MICROSCOPY-BIOLOGY

Movies of Cell Life

Speeded-up motion pictures show repair of injured nerve fibers, rescue of "lost" blood corpuscles and other life dramas under the microscope.

➤ MOTION PICTURES of the self-repair of injured nerve cells, the rescue of red blood corpuscles "lost" in body tissues outside their regular channels, and other intense little life dramas as seen through the microscope were shown before the University of Cincinnati chapter of the Society of the Sigma Xi, national science honor society, by Prof. Carl Caskey Speidel of the University of Virginia.

The pictures were made by the time-lapse or fast-motion method, in which one frame of the motion picture film is exposed every two, four or eight seconds. When the finished film is projected at normal speed of 16 frames a second, from a half-hour to two hours of life and action are compressed into a viewing time of one minute. Prof. Speidel first began work on his micro-motion films in 1932, and he now has a library of 10,000 feet of carefully selected and edited pictures, both colored and monochrome, covering a wide variety of biological subjects.

In the nerve-injury films, an anesthetized frog tadpole is held on a glass slide before the microscope, which is carefully focussed on nerves in its flat, transparent tail. Re-growth of fibers injured in various ways has been recorded. Of special value in medical work are pictures showing nerve self-repair after injury by the three "shock" methods used in the treatment of some forms of insanity: insulin, metrazol and electricity.

Sometimes, in connection with other types of injury, red blood corpuscles come out of the capillaries and become lost among the cells of other tissues. Helpless to get back into circulation themselves, yet too valuable to abandon, they are literally saved by the building of a rescue road. From one of the smaller lymph vessels, the body's auxiliary circulatory system, a short outgrowth pushes its way among the cells to the place where the lost corpuscles are. A channel develops down the length of the outgrowth, and through it the rescued corpuscles move back into circulation. If, however, they are so situated that they cannot be rescued in less than two days they have to be given up as lost, and what might be termed a burial party of white corpuscles makes its way out to them and disposes of them.

Several sequences in Prof. Speidel's films showed the complex process of mitosis or division in different types of animal cells, both under normal conditions and after injury by such medically important agencies as electric shock, mustard gas, sulfa drugs and starvation. These shots of cell life also included the last act of all, the death of the cell.

Science News Letter, February 16, 1946

MEDICINE

Mouse Studies Suggest Polio Susceptibility

➤ SUSCEPTIBILITY to infantile paralysis, or polio as it is also known, is greater in summer because of the effect summer heat has on body chemistry, Dr. D. Frank Holtman, of the University of Tennessee suggests. (*Science*, Feb. 1).

His suggestion is based on studies of the effects of temperature on polio susceptibility in mice.

Mice acclimated to a temperature of 55.4 degrees Fahrenheit, and living in that temperature after inoculation with polio virus, never showed symptoms of paralysis in less than 11 days. Not until 13 days after inoculation had the mortality reached 50%.

In contrast to this, a group of mice adapted to a temperature of 71.6 degrees Fahrenheit had a 50% mortality at the end of seven days and a group of mice acclimated to a temperature of 89.6 degrees Fahrenheit began showing symptoms and dying as early as the fifth day.

Metabolism, that is, physical and chemical processes such as those involved in the conversion of food into tissues and energy, goes on at a faster rate upon exposure to cold and at a slower rate when the temperature rises. In view of this, Dr. Holtman believes his findings with the mice mean that the rapid growth of polio virus in the body and resulting symptoms of disease are dependent on a disturbance of the normal metabolism of the body, such as that occurring in humans living in the temperate zone when the temperature shifts from the cool temperatures of spring to the heat of summer.

The same explanation holds good for the fact that children in the five- to nine-year age group are most often attacked by polio. This age, Dr. Holtman points out, is the period when the rate of metabolism is declining rapidly, after reaching a peak at about the age of five.

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Succulent plants, particularly lilacs, and certain cut flowers can be kept fresh for many extra hours by a vacuum treatment in which air in the plant tissues is replaced by water.

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