

BOOK REVIEWS

Papírová chromatografie (Paper chromatography), by I. M. HAIS AND K. MACEK, Editors, Nakladatelství Československé Akademie Věd, Prague, 1954, 720 pp. + viii, 3795 refs., 73 Tables, 243 Figs., price: cloth, 136 Kčs., board, 142 Kčs.

One of the founders of partition chromatography wrote: "The literature of the subject has already become so large that it can no longer be followed in detail" (A. J. P. MARTIN, *Brit. Med. Bull.*, 10 (1954) 161). The editors have sought to deal with this problem with the aid of those Czechoslovak scientists with experience in the application of paper chromatography and this has resulted in a carefully prepared book by 23 contributors. This book follows an earlier collection of articles on various aspects of chromatography by other workers which appeared in the form of a small book (*Chromatografie*, Prague, 1952).

Every aspect of paper chromatography is examined in detail from apparatus to elution, solvent and quantitative methods, from proteins and inorganic analysis to its part in the detection of radioactive materials. Paper electrophoresis, the history of chromatography, future prospects and theoretical aspects are dealt with concisely. The literature is fully covered up to the beginning of 1953; a less complete coverage exists for the remainder of 1953. In an effort to keep abreast of the literature during the setting up of the type, a number of the most recent references are given in full in the actual text.

The book will not only be of aid to advanced research workers in various fields, it will also assist research students and routine analysts. The book gives a clear exposition of the practical details (details of about 240 detection reagents, nearly 300 solvents, a dozen paper electrophoresis electrolytes and many helpful diagrams of apparatus) and a wealth of comment on the various methods derived from actual practical experience of the authors. Methods are not presented without a critical assessment (e.g. the section on proteins).

There are, however, a few major and minor defects such as the vague article by SLAVIK on clinical chemistry (p. 173), a tendency at times to become a recital of "the literature" more suitable for some "recent advances" and the incorrect position of sarcosine on the two-dimensional paper chromatographic amino acid map (p. 198). The article by PROCHÁZKA (p. 169) is, on the other hand, an interesting one on the past use and future possibilities in the application of paper chromatography to micro-organic synthesis.

Amino acids and other organic substances occupy a substantial portion of the book.

Naturally, the book does not stray far beyond the limits set by its title. It establishes a firm claim to translation that is in no way invalidated by the existence of other books which do not give such a detailed practical survey of paper chromatography.

C. B. COULSON (Colchester)

Isotopic Gas Analysis for Biochemists, R. F. GLASCOCK, Academic Press Inc., New York, 1954, V, 247 pp., 74 Figs., 8 Tables, price \$ 5.80.

Les isotopes et les radioéléments sont devenus un instrument de travail très utile, sinon indispensable aux biochimistes qui s'occupent de métabolisme. Les progrès de la chimie nucléaire ont mis à la disposition des chercheurs deux radioéléments particulièrement précieux, le ^{14}C et le Tritium. Ceux-ci présentent le grand avantage d'une durée de vie très longue mais aussi l'inconvénient d'une faible énergie de radiation et partant un mauvais rendement dans les mesures quand on opère sur les substances sèches.

La sensibilité et la précision peuvent être grandement améliorées en mesurant la radioactivité des gaz, obtenus par combustion, principalement par voie sèche, des combinaisons organiques isolées. Ceci nécessite un montage d'appareils assez compliqué, qui était jusqu'ici l'apanage des grands instituts, disposant de collaborateurs hautement spécialisés et techniciens d'élite. Mais les résultats étaient d'autant plus précis, la méthode une fois acquise. Le grand mérite de l'ouvrage de GLASCOCK est de fournir une description détaillée des techniques appropriées pour le montage des appareils nécessaires aux mesures en milieu gazeux et la manipulation des gaz en circuit fermé. L'auteur met à la disposition son expérience des mesures radiochimiques et n'épargne aucun détail descriptif pour assurer une bonne réussite des nouvelles techniques mises en oeuvre.

Après une introduction où le rendement des mesures par voie gazeuse est comparée à la voie "sèche", il est donné une description complète de l'installation des appareils destinés à la manipulation des gaz, avec les notions indispensables de la technique du vide. L'auteur traite ensuite successivement du mode de fonctionnement des tubes compteurs et des chambres d'ionisation, de la mesure du ^{14}C en phase gazeuse sous forme de CO_2 ; des méthodes de combustion par voie humide et voie sèche; des méthodes de mesures du Deuterium par spectre de masse; de la détermination du Tritium sous ses différentes formes; de la préparation de composés avec Azote lourd pour analyse par spectrométrie de masse; de la préparation de combinaisons (eau, acide acétique, acides gras, stéroïdes tels cholestérol, progestérone, hexestrol, styrène) marquées par le Tritium; de la détermination de l' $^{14}\text{CO}_2$ totale produite pendant une réaction d'incubation *in vitro*.

