that in some cases 60 to 100 per cent. of the eggs of egg masses kept in a depth of 12 to 18 inches of quiet, poorly oxygenated water died, while in similar adjoining vessels eggs less than half submerged developed almost without exception.

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Direct observation of cell division in mammalian tissue.

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Connective tissue cells of the rat cultivated outside the body in rat plasma for as long as seventy-six days formed the material for observation. For maintaining activity for such a period, the pieces of tissue were transferred to fresh plasma at intervals of five to ten days. Measures employed by Carrel for rejuvenating the cells in old cultures were found to be unnecessary.

We have found that the process of karyokinetic division may be followed in the living cells. The earlier phases often escape notice. The later phases, however, may be observed with ease even with the lower powers of the microscope. In actively growing cultures the time required for the entire process is from forty to sixty minutes. The time elapsing between the divergence of the masses of daughter chromosomes to complete division of the cytoplasm averages about ten minutes. In slowly growing cultures the process may be retarded. A half hour to an hour after division is required for the daughter cells to develop the form and staining qualities of the resting cell. These time periods relate to observations made on cells at 35–37°C. At lower temperatures (25–30°) the process is slower.

Cells containing numerous fat droplets have been seen to divide as rapidly as cells free from fat.

Amitotic division has not been observed.

Cells after division have been followed and further division noted. The size reached by these daughter cells was approximately that of the parent cells. This observation affords proof that true growth takes place in cells cultivated in vitro.