Basic Automatic Control Theory

By Prof. Gordon J. Murphy. (The Van Nostrand Series in Electronics and Communications.) Pp. xi+557. (Princeton, N.J.: D. Van Nostrand Company, Inc.; London: D. Van Nostrand Company, Ltd., 1957.) 9 dollars; 67*s*. 6*d*.

THIS book gives a detailed treatment for most of the basic theory pertinent to the analysis of linear feed-back control systems. The author deals first with Routh's criterion for stability, and with calculation of ultimate-state response. Techniques used in frequency response and time-response calculations are described. These include the *G*-plane (Nyquist) polar plot, the use of Bode gain-frequency diagrams, the root locus method for obtaining closed loop poles of the characteristic equation of a system from its open-loop poles, and the construction of the system time response from the closed-loop poles. Floyd's method for constructing impulse response from frequency response is also shown.

The introductory chapters, illustrated by a large number of very clear schematic and block diagrams, present various examples of control system components, and introduce the concept of transfer functions for each component part of a system. Block diagrams are built up for typical systems, and these are reduced to simple signal-flow diagrams. Laplace transform theory is also included among the introductory chapters, and the final chapter in the book gives a brief account of analogue computors and their use in simulation of feedback control systems. Certain parts of linear theory have been omitted, including the behaviour of linear systems with random input signals, and phase-plane analysis, but such omissions do not detract from the value of the book. Numerous worked examples are used throughout to illustrate the theory presented, and these examples are invaluable in providing a sound practical understanding of the subject. The book should prove useful to final-year and postgraduate students as well as to servo-design engineers, especially in respect to the excellent examples and unworked problems.

M. J. SOMERVILLE

Science in Schools

Proceedings of a Conference under the auspices of the British Association for the Advancement of Science, held on April 17th and 18th, 1958, at the Royal Geographical Society, London, S.W.7. Edited with Postscript by W. H. Perkins. Pp. viii+150. (London: Butterworths Scientific Publications, 1958.) 15*s*.

DURING April 17–18, 1958, the British Association for the Advancement of Science held a conference to focus attention on the condition of science teaching in schools. The subjects discussed included the national need, science as a component of general education, scientific education for girls, the present position of science teaching, the supply of science teachers and the role of the university and teachers' training colleges in providing them, accommodation and equipment and the part played by local education authorities in their provision. Among the speakers were Lord Heyworth, Sir Solly Zuckerman, Sir Eric James, Miss E. M. Huxstep, Dr. A. W. Barton, Dr. J. W. F. Hall, Dr. B. E. Lawrence and Lord Tedder. All the speeches and discussions have now been summarized in this book, which contains an introduction by Sir Alexander Fleck and a postscript by W. H. Perkins. The British Association and publishers are to be commended for presenting the proceedings of a nationally important conference in such attractive and readable form so quickly after the conference that the views presented are still fresh, lively and urgent.

Methods of Analytical Histology and Histo-Chemistry

By Edward Gurr. Pp. xv+327. (London: Leonard Hill (Books), Ltd., 1958.) 70*s*. net.

THIS is essentially a practical book designed for use at the laboratory bench, and, with this end in view, the techniques described have been set out very fully. The volume includes all the standard histochemical techniques, and often gives details of the several variants of any particular method. The difficult subject of protein histochemistry has been well covered; the very adequate instructions for the synthesis of some of the reagents used in, for example, the localization of sulphydryl groups by Barnett and Seligman's method are a welcome feature.

For the benefit of workers who do not have ready access to libraries, certain sections of the book are introduced by a theoretical passage which includes sufficient biochemical detail for a proper understanding of the different tests. The details of each reaction are followed by a selection of notes which point out possible sources of error, and these, together with a useful appendix containing such information as a list of buffer tables, of solubilities of various reagents and the formulæ of many dyes and staining solutions, add greatly to the value of the book, which may be readily commended to all who use histochemical methods.

S. BRADBURY

Curious Naturalists

By Dr. Niko Tinbergen. Pp. 280+54 photographs. (London: Country Life Limited, 1958.) 35*s*. net.

IN his introduction to this book, Niko Tinbergen describes it as the work of a small number of naturalists who, over a period of some twenty-five years, joined him in studying the behaviour of animals in their natural environment. He would be much too modest to say that most of the work described was initiated by him and continually inspired by his never-flagging enthusiasm. His friends throughout the world will greet his book with delight; many young naturalists will discover that the field of original investigation is still largely uncharted and awaits only the lively mind allied to a curiosity which is never stilled.

The book is cleverly written. In the opening chapter Tinbergen shows how, in the lovely country of Hulshorst in Holland, his first observations began in a somewhat diverting encounter with the digger wasp, *Philanthus*. From there the story is switched to East Greenland to the study of snow-buntings and phalaropes. Further investigation of *Philanthus* is followed by the study of the fast-flying falcon, the hobby. So the book continues with more studies of insects, birds and flowers, all serving to illumine contemporary knowledge of morphology, genetics and the mechanics of evolution.

The book is written in a narrative form which commands attention and is illustrated by superb photographs and quaint line-drawings which are always relevant to the text. "Curious Naturalists" should be much read.