

## Human information processing

*Strategies of Information Processing.* Edited by G. Underwood. Pp.455. (Academic: London and New York, 1978.) £20.

IN the 1950s and early 1960s scientists who discussed selective attention, perceptual discrimination, reading and the choice of responses called themselves Human Experimental Psychologists. They were earnest people prone to strange methodological obsessions. They used models derived from the theory of simple, passive communications systems and metrics derived from information theory and communications theory. Nowadays the same people are relaxed and expansive. Most have abandoned interest in methodology or metrics and many even in experiments. Nowadays we are Cognitive Psychologists. Among very young research workers it is a dogma that this euphoric transformation (including, incidentally, the titling of three prestigious journals, at least two large departments of psychology, four honorific chairs and an Open University course) came about as a result of a single book, Ulrich Neisser's *Cognitive Psychology* published in 1967. Older workers are embarrassed to enjoy their new liberties without knowing what they must believe to earn them. They find it strange that a very slight book should be credited with a Cognitive Revolution and, by and large, those of us who still do research do the same things we have always done under new titles.

The middle-aged are not prone to rocking boats - even Ships of Fools - so it is right that complaints should come from a young research worker, Geoffrey Underwood, who has edited a collection of 12 essays under the title *Strategies of Information Processing*. Underwood takes his role as challenger of the new establishment as seriously as if he were writing in 1958. He insists that his book is a "statement of faith" (Preface, p1). Apparently he believes that classical models of human information processing may be revived within the context of models drawn from the theory of self-optimising control systems. He feels that these rehabilitated models will provide means for empirical investigations of intention, and purpose, and even perhaps sensible approaches to problems of consciousness. That is they will simultaneously teach Cognitive Psychologists to do proper experiments and disarm their critics (such as Gauld, Shotton and the anti-empiricists) who believe that the most important problems of human psychology are inaccessible to laboratory investigation.

Older research workers may be expected to brighten at this news. The dear

familiar models of our youth are to be justified as the basis of the next conceptual advance. We have always lived beyond the current fashion without knowing it.

The publication of these papers will not quite achieve this. Critics who objected to "mechanistic" psychology in the guise of simple communications models are not likely to be placated by descriptions of purpose in terms of loops and branches of computer programs or conceptions of intentionality paraphrased as the search for the optimum among possible paths in a decision tree.

Control theory models have been common in ethnology since the late 1960s and excellent summaries of their applications by MacFarland, Oatley and Toates have formed the basis of undergraduate courses for some years. The omission of recent work on ethological systems is a sad omission from this book. There is little about the contributions which suggests any striking novelty of approach - or even any daring retrogression. Neville Moray now provides a clear and useful summary of the lectures on optimisation of informational selectivity which he has given over the past six years. Max Coltheart usefully reviews his recent thinking about lexical access during reading. A review of hemispheric asymmetry effects by M.P. Bryden provides an updated bibliography of the unreliable literature in a field recently very popular among Cognitive Psychologists. The inclusion of the word *strategy* in the titles of contributions seems to reflect loyalty to the editor rather than any worked-out change in theoretical ap-

## Biological transport

*Mechanics and Energetics of Biological Transport.* By E. Heinz. Pp. 159. (Springer: Berlin, Heidelberg and New York, 1978.) DM 49; \$24.50.

THE swift development of biological transport as a discipline in its own right over the past two or three decades has proved something of a phenomenon, and has brought in its wake the publication of a near-avalanche of books. Predictably, the majority of these are edited proceedings of meetings or collections of review articles, and suffer from the lack of coherence both in style and content peculiar to this particular genre. Some notable exceptions are the well-known treatises of Stein, Schoffeniels, Kotyk and Janáček, and more recently Christensen, each of which is written from a highly individual standpoint and intended as an all-embracing treatment. What is missing at present is a comprehensive analysis devoted entirely to the energy transactions of the transport process, which would draw together material scattered in a forest of original reports and reviews.

proach. For example, C.I. Howarth reviews his own, excellent and sadly neglected, work on motor skills under the title "Strategies in the Control of Movement". There are useful digests of research on speech perception by Cole and Jakimek and on eye-movements during reading by Alan Kennedy. One paper certainly has a novel theme. John Fox provides an exegesis of hypothetical neurology of vision proposed by Dr. Marr. This work is fascinating, and original, but Marr's own papers are more lucid, much richer in their implications, more rigorous in argument and now generally available. Fox's paper is cheerful and entertaining, but why is it necessary for him to act as a sort of intellectual Basil Brush on behalf of a very talented colleague?

In sum, this is a very handy reference work, invaluable for teaching courses to third-year undergraduates. It does repeatedly stress the point that human beings must be considered as active rather than passive self-optimising systems and it illustrates this emphasis with data from a wide range of experimental situations. Librarians and teachers will find this a useful book to buy, but active research workers will be busy with the current issues of journals and have read it all long ago.

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In this regard, the monograph under consideration (offset printed from a typed manuscript) presents, first and foremost, a concise compilation of kinetic models and formulae. Still, a commendably broad range of topics is included, covering one-flow and two-flow systems, along with an approach to the description of coupled transport in terms of nonequilibrium thermodynamics. Among the topics touched on in summary fashion are diffusion, flux ratios, specificity, carriers and channels, coupling phenomena, isotope interaction, and primary and secondary active transport. Some examples indicating the range of specific coupled systems discussed are the ATPases ( $\text{Ca}^{2+}$ -activated,  $\text{Na}^+$ - $\text{K}^+$ -activated, and proton translocating), the redox proton pump, and the phosphotransferase systems. For many readers the brevity of the treatment will be a great advantage, and the ready accessibility of a large number of formulae to suit every occasion (and taste) may well be, for some, the most attractive feature of the book.

However, this is by no means an eclectic account of transport bioenergetics. Quite the opposite is the case: it bears the unmistakable stamp of a single school. To readers familiar with kinetics this may not