On their own evidence, the authors appear to have carried this principle into action as successfully as is possible in a society which advocates quite different principles of upbringing. But their success seems to have depended on their being highly cultured, reasonably well-to-do and enjoying a good deal of leisure; and, what was more important, on being intelligent and exceptionally well-balanced and loving, so that they were able to tolerate the discomfort and mess which the children's self-regulation entailed. Although 'tension' inevitably arose, they were willing to accept this and to acknowledge that they were the probable cause—in their own words "everybody is silly sometimes". Even then, it is clear that the children experienced considerable difficulty in adapting themselves to the society of children very differently brought up.

This book is not of course a scientific document. We need independent evidence as to whether the children did in fact emerge with the degree of spontaneity, poise and stability which their parents claim for them. To prove the authors' thesis, studies must be made of many more and different families employing self-regulation. Only then shall we know whether self-regulation can be practised successfully by more than the fortunate few. By all means let parents be stimulated to try these methods; but let them realize well in advance what they are setting out to do.

M. D. VERNON

MOTIVATION

Motivation

A Systematic Reinterpretation. By Prof. Dalbir Bindra. Pp. vii+361. (New York: The Ronald Press Company, 1959.) 5.50 dollars.

IT has been clear for at least a decade that our ideas on motivation have been muddled and unable to accommodate some of our data. One way or another the notion has persisted that organisms are inert machines made to behave by instincts, drives, libido, *élan vital*, etc. Many contemporary learning theorists and psychotherapists still hold to this kind of view. Dr. Bindra persuasively marshalls a great deal of research evidence in the hope that they can be brought to change their minds.

The alternative he has to offer translates many motivational concepts into terms of stimulus and habit. We do not have to ask why an organism is active because activity, or irritability, is the property of living matter in virtue of which it is recognized as living. There are biochemical problems here but not psychological ones. What we are concerned with are those aspects of activity which are, or seem to be, purposive.

Not so long ago 'purposive' was shut away in a cupboard with 'consciousness', 'philosophy', 'introspection' and similar skeletons. The biologists, with their comparative freedom from methodological anxieties, have helped to bring it back into use. We can be objective here even though we cannot measure. Purposive behaviour is appropriate, persistent and searching. At the mammalian level, Dr. Bindra claims, most of this behaviour is learned. He suggests two generalizations.

"1. Some degree of repeated or continued exposure to a situation is a necessary condition for the develop-

ment of activities that are goal-directed with respect to some features of that situation.

"2. Behaviour becomes goal directed by virtue of the fact that certain movements or component responses (occurring in a matrix of general activity) that are accompanied by a given goal are selectively strengthened or reinforced . . .".

This does not sound revolutionary, but the shift of emphasis from the drive to the goal, which is not necessarily set up by a drive, liberates subsequent theorizing, and makes it possible to handle data which traditional learning theory is apt to ignore or explain away.

There is some circularity involved in the new definitions of 'goal' and 'reinforcement', but Dr. Bindra sticks as closely as he can to his evidence and points to experiments instead of verbalizing when he wants to make his meaning clear. Socrates might not have approved, but the method works well enough when we are only groping towards a few empirical formulations.

What does seem clear is that we learn to avoid painful objects. We learn to be hungry (that is, develop a food addiction), and so the old drives cease to be available to us when we try to explain learning.

Dr. Bindra has written a timely and important book. It can bear comparison with Hebb's "Organization of Behaviour" from which it stems. The mixture of theoretical boldness and empirical bias which characterizes work in the McGill Department seems to be what is needed at our present stage in psychology.

J. DREVER

MEMORY AND LEARNING: A NEUROLOGIST'S POINT OF VIEW

Brain—Memory—Learning

A Neurologist's View. By Dr. W. Ritchie Russell. Pp. xii+140. (Oxford: Clarendon Press; London: Oxford University Press, 1959.) 18s. net.

THIS book gives the views of a well-known neurologist on the physical basis of memory and learning, to the better understanding of which he applies his extensive and critical appreciation of the effect of brain injuries, on which he is the leading medical (as opposed to surgical) authority in Great Britain. The theme is important and fascinating, for ever since the dawn of history man as a sentient being has pondered the secrets of his mastery of this mysterious universe in which we live. This further approach to our understanding of the brain as the bodily organ of mind is presented with considerable ease and felicity of expression.

Mental processes—themselves dependent upon brain cell activity—are considered in the light of recent neuro-physiological knowledge, which is also applied to a study of their impairment following concussion and focal traumatic lesions of the brain; the result is an enrichment of our understanding of the cerebral mechanism whereby man's dominant position in the universe has been achieved.

The book opens with a survey of some aspects of neuronal physiology, indicating that human thought and reason depend, not on the presence within the nervous system of any special features of the nerve cells themselves, but on the vastness of their numbers and on the utter complexity of their inter-connexions