

and lasting. In other cases a series of subliminal blows was applied and through summation unconsciousness was caused. However, the animal was later able to withstand blows of greater intensity without losing consciousness, a phenomenon which indicated a certain degree of adaptation.

At a certain intensity of the blow paralysis occurs, but repeated blows can again cause adaptation to occur and palsies do not occur even when blows are repeated which were of the same intensity as before. These palsies are not due to either haemorrhage or necrosis. A description is given of the effects of stronger blows delivered singly or in groups of such a kind as to cause irreversible paralysis. An account is also given of contrecoup. Animals were more vulnerable to blows received from behind than from above.

It is probable that man is more vulnerable than animals to repeated blows.

This work is an important contribution to the study of head injuries. Hitherto attention has been chiefly focused on the single blow, but this work indicates the dangers of repeated blows to the skull on account of the secondary changes in the circulation which in turn cause organic lesions.

These unpleasant but necessary experiments, which have been carried out with great foresight and skill, throw a new light on a hitherto obscure subject. The book is a "must" for all those who are interested in head injuries.

A. SPENCER PATERSON.

Progress in Brain Research. Volume 2: Nerve, Brain and Memory Models. By NORBERT WIENER and J. P. SCHADE. Elsevier Publishing Company Ltd. 1963. Pp. 280. Price 80s.

This volume contains a series of lectures given at a Symposium on "Cybernetics of the Nervous System" held at the Royal Academy of Sciences at Amsterdam in April, 1962.

Since Wiener wrote his justly famous book, *Cybernetics*, there have been world-wide and devoted attempts to deepen our understanding of the nervous system by the application of recent concepts in engineering such as storage, control, communication, and so on. But progress is depressingly slow; we are beginning to realize that even simple organs in primitive living systems are infinitely more complicated than anything an engineer has yet built. Nature is not interested in elegant mathematics; the astronomy of planetary motion was the exception which misled us badly.

The reviewer, who attended the Symposium, found little to excite him. There was much talk in

very general terms, much repetition of familiar engineering principles; much invention of artificial neurones and postulation of neural control loops. No lack of ability, however; just the fact that a nervous system lies at the peak of evolution, the most complicated system in the physical universe. This will not stop men wondering, and some of the authors have wondered significantly.

It is of vital importance for the scientists who are working in this field of heart-breaking difficulty to get together at symposia; to those who supported the Conference financially they owe a great debt. But there is, as yet, little to communicate to others.

A. M. UTTLEY.

Probleme der Zentralnervösen Regulation (Problems of Central Nervous Regulation).

Edited by L. DELIUS, H. P. KOEPCHEN and E. WITZLEB. Berlin, Göttingen, Heidelberg: Springer Verlag. 1962. Pp. 102. Price DM. 38.

This is a collection of papers presented at a symposium at Bad Oeynhausen in October, 1961. The participants were physiologists, physicians, neurologists and psychiatrists. Among the subjects under discussion were the rhythm of the blood vessels, homeostasis and the rhythm of circulation, the regulation of voluntary movements, human existence in its relation to central nervous regulation. Most of the speakers approached the problems from the point of view of experimental physiology. Two speakers discussed the effects of physical illness, especially of heart disease, on the feeling of "being", well-being and on behaviour. They attempted to link the anthropological psychology and psychosomatics initiated by the late Victor von Weizsäcker with information theory and cybernetics. The standard of the contributions is uniformly high.

E. STENGEL.

Problems of Psychiatry and Neurology. By I. F. SLUCHEVSKII. Pergamon Press. Pp. 376. Price £5.

This book consists of a collection of papers on neurology and psychiatry from a Conference held in a Leningrad neuropsychiatric hospital. More than 40 papers are printed and a variety of topics covered. The psychiatric articles largely concern epilepsy and the effects of organic lesions. The style is rigidly didactic and much of it has a rather old-fashioned air. The translator sometimes uses awkward words which are not those in current usage but this does not seriously interfere with proper communication of the authors' findings.