

## Potato research

*The Potato Crop: The Scientific Basis for Improvement.* Edited by P. M. Harris. Pp. 730. (Chapman and Hall: London; 1978.) £25.

THIS book is one of the first of a series of crop monographs; those on barley and potatoes have appeared and one on wheat is promised. According to the general editor of the series, E. H. Roberts, the aim is to provide authoritative and comprehensive summaries of current scientific knowledge aimed at teachers, students and research and advisory workers (they are not meant as practical manuals for farmers). The project as a whole is timely because the past 20 years has seen a formidable growth of knowledge of the scientific aspects of all our crops, yet there are few good recent monographs of temperate crops available; tropical crops, perhaps surprisingly, have been, on the whole, rather better served.

To what extent, then, does the present work fulfil these intentions? In general, I think it does so very

well. The book, a large one, is composed of 17 chapters which start with history and biosystematics, and go on through morphology, growth physiology, mineral nutrition, water relations, plant density and 'seed' management to mechanisation and weed control; there follow treatments of diseases, pests, tuber quality, storage, breeding, and economics; and the book concludes with a somewhat more speculative (and very interesting) chapter on the application of physiological ideas to the enhancement of crop performance.

The editor has done a good job of making a reasonably coherent whole out of diverse material contributed by 21 authors. The book is well made, the illustrations and index are adequate, and bibliographies (chapter-by-chapter) seem to be fairly complete; misprints and errors are few. Individually, the writers clearly know their subjects well, so the work as a whole is authoritative as well as comprehensive. The facts that our knowledge has improved greatly in recent decades and that the management of the crop and the product is shifting rather rapidly as new technology emerges become very apparent on reading this book. That knowledge and management are both yet imperfect, however, is also clear

and several authors draw attention to deficiencies in these respects.

This book will surely become the standard reference work for the crop and anyone seriously concerned with potato research will need to have it near to hand. Teachers will find it useful and so, perhaps, will some potato farmers (who tend to be knowledgeable enthusiasts); but it is not a practical manual.

There are two defects which should be considered in preparing a revision. First, few readers will find 30 odd pages of taxonomy of wild species very useful in the crop physiological context of this book, and the first two chapters could therefore be condensed into one without loss of content but with some saving of space. Second, though the bibliographies are reasonably international in character, the more agricultural parts of the text are much coloured by Western European, especially UK, practice. A wider viewpoint (including the place and potential of the crop at low latitudes) would be desirable.

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## Quantum electrodynamics textbook

*Quantum Electrodynamics.* By S. N. Gupta. Pp. 226. (Gordon and Breach: New York, Paris and London, 1978.) £25.30.

QUANTUM electrodynamics is the relativistic quantum theory of photons interacting with electrons and other charged leptons. It grew between about 1930 and 1950, as the natural result of combining special relativity with quantum theory. It has made some spectacularly accurate predictions, and it is one of the triumphs of mid-twentieth century physics.

There are few textbooks on just this subject, and the appearance of a new one is noteworthy, particularly when it is by someone like Professor Gupta, who has been a frequent and important contributor to the subject.

One of the best things about this book is its conciseness. Everything is done as economically and elegantly as possible, with no superfluous words. To achieve this compression some things inevitably have had to be sacrificed. I missed any discussion of polarisation,

of bound states, and, most seriously, of the experimental confirmation of the subject. There is a paucity of references, and there are none at all to other textbooks.

On technical matters, the gauge condition is dealt with using the indefinite metric, and regularisation is treated in terms of auxiliary fields. Scattering theory is treated rather perfunctorily. The difficult subject of renormalisation is briefly but, to my taste, sensibly and adequately covered.

Quantum electrodynamics is not a self-contained subject. In calculating the magnetic moment of the electron, for example, weak interactions and the virtual production of strongly interacting particles would have to be included if sufficient accuracy were required. Professor Gupta's book may be one of the last to confine itself to electrodynamics. It is none the worse for that; but a discussion would have been welcome of the place of quantum electrodynamics within modern physics.

This brief and clear book would be a good one from which to learn the subject. It is a pity that the price is too high for most students to pay.

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