

BOOK REVIEWS

Selection of books for review is based on the editors' opinions regarding possible reader interest and on the availability of the book to the editors. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



HOT SHOTS?

Title Isotopes and Radiation in Parasitology

Publisher International Atomic Energy Agency, 1968

Pages 157, 35 figures

Price \$3.50

Reviewer D. M. Hammond

This book represents the Proceedings of the first research co-ordination meeting of the joint FAO/IAEA Program on the Use of Isotopes and Radiation in Studies on the Etiology, Effects and Control of Parasitic Diseases in Domestic Animals. The meeting was held in Vienna, July 31 through August 4, 1967 and was attended by the Program's chief scientific investigators and several experts in parasitology who were not participants in the Program.

The contents include 16 papers concerning vaccine production by means of radiation attenuation, immunology, and pathophysiology. Four of the papers deal with protozoan parasites, 11 with helminths, and 1 with methodology. In addition, a statement as to recommendations for future studies, a review of the present status of radiation attenuated vaccines, and a list of participants are included.

Many of the papers represent meritorious contributions to this important field because they review critically the literature or because they include new findings. An example of the former is the review by F. W. Jennings of isotopic methods that have been used in the study of

anemias, particularly those associated with helminthic diseases, and especially with reference to detection and quantitation of gastrointestinal hemorrhage. Examples of the latter include a paper by G. M. Urquhart on the immune response of young animals to infection with x-irradiated and normal nematode larvae. Urquhart presents and reviews information indicating that very young animals cannot be as successfully immunized as older animals. In investigations of *Nippostrongylus brasiliensis* infections in rats, the author found that the immune reaction of the young host is deficient (that is, it results in no demonstrable protective antibody) and that the host's subsequent response to infection may be altered. E. H. Sadun and co-workers reported results of work indicating that the egg is the main pathogenic agent in schistosomiasis and that treatment can prevent the occurrence of hepatic fibrosis; this work was done with *Schistosoma mansoni* in mice. Wellde and Sadun found that an acquired resistance to *Plasmodium berghei* is produced in rats and mice by vaccination with irradiated plasmodia. Cunningham and Grainge reported that during infection in cattle, *Trypanosoma brucei* subgroup organisms produce a succession of antigenic variant populations probably at less than 7-day intervals; these populations also have common antigens, and cattle produce antibodies against both the variant and common antigens. Nielson reported that in hypoproteinemias associated with gastrointestinal parasites, diarrhea per se, seems to be an important factor in triggering the enteric protein loss.

The recommendations include

further study of in vitro cultivation of various parasites, as well as studies of metabolism of the parasite and on its host-parasite relationships, with emphasis on immunology and pathogenic effects of parasites. It is stated that the vaccines for the two lungworms (*Dictyocaulus*) are gaining increasing acceptance and that an irradiated vaccine for hookworm disease of dogs is likely to be marketed in the near future. Also, suggestions as to the direction of further work with radiation attenuated vaccines are included.

Datus M. Hammond is Professor and Head of Zoology at Utah State University, Logan, and Secretary of the Society of Protozoologists. For a number of years he has been doing research on host-parasite relationships with reference to coccidia of cattle, sheep, and rodents; he has also worked on genital trichomoniasis of cattle and ostertagiasis in cattle.

MASS SPECTROMETRY APPLICATIONS

Title Mass Spectrometry in Science and Technology

Author Frederick A. White

Publishers John Wiley and Sons, Inc., 1968

Pages xvi + 352

Price \$14.95

Reviewer A. P. Irsa

The growth of mass spectrometry in the last two decades has resulted in the technique being extended to the

point where it finds application in almost every aspect of science and technology. A book devoted to applications is therefore timely and valuable both to the hard pressed specialist in the field who lacks the time to delve into applications remote from his own work and to the scientist or engineer without previous experience in mass spectrometry who wishes to determine its relevance to his technical problems.

This book should serve both classes of readers well. A general introduction to mass spectrometry is given by the first four chapters, which discuss the history of the subject, types of mass spectrometers, and methods of ion production and detection. These chapters are conventional in approach but up-to-date and provide the reader with a good survey of modern techniques.

The remaining chapters then cover a wide variety of applications. In the limited space available no one topic can be explored in depth and, indeed, to attempt to do so would run contrary to the objective of the book.

Nevertheless, the high points of each topic are covered competently with a style that is clear and succinct. Chapters are devoted to the role of mass spectrometry in electrophysics, geology, physics and chemistry of surfaces, materials research, ecology, the space sciences, biology, medicine, and chemistry. The inclusion of a whole chapter devoted to the fabrication of semiconductors by ion implantation is unusual enough to call for comment. The author calls attention to the potentialities of this relatively neglected technique, discusses the state of present research, and briefly outlines the areas in which further research is needed. The chapter is well written and stimulating but the reader may feel that, in view of the book's space limitations, ion implantation has been unduly emphasized at the expense of other subject matter.

The reviewer, for example, feels that a disservice has been done to workers in the fields of organic chemistry, medicine, and biology by the failure of the author to indicate

the great power of high-resolution mass spectrometry used alone and in combination with gas chromatography to determine complex chemical structures and to unravel complex organic mixtures. Others readers will, no doubt, find different areas in which the book might have been improved. Still, the author has made a brave attempt to satisfy everyone and should be credited with a fair degree of success. The future growth of mass spectrometry will probably result in a demand for more books of a general survey nature, and this volume is, perhaps, representative of a trend in that direction. If so, succeeding books will have a good model to follow.

A. P. Irsa, a chemist in the mass spectrometry group of the Chemistry Department at Brookhaven National Laboratory, has worked in various aspects of mass spectrometry for many years. His BChE degree is from the College of the City of New York and his MS (chemistry) from Adelphi University.