

NEUROLOGY

Spinal Cord Paralysis

Studies of regeneration of spinal cord nerve cells by fever bouts may become first steps toward overcoming paralysis of damaged spinal cords.

► STUDIES that may become the first steps toward overcoming paralysis from bullet-shattered or otherwise damaged spinal cords were reported by Drs. C. D. Clemente, W. W. Chambers, Leon Greene, S. Q. Mitchell and W. F. Windle of the University of Pennsylvania at the meeting of the American Association of Anatomists.

Nerve cells within the spinal cords of grown cats and dogs can be made to regenerate after the spinal cord has been completely cut across, these scientists have discovered.

To accomplish this, scars of connective tissues must be checked or prevented, and a loose matrix of reticular and macrophage cells substituted. Fever-causing substances

from certain bacteria help accomplish this condition.

When a fever-causing substance, called Pyromen, was given in repeated bouts and this treatment kept up, scars did not form and some nerve fibers grew across the cut in the spinal cord. But animals that got only two or three bouts of fever followed by long periods of no treatment had scar tissues begin to form again.

By continuing the Pyromen treatment over a long period, the scientists hope to find that nerve function will become regenerated in the animals. If this does result, it might show a way to treat humans whose spinal cords have been cut by war wounds or in civilian accidents.

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WEATHERING COLD—Study of such animals as the whistling marmot—so named because of his shrill whistle when alarmed—is helping scientists to learn the secrets that enable these animals to withstand subzero weather. Here Prof. Peter R. Morrison and Fred Ryser are placing the marmot in a respiration chamber to measure the oxygen consumption rate.

RADIO

Radar Directs Artillery

► AN IMPROVED radar fire-control system, which will automatically aim anti-aircraft artillery, contains an electrical “thinking machine” that calculates where a shell should be exploded to bring an enemy airplane down, and automatically aims the gun to do just that.

It is a development by Bell Telephone Laboratories and actual construction is by the Western Electric Company, manufacturing unit of the Bell System. Production is under a contract with the U. S. Army Ordnance.

The new system is an outgrowth, with many radical improvements, of the Bell Telephone Laboratories electrical gun used effectively in World War II. In it, radar found and tracked a hostile plane, and fed continuous information into an “electrical brain” computer. At the same time, data relating to wind velocity, muzzle velocity of the shells, temperature and similar factors were fed into the computer. Based on all this information, the “brain” automatically aimed the gun in the correct direction.

The new fire-control, adaptable to firing either 90 mm. or 120 mm. anti-aircraft batteries, operates on the same general principle but incorporates many improvements and refinements which assure greater effectiveness and flexibility. Details of the new system are classified for security reasons.

However, many of the basic principles of fire-control systems are similar to those employed in the complex switching mechan-

isms which underlie the dial system of the modern telephone network. Many of the components of the intricate computer which is the heart of the fire-control system, such as switches, relays, vacuum tubes and wave guides, are also found in the telephone system.

Science News Letter, March 31, 1951

PHYSIOLOGY

Human Brain Kept Alive One Week Outside Body

► SMALL pieces of adult human brains have been kept alive outside the body for as long as a week at a time, Dr. Mary Jane Hogue of the University of Pennsylvania reported to the American Association of Anatomists, Detroit.

The human brain pieces were kept alive on a medium of chicken blood plasma, chick embryo extract, human placental serum and a special salt solution called tyrode solution.

The pieces of grown-up brains did not show the “wealth of cell processes streaming out” from them that were shown by pieces of brain from unborn babies which Dr. Hogue previously had kept alive outside the body.

Nerve cells, although they were not seen dividing, showed other phenomena of life and lived as long as a week at a time.

Science News Letter, March 31, 1951

ZOOLOGY

Animals Studied for Ways To Beat Severe Cold

► HELP for humans in withstanding severe Arctic cold is expected from a study of how Alaskan animals stand below-zero weather without freezing.

The heat-generating capacities of Alaskan animals are being compared with those of animals accustomed to warmer climates by Dr. Peter R. Morrison, University of Wisconsin zoologist, and associates. Cold-climate species seem to have better heat regulatory systems than species limited to warmer regions.

The lemming and blue fox, for example, are so specialized in adaptation to cold that they are limited in range to the Arctic. One lemming under observation ran a fever about 10 degrees over normal and died of heat prostration at an air temperature of only 77 degrees Fahrenheit.

University of Wisconsin zoologists have made metal casts duplicating the bodies of the various animal species. Hides are fitted over them. Electric heaters in the casts and recording thermometers enable the scientists to determine how efficiently various fur types insulate from outside cold.

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