Si l'ouvrage de GLASCOCK est à recommander par sa précision et son caractère pratique, il n'en est pas moins hautement instructif pour tous ceux qui utilisent les isotopes. L'édition est d'ailleurs très soignée.

R. RUYSSSEN (Gand)

Chemical Pathways in Metabolism, edited by DAVID M. GREENBERG, Academic Press Inc., New York, 1954, Volume I, xi + 460 pages, price \$ 11.00; Volume II, x + 383 pages, price \$ 9.50.

With these two comparatively small volumes a monument has been erected, portraying the state of fundamental biochemistry in the middle of the 20th century. They represent the result of about 25 years of unprecedented activity in biochemistry. The reviewer believes that KREBS' pioneer work on the ornithine cycle should be regarded as the milestone marking the beginning of this era. In the 1929 edition of one of the best European textbooks of biochemistry, the "Kurzgefasstes Lehrbuch der Physiologischen Chemie" by the late S. EDLBACHER, one still reads: "Die Leber bildet aus NH_4 Carbonat sowie aus Aminosäuren (bei diesen Versuchen) Harnstoff. Der Weg ist, wie gesagt, noch nicht bekannt. Man kann dabei das NH_4 Salz der Carbaminsäure als Zwischenprodukt annehmen. Diese Anschauung dürfte heute die am besten begründete Theorie der Harnstoffbildung sein, die mit der rein chemischen Tatsache der Bildung von Säureamiden aus deren Ammoniumsalzen zusammenfällt". This was the point of view still prevailing with the 19th century biochemist, who looked to the organic chemist as his guide in the unraveling of metabolic processes. KREBS' AND HENSELEIT's now classical paper, entitled "Untersuchungen über die Harnstoffbildung im Tierkörper", which appeared in 1932 in Vol. 210 of the *Zeitschrift für Physiologische Chemie*, delivered the final blow to this line of thought and opened the road for new biochemical thinking and experimenting, liberated from the strait jacket of organic chemistry. Results and perspectives are laid down in these volumes, published as irreproachably as usual by Academic Press Inc.

The authors of the various chapters of this book, including the Editor himself, are all active workers in the fields they cover in their contributions; several of them may even be considered as the initiators in the fields concerned. Volume I opens with a short but clear introduction to the thermodynamic implications of biochemistry by A. B. PANDEE. Then D. E. GREEN sketches a masterly brief survey of the most important metabolic processes proceeding in sequences of enzyme-catalyzed reactions. Several of the topics treated in outline by him are developed further in other chapters. The chapter on Glycolysis is written by P. K. STUMPF; H. A. KREBS expounds development and present status of the theory of the Tricarboxylic Acid Cycle; the chapter "Other Pathways of Carbohydrate Metabolism" is from the pen of S. S. COHEN; W. Z. HASSID treats the "Biosynthesis of Complex Saccharides". This volume closes with two chapters on lipid metabolism, *viz.*, "Fat Metabolism and Acetoacetate Formation" by I. L. CHAIKOFF AND G. W. BROWN JR., and "Sterol and Steroid Metabolism" by D. K. FUKUSHIMA AND R. S. ROSENFELD.

The greater part of Vol. II is devoted to proteins and nucleic acids, and comprises the following chapters: "Nitrogen Metabolism of Amino Acids" by P. P. COHEN, "Carbon Catabolism of Amino Acids" by D. M. GREENBERG, "Synthetic Processes Involving Amino Acids" by D. M. GREENBERG, "Metabolism of Sulfur-Containing Compounds" by D. M. GREENBERG, "Enzymatic Synthesis of Peptide Bonds" by H. BORSOOK, "Purines and Pyrimidines" by M. P. SCHULMAN, and "Nucleotides and Nucleosides" by I. A. HEPPEL. A final chapter on "Metabolism of Heme and Chlorophyll" was written by S. GRANICK.

In the reviewer's opinion these volumes will not only be consulted with much profit by professional biochemists; they even appear to be very suitable for use by advanced students, though there are points upon which the various authors are not quite in harmony with each other. But that is inevitable in a book like this, which reflects the unbelievable activity in biochemistry to-day.

H. G. K. WESTENBRINK (Utrecht)