SCIENTIFIC PROCEEDINGS.

ABSTRACTS OF COMMUNICATIONS.

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80 (776)

Heliotropism and galvanotropism in Euglena.

By FRANK W. BANCROFT.

[*From the Department of Experimental Biology of the Rockefeller Institute for Medical Research.*]

Hitherto positively heliotropic *Euglenæ* have always been found to give the motor reaction when suddenly shaded, and not when suddenly illuminated. Conversely negatively heliotropic individuals were found to react only to sudden illumination and not to sudden shading. Upon this association Jennings has based his theory according to which heliotropic orientation in *Euglena* is by "trial and error."

It has been found, however, that it is possible to obtain positively heliotropic *Euglenæ* which give the motor reaction when suddenly illuminated and not when suddenly shaded. It is also possible to obtain at will negatively heliotropic organisms which give motor reactions when suddenly shaded, and not when suddenly illuminated. Under certain conditions the motor reaction to shading is given by *Euglenæ* in which no heliotropism can be demonstrated at that light intensity. Under other conditions distinct negative heliotropism is obtained with a light intensity which does not bring about any motor reactions when allowed to shine suddenly on the organisms, or when they are suddenly shaded. These facts show that heliotropic orientation in *Euglena* does not depend upon the motor reactions, but upon a separate mechanism.

Galvanotropism, which has so far eluded observation in *Euglena* was obtained by using culture media containing citric acid. With this material it was found that the method of orientation is identical in both galvanotropism and heliotropism. Consequently the orientation to light is as direct as the locomotor mechanism of *Euglena* permits, and does not take place by "trial and error."

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The fat content, morphology and length of life of cells growing in diluted blood plasma.

By ROBERT A. LAMBERT.

[*From the Department of Pathology of the College of Physicians and Surgeons, Columbia University.*]

Cells growing in unmodified blood plasma (Harrison's method) exhibit regularly an accumulation of fat droplets in their cytoplasm. In the case of the cells of the chick embryo this fat accumulation is quite marked after 24 to 48 hours, and reaches a maximum after five to seven days, at which time the cells are distended with fat droplets.

The experiments herewith reported were planned to determine the effect of a reduction in the fat content of the culture medium, brought about by dilution of the plasma, on the accumulation of fat by the cells. In the course of the experiments the influence of dilution on the length of life and morphology of the cells was also observed.

One part of plasma added to twenty or twenty-five parts of Ringer's solution forms a medium which coagulates satisfactorily in hanging drops. Studies were made with dilutions of 1 : 2, 1 : 5, 1 : 10, 1 : 15, and 1 : 20 of pigeon plasma in Ringer's solution, containing 0.9 per cent. NaCl. Pieces of chick embryo heart were used for cultivation. The tissue was finely divided into pieces of suitable size for cultures, which were washed in Ringer's solution for a half hour before using. Cultures from the various series were fixed in formalin at the end of two, three and four days and stained with hematoxylin and Sudan III.

The results may be briefly summarized: