Prof. P. Langen, Central Institute of Molecular Biology of the Academy of Sciences of GDR, DDR-1115 Berlin, Lindenberger Weg 70.