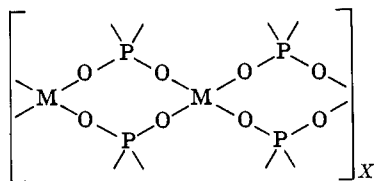


about 0.4 dl./g. The hybrid polymer of cobalt(II) with $\text{OP}(\text{C}_4\text{H}_9)_2\text{O}^-$ and $\text{OP}(\text{C}_8\text{H}_{17})_2\text{O}^-$ bridging groups in 1:1 ratio may be fabricated into leathery films that remain flexible down to about -60° .

Evidence is now accumulating from X-ray studies^{2,4} to support the double-bridged structure we originally assigned to the poly(metal phosphinates). On first glance it is hard to reconcile this double-bridged structure, *i.e.*



with the low-temperature flexibility observed for the amorphous specimens reported here. However, an examination of Stuart-Briegleb models⁵ of some of these compositions reveals a high order of backbone flexibility since the alkyl side chains provide negligible steric hindrance and the basic eight-membered ring spirane struc-

(4) C. E. Wilkes and R. A. Jacobson, *Inorg. Chem.*, **4**, 99 (1965).

(5) E. Leybold's Nachfolger, Manufacturer.

ture is inherently flexible. In addition, the alkyl side chains tend to shield the polymer from any polar inter-chain attractions present in the metal phosphinates we made earlier. They, furthermore, can create a "flexible sheath around each chain molecule,"⁶ thereby reducing the resistance of the surrounding medium to movement of the polymer molecule.

The magnitude of the intrinsic viscosities observed in chloroform for the compositions reported here is well within the range for organic high polymers. It is interesting to note, however, that in agreement with the observations of Crescenzi, *et al.*,² the intrinsic viscosity of a sample of $[\text{Zn}(\text{OP}(\text{C}_4\text{H}_9)_2\text{O})_2]_x$ in benzene is quite low, although the inherent viscosity at 0.5% is 0.25 dl./g.

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(6) A. H. Willbourn, *Trans. Faraday Soc.*, **54**, 717 (1958).

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Book Reviews

Traité de Biochimie Générale. Tome II. Les Agents des Synthèses et des Dégradations Biochimiques. Second Fascicule. Les Enzymes. By M. JAVILLIER, M. POLONOVSKI, M. FLORKIN, P. BOULANGER, M. LEMOIGNE, J. ROCHE, and R. WURMSER. Masson et Cie, 120 Boulevard Saint-Germain, Paris 6, France. 1964. 753 pp. 17 × 25.5 cm. Broché, 140 F.; cartonné toile, 155 F.

A treatise of general biochemistry is presently written by French biochemists and organic chemists, and the book "Les Enzymes," edited by P. Boulanger and J. Polonovski, is the fourth volume to be published in a series of six volumes. The text covers 714 pages, which are divided into 218 pages describing the constitution of enzymes and the nature of enzymatic reactions and 496 pages describing selected enzymes.

Whereas this book fulfills a definite need for French-speaking biochemists, it is doubtful that its usefulness to American readers will override the language barrier. The only book of similar size on the same subject written in English is the one of Dixon and Webb. In both these books the approach is, however, quite different since Dixon and Webb discuss general principles and use specific enzymes as examples, whereas the present work gives an extensive description of many enzymes. The outlook of "Les Enzymes" is more similar to the series "The Enzymes," published in 1959 by Boyer, Lardy, and Myrbäck, but the latter work covers more than 4000 pages. As judged by the only volume which has appeared at the present time, the volumes dealing with enzymes in the treatise "Comprehensive Biochemistry," edited by Florkin and Stotz, may be quite similar to "Les Enzymes," but they will show a far more extensive coverage of most enzymes.

The main criticism to be addressed to "Les Enzymes" is the excessive amount of space used for glycosidases and related enzymes, as compared to the extremely succinct treatment of the oxido-reduction enzymes. A comparison of "Les Enzymes" with "The Enzymes" shows, respectively, for glycosidases 120 pages versus 180 pages, and for phosphorylases 8 pages versus 55 pages,

but for cytochrome 15 pages versus 140 pages, and for catalase 1 page versus 65 pages. This unusual distribution greatly limits the impetus of this book as a general source of information for English-speaking readers.

The author and subject indexes are extensive, and the book is well printed and bound. The choice of references is as broad and selective as can be expected for a work of this nature, and they are well classified. In the list of important discoveries in enzyme chemistry, the reader may, however, be surprised to see the name of Rabaté as discoverer of the transglycosylation reaction, while the names of the Coris are omitted.

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Mineral Metabolism. An Advanced Treatise. Volume II. Part A. The Elements. Edited by C. L. COMAR, Cornell University, Ithaca, N. Y., and FELIX BRONNER, Hospital for Special Surgery, Cornell University Medical College, New York, N. Y. Academic Press, Inc., 111 Fifth Ave., New York 3, N. Y. 1964. xiv + 649 pp. 16 × 24 cm. \$22.00.

This is the fourth and final volume of a comprehensive, multi-author work on mineral metabolism. The first 247 pages are devoted to a review of the chemical composition of the body, first of the composition of the body as a whole and then as the composition of the organs and tissues, with a short section on distribution of minerals in the body of man. The chapter as a whole affords an exhaustive compilation of data on the composition of the body, with special reference to its mineral content from fetal to adult life, and is a rich source of information and of interpretation.

The remainder of the book deals with the mineral elements (phosphorus, calcium, magnesium, strontium, and fluoride) with special