

of *Australopithecus prometheus*. But on several occasions he has been proved triumphantly right, notably over the tool-making capabilities of the Australopithecines—in stone. His unorthodox views and his imagination, no less than his discoveries, have had a most stimulating effect on anthropology. They are very apparent in this most absorbing and readable book, which is marred only by the poor quality of the drawings.

SONIA COLE

## A NEW TREATISE ON PLANT PHYSIOLOGY

### Plant Physiology

A Treatise. Edited by F. C. Steward. Vol. 2: Plants in Relation to Water and Solutes. Pp. xvii+758. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1959.) 22 dollars.

PLANT physiologists cannot complain of a shortage of literature designed to provide up-to-date information of the state of knowledge of the various branches of the subject. As well as a number of monographs on different parts of the subject there has appeared each year for the past ten years the "Annual Review of Plant Physiology" which has given summaries of recent advances in selected aspects of plant physiology, while about four years ago the publication of the "Encyclopedia of Plant Physiology" began, about a third of its projected 18 volumes having still to appear. Now we have the first volume of what is described as a treatise which is designed to cover the field of plant physiology in seven volumes. Although very much smaller in size than the "Encyclopedia", this new venture will yet be a considerable work when completed. How then is it to be appraised? According to the preface of this first volume to appear, it is intended not only to be a work of reference but also to give "a reasoned analysis of the status and development" of each subject discussed, and the readers for whom this analysis is intended are listed as "advanced and postgraduate students, teachers, research workers and investigators in other fields of knowledge, who need information about the present state of physiology".

This first volume to appear consists of seven articles, varying very much in length, by writers who have worked in the respective branches of the subject with which they deal. As is pointed out in the preface, each of these articles is affected by its author's own opinions. This should be borne in mind by the reader, for other workers in these same fields might have other opinions. For example the reviewer, who has had more than a casual interest in the salt relations of plant cells and tissues for nearly half a century, and who was concerned in some degree with earlier investigations on these relations, also has his own opinions, and it is clear that these do not always coincide with those expressed in the article on this subject in the volume under consideration.

Works of this kind, well produced and well bound, extending to several volumes and composed of a greater or less number of articles written by different contributors, have become the fashion. Of their value to the student there can be no doubt, but whatever their merits they have one character in common: they cost what seems to the reviewer quite a lot of money. This is no doubt unavoidable, but it probably

means that in Great Britain at any rate they find their way mainly into the libraries of universities and other institutions and that comparatively few are purchased by students and teachers, who are not among the most opulent members of the community. If this should be so with the present volume it is to be regretted, as probably many plant physiologists would like to have it on their own shelves

WALTER STILES

## VITAMIN B<sub>12</sub>

### Vitamin B<sub>12</sub>

By Dr. E. Lester Smith. (Methuen's Monographs on Biochemical Subjects.) Pp. xii+196. (London: Methuen and Co., Ltd.; New York: John Wiley and Sons, Inc., 1960.) 15s. net.

VITAMIN B<sub>12</sub> is unique in many ways. It took more than twenty years from the time of the discovery in 1926 that liver cured pernicious anaemia until the isolation in 1948 of the active principle, which we now know as vitamin B<sub>12</sub>. The vitamin is active in fantastically small quantities; the body needs something of the order of one millionth of a gram daily. This is about one thousandth of the requirements of some of the other vitamins in the B groups. Vitamin B<sub>12</sub> is the only vitamin which contains a metal in its very complicated molecule. It seems to be synthesized only by micro-organisms, yet in our diets it exists virtually exclusively in foods of animal origin. Its final isolation in 1948, almost simultaneously in the United States and in England, would no doubt have been even longer delayed but for the resources of the two large pharmaceutical companies which could work up one ton of liver to produce about 20 mgm. of red crystals.

Dr. Lester Smith, the Glaxo chemist who was responsible for the isolation in England, has produced the first book devoted entirely to vitamin B<sub>12</sub>. It is a short book, and this is probably the reason for the only serious criticism one can make of an otherwise excellent survey. Some of it is so condensed as to make it difficult to understand at first reading; it becomes more of a reference book than a simple account of the subject. Of particular usefulness for reference is the description of the chemistry of vitamin B<sub>12</sub> and its many relations; this is splendidly done by the author, who himself has contributed a good deal to its elucidation. On the other hand, a few errors and ambiguities—none of them at all serious—have crept into the description of the biological aspects of the vitamin. For example, the author cites the work of Morgan and Yudkin on the vitamin B sparing action of sorbitol, but this work in fact makes no reference to vitamin B<sub>12</sub>. Again, how many readers know of the enzyme rhodanese? I have only one criticism of production: it is certainly difficult to print chemical formulae so as to give the effect of three dimensions, but something better can be done than those given on pp. 36-37.

This is a book that every nutritionist will have to possess and use; and we shall look forward to new editions produced by Dr. Lester Smith to keep us up to date in the rapidly advancing knowledge in this field. I hope he will then be kind enough to indulge the prejudices of at least one reader, who believes that 'human' is an adjective and not a noun, and who also believes that there is a difference between the symptoms and the signs of an illness.

JOHN YUDKIN