Healthy animals, for experimental work, are only to be secured by individual selection, as not all members of a litter are equally healthy, but too rapid breeding of healthy animals is sure to produce weak offspring. Extreme heat will kill mice quicker than cold. Pulmonary diseases must be guarded against by rapid removal of infected animals. Sarcomas have also caused the death of a number of animals in the course of this investigation, usually not appearing in animals less than a year old. Tape-worm cysts have been found in the livers of some mice, but seemed to have been without effect on the general health and reproductive activity of their hosts.

A few female white mice have shown a peculiarity common in yellow mice, sterility accompanied by extensive laying down of fat, after having four to six litters. The cause of this behavior is at present unknown.

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Reaction of cells to the galvanic current in tissue cultures.

By SVEN INGVAR (by invitation).

[*From the Osborn Zoölogical Laboratory, Yale University, New Haven, Conn.*]

By applying a weak constant galvanic current (strength 2–4 billionths of an ampere, density approximately 1/1000–1/2000 δ, nonpolarizable electrodes) to tissue cultures made according to Harrison's method, the following observations were made:

The galvanic current has a directing influence upon the *cell and fiber outgrowth in the cultures* so that this occurs almost entirely *along the lines of force* in the galvanic field. Whereas in the control preparations the outgrowth occurs in all directions, cell movements under the influence of a galvanic current take place toward the anode and the cathode. The cell processes growing toward the anode show morphological differences from those growing toward the cathode. A new biological cell character may in this way be revealed.

If a weak electric current by means of a single conductor is drawn through the culture, the outgrowth of the fibers and cells

always takes place *perpendicular to the conductor*. Bok has called attention to the fact that in the living organism the nerve fibers grow out from the spinal cord *perpendicular to the long fiber paths* growing down from the brain stem. Kappers has tried to explain this as a galvanotropic phenomenon. To this observation, an interesting analogy is thus found in tissue cultures.

The hypothesis of Kappers, as the main result of this author's work on "neurobiotaxis," that electrical forces are determining factors in the outgrowth and distribution of the different constituents of the nervous system, has been proved to be a fact in pieces of the central nervous system of the chick cultured in vitro.

As several authors (Hyde, Mathews, Pfeffer) have pointed out, electrical currents flow in developing organisms. The currents successfully employed in our experiments correspond in range in electromotive force with those found in various embryos. From this it may be concluded that electrical forces play a rôle in the formative processes in morphogenesis.

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Experiments on the lens in amblystoma.

By ROSS G. HARRISON.

[*From the Osborn Zoölogical Laboratory, Yale University, New Haven, Conn.*]

The embryo of *Amblystoma punctatum* has been reported as one of those in which the ectoderm normally giving rise to the lens is dependent upon the continued influence of the optic vesicle to effect its differentiation.[1] It was surprising, therefore, to find that in certain experiments, directed toward the study of the gills, lenses developed from the proper ectoderm when transplanted to regions far from the eye.

There are obviously two ways of testing the independence of lens differentiation: one is to take away the eye rudiment as has been done in previous experiments (Spemann, Lewis, Le Cron); the other is to transplant the lens-forming ectoderm to another

[1] Wilbur L. Le Cron, "Experiments on the Origin and Differentiation of the Lens in *Amblystoma*," *Am. Journ. Anat.*, 1906–7, VI.