Sensory (apart from visual) adaptation is mentioned, almost *en passant*, in several places, but does not seem to be regarded as a phenomenon in its own right—which it surely is. Reaction time also receives scant recognition.

To redress the balance, however, it must be said that the physiological chapters, and especially those on vision and hearing, are outstandingly valuable collections of data, not less for their many excellent illustrations than for the text. The other major section of the book—on learning—runs them a close second. The chapters on speech and language, in which applications of the theory of information are discussed, are exceptionally interesting. A welcome new departure for a work of this kind is a chapter with the title "Engineering Psychology and Equipment Design". The editor, in his delightful opening chapter on "Mathematics, Measurement, and Psychophysics", provides most of the humour; possibly the lively figure of speech, the conversational aside and the dry comment are editorial privileges.

In short, this is a book which every experimental psychologist, whether or not he approves of its physiological and mechanistic—one might almost say engineering—bias, will earnestly desire to possess, as will a great many other people. One can only suggest that they form themselves into syndicates to buy it.

W. E. Hick

MONOGRAPH OF AURORÆ

The Auroræ

By Dr. L. Harang. (International Astrophysics Series, Vol. 1.) Pp. x+166. (London: Chapman and Hall, Ltd., 1951.) 25*s*. net.

RESEARCH on the aurora polaris has proceeded with increasing tempo throughout the present century; each decade has brought solid progress, and some have produced new discoveries of great interest. Popular articles and lectures on the subject always meet a good welcome; but books on it appear very seldom. The opening of the second half of the century now brings an excellent work by Dr. L. Harang, one of the most distinguished of the younger followers of his famous countrymen who have been pioneers in this field—Birkeland, Størmer and Vegard. The last previous book on the aurora, published in Great Britain, seems to have been the English translation of the French work by Angot, in 1896.

The aurora is one of the spectacular wonders of Nature, and it is fitting that this book is very well illustrated—with photographs and diagrams numbering rather more than one a page. They illustrate the aurora itself; the apparatus used for photographing auroræ and their spectra; the technical methods used to determine their height and location from simultaneous photographs from different places; their geographical distribution and the isochasms (lines of equal auroral frequency) around the northern and southern magnetic axis-poles; statistics of their occurrence in time, and its relation to the occurrence of solar and magnetic activity; statistics of their distribution in height (including both ordinary auroræ and the very high sunlit auroræ), and also of their directions in plan (along the auroral arcs and draperies); their spectrum; the electrical theory of the aurora (Birkeland, Størmer, Brüche); the detailed connexion between the geographical distribution of auroræ and that of geomagnetic disturbance; and the accompanying changes in the ionosphere revealed by radio methods.

This list gives a good general idea of the scope of the work, which is addressed to the student and specialist rather than to the general reader. Dr. Harang, who was for several years head of the auroral observatory at Tromsø, speaks with authoritative first-hand knowledge of all the observational aspects of the subject, and has also made varied and valuable interpretative studies of the data.

The improvement of auroral spectrographs in recent years has brought a rich harvest, through the efforts particularly of Vegard, Gartlein and Meinel, and yet it is probably only a foretaste of much more still to come. The theory lags behind; but the theorist gains much from the recent observational proof that in auroral arcs protons enter the atmosphere with speeds of several thousands of kilometres a second.

New workers entering this field of research, and many older ones also, will find great benefit from a thorough and repeated study of the wealth of facts and interpretations so well expounded in this book.

S. Chapman

MICROBIOLOGY FOR THE GENERAL STUDENT

Bacteriology

By Prof. Robert E. Buchanan and Estelle D. Buchanan. Fifth edition. Pp. x+678. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1951.) 45*s*. net.

THIRTEEN years have elapsed since the previous (fourth) edition of this book. During that period there have been great changes in microbiology—that protean discipline which is the real subject of this book. The word 'bacteriology' used as its title does not necessarily indicate that yeasts, moulds, viruses and some pathogenic protozoa, as well as bacteria, are included in its subject-matter. In the new edition, which contains 130 pages more than the previous one, an attempt is made to cope with the new material, new emphases and new orientations which the previous thirteen years have yielded. About forty more pages each have been added to morphology and classification, to physiology and applications, and to pathogenic organisms.

The book first gives the student of elementary microbiology a good general perspective and a rather superficial description of the diverse kinds of micro-organisms which are his objects of study. The general approach is still predominantly classical and biological, though the increased space and a re-arrangement of the sequence of chapters devoted to physiology gives a better balance and better reflexion of some newer trends. After the physiology, various micro-organisms are considered, somewhat briefly, in relation to their socially and economically important roles, constructive or destructive. More attention is paid to what they do than to how they do it.

To devote only twenty-eight pages out of 678 to "Resistance to Disease: Immunology and Serology" seems too little, especially when tighter editing of various rather slight pages elsewhere in the book could have saved space for more solid matter on immunity. On the whole, though, the balance of the book is reasonable, given the diversity of aspects to be treated. There are not many books which attempt