

steps and chemical properties of the original compounds and their degradation products. In fact, in a number of cases, the expressed evidence for the structure of a particular naturally occurring compound is a précis of the original paper. This presentation of the information gathered from an investigation is very useful to a researcher working in related fields and may save time when he wishes to consult the literature. Quite frequently the physiological activity of compounds is emphasized, and a brief reference is made to the biosynthesis of furocoumarins. Adequate coverage is given to the physical properties of compounds. Chapters deal with the chemistry of the furocoumarins, furochromones, furoxanthones, furoflavones, furoisoflavonoids and chromanochromanones (the Rotenoids) in some detail, giving an extensive background knowledge to anybody interested in these topics. In reviewing a book of this type it is very difficult to single out any particular item for special reference, because the number of compounds mentioned is so very large and nearly all of them are treated with the same degree of importance.

It is easy to see that a great deal of work and endeavour has gone into producing this excellent book and it will without doubt find a place in all chemical libraries. This book provides a useful summary of information which will be of great value to research workers undertaking investigations in the oxygen heterocyclic field. The layout of the book is very good and it is easy to praise the excellent diagrams and tables, which are a great help to the reader. In mentioning the inclusion of the more than adequate number of references, it is worth drawing attention to the fact that every effort has been made by the author to include papers indexed by *American Chemical Abstracts*, up to and including 1964, and subsequent papers in the more important journals up to December 1965.

R. LIVINGSTONE

## SORTING STEROIDS

### The Gas Liquid Chromatography of Steroids

Edited by J. K. Grant. (Memoirs of the Society for Endocrinology No. 16.) (Proceedings of a Symposium held at the University of Glasgow on April 4-6, 1966.) Pp. viii + 294. (London and New York: Cambridge University Press, 1967.) 70s. net; \$13.50.

THIS further edition in the series of Memoirs of the Society for Endocrinology contains the sixteen papers (one as an abstract) presented at the symposium on the "Gas Liquid Chromatography of Steroids" and also the verbatim report of the subsequent discussions. The stated purpose of the symposium was to bring together the European workers in the steroid field to discuss and assess the present position of gas liquid chromatography and to consider new techniques to be used in this field and also in conjunction with it. Some of the speakers were not working on steroids and so it was hoped that their contribution would prove both critical and provocative. As the editor states in the preface, however, more was gained in informal rather than formal discussion and, as a result, such benefit is not recorded. As was to be expected, the standard of papers is, on the whole, high.

The first three papers deal mainly with the basic technical problems of gas liquid chromatography and include an excellent discussion of the characteristics of capillary columns, as well as a useful and informative description of the handling of micro-litre quantities. Solutions to some of these basic problems are proposed and, while most are acceptable, perhaps it is a little unreasonable to hope that "instrument manufacturers will improve the design of all their Chromatographers" (page 6—an unfortunate transposition).

There follows an excellent paper on the conditions required for the separation of steroids by this technique.

This is a very condensed and precise contribution which deals with such aspects as the effects of column and column packing, alterations in the stationary phase, the preparation of and the effects of derivative formation and the relationship between the structure of steroids and their behaviour when subjected to gas liquid chromatography.

The principles of the systematic analysis of steroids are then considered briefly, with references to the practical details already published. The results of the application of such a scheme to the study of free and conjugated steroids in human placenta are of considerable interest and the scheme itself indicates the amount of chemical manipulation required before such extracts can be applied to gas liquid chromatography columns. The need for this preparation is borne out very well in subsequent papers on determination of oestrogens, the use of electron capture in the ultramicro detection of steroids and the fractionation of steroids before gas chromatography. The combined use of an electron capture detector with heptafluorobutyrate derivatives of steroids appears to offer greatly increased sensitivity and may well lead to the greater use of these chromatographic techniques in steroid analysis.

The many aspects of the quantitative determination of steroids are dealt with very adequately and this paper underlines the great care that is required before useful results can be obtained.

The estimation of cortisol and prednisolone and the use of haloalkylsilyl ether steroid derivatives are discussed in subsequent papers, and also the problems of investigating such complex mixtures as the metabolites of plant sterols in faeces.

Techniques, such as mass spectrometry and those involving radiochemistry, which are less commonly used in steroid gas liquid chromatography are the subjects of the following three papers. It is perhaps unfortunate that only an abstract is given of one of these papers, for its inclusion would have afforded an opportunity to evaluate the relative merits of the discontinuous and the continuous isotope counting techniques.

The organizers of the symposium are to be congratulated on the success of their meeting and this book is a useful addition to the literature.

D. B. HORN

## CELLULAR ORGANIZATION

### Molecular Insights into the Living Process

By David E. Green and Robert F. Goldberger. Pp. xii + 420. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1967.) 78s.

THE authors describe this popular account of molecular biochemistry and cellular organization as being written in a narrative style. It soon transpires, however, that this amounts to serving the molecular "meat" in an anthropomorphic "gravy". Thus the reader is asked to admire "Nature as a brilliant chemist" or "Nature's exploitation of transition state chemistry"—banalities which neither improve the literary flow nor aid the understanding. The authors' own uneasiness about this approach has unfortunately only prompted them to emphasize a Darwinian view of the evolution of molecules which is surely misapplied and will undoubtedly add to the general confusion about this subject.

The central theme of this book, as might be expected, is contained in a ninety page account of the mitochondrion and electron transport system (energy transduction) and the structure and properties of cell membranes. The descriptions are clear and the accompanying diagrams and electron micrographs are good. It does not matter that the ultimate location of enzymes within the mitochondrion is still a subject of some controversy and may require some reappraisal in the future.

Unfortunately, the remainder of the book is very patchy in quality. The opening chapters augur well with an