

lations. These are only nuclear granules passed from the nucleus to the protoplasm, and there closed with a special wall and gradually enlarged by absorption from the protoplasm of a special fluid substance so as to become secretory globules. There is evidence to show that these two components of the globules, wall and contents, which probably constitute their essential elements, are two different substances which become dissolved in the cerebro-spinal fluid, and are of great importance in the formation, nutrition and function of the central nervous system. The secretion of the globules is abundant in intra-foetal life (in man from the third to the seventh month), and gradually diminished afterwards with age. At the same time the choroid epithelium undergoes a slow evolution, which manifests itself especially by a granular fatty degeneration, most pronounced in the plexus of the old man.

From birth onwards there is deposited in the protoplasm of the epithelial cell and in the tissue between epithelium and blood-vessels granules of fatty acids or droplets of special fats (frog, tortoise, rabbit) or soaps, calcium salts, lecithin, lipochromes, etc. These are waste products derived from the cerebro-spinal fluid, and probably resulting from functioning of the central nervous system. The largest and most varied accumulation occurs in man. In severe acute experimental intoxications and after cerebral decortication (and physiologically in the latter half of pregnancy) the deposit of fatty acids and fat in the epithelium and vascular walls increases.

The choroid plexuses of the fourth ventricle assume the features of the adult choroid epithelium, and present a large quantity of fatty acid granules sooner than those of the lateral ventricles. Injections of alkalies increase the secretion of the globules into the cerebro-spinal fluid. Acids have an opposite effect. Secretion of globules is also favoured by making an occipito-atlantoid fistula.

There is reason to believe that the cerebro-spinal fluid is formed in great part of transuded lymph. The secretory globules introduce into it special substances of immense importance for the specific biological function. Total extirpation of the plexuses in the frog gives rise to a state of torpor. In severe and acute intoxications in cerebral decortication, in various experimental and natural pathological conditions in the rabbit, guinea-pig, dog, and in man, there are to be seen typical cells (Abraimzellen) containing granules of fatty acids, fat, detritus of tissue, globoplasts and initial globules in various stages of destruction. These cells, like the granular cells, are very probably hæmatogenous in origin. Mast cells are numerous in the plexuses, especially during foetal life, and in severe intoxications as well as experimental and pathological lesions.

The fresh method of staining with *Nilblau* was found to give the best results in this study.

J. H. MACDONALD.

*The Influence of Alcohol on the Movements of the Brain* [*L'influenza dell'alcool sui movimenti del cervello*]. (*Ann. di Neurol., anno xxxix, fasc. 3, 1911.*) Bianchi, V.

Dr. Bianchi, who has already published some valuable researches regarding the action of alcohol on the circulation, records in this

paper, which bears the sub-title, "A Contribution to the Ætiology of Epilepsy," a series of observations on the influence of the drug on the pulsations of the brain. The observations were made on a youth æt. 18, who suffered from traumatic epilepsy, and had had a large part of one parietal bone removed by operation. A sheet of lead-foil placed over the aperture in the skull and fixed at the edges with putty formed a flexible diaphragm, the movements of which, corresponding to the cerebral pulsations, could be recorded by means of a Marey's tambour. Doses of ethylic alcohol varying from a minimum of 10 grm. to a maximum of 100 grm., in dilutions of 10-15 *per cent.*, were administered to the patient, and the resultant changes in the tracings observed. Very small doses failed to produce any clearly marked effect, but with doses of 15 grm. definite modifications were noted within five minutes, and with larger quantities of alcohol increasingly distinct and persistent results were observed. These latter results show sufficient resemblance in type to those produced by the smaller doses to indicate, in the author's opinion, a definite and characteristic mode of reaction to alcohol. This reaction depends on two factors, the effect of the drug on the heart and its effect on the cerebral blood-vessels, and is shown in rapid modifications of volume in the cephalic mass, disorder of the pulse rhythm, and alterations of hyper- and hypo-tonicity in the vessels of the brain. The tracings which most clearly exhibit these characteristics, such tracings as are obtained, for instance, after two doses of 50 grm., given with an interval of two hours, show a very striking similarity with the tracings described by several authors (Todorsky, Capriati, D'Ormea, Collucci) who have studied the condition of the cerebral circulation during the epileptic attack. Without wishing to press the argument from this resemblance too far, the author suggests that it is deserving of note in connection with the many other facts which point to a community of character in the cerebral condition in epilepsy and in alcoholism. As specially bearing on this point, reference is made to the clinical evidence of the importance of parental alcoholism in the ætiology of epilepsy.

W. C. SULLIVAN.

*Investigation of the Colloid Substance of the Urine of Epileptics and Insane Persons [Untersuchungen über die Harnkolloide von Epileptikern und Geisteskranken]. (Zeitschr. f. d. gesamte Neurol. u. Psych., vol. vii, No. 1.) Loewe, S.*

Following on the premiss that epilepsy may be caused variously by disturbances toxogenetic and purely chemical or by those merely local and mechanical, the question arises—"Are there cases of epilepsy in which blood changes are the cause of the epileptic seizure?" Assuming that this is so, Dr. Loewe has made interesting experiments on the urine of epileptics, paralytics, etc.

The method of analysing the urine is that suggested by Hofmeister, who has pointed out that although normal urine contains toxins, these are only found in a minimum degree in the colloid substances separated by dialysation. It is also shown that toxins appear in the colloid substances under numerous pathological conditions, such as pneumonia, eclampsia, uræmia, etc., and that these toxins differ from the toxin