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Allelopathic response

Allelopathy. (Physiological Ecology: A Series of Monographs, Texts and Treatises.) By Elroy L. Rice. Pp. x+353. (Academic: London and New York, September 1974.) \$25.00; £12.00.

MANY people are familiar with the interactions between microorganisms which involve the release of chemical toxins, yet the general public and even many biologists are probably unaware of the importance of such toxic substances in interactions between higher plants. But the concept is by no means new. De Candolle was perhaps the first biologist to suggest such a possibility in 1832. Yet, in spite of that, this book can justifiably claim to be the first volume in English to be devoted to the subject. That alone serves to illustrate the neglect which the study of allelopathy has suffered; it may also be regarded as an indication of the difficulties and uncertainties which surround such a study.

The definition of allelopathy used in the book is that of Molisch, which includes chemical interactions between plant and plant and between microorganism and plant. The study of chemical interactions between plants and animals (included in the term 'allelochemics' as used by R. H. Whittaker) is thus excluded. The emphasis of the book is ecological, and the role of allelopathy in the development of community structure and composition forms a theme linking several sections, whether dealing with phytoplankton, weeds in an old field succession, fire cycles or vegetation pattern in stable communities.

Two chapters on the role of allelopathy in agriculture and horticulture deal briefly but effectively with the considerable volume of work which has been done on this subject. A further section is devoted to the chemistry, physiology and mode of action of the inhibitors involved in allelopathy. The final chapter on chemical reactions between animals and plants is rather incongruous. It is too brief to do justice to a fascinating aspect of plant toxicity and since it does not fall within the definition of allelopathy used by the author, it hardly seems necessary.

Overall, however, the coverage is good and the bibliography excellent. In emphasis and treatment this is essentially a personal view of the subject by Elroy Price. He is well known for his work and ideas on the inhibition of bacterial processes—such as nitrification—during the development of stable vegetation, and on the role of allelopathy in delaying succession in some instances by the attainment of dominance by species with inhibitory properties. These subjects and others like them are developed fully in this book.

At times readability and flow are sacrificed for the author's concern to give practical details (even to the grade of Whatman filter paper used in experiments), but summary paragraphs at the end of chapters make up for this.

I cannot agree with the author's concern to divorce the concept of allelopathy from that of competition. The plant which has evolved allelopathic properties is comparable with a species of coarse or robust morphology in that it is able to substitute space for a resource in competitive interactions. On acquiring such space the resource may become freely available to the plant which would not necessarily require any degree of efficiency in tapping it. To say that the struggle for space is not competition is, in my opinion, an exercise in semantics.

This book is a full and stimulating account of a sadly neglected subject; as such it should be read by all practising ecologists, physiologists, agriculturalists and foresters. It is to be hoped that its production will give impetus to further research in an area where many problems, both theoretical and practical, have yet to be solved. **Peter D. Moore**

Nuclear spectroscopy

Nuclear Spectroscopy and Reactions: vols 40-A and 40-B. Edited by Joseph Cerny. Part A, pp. xvii+518; part B, pp. xvii+711. (Academic: New York and London, October 1974.) Part A: \$44.50; £21.35. Part B: \$49.50; £23.75.

THE rate of growth of the physical sciences is nowadays so great that even the specialist has difficulty in keeping abreast of more than a very narrow field. Yet he needs to know more than this, so it is very important that specialists should periodically summarise the work in their field for the benefit of those working in related areas.

Professor Cerny has succeeded admirably in bringing together the work of a group of well known specialists in nuclear spectroscopy and reactions, and has arranged it in four volumes.

The authors of the articles in the first two volumes—covering nuclear instrumentation and research in nuclear spectroscopy—are among the foremost authorities on their subjects and in many cases are leading the most active groups in the field. The result is most impressive and contains within a relatively manageable compass expert and up-to-date coverage of many of the important growth areas in nuclear spectroscopy. The volumes will be essential reading for all engaged on work in this field. The subsequent volumes, on gamma-ray spectroscopy and theoretical analysis, will be eagerly awaited. **P. E. Hodgson**