

V-A rhythm produced by electrical stimulation of the atrio-ventricular funnel. In *Malacoclemmys geographica* the two nerves are not fused into a single trunk, but run separately in the neck just median to the carotid artery. The turtles were decerebrated, and the plastron removed, the circulation being kept intact to a large degree. The vagus was stimulated just above the thoraco-abdominal ganglion, and the sympathetic, between the median cervical and the first thoracic ganglion.

Stimulation of the vagus nerves alone gave the usual results. The effects of sympathetic stimulation were, however, not so clearly marked. The general effect was a slight augmentation of the auricular contractions. Acceleration of the heart beat was less frequently obtained, the average being from 2 to 3 beats per minute, although an acceleration of as many as 6 beats per minute was registered.

Conjoint stimulation of the vagus and the atrio-ventricular funnel just below the A-V boundary with relatively strong interrupted currents produces a V-A rhythm which lasts over, in different experiments for varying lengths of time, after the stimulation has been discontinued. In these cases stimulation of the vagus nerves with a current of sufficient strength to still the normal heart causes only a decrease in the height of the auricular contraction with no effect on the rate of beat. Stimulation of the sympathetic with strong currents stops the funnel rhythm, after which a normal atrio-ventricular beat begins.

105 (1169)

Changes in form and position of the retinal elements of normal and transplanted eyes of *Amblystoma* larvæ occasioned by light and darkness.

By HENRY LAURENS and J. W. WILLIAMS.

[*From the Osborn Zoölogical Laboratory, Yale University.*]

In order to investigate the changes occasioned by light and darkness in the retinal elements of a Urodele a series of experiments on large (37 to 45 mm.) larval and on recently metamorphosed individuals of *Amblystoma* was carried out. It was found

that the pigment of these eyes undergoes a decided forward movement when the animals are transferred from darkness to light. In darkness most of the pigment is massed near the base of the epithelial cells, and only comparatively few needles extend into the protoplasmic processes between the visual cells. In light a decidedly greater amount of pigment moves toward the external limiting membrane so that the basal layer is thinner. Measurements of the distance from the external limiting membrane to the nearest pigment needle (or from the choroid edge of the epithelial cells to the farthest pigment needle) are practically the same in light and dark eyes, so that this kind of measurement gives no indication of the extent of movement of the pigment.

The cones in the light eye are 4.2μ shorter than those in the dark eye, the total expanded length of the cones being 25μ . The rods seem to be longer in the light eyes than in the dark, but the increase is too slight to permit of satisfactory measurement.

Optic cups were transplanted at the tail bud stage to various parts of the body, where they developed to form more or less perfect eyes. The region of the auditory vesicle seemed to offer a particularly advantageous spot for the transplant. In the transplanted eyes the movement of the pigment is fully as great as in the normal eyes. The cones also contract in the light but only to the extent of about 2.5μ .

Pigment migration and cone contraction therefore do take place in a Urodele retina and can do so independently of the central nervous system.

106 (1170)

The alleged exhaustion of the epinephrin store in the adrenal by emotional disturbance.

By G. N. STEWART and J. M. ROGOFF.

[From the H. K. Cushing Laboratory of Experimental Medicine of Western Reserve University.]

1. It has been stated that a marked diminution in the store of epinephrin in the adrenal gland is associated with various kinds of emotional excitation. Thus Elliott¹ speaks of morphin-"fright" in cats causing exhaustion of a gland whose splanchnic nerve

¹ *Journal of Physiology*, 1912, 44, p. 374.