of the body weight, brain and spinal cord of dogs (without meninges) under ether anesthesia contain after injection of 0.85% salt solutions 0.9% of the total blood, after injection of 15% salt solution 1.6%, and after injection of 50% dextrose 1.1% of the total amount of blood.

5430

A Method for Accurately Locating Points in the Interior of the Brain.

S. W. RANSON AND W. R. INGRAM.

From the Institute of Neurology, Northwestern University Medical School.

With the instrument devised by Horsley and Clark[1] it is possible to stimulate or destroy any desired point in the interior of the brain. When properly adjusted to the head of the animal by grasping devices inserted in the external auditory openings and the orbits, the base line of the instrument passes through the center of the external auditory meatus and through the lower border of the orbit. The zero horizontal plane is parallel to the base line but above it one-third of the distance from the interaural line to the vertex. The zero point is at the intersection of this plane and the midsagittal plane with one at right angles to them passing through the interaural line. The instrument is so constructed that it is possible to place the tip of a fine electrode at any desired position with reference to this zero point, for example, at a point 7 mm. to the right, 4 mm. rostral and 2 mm. dorsal to the zero point.

In order to use the instrument it is necessary to know the location of the point which is to be stimulated or to be destroyed by electrolysis, with reference to the rectilinear coordinates of the instrument. For this purpose we have prepared cats' brains in the following manner:

With the instrument in position on the head the cat was injected with 10% formalin. After the brain was thoroughly hardened *in situ* the skull was removed in certain small restricted areas. Through these openings perfectly straight 18 gauge copper wires were inserted with the aid of the instrument. Three wires were inserted horizontally from behind through the cerebellum and tentorial notch to the rostral extremity of the brain. These were

[1] Horsley, V., and Clark, R. H., *Brain*, 1908, **31**, 45.

located in the zero horizontal plane and while one was in the midline the other 2 were 5 mm. on either side of the midline. Four other wires were inserted vertically in a plane 17.5 mm. in front and 2 more in a plane 7.5 mm. in front of the zero point.

The brain was then dissected out and imbedded in celloidin. The horizontal wires were withdrawn, leaving minute tunnels through the brain and celloidin in the zero horizontal plane. The 2 wires in the frontal plane located 7.5 mm. rostrally were also pulled out, leaving similar tunnels marking the position of that plane. The block was then cut along the rostral surface of the 4 wires in the frontal plane 17.5 mm. in front of the zero point and the brain cut with the microtome into serial sections parallel to the frontal plane thus established.

Each frontal section has in it 3 small round holes produced by the wires inserted on the zero horizontal plane. One centimeter divided by the number of sections included between the 17.5 and 7.5 mm. planes gives the thickness of each section in terms of the unimbedded brain. This eliminates the error which would be introduced by shrinkage during imbedding and makes it possible to assign each section to its correct frontal plane.

Since the frontal plane to which each section belongs is accurately known and since each section contains 3 small round holes in the zero horizontal plane from which measurements can be made it is possible to fix with great accuracy the location of any nucleus or fiber tract and to express it in terms of rectilinear coordinates with reference to the zero point.

5431

Carbohydrate Metabolism in Degenerated Striated Muscle.

DORA K. FISHBACK AND HAMILTON R. FISHBACK.
(Introduced by J. P. Simonds.)

From the Department of Pathology, Northwestern University Medical School.

Twenty-three rabbits used in these experiments were put under light ether anesthesia, and the gastrocnemius muscle injured either by freezing with carbon dioxide snow or by multiple light blows. After 24 to 72 hours the animals were given amytal intraperitoneally and the gastrocnemii removed after being frozen solidly with