

which confirms some earlier observations by Samec.⁴ The recently published method of Embden was used in testing for phosphate.⁵

4030

Induced Encystment and Excystment of a Marine Euplotes, Sp. Nov.

LAURA GARNJOBST. (Introduced by C. V. Taylor.)

From the Biological Laboratories of Stanford University.

A new species of Euplotes, a marine hypotrichous ciliate, found in San Francisco Bay can be readily induced to encyst and excyst at will by the following method.

By means of a micro-mouth pipette, from 25 to 35 organisms picked at random from a thriving culture are placed on a slide or coverslip within a drop of the culture medium. The slide (or coverslip) is then placed in a moist chamber to allow gradual evaporation to take place. The rate of evaporation under these conditions at about 22° C. gives the best results. Within 1 to 10 hours, or even less time, encystment occurs. This process includes a gradual decrease in motility of the organisms until they become fixed to the slide, whereupon they gradually assume a rounded form. External organelles at first can be recognized within the cyst wall but later disappear from view. Excystment takes place when a small drop of fresh culture medium, tap, or distilled water is added to the drop containing the cysts. The time required for complete excystment depends upon the age of the cyst and varies from a few minutes to 1 or 2 hours. A contractile vacuole reappears and functions slowly soon after the addition of water. The cyst wall breaks, usually just above the contractile vacuole. The contents stream to the outside, external organelles make their appearance, and soon the organism again becomes free-swimming.

The above method has proved to be an excellent means for studying the structural changes which occur during cystment. The coverslip is inverted upon a depression slide, the edges sealed with vaseline, and now the slide may be placed under a microscope. There the processes of encystment and excystment can be studied with any magnification, including oil immersion. This coverslip method provides also a means of making permanent slides without danger of

⁴ Samec, M., *Koll. Chem. Beihefte*, 1914, vi, 23.

⁵ Embden, G., *Z. für physiol. Chem.*, 1921, cxiii, 138.

cysts becoming detached at any time during the staining process, and prevents injury to the cysts due to transference. Obtaining accurate data regarding age of individual cysts is also made possible by this method.

A study of (1) living material and (2) stained preparations of cysts in various stages has brought out the following facts: During some period of encystment external organelles disappear. With excystment a redifferentiation of these structures occurs. The nuclear apparatus undergoes a reorganization process during encystment which is similar to that taking place in binary fission and conjugation in this species.

4031

Regeneration of Peridental Membrane in the Cat.*

T. D. BECKWITH AND ADRIENNE WILLIAMS.

From the Department of Bacteriology, University of California.

Recently we¹ have shown that regeneration of the peridental membrane takes place in the guinea pig and rabbit following artificial destruction of this tissue. The sequence of events leading up to this repair was outlined. Injury had been induced by passing a dental bur through the alveolar process across the peridental membrane and into the upper incisor tooth on its lingual surface. Thus, the peridental fibres were severed at this point. The rodent was chosen for that work since it has continuously growing teeth with the result that uninjured tooth surface will move forward to a position opposite to the site of injury to the alveolar bone. Thus repair may be followed more easily by microscopic technique.

A similar series of experiments then was performed upon cats. This was done in order to learn whether a like sequence of repair may be demonstrated in an experimental animal still higher in scale and in which the tooth is stationary. The animals were 4 or 5 months old and had received the usual animal house diet. The operation was performed by Dr. F. V. Simonton of the College of Dentistry of this university and his cooperation is thus acknowledged.

* Aided by grant from the Carnegie Corporation, the American Dental Association and the Associated Radiograph Laboratories of San Francisco.

¹ Beckwith, T. D., Williams, Adrienne, and Fleming, W. C., *Proc. Soc. Exp. Biol. and Med.*, 1927, **xxiv**, 562.