

REVIEWS

Organic Syntheses with Isotopes. By Arthur Murray III and D. L. Williams. Part II—Organic Compounds labelled with Isotopes of the Halogens, Hydrogen, Nitrogen, Oxygen, Phosphorus and Sulphur. (Interscience Publishers, Inc., New York and Interscience Publishers Ltd., London), 1958 Edition. Pp. 1146-2096. Price \$ 25.00.

A review of the First Volume of this work appeared recently in *Current Science* (Vol. 28, 1959. Pp. 42-43). The general features of the work were there set out in detail. It is, therefore, not necessary to traverse the same ground again here.

It is not surprising that deuterium compounds occupy a substantial part of the present volume, covering 400 pages. Nitrogen-15 comes next with 150 pages and then Sulphur-35 with 80 pages and iodine with 64 pages. The remaining 170 pages are divided pretty equally between the other isotopes considered, namely, Bromine, Chlorine, Oxygen-18 and Phosphorus-32. Two isotopes of iodine figure in the volume, viz., Iodine-128 and Iodine-131, the latter much more prominently. Two isotopes of Bromine appear, viz., Bromine-80 and Bromine-82 and three isotopes of Chlorine, viz., Chlorine-34, Chlorine-36 and Chlorine-38.

The present volume contains the General Index for both the volumes and is therefore indispensable to a possessor of the first volume. All chemical names are indexed, with the sole exception of common solvents. Page numbers are presented in three modifications: Complete syntheses of compounds are indicated in bold-face type, references to preparations without procedural details are given in italics, and the use of compounds as reagents is shown by entries in ordinary type. Index forms of text names are constructed, where feasible, according to the Subject Index usage of *Chemical Abstracts*. Order is primarily based on non-isotopic parts of names. Secondary considerations, in decreasing order of importance, are element symbol, superscript, subscript and locant.

The second volume, like the first, is clearly an indispensable possession for every organic chemistry library.

C. V. R.

The Sources of Invention. By John Jewkes, David Sawers and Richard Stillerman. (MacMillan & Co., Ltd., London), 1958. Pp. xii + 428. Price 31 sh. 6 d.

Collection of facts and circumstances which led to discoveries helps to trace the growth and development of science during a given period. In this book are presented a great body of data which led to the development of science in the past century.

Part I deals with the background and the successful attempts of scientists to place their inventions at the disposal of technologists. It also points out the difficulties that individual inventor had encountered and how these were overcome by research corporations and the team-work of scientists, towards the development of organised research. The peculiarity of this century appears to lie in the relative decline of invention of the individual type in certain industries with large research laboratories attached to them. A crucial distinction has been made in this book, in purposes, methods and results between pure science and technology. Science is directed towards understanding, and technology is directed towards use. Another point made out is that history of invention shows no sharp break in continuity. In Part II the author has presented case histories of certain important inventions made during the past century. All these cases can be held to belong to the twentieth century, the year 1900, that is to say, has been taken as the dividing line between old and modern inventions. Special mention should however be made of case histories of Cyclotron, Helicopter, Jet engine, Radar, Magnetic recording, Radio and Rockets. A complete and connected account of each of these inventions has been given in a very interesting manner.

This book would be a valuable addition to any scientific library. S. BALAKRISHNA.

The Theory and Design of Magnetic Amplifiers. By E. H. Frost-Smith. (Chapman & Hall Ltd., London; India: Asia Publishing House, Bombay-1), 1958. Pp. 487. Price 75 s. net.

This book provides an excellent treatment of saturable reactors (magnetic amplifiers) for power frequencies and frequencies somewhat higher.

The section on commercial applications could have been considerably expanded, and a much more complete biography than is contained in the rather meagre references would have been helpful. For example, many papers on magnetic amplifiers have been published in the last few years in such journals as *Communications & Electronics* (a publication of the American Institute of Electrical Engineers), few of which are mentioned in this book.

However, the treatment of many phases of magnetic amplifiers is exhaustive. This reviewer found Chapter 13 on *Construction and Design of Magnetic Amplifiers* especially helpful. The portion of that chapter on *Design Procedure* contains much material not generally found in other books on the subject.

