

served in cultures of connective tissue, which were obtained from the buffy coat of centrifuged blood of the guinea pig.

Thus, abundant formation of true collagen can be obtained in cultures of adult mammalian connective tissue. The process follows the same paths as in the body. At first argyrophile fibrillar networks appear which in every respect are identical with the so-called reticulin or lattice fibers ("Gitterfasern"). Later, with continued increase in quantity, the fibers become arranged in parallel, wavy bundles, lose the argyrophilia and begin to stain in the fashion of mature collagen. Nothing could be observed which would substantiate the idea of the transformation of the cellular protoplasm or exoplasm into reticulin or collagen. The first fibrillae appear in the medium surrounding the cells, as the result of precipitation or, perhaps, of transformation of some colloidal sol into a gel under the influence of an unknown factor, probably of chemical nature, which originates in the cell body of the fibroblasts and diffuses into the surrounding medium. Therefore the fibrillae first arise in the immediate neighborhood, sometimes directly on the surface of the protoplasm. They, however, extend at once far into the medium, away from the cells. It is probable, that, as Heringa and Lohr<sup>1</sup> suggested, the particles of the colloids in question are rod shaped. This causes the gel to assume a fibrillar structure. The fibrin threads of the plasma clot seem to serve as pathways for the precipitating material. Whether the fibrin itself is transformed into reticulin and later into collagen (Baitsell<sup>2</sup>) is doubtful.

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<sup>1</sup> Heringa, G., and Lohr, H., *Kon. Akad. v. Wetensch. te Amsterdam*, 1926, xxvi, 1081.

<sup>2</sup> Baitsell, G., *J. Exp. Med.*, 1915, xxi, 455.

### 3890

#### **Symptoms Resembling Epilepsy Following Experimental Lesions in Brain of the Dog.**

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(Introduced by V. E. Emmel.)

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This study is based on 16 dogs in which a lesion was successfully placed in the mammillo-infundibular region of the diencephalon.

Symptoms were recorded, blood chemistry studied and the brains prepared for microscopic study.

Apparently normal in other respects, these animals had periodic fits which in all essential respects were identical with the characteristic epileptic fit in human. The animal would suddenly become rigid and plunge forward or fall on its side. The rigidity was followed by convulsive spasms of all voluntary muscles. The fit was further characterized by unconsciousness, dilation of pupils, frothing at the mouth, marked vasoconstriction, erection of the penis, increased heart rate, rise in temperature, frequently by micturition and occasionally defecation. The fit itself usually lasted from 1½ to 3 minutes and left the animal confused and disorientated for several minutes. In some cases the fits would begin rather lightly a few hours after the operation and would occur at intervals of 40 to 60 minutes. These fits would then become more frequent and more severe until the animal passed into a continuous state of coma with convulsions occurring every few seconds and death would soon follow. At this later stage the heart rate increased to from 200 to 250, the temperature rose to 105°-110° and in 3 cases dilation of the intestines and stomach and contraction of the bladder were noted. A second group of animals had periodic fits for 1 to 3 days following the operation and then recovered.

The cardiovascular disturbances, inhibition of gastro-intestinal musculature, dilation of pupils and salivation are suggestive of hypersecretion in the suprarenal glands. The thyroid and parathyroid may be concerned with the symptoms involving the voluntary musculature. The lesion in these cases involved the substantia grisea of the third ventricle, the mammillo-infundibular nucleus, the nucleus tuberis, and frequently but to a less degree, the medial cells of the basal optic ganglion. The first 3 of these nuclei occupy a considerable area lateral to the third ventricle, from the optic chiasma to the mammillary bodies and extending dorsad to the thalamus. The substantia grisea lies mediad, the mammillo-infundibular nucleus laterad and the nucleus tuberis ventrad, in this region. The cells of these 3 groups intermingle freely ventral and medial to the fornix. The basal optic ganglion extends above the optic tract and the more medially placed cells lie in close proximity to the area occupied by the other 3 nuclei. These nuclei probably receive fibers from both the cerebral cortex and corpus striatum.

The lesions were made by the injection of 2-3 drops of a 0.2%-0.5% solution of mercuric chloride. It is believed by the authors that the symptoms are caused by an irritative stimulation of the

cells in the area involved rather than inhibition of the normal activity of these cells.

A study of blood chemistry is being made but more data are required before the findings can be reported.

## 3891

**Localized Cell Destruction and Degenerative Processes in the Brain in Idiopathic Epilepsy.**

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This study is based on 4 brains from patients which were diagnosed as typical cases of idiopathic epilepsy. Celloidin sections were made through the region of the third ventricle and stained with iron-hematoxylin and iron-hematoxylin and neutral red. There is a marked localized distention of the third ventricle from the optic chiasma to the mammillary bodies and extending dorsad to the intermediate commissure of the thalamus. This distortion is due to a shrinkage of tissue in the lateral walls of the ventricle. There is a marked hyperemia confined to the region of the third ventricle.

The following cell groups are affected:

(1) The substantia grisea of the third ventricle is composed normally of small rather closely packed nerve cells in the lateral wall of the ventricle from the optic chiasma to the mammillary bodies and extending upward to the thalamus. These cells mingle laterally with those of the mammillo-infundibular nucleus. In all of the 4 brains studied there is a marked bilateral reduction in the number of cells in this group. Many of the remaining cells show various stages of chromatolysis. There is a marked proliferation of glia cells in some areas. A shrinkage in this cell mass is largely responsible for the distention of the third ventricle.

(2) The mammillo-infundibular nucleus is normally composed of large scattered cells more laterally placed than the substantia grisea and extending from the infundibular region to the caudal level of the mammillary body. The cells are most concentrated around the fornix and lateral to the mammillary body. The cells of this nucleus are considerably reduced in number in the epileptic brains, both sides being affected. A great many of the remaining cells show chromatolysis. In the areas most affected there is