SCIENTIFIC APPARATUS AND LABORATORY METHODS

A QUICK METHOD OF PRESERVING CATS FOR DISSECTION

THE customary techniques for preserving cats for student dissection are by embalming or by injection of formalin through the femoral or carotid arteries. All these require a certain amount of dexterity and considerable time, especially as the best results are obtained with anesthetized specimens or by using gravity pressure. It is probable that analogy with the medical school dissecting-room is responsible for these divergencies from the technique used for lower vertebrates. Where there are large classes and the injecting must be done by the instructors alone or with student assistance, the time spent in this way may be a real burden. The following method, devised to meet this difficulty, can be used on freshly killed specimens, and permits satisfactory dissection of the digestive, urino-genital, muscular and autonomic nervous systems.

Open the abdominal and thoracic cavities with a median incision, starting well posteriorly, avoiding the milk glands of the nursing females. Cut through the skin on the outside of each thigh from the knee to the gluteal region, and pull up the flaps of skin on each side. With a hypodermic syringe inject from 200 to 400 cc of 10 per cent. formalin into the left ventricle (according to the size of the animal), until bubbles appear at the nostrils. Immerse the animal in 5 per cent. formalin. The cats can be injected in an average time of five to eight minutes apiece. Later, when the students skin their individual cats, perhaps one out of four specimens will show slight discoloration under the skin, which will disappear before the next laboratory period, if the animal is replaced in the 5 per cent. formalin. One specimen out of ten, perhaps, will have a definite decayed spot and is best discarded. After a few days, the formalin may be diluted to 3 per cent. In dissecting the muscles, it is helpful to rub glycerine on the parts being studied.

This is a satisfactory rough-and-ready method; it is not, in any sense, a museum technique.

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A CULTURE MEDIUM FOR FREE-LIVING FLAGELLATES

THE following culture medium has been tried out for two years and may be of general use to other laboratories. Whole wheat is weighed into five-gram lots, which are then put into large test tubes and 25 cc of tap water added. These are then plugged with cotton, capped with lead foil and autoclaved at fifteen pounds for two hours, which very thoroughly macerates the wheat. Tap water is again added up to 50 cc, and desired percentages of this are used after shaking. After opening a tube it is necessary to sterilize again in an Arnold sterilizer, as bacterial growth is quite vigorous in the mixture. However, a tube may be used day after day, if sterilized daily.

Varying percentages of this afford a very good medium for many protozoa. Bacterial feeders as Chilodon, Paramecium, Oicomonas and others thrive. Ochromonas, Chilomonas and several of the smaller Euglenas (E. gracilis, E. quartana, E. mutabilis) have been grown in great abundance in various dilutions and there are several species of Amoeba which likewise occur or are capable of being cultured in large numbers. It has proved best, however, for Entosiphon and Peranema. Both of these forms are easily grown in quantities sufficient for classroom use; isolation cultures of the former have been carried for over a year on this medium. In general it seems much better than cracked boiled wheat, which is often used.

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SPECIAL ARTICLES

CONCERNING PROTOPLASMIC CURRENTS ACCOMPANYING LOCOMOTION IN AMEBA

INVESTIGATORS of the mechanics of ameboid locomotion have generally agreed as to the existence of currents in the protoplasm of the progressing ameba, but there has been much disagreement as to the direction and general relations of such currents. One of the most serious contradictions is that between the observations of Rhumbler[1] and those of Jennings.[2] Rhumbler described a system of currents which was entirely in accord with his view that surface tension is an essential agency in ameboid locomotion. He asserts that the deeper protoplasm (endoplasm) flows forward. Any given portion of it, having attained a superficial position at the advancing front of the animal, then turns and moves backward at a relatively

[1] Rhumbler, L., 1898. "Physikalische Analyse von Lebenserscheinungen der Zelle." *Arch. für Entwickelungsmech. der Organismen*, 7, pp. 103–350, plates VI, VII; 100 figs. in text.

[2] Jennings, H. S., 1904. "The Movements and Reactions of Amoeba." Carnegie Institution Publication No. 16, pp. 129–234, 78 figs. Washington, D. C.