A serious omission is the complete absence of any material on the newer uses of magnetic amplifiers, such as their use as audio-frequency amplifiers in public address systems¹ and for radio-frequency amplification and computer applications.²

Ferrites³ receive almost no notice although they have made possible the use of magnetic amplifiers for a whole new field of frequencies.⁴ The treatment of a large new array of magnetic alloys should have been expanded, possibly with the incorporation of tables giving the comparative characteristics of these materials.⁵

Nevertheless, this is one of the best books on the subject to appear recently, and any user of magnetic amplifiers in the lower frequency field will find the book very useful.

P. H. C.

1. A paper by J. J. Suozze and E. T. Hopper in *Communications and Electronics*, pp. 297-301, July, 1955.

2. Catalog sheets of Potter Instrument Co., Inc., Great Neck, New York.

3. *New Developments in Ferromagnetic Materials* (a book), by J. L. Snoek. (Elsevier Press, Houston, Texas), as a typical example.

4. *Magnetic Amplifiers: Theory and Applications* (a book), by Sidney Platt (Prentice-Hall, New York), pp. 204-05.

5. *Magnetic Amplifiers* (a book), by H. F. Storm (John Wiley & Sons, New York), pp. 30-31.

Practical Invertebrate Anatomy. Second Edition.

By W. S. Bullough. (MacMillan & Co., Ltd.), 1958. Pp. v + 483. Price 30 s. net.

In writing this book Prof. Bullough has provided the advanced student of Zoology with a helpful addition to his library. This second revised edition has been prepared as a result of the current theory of the origin and evolution of Metazoa.

Hitherto the Coelenterata were considered to be the most primitive Metazoa but now the researches of Govan Hadzi make it necessary for us to accept that Turbellaria Acoela are indeed more primitive and plausibly evolved from the multinuclear Protozoa. Hence the author examines the Platyhelminthes before the coelenterates and within the coelenterata the Actinozoa are considered as the most primitive class.

The book offers descriptions of 122 commonly studied genera. The happy combinations of details of classification, accounts of the distribution, habitat and mode of life of the genus, and notes on the significance of unusual organs or structures, make the book a *vade mecum* of practical invertebrate anatomy.

References to more detailed descriptions are made available wherever possible and appendices are skillfully introduced to give culture, killing, fixing, and staining methods. A generous supply of semidiagrammatic and well labelled figures aids in the understanding of anatomical descriptions. And, as a finishing touch, Prof. Bullough provides us, in his final appendix, with details of the composition of the fixatives, stains and other solutions which he has mentioned in the course of the text.

Considering that the book will probably be put to constant use by students, the publishers have provided a firm cover. The book is essential for any well equipped Zoology library.

B. R. S.

Perspectives in Marine Biology. By A. A. Buzzati-Traverso. (University of California Press, Berkeley; Cambridge University Press, London N.W. 1), 1958. Pp. xvi + 621. Price 75 sh.

This publication includes forty-two papers presented at a symposium held in 1956 at the Scripps Institution of Oceanography to discuss the future bearings in marine biology.

The rapid advances in biology during recent years have been achieved through the application of experimental methods and also the techniques and concepts of other scientific disciplines. But all this work has been almost exclusively on non-marine organisms. At present, only morphology and taxonomy are concerned with the totality of animal forms, while experimental studies of evolution, genetics and biochemical investigations are restricted to a few groups of non-marine organisms. Can such a procedure give us a balanced knowledge of biology as a whole? Will it not be fruitful

if we extend the experimental, biochemical and other approaches to marine organisms also. The papers and discussions in the book under review are all focussed on this problem of experimental approach and on discovering new horizons in marine biology.

