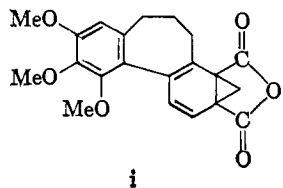


stantial downfield shift of one resonance are in accord with structure VIIIa where the methylene is doubly allylic. From models¹⁹ it is apparent that the methylene proton resonating at 63.8 c.p.s. is shielded by the 2,3-double bond in VIIIa where ring A cannot be planar.



That the enol derivatives are represented structurally by VIIIa-c, and are not resonance hybrids of which structures VII and VIII represent contributing forms, is further evidenced by the consistency of *J* values (10 c.p.s.) for the geminal cyclopropyl protons in VIIIc, irrespective of the solvent polarity.

The action of the fluoramine on other tetracyclic and bicyclic alcohols will be the subject of future communications.

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BOOK REVIEWS

Traité de Biochimie Générale. Tome II. Les Agents des Synthèses et des Dégénéralions Biochimiques. Premier Fascicule. Vitamines, Oligoéléments, Hormones. By M. JAVILLIER, M. POLONOVSKI, M. FLORKIN, P. BOULANGER, M. LEMOIGNE, J. ROCHE, and R. WURMSER. Masson et Cie, 120, Boulevard Saint-Germain, Paris VI, France. 1962. 700 pp. 17.5 × 25.5 cm. Price, broché, 140 NF.; cartonné toile, 155 NF.

This is the third volume of a series of six, comprising this "Traité de Biochimie Générale." The first two volumes dealt with the chemical composition of organisms and appeared in 1959. The present third volume is the first of two parts covering the agents of biochemical syntheses and degradations and is limited to vitamins, trace-elements, and hormones, while the second part, which will appear shortly, will cover enzymes. Volumes 5 and 6 will discuss the biochemical processes and their coordinations, and are expected some time in 1963.

Part I deals with Vitamins. The first chapter covers vitamins A₁ and A₂ and represents a very good summary of the state of our knowledge in this field. Chapter II presents vitamins D in the same comprehensive way. Chapter III describes vitamins R (tocopherols) while Chapter IV covers the vitamins K.

The first 130 pages are therefore devoted only to the fat-soluble vitamins. Pages 131-372 discuss the water-soluble vitamins. Here again, a chapter is reserved for each kind, including vitamin B₁ (thiamine), vitamin B₂ (riboflavin), vitamin PP (niacinamide), vitamin B₆ (pyridoxine, biotine, pantothenic acid, inositol, thioctic and lipoic acid, folic acid), vitamin B₁₂, vitamin C or ascorbic acid, and vitamin P.

There is even an appendix on "Pteridines" in which the subject is treated in much the same way as a regular chapter on the more clearly defined vitamins. While no attempt is made to exhaust any of these subjects in depth, a great amount of effort is made throughout the book to cover at least adequately every subject which could be considered as coming under the official heading, "Vitamins."

Part II of the book, which in fact covers only 55 pages, describes the trace elements. The treatment here is quite different. Most of this part concerns the experimental determination of these trace elements in green plants, in animals, and in various organisms, while only a few pages are devoted to general and more specific roles played by these elements in the life processes.

The third part, pages 439-637, describes hormones in four chapters and the first one deals with phyto hormones like the gibberellins. Chapter II, in two parts, discusses the hormones of the vertebrates, the first part covering the peptide hormones and the second part the hormones which are derived from amino acids, such as serotonin, adrenalin, thyroxine, etc. Chapter III discusses the sterol hormones while Chapter IV, the last and shortest of the book, describes the hormones of the arthropods.

After spending so much time to cover so adequately the vitamins, one has the feeling that no attempt was made to cover as adequately the fields on trace elements and on hormones. This is especially true of the hormones where the amount of knowledge available today is very large indeed, but the coverage is sparse, resulting in a feeling of improper balance between the three parts of the book. One would like to see a much more thorough treatment of the peptide hormones. It is true, however, that the volume to come covering enzymes will deal with subjects which are closely related to peptide hormones. However, in the steroid hormone field, one would expect to see at least a brief mention of some of the highly potent corticoid and progestational

hormones used in therapy today, even if these are mostly synthetic steroids. The very fact that they are generally more potent than the naturally occurring steroids and have become so important to the modern treatment of many metabolic diseases would seem to justify their coverage in this book.

However, as is often the case in French textbooks, this one is highly readable, clear, and the presentation is very clear and systematic. The tables of contents make it relatively easy to find what is to be found in the book, although, especially in the hormone field, many valuable data could have been added. Fortunately, there is a good author index and a good subject index which make this book all the more valuable as a source of general reference in the covered fields.

Summarizing, this edition of the "Traité de Biochimie Générale" is still in the very high tradition of the French scientific publishers and certainly has its place between the long comprehensive treatment of the more limited fields and the short but broad coverage of text books.

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Adsorption and Collective Paramagnetism. By PIERCE W. SELWOOD, University of California, Santa Barbara, Calif. Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1962. ix + 189 pp. 15.5 × 23.5 cm. Price, \$7.50.

In the study of heterogeneous catalysis, a variety of experimental techniques has produced a variety of interesting results. In particular, the study of the adsorption of gases has proceeded to such a great extent that it has become a self-sufficient field by itself. In fact, the most successful studies of adsorption often have only a secondary application to catalysis itself; for example, the estimation of surface area by nitrogen adsorption (the BET method) is important to catalysis, but has many applications to systems that are not catalysis, such as carbon blacks.

The problem is that the simple measurement of adsorption gives little information as to the state or chemical nature of the adsorbed species; for that reason collateral studies, such as infrared spectra, electric conductivity, and electron emission potentials have been applied to catalysts in the presence of adsorbed gases.

One of the most successful and promising of these techniques is described at length in this monograph. Relatively small particles, typical of supported catalysts, that would be ferromagnetic in the bulk phase, often exhibit a species of paramagnetism. If a particle contains *n* atoms of individual moment μ these can produce a total moment $n\mu$ that interacts with similar particles. This particle-particle interaction is not ferromagnetic, as it would be in the bulk phase, because the relatively large distance between particles reduces the interaction energy between them.

Because of complications, notably the heterogeneity in size of the particles, the treatment of systems of this type is not as simple as, say, the paramagnetism of a gas, but the author is able to present a successful treatment of the problem. When this treatment is then applied to the same catalyst, after the chemisorption of a gas such as hydrogen, a powerful tool for the study of catalyst-substrate interaction is provided.

This book is particularly useful in that the complete details of the procedure are elaborated; it gives both the theoretical back-