present) and is then submerged in tr. iodine (7 per cent.) for one hour. At the end of this time the capillary is removed from the iodine by using a sterile forceps. The last sealed end is then carefully grasped by the fingers and the capillary held in a vertical position. The iodine drains toward the fingers, and when the outside of the tube is dry, segments from the distal end of the tube are broken off, with a sterile mosquito forceps, into selected culture media. *Trichomonas hominis* has been repeatedly isolated bacteria-free by using this technique.

Discussion

Our observations on the migration of motile protozoa seem to indicate that, with the exception of the free living phototactic organisms, their migration in liquid media is greatly influenced by the force of gravity. Very little progress is made against the force of gravity unless currents in the liquid support this movement. Currents in the liquid contents do not occur in capillary tubes, whose outside diameters do not exceed 0.8 mm. Migration of organisms in the liquid of the capillary apparently is influenced only by the motility of the organisms and the force of gravity, which result in gradual migration down the capillary. Motile bacterial organisms seem to be unable to make progress beyond the second trap and practically all of them are held back by the first trap.

The apparatus should be adaptable to the isolation of other actively motile flagellates and perhaps ciliates. However, we have not had the opportunity to test it using other organisms.

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THE USE OF THE HORSLEY-CLARKE INSTRUMENT ON THE RAT[1]

Since the reintroduction[2] of the Horsley-Clarke instrument[3] its use on the cat and monkey has become quite popular. A recent modification[4] has proved of considerable value. Lately it has been found possible to utilize the same instrument on albino rats by employing a few easily constructed special parts.

Ear plugs were dispensed with since the ear bars on the machine can be seated directly into the external auditory meatuses of the rat. Then, in order to center the animal, a c-shaped clamp is fastened to the ear bars. This makes it possible to loosen the screws holding the ear bars in position on the frame of the instrument and to move the animal back and forth, although the ear bars themselves remain rigidly seated in the rat's ears. A transverse bar and a light nose clamp were substituted for the usual mouth and eye clamps. After the ear bars are seated and the animal centered the nose-piece is adjusted so that the rat's long upper incisors rest just in front of the transverse bar. The nose clamp is then lowered. This centers and immobilizes the nose and holds the maxillae firmly against the transverse bar. No exact dimensions of these parts need be given, for they should be built so as to fit in the Horsley-Clarke machine with which they are to be used. Any machinist having the Horsley-Clarke instrument before him and with photographs of these parts which will be furnished on request should have no difficulty in making the special parts.

The operative procedures are quite simple. Under Evipal anesthesia (0.1 gm/kg. intraperitoneal) the hair is cut off the top of the head, the animal placed in the machine and an incision 1.5 to 2.0 cm long made through the skin in the midline. The electrode carrier is then set at the zero midsagittal plane and the electrode slowly lowered. If the tip of the electrode does not come to rest exactly upon the interparietal suture the animal is improperly placed in the machine and must be removed and replaced properly. The tip of the electrode is then raised and an opening in the skull made with the aid of a dental drill. Then the electrode is lowered to the desired point and the lesion made.

In working with rats it is very necessary that animals of uniform size and age be used. We have found it convenient to select animals weighing between 90 and 100 gms. If animals of more widely varying size are used little uniformity can be expected in the location of the lesions.

It would be desirable to produce chart sections of the rat's brain for the determination of coordinates of nuclei and fiber tracts, as has been done in the case of the cat and monkey. So far, however, such chart sections have not been made, since by the sacrifice of a few animals the location of any desired point in terms of the coordinates of the instrument can be determined by the method of trial and error.

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[1] From the Institute of Neurology, Northwestern University Medical School.

[2] S. W. Ranson, *Psychiat. en neurol. bl.*, 38: 534, 1934.

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