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.

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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:

In plasma diluted 1 : 2 the cells live practically as long (5 to 10 days without transfer), as in pure plasma, and show a similar accumulation of fat.

In a 1 : 5 dilution the fat content is slightly diminished; there is little or no effect on the length of life or on the morphology of the cells.

In a 1 : 10 dilution the fat content of the cells is definitely reduced; the cells appear smaller and are stained more deeply, and the duration of life is shortened (3 to 5 days).

In higher dilutions (1 : 15 and 1 : 20) the accumulation of fat is reduced to a minimum, a majority of the cells showing at the end of two days a complete absence of fat granules. The cells which do contain fat show, as a rule, a single rather large droplet instead of a number of small droplets, as in the controls in undiluted plasma. Two to three days represents, as a rule, the limit of activity of the preparation. When stained the cells in cultures of high dilution exhibit a rather striking contrast to those in pure plasma cultures: they are smaller, more irregular in shape, and take a deeper stain in both nucleus and cytoplasm.

In all experiments observations upon the living cells were confirmed by a study of stained and fixed preparations. Diluted preparations and controls were, of course, fixed atthe same moment.

The results of these studies which show, in brief, that the amount of fat accumulated by cells in cultures varies directly with the fat content of the plasma medium, afford further evidence in favor of the view that these fatty accumulations are not degenerative in origin, but are the result of some disturbance in the metabolism of the cells.

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The rate of absorption of water by the skin of the frog, in relation M. H. Fischer's theory of edema.

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Fischer observed swelling of amputated frog's legs, in water. The question arises: is this a phenomenon of osmosis due to the osmotic pressure of cellular and intercellular fluids?