

at a moment when it was no longer true. Harriet Greenaway's "Impact of Educational Policies" starts with Robbins and concentrates mainly on the past five or six years, with too much attention devoted to very recent happenings, some of them unimportant. First employment statistics are discussed by both editors separately in chapters 1 and 2; the reason for this is unclear, the tables are confusing and the total effect is more muddled than even this difficult subject need be. In spite of these defects this is a worthwhile book, and there is a useful six-page bibliography.

B. J. HOLLOWAY

## Ectomycorrhizae

*Ectomycorrhizae*. Edited by G. C. Marks and T. T. Kozlowski. (Physiological Ecology: a Series of Monographs, Texts, and Treatises.) Pp. xiv + 444. (Academic: New York and London, June 1973.) \$28.50.

THE content of this latest volume on mycorrhizae, specifically ectomycorrhizae in this instance, reflects a revival of emphasis on the general biology of these structures. The emphasis is very much on the need to relate more carefully findings from controlled laboratory experiments to complex soil situations.

Many references are made to ectomycorrhizal synthesis. Well tried aseptic techniques are described and at the same time mention is made of the need to consider possible role(s) of rhizosphere microorganisms in synthesis and function. The inclusion of a specific rhizosphere chapter (by Rambelli) is excellent, but the chapter itself is a little disappointing both in presentation and in the errors it contains. The section on the concept of the rhizosphere is muddled, and the data of Buxton (1957) on page 323, Slankis *et al.* (1964) on page 318 and Rovira (1965) on page 314 are either incorrectly quoted or presented in a confused way. Also Figs 1 to 8 do not relate properly to the accompanying text.

Bjorkman's hypothesis, it is concluded by various contributors, is an oversimplification of the situation. The comments of Slankis on the probable involvement of growth hormones are very relevant and the concept of a mycorrhizal infection zone (MIZ), as outlined by Marks and Foster, should prove of value in further studies on the synthesis problem. The comments of Bowen and Theodorou on the need to separate the process of root surface colonisation from that of infection proper involving the formation of an Hartig net are also important.

Ectomycorrhizal function is also discussed at length. Bowen's contribution on mineral nutrition is quite excellent and his remarks on the need to study

soil situations such as form and mobility of ions in soils and the importance of mycelial strands are very logical. This author also mentions field inoculations and forestry practice. This more applied aspect of mycorrhizal studies is further developed by both Meyer and Mikola in their respective chapters. The possibility of conducting field inoculations with fungi suited to particular situations such as soil types and climate, and the necessity (or not) of raising nursery seedlings under conditions conducive to mycorrhizal infection, are discussed. Somewhat related to these points, perhaps in connection with the establishment of culture collections of useful ectomycorrhizal fungi, are the problems of their precise identification as discussed by Zak.

Marx deals with the function of ectomycorrhizae as protective agents against certain soil pathogens. Several contributors venture the opinion that nutrient uptake and protection against soil pathogens are the two important functions of ectomycorrhizae but that there are others.

The importance of nitrogen in ectomycorrhizal synthesis and function is mentioned many times but it is clear that much work still remains to be done on its general involvement. Its relative importance to phosphate is still not known. The same sort of comments are relevant to studies on the involvement of root exudates (and metabolites). Here it seems that too much emphasis has been put on aseptic laboratory experiments.

It is something of a relief to see the consistent use of the term ectomycorrhiza(e) throughout the book. I am less happy about the use of the terms obligate and facultative ectomycorrhizal tree as proposed by Meyer. Applying these terms ecologically, as he suggests, is virtually impossible.

Despite the inevitable variable quality of the chapters, most are excellent. The volume as a whole is well integrated and makes for consistently stimulating reading. It certainly rates as a significant contribution to the study of ectomycorrhizae. B. W. FERRY

## Decision and Reaction

*Attention and Performance IV*. Edited by Sylvan Kornblum. Pp. xxxvii + 771. (Academic: New York and London, April 1973.) \$18.50.

THE series of volumes with this title forms one of the curious spontaneous developments of modern psychology. The first appeared six years ago; it reported the papers given at a small gathering of like-minded researchers organised in Holland by Andries Sanders. The gathering was fun; two more meetings followed in quick succession, and each gave rise to its volume of

proceedings. Usually, volumes assembled from conference papers are uneven, badly edited, and packed with the output of those who need to give a paper to get their fare; but *Attention and Performance* was not like that. The three volumes have been eagerly read by advanced workers and students alike, and contain many of the basic papers in the newly expanding area of cognitive psychology. Now the fourth volume appears; this time the conference moved from Holland to the USA, the editor and publisher ceased to be Dutch, and the sheer thickness of the volume has increased. The question obviously arises, is the magic still there?

Briefly, it is. There are forty papers in the volume, and almost every one makes some point which needs consideration even if one disagrees with it. No journal has such a high success rate, and once again the book should be bought by anybody who wants to know what is happening at the frontiers of research into the areas covered. This time, the sections of the meeting were devoted to selective attention, physiological correlates of attention, sequential effects in reaction time and judgment, organisation of memory, and judgments of temporal order. There are also sections on two special aspects of reaction time, which are titled "binary classification" and "choice" respectively, but which might be better described as "experiments in which a person decides whether two patterns are the same or different" and "the relation between speed and accuracy in decision".

These areas are technical, and this is not a book for the amateur. In an attempt to widen its scope, each section starts with a "tutorial review" of the area, but it was perhaps too optimistic to expect first-rank workers to forget that at the meeting itself they were talking to the highly knowledgeable. The best review for outsiders is that by Vaughan and Ritter on the various cortical evoked potentials and their relationship to behaviour; runners-up are Kornblum on sequential effects and Nickerson on the "binary classification" task, provided one already knows why these topics are important. Other reviewers such as Moray and Fitter, Norman, or Audley used the occasion to put forward a general and highly original framework of their own for theorising in the particular area, and these might be positively misleading for the unguided novice. This departure therefore did not succeed in making the book into a true textbook. But was such an attempt worth while? The real virtue of *Attention and Performance* lies in the opportunity it gives for some of the brightest minds in psychology to strike sparks off each other at a technical level. Long may it continue.

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