

Metal ions in biological systems, Volume 6: Biological action of metal ions: edited by Helmut Sigal, Marcel Dekker Inc., New York and Basel, xii + 453 pages, Sfr. 130.

The first article in this volume is a useful review of zinc enzymes by Chlebowski and Coleman (Yale), a rapidly broadening research area which is treated comprehensively and even includes a "stop press" section with late news of alkaline phosphatase and eukaryotic superoxide dismutase. The next, on vanadium in biological systems (by Briggs and Swinehart, Davis) is also comprehensive but the research area is far from expanding: the capricious appearance of this metal in exotic environments such as the blood of tunicates (now in the fly agaric also) is as enigmatic as it was half a century ago; a fascinating backwater of biochemistry. Nitrogen fixation, the next topic (by Schneider, Yellow Springs, Ohio) is regrettably out of date, and prone to inaccuracies on the biological side. I am bewildered that the author (and editor) should, in a volume of the title above, ignore almost completely the important ions of nitrogenase (Mg^{2+} and, in some systems, Mn^{2+}) and concentrate on metal atoms (Fe and Mo) which are non-exchangeable components of the enzyme proteins' structure and not usefully considered as ions at all. This article adds nothing to an already over-reviewed topic. Darnall and Birnbaum (New Mexico State Univ.) review recent developments on calcium activation of trypsinogen authoritatively; the use of lanthanides as substitutes for Ca^{2+} has advanced knowledge considerably. I can offer no informed opinion on the article on metal chelates and neurotransmitters (by Rajan, Colburn and Davis of Various Institutes) except to note that it is reasonably brief as befits, so the authors tell us, a preliminary hypothesis on synaptic transfer. The final article on divalent metals in muscle contraction (Briggs and Solaro, Richmond, Va.) returns to a long-established topic of biochemistry whose essential complexity justifies repeated reviews and re-assessment. The book includes a good index; it is highly specialized and is prepared from "camera-copy" manuscripts. Review volumes covering rapidly developing subjects go out of date rapidly; whether the balance of substantial to ephemeral matter here justifies its purchase will clearly depend both on local interests and local library budgets.

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