In the course of the symposium several illuminating ideas and suggestive possibilities have been brought forward, a few of which may be mentioned. (1) Ernest Baldwin emphasises the need for comparative biochemistry of poikilotherms, especially those dwelling in transitional habitats, and for the establishment of marine biological stations devoted primarily to biochemical studies of living organisms. (2) S. S. Konn links dairy research at Reading to investigations on the source of vitamin A in whales, and wants that research vessels should roam the seven seas and bring back organisms not for enshrining them in formalin but for the investigation of their dynamical biochemistry. (3) Szent-Gyorgyi with characteristic perspicacity suggests that we should develop a quantum-mechanical biology. (4) E. M. Rae suggests that for experimental ecology we should establish a school of plankton husbandry, and that we should try to discover the marine equivalents of the guinea-pig, mouse and fruit-fly for experimental work in marine biology. (5) It is also emphasised that the prime factors in the determination of marine populations are not the gross chemical and physical parameters, but the less obvious factors like vitamins, metabolites, etc., in sea-water. (6) Prof. Hardy points out that we cannot regard marine ecology as exact until we can with reasonable frequency apply to it the crucial test of prediction. (7) Television techniques can be used for selective sampling of deep bottoms, plankton studies and ecological surveys. (8) The behaviour of pelagic organisms may in part be determined by polarised light. In the wealth and variety of marine invertebrates we have very valuable material for genetical, cytogenetical and evolutionary studies.

It will be seen that this book under review is a signpost in marine biology indicating forthcoming developments in marine biology, which will have far-reaching effects on biology as a whole, and confer on it a 'sea change into something rich and strange'. Buzzati-Traverso, the moving spirit behind the symposium, has ably edited this book, which deserves a careful study by all those interested in the biology of tomorrow.

R. V. SESHATYA.

Annals of the New York Academy of Sciences. Screening Procedures for Experimental Cancer Chemotherapy. By C. Chester Stock and others. (Vol. 76, Art. 3), 1958. Pp. 409-970. Price \$ 5.00.

Lymphocytes and Plasmacytes in Nucleoprotein Metabolism. By Margaret A. Kelsall and Edward D. Crabb. (Vol. 72, Art. 9), 1958. Pp. 293-338.

Psoriasis. (Vol. 73, Art. 5), 1958. Pp. 911-1037.

The first monograph, the outcome of the joint efforts of the Cancer Chemotherapy National Center, U.S.A., and the New York Academy of Sciences, constitutes a comprehensive review of the state of knowledge in the field of anti-cancer screening.

Part I of the monograph exhaustively discusses the application of bacterial, fungal and protozoal bioassay methods. The studies on a series of 200 compounds, utilizing 16 microbiological systems have led Foley to conclude that these assay systems are highly useful for routine screening programmes. Exploratory aspects of the use of drug resistant microorganisms, the usefulness of the mutagenicity test as a simple preliminary screening procedure and of lactic acid bacteria for evaluation of purine and pyrimidine antagonists, highlight the special microbiological systems presented.

Tissue culture techniques have naturally attracted attention as useful tools for characterization of nutritional requirements, metabolic activity and morphologic changes of malignant cells. Recent developments in the field, as applicable to screening procedures have been outlined in Part II of the monograph. The tumorigenic activity of tissue cell cultures, comparison of biological qualities of 'transformed' cells of normal and cancerous origin; tumour-specific cyto-toxicity of antitumour agents and highly informative discussion on the variability of results obtained on different cell systems are the main features presented in the second part.

Ascites tumours have been used to a considerable extent in chemotherapy studies of cancer. They constitute a peculiar 'in vivo-in vitro' test. Part III of the monograph discusses limitations of the technique, parameters of ascites tumour growth, the action of mitotic poisons on hyperdiploid Ehrlich mouse, ascites carcinoma, sensitivity of solid and ascites forms of sarcoma 180 and Ehrlich carcinoma, evaluation against Nelson ascites tumour and screening techniques with ascites hepatoma.

It is not possible to review in this brief account the extremely informative chapters on Lymphomas, Hormone responsive tumours, the human tumour in heterologous hosts, etc. Consultation of the original papers in the volume is sure to benefit all research workers in this field of cancer chemotherapy.

