

of these reserves is stated, in effect, to prove that administration of vitamin A could not have benefited the patient; this is surely to make quite a number of unproved assumptions about availability and mobilisation and the *site* of vitamin A action, as well as to rule out entirely a possible pharmacodynamic action of intensive vitamin A therapy. A similar consideration might be advanced about the curiously specific action of parenteral vitamin D treatment for certain skin allergies.

However, these matters take us a little far from Dr. Harris's mainly dietary contentions. About these there can be no cavil. Dr. Harris, as director of the Medical Research Council's Nutritional Laboratory at Cambridge, is, in a sense, a civil servant. It is to be hoped that his administrative colleagues in the Departments involved will read and mark his last chapter in particular, and outwardly digest for their respective ministers its devastating implications. The force of these implications is the greater in that Dr. Harris writes solely as a man of science, either stating proved facts or expressing opinions on matters about which objective and agreed judgments both can and will be reached sooner or later. Any political, and therefore subjective, consequences are not Dr. Harris's concern—at any rate as the author of this book.

Dr. Harris says in his penultimate paragraph that the co-existence of want and surfeit is not the fault of science; there are, however, many, and Dr. Harris is perhaps one, who are feeling less and less inclined to accept the comfortable corollary that no fault lies with scientific workers.

A. L. BACHARACH.

#### The Translocation of Solutes in Plants:

a Critical Consideration of Evidence bearing upon Solute Movement. By Prof. Otis F. Curtis. (McGraw-Hill Publications in the Agricultural and Botanical Sciences.) Pp. xiii+273. (New York and London: McGraw-Hill Book Co., Inc., 1935.) 18s. net.

THIS excellent monograph should be in the hands of every plant physiologist. Prof. Curtis is a recognised authority on the difficult problem of translocation in plants, and he is to be congratulated on the production of this book.

The first chapter is a specially well-balanced consideration of the historical side of the subject. Prof. Curtis has decided views on the particular functions of the different channels of transport in the higher plants, and considers that the phloem alone is sufficient not only for the downward translocation of elaborated metabolic products from the centres of synthesis; but that it is also the main channel for the upward translocation of mineral salts from the soil. On the latter point he will find the majority of plant physio-

logists against him. His survey of the brilliant series of investigations of Mason and Maskell on translocation in the cotton plant is on the whole fair, but tends to be biased by his own views on the function of the phloem.

The peculiar condition of 'negative gradients' of crystalloid nitrogen described by Mason and Maskell for the stem of the cotton plant, interpreted by them as a static gradient of crystalloid nitrogen mainly composed of asparagine, on which is superimposed a dynamic gradient of crystalloid nitrogen, finds a different interpretation at the hands of Prof. Curtis, who considers that it is "more likely to be due to a retention of the carbohydrate-filled tissues, of nitrogen that has never reached the leaves". This suggestion presumes that synthesis of organic from inorganic nitrogen can take place in regions other than the leaves, for example, the roots. This is quite possible, and there is experimental evidence to support the view. In face of these diametrically opposite interpretations of the same facts, further work is desirable on the matter.

The general appearance of this monograph is attractive and the diagrams clear and explicit. The text is not marred by misprints. The book can be thoroughly recommended as an up-to-date survey of the subject.

E. B. W.

#### The Quantum Theory of Valency

By Dr. W. G. Penney. (Methuen's Monographs on Chemical Subjects.) Pp. vii+95. (London: Methuen and Co., Ltd., 1935.) 2s. 6d. net.

As there are notably few text-books available dealing primarily with modern valency theory, a concise handbook is more than welcome. The object of the present monograph is "to explain in simple language the view-point of quantum mechanics on valency and related topics such as the architecture of molecules and the activation energies of simple reactions".

After an explanation of quantum numbers and the wave function of the electron, the hydrogen molecule is treated at some length on the basis of the Heitler-London electron-pair bond theory. A chapter follows on the method of molecular orbitals as applied to the hydrogen molecule and the general diatomic molecule, and another on the problem of the shape of molecules by the generalised Heitler-London method of localised pairs, illustrated for various radicals and molecules. The final chapter deals with activation energy, the three- and four-electron problem, the ortho-para conversion, and resonance.

Although present-day views on valency have developed largely through interpretation of molecular spectra, the author manages to avoid reference to spectral considerations. The text is explanatory and excludes mathematical deductions, but is by no means easy reading since it is, of course, highly condensed and its tone is mathematical throughout. The work is addressed especially to chemists, and those who have kept themselves equipped with a reasonable knowledge of quantum mechanical progress will value this concise treatment of a matter of essentially chemical interest.

N. M. B.