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elementary textbook as we know it at the time, Playfair's *Illustrations of the Huttonian Theory* was certainly available. It would be interesting to know the names of the people who attended Davy's classes and the influence that he had on them. We know for instance from Geikie's biography that R.I. Murchison attended Davy's class in 1812 and that in 1823 Davy encouraged Murchison to go up to London and take some lectures in chemistry, etc. Davy's further irresistible bait was that he would soon get Murchison into the Royal Society (Davy was at that time its President!). Perhaps then Davy's greatest contribution to geology was to persuade Murchison to abandon fox-hunting and take up geology instead.

Geologists and historians will be grateful to the editors for producing this book and continuing the tradition of academics in the mid-western United States in providing, indeed specializing in, transcripts and facsimile copies of the works of the late-eighteenth and early-nineteenth century philosophers of the Earth. Future historians of the history of science will no doubt one day wish to consider the reason for this phenomenon.

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Cellular regulatory mechanisms

John Mowbray

Principles of Metabolic Control in Mammalian Systems. Edited by R.H. Herman, R.M. Cohn and P.D. McNamara. Pp.670. (Plenum: 1980.) $35, £22.05.

THE editors of this large book are also the main contributors as authors or co-authors of 11 of the 15 chapters. Their aim, according to the preface, is to discern basic regulatory principles and to embody these in a theoretical approach which can be applied to any set of metabolic reactions. Anyone conversant with the development of metabolic regulation in recent years could be forgiven the thought that such an attempt is premature; close reading of the resulting volume has unfortunately done nothing to dispel my prejudice in this respect. This does not mean that the work should be dismissed out-of-hand, for there is a patent need to collate and review critically the diffuse literature on cellular regulation so that the various arguments may be widely appreciated and tested.

The subject is not one for those without a basic grounding in biochemistry, and yet many of the chapters are padded out with rather large amounts of elementary textbook information. The second chapter, for example, discusses metabolic networks from a non-linear, non-equilibrium, thermodynamic point of view in the first part and defines, as in a primer, hydrophobic, electrostatic, covalent and van der Waals interactions in the second part. In similar vein the special purpose of the book receives little or no contribution from the chapters on enzymes and coenzymes, protein synthesis, DNA replication and the cell cycle, membrane enzymes and membrane structure. All of these topics are better presented (there is a noticeable dearth of diagrams in this volume) in most textbooks for the beginner, and are readily accessible in expert reviews or monographs for the more advanced reader. On the other hand, a topic not well covered as yet, protein degradation, is presented in a straightforward account with the methodological reservations adequately expounded.

Of the chapters devoted to regulatory mechanisms, the opening chapter in the book develops the hierarchical classification of metabolic processes from which the authors believe important principles can be deduced. The lists and tables are informative, albeit less than comprehensive. In a later contribution, modulation of enzyme activity is discussed without achieving the penetration of specialist monographs like those by Newsholme and Start (Wiley, 1973), or Ferdinand (Wiley, 1976), and it lacks the breadth of some recent reviews. The account of feedback/forward on complex pathways such as glycolysis strikes me as difficult to follow without the aid of diagrams unless one is already familiar with the examples. The chapter "Secretion Mechanisms" is a good, clear account with sufficient references for further reading, and that on the role of compartmentation is well written and nicely balanced with examples taken from key processes. Finally, the chapter dealing with hormone mechanisms has an interesting section on comparative biochemical endocrinology which is perhaps too complex for the novice, and a comprehensive though somewhat uncritical treatment of fast-acting hormones. By contrast the treatment of steroid hormones is cursory in the extreme, spoiling what is otherwise one of the better chapters.

In the end, while there are selected chapters one can recommend to one's students, this is a book for the specialist who can whin the grains of very real effort the editors have sown from the chaff of their self-indulgence.

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