In such a vast and rapidly developing field it is sometimes difficult to assess what might have been new at the time of the Symposium and what remained also fairly new by the time the book was published nearly two years later. Most of the authors are well known and very active from the point of view of publications. The list of participants is a formidable one, although there are no Japanese, Chinese, or Russian workers. The bibliography of some chapters however tries to do some justice to the other well-known authors in the field of the physiological basis of mental activity who did not participate (or were not invited).

In conclusion, this is an important book for the libraries of most neurophysiological departments and scientific institutes. It will be a rather difficult reading for those many neurologists, neurosurgeons and psychiatrists in this country who have not been exposed adequately to the present fashion of neurophysiological thinking.

G. PAMPIGLIONE.

The Development of the Brain and Its Disturbance by Harmful Factors. By B. N. KLOSOVSKII. Translated and edited by BASIL HAIGH. Pergamon Press. 1963. Pp. 275. Price 30*s*.

This monograph is a collection of reports on experiments and clinical investigations conducted by Professor Klosovskii and his co-workers with the object of elucidating certain aspects of the normal and pathological development of the brain.

In the first part, which is devoted to normal development, special stress is laid on the vascular system of the brain and spinal cord. Professor Klosovskii has found that, in the course of phylogenesis and ontogenesis, the arterio-venous units are replaced by a network-like structure which he calls "continuous vasocapillary network". He thinks that this form of circulation provides for improved metabolism of the nervous tissue. The nutrition of the central nervous system is considered in the chapter dealing with the development of the choriod plexuses. As shown in animal experiments, in the early stages of development the C.S.F. is the main source of nutrition. At that time the C.S.F. contains 20 times as much protein as in the adult. Later the level of protein gradually decreases, and parallel with this process, the blood replaces the C.S.F. as the main source of nutrition. This coincides with the migration of cells from the matrix to the cortex. It is suggested that, while the causes of migration are not known they may be related to the attraction exerted by the

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increasing vascularity of the cortex, together with the difference in composition of blood as a nutrient, compared with the C.S.F.

Dealing with the development of the receptors the authors examined the vestibular apparatus and the auditory analyser. There is anatomical evidence that the former is sufficiently mature to function in the 14-week-old foetus. It sends impulses to the nuclei of the oculomotor nerve, the motor neurons of the spinal cord, the cerebellum, and other parts, and the authors believe that this plays an important role in the maturation of the brain.

A valuable feature of this book is the constant correlation of anatomical, experimental and clinical data. This is even more obvious in the second part which deals with the disturbances of development brought about by some harmful factors. Experiments were designed to confirm the clinical impression that the following factors interfere with the development of the brain: asphyxia, hypo- and hyper-thyroidism, maternal diabetes, quinine, X-ray irradiation, prematurity and birth trauma. In most cases the results of parallel clinical surveys are also reported. For example the sequelae of intra-uterine asphyxia were studied experimentally while the clinical approach was used to investigate the consequences of neonatal and postnatal asphyxia. It is claimed that a definite correlation was found between the duration of asphyxia and the severity of abnormalities. Clinical and experimental studies of some endocrine disorders revealed interesting facts, e.g. foetuses born to animals suffering from experimental thyrotoxicosis often showed cerebral malformations.

On the whole, the work reviewed in this book reinforces the general impression that diverse factors acting on the organism at certain stages of development will produce various abnormalities. Some of these may be minimal but are fairly constant findings and are detectable if looked for.

The most interesting part of the book is the chapter dealing with the special features of the brain in premature infants and its adaptation to the extra-uterine environment. This is reflected in the different course of development of the brain of premature compared with full-term infants of the same age. The author's experiments suggest that adaptation to extra-uterine life depends considerably on the quantity and quality of stimuli reaching the infant, and therefore, on nursing.

An anatomical study of the central nervous system was undertaken to show the influence of stimulation on its development. Newborn puppies and kittens were used for this purpose because they are still immature at birth. Stimulation of the vestibular receptor was chosen not only because it is measurable but also because the vestibule matures during intra-uterine life. The nuclei of the vestibular nerve are connected with the cells of the oculomotor nucleus which matures only after the eyes open. Thus the effect of stimulation was studied both on functioning and non-functioning nerve cells. It is concluded from the experiment that the maturation of neurons as well as myelination of nerve fibres may be influenced by appropriate peripheral stimulation. In view of their findings the authors consider the possibility that controlled peripheral stimulation might be used to compensate, in part, for the deficiencies of the damaged brain.

This book is very useful and though only a few of the known harmful factors have been studied, these are dealt with in detail both by clinical and experimental methods. It is, therefore, valuable to all interested in the pathology and embryology of the central nervous system.

The bibliography contains a large body of predominantly Russian work.

The translation is not very smooth in some parts.

The book is attractively produced and the numerous illustrations are clear and instructive.

MAGDA ERDOHAZI.

CORRECTION

The price of **Micromolecular Specificity and Biological Memory,** reviewed in our May issue, is £1 3s. or $3.00, not $23 as stated.

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