Biochemical Basis of Ecological Adaptation', since this points to one of the significant growing points in photosynthetic research. While tantalisingly little is known as yet about the biochemistry of photosynthetic adaptation, this must be an area where much exciting development will take place in the years ahead.

Perhaps the single most striking impression to emerge from this volume is the remarkable diversity in pathways that exist in photosynthesis. Already plants can be divided into four types: those with C_3, C_4, intermediate C_3–C_4 or CAM pathways: and within these types, there are a number of subtle interspecies variations. In addition, the editors pose the question in their introduction—will photosynthetic pathways not utilizing RuBP and PEP carboxylases be revealed in higher plants? It will indeed be interesting to see what further differences in the carbon pathway emerge as more plant species are biochemically analysed in depth. This important volume will undoubtedly provide the spur for future, fascinating and fruitful experiments into the comparative biochemistry of photosynthesis within the plant kingdom.

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Phytochemistry, 1980, Vol. 19, p. 1006. Pergamon Press Ltd. Printed in England.

Recognition and Specificity in Plant Host–Parasite Interactions: edited by J. M. DALY and I. URITANI. University Park Press, Baltimore (European distributors, MTP Press Ltd., Lancs.), 1979. 355 pp. £22.95.

This handsome volume is the outcome of a two-nation research seminar held in Lincoln, Nebraska in the Summer of 1977 between U.S. and Japanese plant scientists. To some, the absence of European participants might appear to have been a handicap but, in fact, these proceedings provide a satisfactorily representative account of recent research in the field of host–parasite interactions. The book contains 22 papers collected together under four headings: genetical aspects, cytological events, constitutive recognition and induction of host responses. The majority of papers are part review, part experimental, and each is followed by a summary of the discussion that took place subsequent to the lecture presentation.

Inevitably perhaps, the phytoalexin response receives the most attention, in spite of the fact that its role in disease resistance is far from clear and that it lacks specificity, at least as far as the parasite is concerned. Not only are there papers specifically on phytoalexins and pathogenesis (H. Van Etten, S. Ouchi and I. Uritani), but the topic also creeps into many of the more general contributions. J. Kuc, in reviewing 'Modes of Metabolic Determination of Specificity', is rather pessimistic about their importance in controlling disease, while Van Etten takes a cautious middle view. On the other hand, the Japanese contributors are optimistic from their experiments that a significant role will eventually be established for them. Nevertheless, as Kuc points out, phytoalexin synthesis only represents one of a number of mechanisms which are clearly present in host plants as part of their co-ordinated defence against microbial invasion. Unfortunately, we know little about other mechanisms and so are unable to monitor them in particular host–parasite situations.

Other topics that receive significant attention include systemic resistance (L. Sequeira), elicitors (J. D. Paxton), lignification in response to infection (Y. Asada), host-specific toxins (R. D. Durbin, S. Nishimura) and cell membranes (H. Wheeler). In spite of much research effort, however, it appears that the agents responsible for recognition and specificity in gene-for-gene interactions are still elusive. This book can only therefore be considered a progress report; there is as yet no final solution. As such, it represents a useful addition to the literature on physiological plant pathology. It is well edited, nicely produced and reasonably priced. All phytochemists working with plant diseases will find something of interest and value in these pages.

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