Antibody production, protein synthesis and transport of nucleoproteins to the sites of growth and repair are problems which have attracted the attention of research workers of different disciplines. The second monograph, though small in size, has comprehensively reviewed all available information for and against the tenet that lymphocytes and plasmacytes are primarily true trephocytes that synthesize and store nucleoproteins. The development turnover and fate of the circulating lymphocytes, the origin of plasmacytes, the normal and pathological distribution of these cellular elements in the body, and the significance of the interposition of lymph nodes, spleen and intestinal lymphoid tissue in the circulatory system, as presented, leaves no doubt of their important role in nucleoprotein synthesis, storage and transport. The significance of the presence of lymphocytes and the formation of plasmacytes in wound healing, inflammation, tumour growth and the effect of their depletion on repair, growth, and immunity have been very well discussed. Biochemists, pathologists and clinicians will find in this small volume a highly informative presentation.

In spite of the advances in medical research Psoriasis still remains "the great dermatological mystery". Etiological factors are still indeterminate, while clinical morphology of Psoriasis continues to rest on solid foundation, characterizing the disease as an entity. A detailed study of the pathology and histochemistry has not shed light on any specificity of the disease process.

Though no spectacular therapeutic success has yet been obtained, the steady untiring attempts of histopathologists, chemists, biochemists and clinicians are paving the way for a rational understanding of the disease. This monograph presents the results of these investigations. Comprehensive review on the histochemistry of Psoriasis by Braun Falco, application of electrophoresis to the diagnosis of psoriasis, chemical and biochemical changes in psoriasis and the significance of the enzymatic alterations in the psoriatic scales are some of the interesting chapters in this volume. Observations on the problem of pathogenesis

suggesting psoriasis as a pathological acceleration of epidermopoiesis and clinical experiences with an allantoin coal-tar preparation will be found useful by physicians in general and dermatologists in particular.

M. SIRSI.

Books Received

- Studies on the Structure and Development of Vertebrates*, Vols. I & II. By Edwin S. Goodrich. (Dover Publications, New York), 1959. Chapters 1-8 & 9-14. Pp. 1-485 & 486-837. Price \$ 2.50 each Volume.
- The Atom and its Energy*. By A. D. Gupta. (Asia Publishing House Bombay-1), 1959. Pp. vi + 140. Price Rs. 9.50.
- Some Aspects of Multivariate Analysis*. By S. N. Roy. (Asia Publishing House, Bombay-1). Pp. vi + 214. Price Rs. 18.00.
- Technical Communication 26; Horticulture in the British Commonwealth, an Outline*. By D. Akenherd. (Commonwealth Agricultural Bureaux), 1958. Pp. vii + 63. Price 10 sh.
- The Magneto-Ionic Theory and its Applications to the Ionosphere*. By J. A. Ratcliffe. (Cambridge University Press, London N.W. 1), 1959. Pp. x + 206. Price 40 sh.
- Liquid Helium*. By K. R. Atkins. (Cambridge University Press, London N.W. 1), 1959. Pp. x + 312. Price 60 sh.
- National Physical Laboratory Symposium No. 8—Visual Problems of Colour (Vol. I) and the Needs and Prospects of Subjective Colour Measurement (Vol. II)*. By W. D. Wright. (Her Majesty's Stationary Office, London), 1959. Pp. viii + 749. Price £ 2-2-0.
- Rape and Mustard*. By Dharampal Singh. (The Secretary, Indian Central Oilseeds Committee, Hyderabad-1 Dn.), 1958. Pp. viii + 105. Price Rs. 8.00.
- An Introduction to Organic Chemistry*. By V. N. Deshpande. (Book Centre, Hubli), 1958. Pp. 232. Price Rs. 4.25.
- The Technical Writer*. By J. W. Godfrey, G. Parr. (Chapman & Hall, London; India: Asia Publishing House, Bombay-1), 1959. Pp. 340. Price 45 sh.
- Advances in Pest Control Research*, Vol. II. Edited by R. L. Metcalf. (Interscience Publishers, New York-1), 1958. Pp. vii + 426. Price \$ 12.50.
- Carnegie Institution of Washington—Year-Book 1957-58*. (Director of Publications, Carnegie Institution of Washington, Washington, D.C.), Pp. xi + 497. Price \$ 1.00.