

the equation $k_1 = k_1^0 (1 + b[\text{LiClO}_4])$, with b equal to 16 and 11, respectively. In these cases, k^0 exceeds k_{ext}^0 substantially, k_1/k_t being 4.1 and 3.9, respectively, with no added salt, decreasing sharply during the early salt additions and subsequently only slowly. Where lithium perchlorate displays the unusually large salt effect it is evidently eliminating a definite substantial portion of, but not all, ion-pair return.

Our interpretation is that two varieties of ion-pair coexist in these cases of acetolysis: (i) the previously² discussed "intimate" or "internal" type consisting of a pair of ions in contact, with no inter-

posed solvent molecules; and (ii) the "external" or "solvent-separated" type, the usual conception of a pair of solvated ions held together by coulombic attraction in a solvent of low dielectric constant. In acetolysis some systems return essentially only from the first of these ion-pair stages (internal return²). Others return also from the second of these stages and here, lithium perchlorate can be specifically effective in preventing such return.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF CALIFORNIA
LOS ANGELES 24, CALIFORNIA

S. WINSTEIN
E. CLIPPINGER
A. H. FAINBERG
G. C. ROBINSON

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BOOK REVIEWS

Biochemie. Naturforschung und Medizin in Deutschland 1939-1946. Edited by RICHARD KUHN, Kaiser-Wilhelm-Institut für Medizinische Forschung, Heidelberg. Verlag Chemie, G.m.b.H., Weinheim/Bergstr., Germany. 1953. Vol. II, 241 pp. Vol. III, 201 pp. Vol. IV, 318 pp. 15 × 22 cm. Price, DM 15, -, DM 13, -, and DM 17, -, respectively.

These volumes encompass practically every aspect of German biochemical endeavor from 1939-1946. Most of the references may be found in American literature such as "Advances in . . ." series, "Vitamins and Hormones," etc. However, "Biochemie" presents a complete and succinct aggregate of the German investigations, some of which are from journals not appearing in American libraries or reviews.

Particularly noteworthy in volume II are the chapters on "Pflanzliche Giftstoffe" and "Tierische Gifte" by B. Witkop and H. Behringer, respectively. Although "Biochemie der Tumoren" by H. Lettre, "Blastokoline" by F. Moewus, "Immunchemie" by H. Schmidt and O. Westphal and "Serologie" by H. Schmidt are comprehensive, the contents have since been thoroughly covered by American articles. Other chapters on "Radioactive Tracers" by K. Starke and "Electron Microscopy" by G. Bergold seem primitive in the light of present knowledge.

The contents of volume III are unusually well written and informative. "Aminosäuren, Peptide und Proteine" by Th. Wieland, "Polysaccharide" and "Lignin" by K. Freudenberg, and "Sterine und verwandte Naturstoffe" by H. Lettre present thorough coverage of these multifaceted subjects. "Gärungsfermente" by O. Warburg and "Fermente der biologischen Oxydation" by F. Lynen are not only reviews but carefully woven stories of progress in those fields. "Süssmandel—Emulsion und verwandte Carbohydrasen" by B. Helferich is an autobibliography.

In volume IV, U. Westphal's presentation of "Hormone" is scholarly, but studies on pituitary hormones and adrenocortical steroids have advanced so rapidly since 1946 that much of the information is either passé or strictly of historical value. Although "Vitamine" by G. Wendt falls within the latter category, some of the references, especially to enzyme-vitamin interrelationships, are still refreshing enough to be of interest. The same is true of "Wuchsstoffe" by E. F. Möller and F. Weygand. K. Scharrer's treatment of "Agrikulturchemie" read much like an abstract of "Bodenkunde u. Pflanzenernähr."

In general, the photomicrographs, charts and chemical formulas are clearly reproduced and lucid. Certainly these volumes represent excellent reference compilations for both the novice and experienced investigator.

DEPARTMENT OF RADIATION BIOLOGY
UNIVERSITY OF ROCHESTER
ROCHESTER, NEW YORK

LEONARD R. AXELROD

Les Proteines: Rapports et Discussions. Neuvieme Conseil de Chimie tenu a l'Universite de Bruxelles du 6 au 14 Avril 1953. By Institut International de Chimie Solvay. R. Sroops, Editeur, 76-78 Rue Coudenberg, Brussels, Belgium. 1953. 350 pp. 17.5 × 24.5 cm. Price, 700 Belgian Francs.

The Proceedings of the Ninth Solvay Conference, held at Brussels in April, 1953, have now been recorded in this valuable book on proteins. The inherent interest of the book is enhanced by its prompt publication, only a few months after the conference. It deserves close attention from all who are seriously concerned with modern protein chemistry. The emphasis throughout is on proteins as chemical substances and—in the last two papers—on systems involving enzyme proteins; there is no attempt to discuss the intermediary metabolism of proteins or their role in nutrition.

K. O. Pedersen opens with a paper on the molecular weights of proteins, with special emphasis on recent developments in ultracentrifuge studies, and a critical examination of the sources of some discrepancies in published measurements. An extensive table of recent molecular weight values derived from sedimentation and diffusion is included. Linus Pauling discusses the configuration of polypeptide chains in proteins. This is in many ways the best exposition yet published by Pauling of the structure of the α -helix, the pleated sheets and other related configurations of polypeptide chains. The great importance of these configurations for the understanding of protein structure now appears indubitable. Sir Lawrence Bragg follows with a brief but valuable discussion of recent developments, and current thinking, in the work of the group concerned with X-ray study of proteins at Cambridge. It is perhaps appropriate to remark here that major developments have occurred in the Cambridge laboratories during the last six months—unfortunately too late to be recorded here. J. D. Watson and F. H. C. Crick provide a short note on the stereochemical structure of deoxyribose nucleic acid—one of the most important of recent developments in biochemistry, which has been expounded at greater length elsewhere. A. C. Chibnall gives a critical discussion of the chemical constitution of the proteins, with special emphasis on the development of new approaches to the problem of determining the sequence of amino acid residues in peptide chains. R. L. M. Syge discusses electrophoresis, chromatography and related physical methods in relation to protein chemistry, in a highly suggestive paper which deserves close attention from all who are interested in this field. V. Desreux and E. Fredericq discuss fractionation and purification of proteins. The discussion is relatively brief, considering the vastness of the field, and quite properly lays major emphasis on some of the newest developments in techniques of fractionation. M. L. Anson gives a provocative discussion of