

book under review meets a fundamental need of pointing out to the biologists how much they could gain from an assimilation of the methods of NET. The authors have a universally known authority in the field of biophysics, in particular in the study of complicated transport processes through membranes, and have made important contributions in explaining systematically many of these phenomena by use of NET. This book is therefore a welcome event.

The reading and understanding do not require a thorough knowledge of thermodynamics: the book is fairly self-contained. The first three chapters are devoted to a short exposition of classical thermodynamics. By reading them one can understand why in the past biologists have been so reluctant to study thermodynamics. The abstract concepts of reversible changes, Carnot cycles . . . which are the framework of classical thermodynamics seem at first sight so artificial and so far from nature that they may discourage further efforts. Chapters 4 and 5, devoted to the entropy production and chemical thermodynamics, will convince the reader that the effort was worth making. He will perceive the first contacts with biology (this perception being discretely but effectively suggested by the authors, who provide beautiful and unusual illustrations, such as the theory of muscle contraction).

Chapters 6, 7 and 8 are crucial. They contain the general theory of NET. It is a very clear and lucid presentation, stressing the important points as well as the limitations.

The second half of the book is devoted to illustrations which are selected specially for their actual or potential biophysical interest. The titles are suggestive by themselves: diffusion, sedimentation, membrane permeability, transport processes in systems containing electrolytes, electrochemical processes, active transport, etc. It is wonderful to see what a variety of non-trivial transport mechanisms, complex steady states, thermodynamic couplings, one can find in this field. Most of these problems have been studied in the past by separate particular methods. NET provides the necessary link between apparently disconnected phenomena and makes them appear as consequences of a unified body of knowledge. And still the applications discussed here show only a small sample of the possibilities of NET. One may assert without being too ambitious, that NET will provide in the future some of the fundamental answers to such problems as the mechanism of protein synthesis, reproduction or even the origin of life.

I am sure that this beautiful book will attract many biologists and many physicists into the field of NET and their combined efforts will result in important advances in some of the more crucial domains of science.

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## READING EFFICIENTLY

### Read Better, Read Faster

A New Approach to Efficient Reading. By Manya and Eric De Leeuw. (Pelican Book A.740.) Pp. 249. (Harmondsworth, Middx.: Penguin Books, Ltd., 1965.) 3s. 6d.

THE information explosion has exposed a curious limitation both of our educational system and of the efficiency of the average person as an adaptive mechanism. Teaching a child reading as a skill has only involved checking that it can make the noises appropriate to individual words; faced with increasing amounts of written material the average person is incapable of devising methods of coping, and, in fact, reads with an efficiency well below his capacity. The alarming feature of the situation is that, for the majority, the application of only the most elementary common sense together with a small amount

of self-confidence are sufficient to produce vast improvements in reading performance.

Most commercial reading courses use assorted films, reading pacers, tachistoscopes and other devices as crutches for the wilting ego, talking about the need to "train eye-movements" and "improve perceptual skills". While one can admit that it is easier for the unskilful or tired teacher to keep the morale of the class high with such techniques, there is no shred of evidence that such devices are necessary; indeed, as Perry and Whitlock, devisers of the "Harvard Teaching Course", once wrote: "it is our possibly scandalous belief that if students were to be trained to obvious improvement in any skill whatsoever, say writing with their toes, and were somehow persuaded that this skill was fundamental to good reading, they would read better". The courses all have an effect: it would take a genius to prevent a course from having an effect.

Reading improvement is thus a legitimate subject for self study; however, the normal sensitive Englishman is likely to be repelled by the majority of the available books on the topic, with their heavy, Dale Carnegie, back-slapping style. In addition there are scarcely any such books which can be said to have any scientific merit (for there *is* a body of experimental evidence and psychological theory which is relevant to reading). Pelican Books have gone some way towards providing the required volume. The authors, who have a good deal of practical experience, write in a quiet style, and refer to the literature on occasions, though not as often or as exhaustively as they might. Thus, for example, their sections on anticipation and memory are far too short and could be misleading; there could have been more compelling illustrations of the points they are making. They are, however, very sound in the common sense aspects of reading; they make the point that with reading, as with travelling, it is easier if you know where you are going. Their test passages are varied and interesting, and sometimes long enough to give meaningful results (most of the reading speeds of more than 1,000 words per minute quoted in the press are attained on short, very simple passages requiring factual answers and should not be taken literally).

Most important, the authors realize that the reader has to do most of the work. Reading skills can be improved overnight (though the authors claim otherwise); the use of their book is to make sure that the skills become habitual.

The book is not ideal, but it seems to be the best available. In any case, a throw-away volume at 3s. 6d. has an enormous advantage over one at 30s. JOHN MORTON

Bestimmungstabellen der Gallen (Zoo- und Phytocecidien) an Pflanzen Mittel- und Nordeuropas  
Von Herbert Buhr. Band 2: Pflanzengattungen N-Z; Gallennummern 4389-7666. Pp. 763-1572+25 tafeln. (Jena: Gustav Fischer Verlag, 1965.) 84.50 MDN.

VOLUME 2 completes this outstanding work, the first volume of which was noticed in *Nature*, 210, 772 (1966). In the two volumes, keys are given to no fewer than 7,666 galls, with thirty added at the end of Volume 2. (In Volume 2 the oak-galls alone occupy sixty-six and the willow-galls forty-eight pages.) The volume concludes with a list of abbreviations of authors' names; two specific indexes, arranged separately by genera and by specific epithets, to the gall-causing organisms; a ninety-page bibliography; and the twenty-five plates of figures, to which reference was made in the earlier notice. Proof-correction seems to have been almost perfect, the only misprint I noticed being '*musciola*' instead of *muscicola* on page 764. What more could the student ask? This will remain an absolutely indispensable work of reference for all interested in plant-galls for many years to come.

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