

principles which have not yet been characterized. A number of them have such outstanding biological properties, for example, their marked specificity and the fact that they show their effects in such extremely minute concentrations, that in pre-penicillin days they would have been regarded as quite remarkable substances. As would be expected from our knowledge of other microbial metabolic products which have no antibiotic properties, the antibiotics also show an almost bewildering variety of chemical structures. Hence, apart from the proved practical importance of a few of them in clinical medicine, they are clearly of great interest to research workers in a number of fundamental sciences. This point of view is aptly summarized (p. 1511) and is quoted, since it admirably expresses the philosophy of the authors themselves. "These considerations (i.e., the possibility of discovering new clinically important antibiotics) should not be allowed to obscure the more academic side of the subject. Pursuit of fundamental knowledge of microbial antagonism is resulting in the discovery of new substances whose chemical structure and biological specificity are alone of sufficient interest to compensate, in some measure, for the labour and difficulties involved in their isolation. It is also leading to a large accumulation of data which, though at present unexciting, may some day, like observations on morphology, find a place in a coherent account of the varied activities of living cells."

The two volumes are assured of premier place in the libraries of those interested in antibiotics.

HAROLD RAISTRICK

DEVELOPMENT AND BEHAVIOUR OF MAN

About Ourselves

Man's Development and Behaviour from the Zoological Viewpoint. By James G. Needham. Pp. xi + 276. (London: George Allen and Unwin, Ltd., 1950.) 15s. net.

WRITTEN for laymen, this is a book which sets out to trace man's position in Nature and the fundamental zoological reasons for his being what he is and behaving as he does. The book is divided into two parts, the first tracing the structure, development and first steps in learning in man back to their sources in the animal world; the second investigates man's collective behaviour by comparing it with the behaviour of the more social animals. In the first part a short introductory statement about man's relation to the rest of the animal kingdom is followed by chapters on the primates, the growth of the nervous system and behaviour, infancy and the roles of heredity and environment in man's development. This section is admirably done, although the paucity of illustration is surprising.

In the second part, Dr. Needham discusses society in its biological aspects, and among the topics considered are population, social nurture, social behaviour, instinct in human affairs, the folk-ways, war, government and religion. Here one notes a real difference from the first part of the book, where the author's statements are demonstrably based on experiment and observation. The unsuspecting layman might assume that all the statements on the biological aspects of society are also based on evidence carefully collected through the years by men of science.

Although much of the information in this part of the book could be substantiated, in several places a note might have been included to say that statements made were, at present, opinions which might not be shared by other men of science. The suggestion that man, in his present state of social development, must go to war periodically is one which, although shared by many men of science, has been rejected by a large number of anthropologists and psychologists. Needham's views on religion would also be challenged by many zoologists; in fact, it is open to question whether such a topic should have been included in a book the first part of which consists of information sufficiently factual to make a layman accept it as authoritative. Without explanation the layman might be led to accept the more controversial second part in its entirety as substantiated fact.

T. H. HAWKINS

BIOCHEMISTRY OF PLANTS

An Introduction to Plant Biochemistry

By Dr. Catherine Cassels Steele. Second edition, revised. Pp. viii + 346. (London: G. Bell and Sons, Ltd., 1949.) 22s. 6d.

THE claim is made for the second edition of this book that it has been carefully revised and brought up to date. It is therefore unfortunate that many of the additions are slipshod and inaccurate. Little or no complaint can be made about such chapters as those on the chemical composition of plants, the colloidal state, alcohols, fatty acids, etc., in which the author is dealing with matter that has now become incorporated into the groundwork of our knowledge. Even here, however, the investigators quoted are treated in a cavalier manner. Names of authors are mentioned; but dates and the titles of their communications and the journals in which they have been published are conspicuous by their absence. This places the reader at a serious disadvantage; but perhaps it may be considered to have some basis in logic if pursued to the end.

Practical experimental exercises for the student to carry out are mentioned in a number of chapters. The majority of these experiments are well and clearly described; but the description of the Kjeldahl method of estimating total nitrogen is completely misleading. Not only is the addition of a catalyst not mentioned, but also the great importance of the time of digestion after the solution has cleared (and it will only clear if a catalyst is present) is not emphasized. Finally, no practical analyst would think of using the distillation apparatus illustrated, but would distil the mixture direct from his digestion flask.

The statements made about certain vitamins are confusing and inaccurate. On page 163 vitamin B₁ is correctly termed aneurin, but on p. 171 vitamin B₆ is also called aneurin. In fact, the whole description of the vitamin B₆ complex given here requires revision. Again, reference is made to vitamin B₂ or riboflavin, also on p. 171, as being a factor essential to the nervous system. This, of course, is not the case. Moreover, the best plant-sources of riboflavin are not green vegetables like spinach, lettuce and broccoli, but leguminous seeds.

It is a great pity that this otherwise excellent book should be marred by defects such as have been described. An adequate list of general references is given at the end of the book.

E. C. BARTON-WRIGHT