authors in the preface, however, the book is also concerned with other drugs and compounds whose cellular targets are similar or somehow related to those of the antibiotics.

The volume is divided into eight chapters beginning with a brief outline of the Ehrlich concept of chemotherapy including a short account of the development and mode of action of arsenical drugs, sulphonamides and early work on antimetabolites. There is a brief description of the biochemical targets for drug action, selectivity and resistance, antibiotic inhibitors of peptidoglycan synthesis, drugs and compounds altering the function of the cytoplasmic membrane, inhibitors of nucleic acid synthesis, inhibitors of the ribosome function and bacterial resistance to antibiotics. The book ends with a discussion on some possible experimental approaches to the antibiotic mode of action (double blockage, modification of existing antibiotic nuclei, and the use of alkylating agents).

The emphasis is on basic research, but the authors usually dedicate most of their contributions to drugs and antibiotics important for clinical use as antibacterials. Perhaps this is the reason for the omission of antibiotics acting on respiration and oxidative phosphorylation such as antimycin A, piericidin A, usnic acid, oligomycin, rutimycin and aurovertin.

It is stated in the preface that each author has written individually the chapter in which he is specialized and this has led to some lack of uniformity. For example, when dealing with inhibitors of nucleic acid synthesis, agents interfering with nucleotide metabolism are briefly described besides those drugs inhibiting either the enzymic process of nucleic acid synthesis or the template function of DNA. On the other hand, inhibitors of aminoacyl-tRNA formation such as borrelidin and furanomycin, and inhibitors of formyl-methionyl-$tRNA_F$ formation such as aminopterin and trimethoprim, are not mentioned in chapter 6. In most cases, however, uniformity of style has been successfully achieved. All the contributors are, or have been for many years, members of the same sub-department of chemical microbiology in Cambridge working under the same head and it is very obvious the influence of this stage of their career in their style.

The book is well written and very carefully edited. The lists of references in each chapter are well selected and the field is well covered until August 1971; even many data not yet published at that time are included. The book is very pleasant to read and should be very useful not only to specialists on the increasing fields of antibiotic mode of action, but also to workers involved in teaching or those wishing to use correctly antibiotics as tools in research.

D. VÁZQUEZ

Oceanography

Seventy-Years Agrowing: a History of the International Council of Exploration of the Sea. By A. E. J. Went. Pp. 252. (International Council for the Exploration of the Sea: Charlottenlund Slot, Denmark.)

THE International Council for the Exploration of the Sea was set up by eight European countries. Eight more, and Canada, joined later. There had already been national and international agreement to ensure good order among fishermen, but the great expansion of the industry following the introduction of steam propulsion, development of the otter trawl, and extension of markets by rail transport had brought fears of overfishing. Initiative for systematic study, coming from Scandinavia, was supported in the UK by prominent scientists, by the National Sea Fisheries Protection Association and by the Sixth International Geographical Congress meeting in London. Otto Pettersson, one of the most dedicated marine researchers of the day, helped by Nansen, persuaded the Swedish Government to call a planning conference in 1899 and the Council met for the first time in 1902. It has met annually for 70 years with some interruption during the two world wars.

From 1902 to 1908 it had its own Central Laboratory which proved a veritable cradle for oceanography, setting the pattern for half a century. The outlook then narrowed a little. While exploration added continually to our knowledge of the plankton and fishes of the Atlantic Ocean, the North Sea and the Baltic Sea, immediate problems such as mesh regulation, decline of herring stocks, dependence of recruitment on parent stock and building up reliable statistics were the main purpose. Progress was necessarily slow, but the Council has often been able to give advice of permanent value to the industry and has been the parent of a number of valuable conventions and commissions.

Dr Went deals with the scientific work and its achievements, but mostly in the context of organization, committees and personalities. He describes the early meetings as "rather family affairs with a few outsiders" and one sometimes wonders if the circle has been too restricted. It could, for example, have taken a more active part in the rapid widening of interest in marine science after the Second World War. It has since organized IGY work in "the ICES area", and arranged a symposium on physical variability, bringing an unusually wide range of scientists to one of its meetings.

It is clear that the Council has had excellent service from the small administrative and technical staff working at its headquarters in Copenhagen.

G. E. R. DEACON

Regulation in Cells

Control Mechanisms and Protein Synthesis. By S. D. Wainwright. Pp. vii + 550. (Columbia University: New York and London, November 1972.) £9.40.

THE regulation of protein synthesis has long been one of the exalted topics in biology. Twelve years after its publication, the operon hypothesis has become firmly established as the primary mechanism for the negative control of gene expression in many bacterial systems. In spite of the obvious feasibility of the operon model as a general regulatory concept, it remains obscure to what extent this mechanism is employed in the more complex organisms. Incisive information has proved difficult to obtain because of the dearth of eukaryotic systems suitable for both genetic and biochemical analysis of the necessary detail. It is apparent, however, that eukaryotes have various control mechanisms which have no counterpart in prokaryotic systems.

Dr Wainwright's aim in *Control Mechanisms and Protein Synthesis* is to describe and assess the current state of our knowledge in this complex field. His view of the subject is broad, ranging from RNA-containing bacteriophages with only three genes to hormonal effects in metazoans. The treatment is detailed, though a more chemical approach might have been appreciated in those few cases where the molecular interactions are well enough understood. In places I found the sequence of chapters surprising. Thus the introductory chapter, "The System Regulated", a detailed and comprehensive account of the mechanism of translation, is followed by a contrastingly superficial chapter on differentiation and gene amplification. The synthesis of messenger RNA, often itself "the system regulated", is saved until chapters 5 and 6. Later chapters deal with molecular differentiation and antibody formation, devoting considerable space to models and hypotheses. A final chapter on recent developments ensures that the coverage is very up to date.

Dr Wainwright presents a balanced, if unexciting, account of the regulation of protein synthesis from the biochemist's viewpoint. The real strength of his book is its extraordinarily comprehensive bibliography which, together with the excellent index, will make it an invaluable guide to an increasingly daunting literature. W. J. BRAMMAR