All is not gold that glitters and so in the polysaccharide field all is not arabinan that yields arabinose on hydrolysis. Animals cannot metabolise compounds that only exist on the printed page.

The book has numerous tables, a clear presentation, and a sense of purpose and relevance that must derive from the fact that many of the contributors carry out research in institutes and departments with interests clearly relevant to herbage. There are a number of minor errors but these should not be viewed as detracting from the deserved praise. The book is much needed, timely, and has no rival. It provides a critical appraisement of new and old methods of analysis. Not only the target readership but many others could benefit from reading or consulting it; while the applied scientist in agriculture will benefit from this book, so will the pure scientist dabbling in the constituents and growth of herbage plants.

University of Aberdeen K. C. B. WILKIE

Progress in the Chemistry of Organic Natural Products: edited by W. HERZ, H. GRISEBACH and G. W. KIRBY. Springer Verlag, Vienna, 1973. Vol. 30, VIII + 666 pp. $92.30.

THIS volume of six review articles maintains and sustains the high standard we have come to expect from this distinguished series which was founded by L. Zechmeister in 1938. To the phytochemist, it is worth having just for the masterly and timely comprehensive account of the chemistry and biology of the saponins by R. Tschesche and G. Wulff. These authors describe 452 structures, quote 617 references and provide a wealth of useful tables. A remarkable range of oligosaccharides conjugated with sapogenins are listed; many are branched chain and have as many as 6–8 monosaccharide units. Two other reviews in this book also cover higher plant constituents: J. Polonsky writes on the quassinoid bitter principles and H. D. Locksley on the biflavanoid compounds. Both are excellent articles but written essentially for the pure organic chemist; as a phytochemist, I would have welcomed more information in these accounts on methods of detection in plants and on taxonomic distribution.

The microbial chemist is catered for in this volume by accounts of the macrolide antibiotics by W. Keller-Schierlein and of ergochrome by B. Franck and H. Flasch. The remaining two articles will command a wider audience, since they cover chemical aspects of bioluminescence, by M. J. Cormier and co-workers, and sexual hormones of lower plants and hydroids, by L. Jaenicke and D. G. Müller. The book is impeccably edited and extremely well produced.

University of Reading J. B. HARBORNE

Metal Ions in Biological Systems: Volume 3, edited by HELMUT SIGEL. $22.75.

THIS book contains seven chapters on the role of metal ions in enzymes and enzyme-catalyzed reactions, and with the interactions of ions with other proteins and nucleic acids. Although the chapters are mainly oriented towards animal systems, they are of interest to plant biochemists, especially those dealing with The Role of Copper in Cytochrome

Oxidase (by D. C. Wharton) and in Hemocyanins (by Lontie and Vanquickenborne). The last chapter on Monovalent Cations in Enzyme-catalyzed Reactions (by C. H. Suelter) is undoubtedly also of interest, since it deals with a number of important enzymes of general metabolism in which the alkali metals play an important role. All the chapters are well written and have an adequate bibliography, and most give mathematical treatments of the facts described.

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