

in organization pattern, but there are, he suggests, certain principles which should be used as a guide. Apart from his main thesis of clear definition of responsibilities, there is at least one other principle which he recommends which is certain to arouse considerable controversy, namely, that there should be only one chief executive.

This book has already been described as comprehensive, so the reader will expect and will find valuable discussions on such topics as the role of the specialist, the responsibility of top management, centralization versus decentralization, the effective use of committees and the role of organization charts. The latter is accompanied by a special warning against exaggerating what can be accomplished by them. There are specially illuminating discussions on the difficulties of executive directors, which Mr. Brech attributes primarily to a failure to distinguish between their dual roles; the harmfulness of deputy appointments which are used in some of the nationalized industries; and the factors which affect the span of control. Among the latter Mr. Brech includes the 'emotional' aspect of attention, that is the extent to which an individual can deal with interruptions as well as more obvious factors such as geographical distribution and the nature and diversity of responsibilities.

There are three interesting appendixes on the history of thought on organization, on the Fleck and Herbert Reports and on organization for command in the Army.

A board of directors which wishes to assess the effectiveness of its management might start from the list of factors given on p. 278 of Mr. Brech's book. These do not, of course, provide the answers, but periodic heart searchings on each of these points together with research, where necessary, would help to improve the efficiency of management by ensuring that the board was considering all relevant factors.

ROSEMARY STEWART

MICROSCOPY IN REVERSE

Microphotography

Photography at Extreme Resolution. By Dr. G. W. W. Stevens. Pp. xvi+326. (London: Chapman and Hall, Ltd., 1957.) 50s. net.

MICROPHOTOGRAPHY, which Dr. G. W. W. Stevens very properly distinguishes from photomicrography, can be defined as the copying of objects on an exceedingly small scale. The process is almost as old as photography itself, and a fine example, nearly a century old, by J. B. Dancer of Manchester, is reproduced in this book. Such a technique offers a challenge to the perfectionist, and enthusiasts express their results in terms of 'Bibles per square inch'. Some of the practical applications are fairly obvious; Nazi spies transmitted copies of secret documents in the full-stops of newspapers and telegrams, and the value of microphotographic books in space travel can be foreseen. On a more everyday plane the importance of storing information in a small volume needs no emphasis at a time when the number of scientific journals alone is increasing so rapidly that the storage space of many libraries is likely to become inadequate within the next generation.

Quite apart from its immediate practical value, microphotography is of great intrinsic interest, in

that it brings together a large number of different techniques and disciplines. There is great scope for the development of new types of grainless photographic emulsions, and Dr. Stevens gives an account of these and of some of the special problems encountered in their use, which will certainly fascinate anyone interested in photography. The long sections devoted to optical techniques are of great interest to microscopists, and will help them to think about their problems from a new point of view. The beautifully illustrated chapter on anomalous image formation and spurious resolution will provide theoretical optical physicists with food for thought. The last hundred pages or so deal with practical applications. These range from the large subject of graticule manufacture through document copying to such diverse research methods as resolution testing, the study of fine mechanical movements and autoradiography.

This is a pioneer effort, and the author has not been able to make use of other text-books on the subject. It would be surprising if such a book were free from errors or if all sections were easy to read. Such things are of little importance and can be attended to in future editions. The really important fact is that this book should have been written at all, for it contains a mass of information which has hitherto been available only to specialists. Adequate references are provided after each chapter, and, as is to be expected, the numerous plates are of very high quality and unusually informative. R. BARER

MAGNETIC AMPLIFIERS

Transducers and Magnetic Amplifiers

By Dr. A. G. Milnes. Pp. xiv+286+16 plates. (London: Macmillan and Co., Ltd.; New York: St. Martin's Press, Inc., 1957.) 63s. net.

THE magnetic amplifier is essentially a non-linear element and does not lend itself to a general solution. The extensive literature on this subject tends to treat particular aspects of it rather than give an overall generalized picture. This book gives a very complete survey, and attempts to bring the different aspects together and place them on a common foundation. The author is well known for his analytical treatments of the series and self-saturated magnetic amplifiers. These theories have been integrated into the book and give the specialist a valuable insight into their operation.

The introductory chapter describes the basic operation of the transducer, flavoured with a little of the analytical theory which is fully developed in the later chapters. The effect of core material and rectifier performance is discussed in detail, and typical figures for a range of 400 c./s. magnetic amplifiers with selenium rectifiers are given. Unfortunately the figures are rather out of date, as much better results are now obtained with silicon and germanium diode rectifiers.

Detailed analyses are given of the series-connected transducer with various degrees of positive feedback and the self-saturated magnetic amplifier. The $B-H$ loop is approximated to three straight lines, having a finite slope in the unsaturated condition, and zero slope in the saturated conditions. Although this gives good agreement for current sensitivities achieved in practice, the omission of a hysteresis term from the approximation does not allow the