is really Fig. 2 of the article by A. Sosin. Missing paragraphs or pages, for example, page 563 and page 1007, are also evident, and the conclusions to the paper by Yoshida and Kiritani are included at the top of the last page rather than at the end of the article. All of which indicates that the task of editing the publication of a complete conference is too great to be carried out by just one of the conference participants.

The book is arbitrarily divided into four sections called (i) elementary defects, simple complexes and their interactions, (ii) clusters and dislocation loops, (iii) radiation damage, and (iv) collective behaviours and motions of dislocations and their results, respectively. There are, of course, some good articles included in the book, but in the main they are submerged by pages and pages of doubtful verbiage, of which the 165 pages devoted to digital computations of the energies of dislocations and point defects in f.c.c. metals using Morse potential functions must take the top prize. Most of the other articles are, however, of a manageable length of 25 pages, with something for everyone. In general, much of the work described in the book is reasonably good conference material, certainly for a trip to Hawaii, but not for a book; not even a well-edited version.

R. E. SMALLMAN

POLAROGRAPHIC METHODS

Polarography

By D. R. Crow and J. V. Westwood. (Methuen's Monographs on Chemical Subjects.) Pp. x+174. (Methuen: London, August 1968.) 30*s*.

THIS latest addition to Methuen's well-known series of monographs on chemical subjects presents a fairly simple and concise account of the polarographic method written essentially with the undergraduate in mind. Although several specialist texts dealing with polarography are now available, and most textbooks of instrumental methods of chemical analysis give prominence to the methods and techniques of polarography, there does appear to be a need for a monograph of the size and scope of the present volume.

After a short introduction to the subject, the fundamental principles leading to the establishment of the Ilkovic equation are given. This is followed by aspects of the practice of classical d.c. polarography, including differential and derivative polarography. The use of polarography in the study of inorganic complexes, and in organic chemistry, is then described. The discourse on classical polarography is completed with an account of the amperometric titration technique. The book concludes with chapters dealing with the more sophisticated topics of a.c. and oscillographic polarography.

There is no doubt about the utility of this little volume, particularly to the student concerned with electroanalytical processes. In recent years, polarography has become so much a part of the general analytical scene that a working knowledge of the method is essential for all professing an interest in chemical analysis. The use of the techniques in advancing the study of organic reaction mechanisms, inorganic complexes and many other chemical problems will undoubtedly extend the appeal of this book to include the research worker with little or no previous knowledge of the field. Here he will find the essentials of polarography adequately presented for introductory purposes and, if this is sufficient to arouse further interest, the moderate number of references at the end of each chapter should enable him to enter more fully into the literature on the polarographic method. This, then, is a book to be recommended to all interested in knowing about the fundamental principles of polarography.

WILLIAM I. STEPHEN

Biological Sciences

SET TASKS

Reward and Punishment in Human Learning

Elements of a Behavior Theory. By Joseph Nuttin, in collaboration with Anthony G. Greenwald. Pp. x+205. (Academic Press: New York and London, July 1968.) 79*s* 4*d*.

THIS short book is designed to discuss the question: "What is learned when a response is rewarded, and how does this differ from what is learned when a response is punished?" Despite a statement on the jacket, the method is purely behavioural, not physiological: the authors advocate a "conception of a personality constructively interacting with its environment . . . as the framework for theoretical analysis".

The core of the book consists of six chapters, each a detailed account of the findings from experiments in which human subjects are set tasks, such as estimating areas, and are variously rewarded or punished by being told "right" or "wrong". This work is due to the senior author, and was originally published (in French) in 1953; some long footnotes and an appendix of 49 pages are designed to bring the text up to date and to present observations by the junior author.

Among the conclusions from the experiments is "that rewards do not have any inherent property of enhancing stimulus-response connexion strength or in otherwise facilitating learning in laboratory learning tasks". Emphasis is put rather on the importance of expectation that remembering a response (whether rewarded *or* punished) will be useful on future occasions. If punishment is infrequent, giving it may draw special attention to the punished responses, and these may be remembered better than others that have been rewarded. The authors criticize previous (early) work in which learning was reported to be enhanced by reward: the experimenters often told their subjects that rewarded responses would later be more useful than punished ones, and they also used reward only infrequently. Clearly, controls for these features are needed in all experiments of the type described in this book. Whether similar effects would be observed with rewards and punishments of different kinds is not discussed.

The first and last of the chapters of the main text give the authors' theoretical position. This is stated for the most part in turgid prose of high generality. The authors attack stimulus-response interpretations of human behaviour, though few people nowadays hold the views that they criticize. There are some tantalizing sentences which at first promise useful comment on current problems. For instance, what Nuttin and Greenwald call "the constructiveness of behaviour" demands discussion of curiosity, exploratory behaviour and allied activities; but this very relevant field of study is neglected. Again, we are told: "The basic product of learning is the acquisition of behavioural . . . capabilities at the performer's disposal". But important questions of transfer