

substantial enrichment of both zinc and activity was encountered in the first crystalline fraction. Throughout the fractionation alkaline earth and transition elements decreased to absolutely, and stoichiometrically, negligible quantities.

Inhibition of enzymatic activity by typical metal chelating agents such as O-phenanthroline was observed, and, correlating to this, the agent was capable of removing zinc from the protein, which could not be accomplished by dialysis against water or ammonia. The protein satisfies the criteria of a zinc metalloprotein.<sup>7</sup>

These data expand on previous observations and conjectures concerning the enzymatic character-

(7) B. L. Vallee, F. L. Hoch and W. L. Hughes, *Archiv. Biochem. Biophys.*, **48**, 347 (1954).

istics of carboxypeptidase and its possible metal content.<sup>8</sup> A full account of this work will be published elsewhere.

These studies were aided in part by a contract between the Office of Naval Research, Department of the Navy, and Harvard University, Contract No. Nr5ori-07660.

(8) H. Neurath and G. de Maria, *J. Biol. Chem.*, **186**, 653 (1950).

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## BOOK REVIEWS

**Catalysis.** Volume I. Edited by PAUL H. EMMETT, Gulf Research and Development Company's Multiple Fellowship, Mellon Institute, Pittsburgh, Pennsylvania. Contributing Authors are HERMAN E. RIES, JR., PAUL H. EMMETT, KEITH J. LAIDLER, W. B. INNES, F. G. CIAPETTA C. J. PLANK, and P. W. SELWOOD. Reinhold Publishing Corporation, 330 W. 42nd Street, New York 36, N. Y. 1954. vi + 394 pp. 16 × 23.5 cm. \$10.00.

During World War I, Rideal and the writer wrote a text entitled "Catalysis in Theory and Practice." There was a good deal of descriptive chemical technology and very little theory or science. That has all changed and the subject of catalysis now requires two volumes "to cover all the general approaches and tools" necessary to obtain a basic understanding of catalysis. An unspecified number of subsequent volumes will cover principles and mechanisms in individual catalytic reactions. The Editor selected for the task is a guarantee of a careful, thorough and competent coverage of the vast field. The present Volume I is at once a confirmation of this view and builds up one's expectancy for the volumes to follow.

In the order of the contributing authors listed above the topics covered in Volume I are Physical Adsorption; Surface Area; Chemisorption, Kinetic Laws, and Absolute Rates (3 chapters by Laidler); Catalyst Carriers, Promoters, Accelerators, Poisons and Inhibitors; Catalyst Preparation; Magnetism and Catalysis.

It is a striking feature of this field of work that new developments succeed each other with such speed that chapters in a book need additions even before publication. This is exemplified in the chapter on physical adsorption where new work by W. R. Smith, Beebe, Halsey and others in the last year has further illuminated the factors operative in the structure of the adsorption isotherms, and the role of the surface and its uniformity in the process. The data on chemisorption are excellently presented but again, in this case, newer data are beginning to suggest variations from the point of view presented. It is certain that the subject is actually more complex than the presentation of Laidler would suggest. The induced heterogeneity of even a uniform surface which is produced by chemisorption indicates that in calculating the absolute rates of surface reactions, the concept of concentration of sites cannot be the only parameter. The technical excellence of the book is admirably exemplified in Innes' chapter on carriers, promoters, etc. Throughout the book there is a wealth of tabular information. The chapter on catalyst preparation gives comprehensive literature references as well as important experimental

examples. The final chapter on magnetism by Selwood gives an authoritative outline of theory and well-chosen examples of applications of magnetism to the identification of catalyst components, reactions in the solid state with appropriate exemplification of experimental methods.

Volume I of the new text on catalysis is a heartening record of the progress that has been achieved in the science of catalysis during the last three decades and an indispensable base from which to proceed to chart the unknown future in the field.

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**Advances in Protein Chemistry.** Vol. VIII. Edited by M. L. ANSON, Lever Brothers Company Research Center, Edgewater, New Jersey, KENNETH BAILEY, University of Cambridge, Cambridge, England, and JOHN T. EDSALL, Harvard Medical School, Boston, Massachusetts. Academic Press, Inc., Publishers, 125 East 23rd Street, New York 10, N. Y. 1953. ix + 529 pp. 16 × 23.5 cm. Price, \$10.50.

The eighth volume of "Advances in Protein Chemistry" maintains the high standards set by the preceding volumes in this series. It will undoubtedly find its way to every protein chemist's bookshelf. As in previous years, the reviews, of which there are seven, are authoritative, comprehensive and unhurried. One has the feeling that the authors have not been required to limit themselves to any given number of pages.

As usual, the interests of all varieties of protein chemists are represented. The articles range from "Rotational Brownian Motion and Polarization of the Fluorescence of Solutions" by G. Weber, a review distinguished by detailed mathematical derivation of pertinent equations, to "Peanut Protein, Isolation, Composition and Properties" by J. C. Arthur, Jr., a review emphasizing earthy facts, such as U. S. production figures for peanut butter (about 5 lb. per person per year, a figure well below the rate of consumption by the younger members of this reviewer's household).

The other articles are: "Naturally Occurring Peptides" by E. Bricas and C. Fromageot (with 667 references); "Peptide Bond Formation" by H. Borsook; "Bacteriophages: Nature and Reproduction" by F. W. Putnam; "Assimilation of Amino Acids by Gram-Positive Bacteria and Some