

Membranes layer by layer

Clive Ellory

New Comprehensive Biochemistry, Vols I and II. Vol. I, *Membrane Structure*. Edited by J. B. Finean and R. H. Michell. Pp.271. ISBN 0-444-80304-1. (Elsevier/North-Holland Biomedical: 1981.) Dfl.140, \$59.50. Vol. II, *Membrane Transport*. Edited by S. L. Bonting and J. J. H. M. de Pont. Pp.362. ISBN 0-444-80307-6 (Elsevier/North-Holland Biomedical: 1981.) Dfl.140, \$59.50.

MEMBRANE expansion is a term that not only applies to certain important cellular processes, but also describes the status of the whole field of membrane biology. In addition, it seems to have become a clarion call to publishers. Predictably, however, books on the topic are extremely variable in quality, often representing unrefereed reportage at symposia. Happily, the present two works are excellent, comprising comprehensive and scholarly reviews by experts, each of whom describes the present state of knowledge in his area of membrane biology.

The depth in which subjects are covered in the first volume, *Membrane Structure*, is impressive, and is reflected by the relatively few (six) chapters of which it is composed. An initial contribution by the editors sets the scene and introduces the Singer-Nicholson fluid mosaic model — now ten years old and very much part of the established orthodoxy — as probably the last generalizable membrane model. They suggest new models will not be general, instead emphasizing the individuality of specific membranes at an advanced level of definition. Edidin produces a detailed and critical analysis of the results obtained from applying spectroscopic techniques to measuring molecular motions of membrane components, particularly the lateral diffusion of membrane proteins. op den Kamp reviews the evidence for asymmetry of both membrane proteins and lipids. Although agreeing that membrane proteins are always distributed in a completely asymmetric manner, he ends on a cautious note with regard to phospholipid asymmetry, counselling care in the interpretation of experimental results which rely on phospholipid modification during localization.

In his excellent review of membrane glycoproteins, Gahmberg starts by admitting that we do not know the reasons why all known cell surface proteins are glycoproteins. He finishes, however, on a more positive note by proposing two plausible roles for the carbohydrates attached to surface proteins.

The final two chapters deal with the demanding topics of membrane-bound enzymes (including the complexities of the adenylyl cyclase system) and the structure and assembly of membrane proteins. Again the overall quality is impressive,

although some results are perhaps presented more optimistically than they deserve; for example, Freeman's discussion of Arrhenius plots could have included a word of caution on kinetic artefacts.

The credentials of the contributors to Vol. II, *Membrane Transport*, are equally impressive, but the topics are narrower or at least their treatment is less comprehensive. This is reflected numerically with 12 chapters instead of 6. Nevertheless, every contribution is worthwhile, and I particularly liked the review of anion-sensitive ATPase(s) by de Pont and Bonting, which raises the status of this system by focusing attention on the amount of information now available. In contrast, the contribution on SR Ca-ATPase seemed surprisingly lacking in data on structure and subunit composition.

The reviews on membrane permeability

for water and polar and lipophilic molecules by Sha'afi and Stein respectively, and the contribution by Weinstein *et al.* on the coupled transport of water reveal that we have made less progress towards understanding transport in membranes than we have towards elucidating their structure.

Stein's major contribution to Vol. II, on the kinetics of mediated transport, is presented with his usual rigour and vigour, and may have the consequence of promoting an uneasy conscience in those of us who publish papers defining membrane transport systems with less than the full kinetic treatment.

Technically the quality of printing and illustrations is good, and these are books which few membrane biologists can afford to be without. I hope this series can maintain its momentum and adhere to the overall title of the *New Comprehensive Biochemistry*. □

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Evolution: opinions, axioms and "isms"

Jonathan Howard

Evolution: Genesis and Revelations, with Readings from Empedocles to Wilson. By C. Leon Harris. Pp.339. Hbk ISBN 0-87395-486-6; pbk ISBN 0-87395-487-4. (State University of New York Press: 1981.) Hbk \$29.50, £20.65; pbk \$9.95, £7. *Science, Ideology, and World View: Essays in the History of Evolutionary Ideas*. By John C. Greene. Pp.202. Hbk ISBN 0-520-04217-4; pbk ISBN 0-520-04218-2. (University of California Press: 1981.) Hbk \$16.50, £11.50; pbk \$5.95, £4.

DESPITE a respectable suit of clothes, Darwinism remains deeply controversial. Even intricate internal disputes, over cladistics, over sociobiology, spill over into the public domain in extraordinary displays of bad temper in the popular press (if I may so designate, in this context, *The Times*). It is quite funny how many people feel entitled to express a public opinion regarding, say, the validity of the theory of evolution, from a standpoint of the most abysmal ignorance of any biological phenomena at all save the workings of their own bodies.

Controversy, if raucous enough, takes the reading public to the bookshops, only to be confronted with the mountain of Darwin and evolution studies. Nothing is more intellectually stultifying than to be faced with too much to read, yet more and more stuff is pressed on our attention. If, as seems likely, the evolution debate in the wide sense marks one of the most far-reaching intellectual revolutions in history, it would be a pity to devote what little time

one has to reading the wrong books. If the publishers refuse to discriminate between worthwhile and trivial books, the critics must.

Here is such a discrimination. I have two review copies of books on the history of evolutionary ideas, one a flabby paperback by a (to me) unknown biologist, the other an elegant hardback by a distinguished historian of biology. But if the general reader based his judgement on these superficial observations, and settled for the elegant book by the distinguished author, he would make a grave mistake. For it is not worth his attention, while the less favoured volume is brilliant and original, and still more exceptional in being very funny. *Evolution: Genesis and Revelations, with Readings from Empedocles to Wilson* is the punning, bathetic title of C. Leon Harris's primer in the history of evolutionary ideas. Brief readings from the evolutionary masters are sandwiched between essays by Harris in which he first introduces, and later discusses, his readings for the session. The great joy of the book is that it is deeply opinionated. There is nothing more agreeable than finding a scholar with a clear point of view, clearly stated, and supported with a will and a wit. Harris has all of this. His discursive essays cover an extraordinary range, each one a gem of concentrated opinion and argument which flows onto the page at a terrific pace. Sometimes, indeed, the pace seems too great for the constraints imposed by English grammar, but after reading a few pages I could