

(Bender and Gaensslen), and contains also three interesting chapters on the genetics of insect resistance to synthetic insecticides by Brown, behaviour by Mattingley, and vector susceptibility to parasites by Macdonald. Genetic control is described in the fifth section, first by Knippling in reference to the general principles involved in release of sterile males into a natural population, and second by LaChance in a good chapter on the induction of lethal dominant mutants by irradiation and chemicals of various types including the well known alkylating agents.

Techniques are discussed in the concluding (sixth) section by Carroll Smith on mass-breeding procedures, and by Rai on methods used in cytogenetics and genetics of insect vectors. The latter chapter does not include full details of techniques and refers the reader to the original papers; the full descriptions of all procedures would probably have occupied too much space, but for certain essential methods like squashes, a few examples might usefully have been given *in extenso*.

The appendices consist of reports of WHO groups, lists of strains, information services, and so on, which do not fit in well with a scientific monograph; they are of ephemeral concern and if omitted the inordinate cost of this volume might well have been lessened.

The book will appeal to geneticists, entomologists and hygienists concerned in the control of insect pests in this field.

P. C. C. GARNHAM

INSULIN AND ITS ACTION

Insulin, Membranes and Metabolism

By Peter Rieser. Pp. xii+156. (Williams and Wilkins: Baltimore, Md, 1967. Distributed in the UK by E. and S. Livingstone, Edinburgh.) 77s. 6d.

THE spate of publications on the subject of insulin and its action shows no sign of abating. In 1961, Professor M. E. Krahl published a book *The Action of Insulin on Cells*; since that relatively short time ago a large number of research publications on insulin has appeared. During that period the complete chemical synthesis of insulin has been achieved, although the three-dimensional structure of the molecule is still a matter of controversy. The very substantial species differences in the primary structure of insulin have become clearer during the past few years, while use of the electron microscope has led to much understanding of the detailed processes whereby the insulin stored in the granules of the β cells of the pancreatic islets is liberated and finds its way into the blood-stream.

Dr Rieser in his preface makes clear that he has made no attempt to be encyclopaedic. He attempts to make a critical examination of some of the progress, and of the subjects of controversy, which he has found to be most interesting and challenging in research on the subject of insulin during recent years.

The speed of advance in this field is well illustrated by the fact that in the introduction Dr Rieser writes with regard to the biosynthesis of insulin: "The notion that the A and B chain are synthesized separately has been all but accepted; however, the nature of the mechanism whereby the chains, once formed, are united with the appropriate disulphide closures remains obscure". Nevertheless, with the recent isolation from the pancreas of "pro-insulin" and the elucidation of its structure, the probability has become very high that insulin is synthesized as a single peptide chain with subsequent formation of inter-chain disulphide linkages, and then peptide fission to form insulin.

The book is divided into three parts. The first, entitled "Insulin Metabolism", contains four chapters dealing respectively with the biosynthesis of insulin and its storage in the β cell, its secretion, insulin in the blood plasma,

and the antagonism, inhibition and degradation of insulin. In the second part, entitled "Insulin Effects", the subject is discussed in three chapters under the respective headings of "Carbohydrate Metabolism", "Lipid Metabolism" and "Protein Metabolism". The third part of the book is about "Insulin Action", and this section contains three chapters, the first of which is entitled "Insulin Structure in Relation to Biological Activity". The next chapter (chapter 9) discusses the "Attachment of Insulin to Cells and the Question of Penetration"; the final chapter discusses "Theories of Insulin Action".

Necessarily, the last two chapters are prodigal of theory and costive of proof, but the discussion of the somewhat meagre volume of relevant evidence is critical and, though perhaps not convincing, it is at least attractive. We really have got little further than the idea of Sir Rudolph Peters, which was put forward in 1956, that hormones affect the cytoskeleton of cells. According to Peters the cytoskeleton consists of a "fluid anatomy" in the geography of the cell, a tenuous network of unspecified nature which serves to coordinate the enzymatic activity of the cell. This idea is of value because of the widespread belief that hormones act on the cell as a whole, rather than on any one enzyme system. According to this theory, a hormone could enter the cell's surface and reorientate the cytoskeleton in such a way that a number of enzymatically catalysed reactions would be modified. As Dr K. L. Manchester has said in a review article published in 1965, "Although it cannot be claimed that this is a very detailed description of how [insulin] acts on muscle, it represents about as much as can be said at the present time". Despite the enormous accumulation of fact about insulin and its action, we still do not understand the mechanism of action of this very important hormone. F. G. YOUNG

RESPIRATORY DISEASES

Occupational Mycotic Diseases of the Lung

By F. Kováts and B. Bugyi. Pp. 212. (Akadémiai Kiadó: Budapest, 1968.) 70s.

DR KOVÁTS is well known for his discovery in Hungary of a respiratory disease caused by fungal dusts produced in the splitting of paprika beans. The book starts with a brief but interesting history of respiratory diseases caused by organic dusts. A section on the elements of mycology is of help in understanding descriptions of the diseases which are looked at from the point of view of a clinician, with a special interest in mycology rather than pathology or immunology. The account of how to sample the dust describes the konimeter and impinger, but not more recent methods. There is an account of ten of the principal groups of mycotic diseases where growth of the fungi may occur in the lungs or other parts of the body. The descriptions are full and interesting, and refer to a number of papers not easily accessible in the literature.

The second half of the book is principally concerned with what the authors call "toxomycoses"—that is, diseases thought to be caused by the inhalation of spores or fungal debris but in which fungi do not apparently grow in the lung but act as antigens or chemical or physical irritants. Detailed clinical descriptions of a surprisingly large number of such illnesses are collected. The diseases described include paprika splitter's disease, farmer's lung, diseases caused by sorghum and rice-straw dust; asthma of millers, bakers and distillers; respiratory disease encountered in tea pickers, tobacco workers, and those working in wood and cork dust. Bagassosis is described, and so is mummy disease; Peruvian mummies are said to be safer than Egyptian or Coptic! There is a final chapter on lung diseases in the textile industry.

The second part of the book lacks an adequate description of the recent work on the pathology and immunology which has provided a unification of a number of these