

Information of this kind is of great importance in conservation work, and it is presumably quite feasible also to use the echo-sounding device for the location of schools of fish in proper condition for catching.

In locating the fish schools, the apparatus worked in exactly the same manner as it does for showing bottom depth. Sound waves sent out from the ship's bottom were reflected off the fishes' backs and returned to the listening device just as they do from the rocks or mud of the sea bed. The length of time between the start of the sound and its return as a submarine echo indicates depth.

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PHYSIOLOGY

Severe Vitamin Lack Causes Nerve Breakdown

VITAMIN lack in diet, if severe enough, causes an actual breakdown and "death" of nerve tissue, experiments on rats by Dr. Charles Davison, of Montefiore Hospital, New York City, have demonstrated.

Rats were fed diets adequate to sustain life, except that each diet wholly lacked one or another of the vitamins, from A to E. The animals became ill, finally losing the use of their hind limbs.

When they were chloroformed and dissected, it was found that the nerves leading to their muscles were abnormal in appearance and structure, with an actual breakdown of the nerve substance itself, and in some cases brain hemorrhage.

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SEISMOLOGY

South American Quake Almost on Equator

THE EARTHQUAKE that caused destruction and death in the Colombian city of Pasto and in neighboring towns, on the morning of Wednesday, Aug. 7, had its center almost on the equator, near the Colombia-Ecuador boundary, U. S. Coast and Geodetic Survey seismologists announced after examining data transmitted through Science Service.

The location of the epicenter was given provisionally as one degree north latitude, 78 degrees west longitude. Time of origin was 4:02.2 A. M., Eastern Standard Time.

Stations reporting were those of the Jesuit Seismological Association at St. Louis University, St. Louis, Mo., and Georgetown University, Washington, D. C., and of the U. S. Coast and Geodetic Survey at San Juan, Puerto Rico.

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PHYSIOLOGY

Suspended Animation Possible Even to Human Beings

"Freezing" and Revival of Animals Merely Special Cases Of Inanition, Phenomenon Long Known to Physiologists

WITH LATE summer hot weather comes another nine-days'-wonder to press, radio and newsreel. Animals are being "frozen to death" and subsequently resurrected by laboratory miracles. In Hollywood, 180 persons are said to have offered themselves as human subjects for one of these super-chilling experiments. Maybe there was a hot wave in the California foothills at the time.

Although the animals used are of a higher zoological order than have figured in previous experiments of somewhat similar nature, the wonders now being reported are not wholly without precedent. At the bottom of the animate scale, bacteria and protozoa are notorious for their resistance to extreme cold. They even stand prolonged immersion in liquid air without apparent prejudice to their subsequent reproductive powers.

Interstellar Immigrants?

It has been suggested, by speculative philosophers, that evolution started with one-celled immigrants of this kind, floating in somehow, from some unknown elsewhere, through the unimaginable cold of outer space.

Higher in the scale, similar freezings have been inflicted on fish and frogs, with at least short-time survival after thawing.

Of course, all such creatures are not really frozen to death. If they were dead, they would stay dead, no matter how carefully thawed out. They are really in a state of low metabolism or life-process, known as "inanition" to scientists. With life-fires thus banked, organisms can exist for surprisingly long periods without visible signs of life.

Hibernating animals, like bears, woodchucks, ground-squirrels and turtles, display the phenomena of inanition in quite typical form. Their muscles are limp, their breath has practically ceased, there is no readily detectible heartbeat, their other organs seem to be without function. Their temperatures, even in the case of warm-blooded animals, drop to very little above that of the surrounding air. You can shake them, poke them, stick pins in them, without getting any re-

sponse. Only a gradual warming-up brings them to life again.

Inanition is an organism's response to extreme conditions against which it has no other defense. It is a feigning of death to defeat real death.

We do not commonly think of man as a hibernating animal, and he is not, under normal conditions. Yet he also is capable of invoking voluntary inanition in times of stress. Prof. Sergius Morgulis, of the University of Nebraska College of Medicine, tells of a hibernation-sleep resorted to by Russian peasants in famine times. They huddle together on the tops of their great flat stoves, by families, even by whole villages. Covered with all the fur coats available, drawing warmth from the stove and from each other, they conserve their life energies to the utmost, and with only a few unavoidable interruptions, wait for spring in practically continuous sleep.

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PHYSIOLOGY

Radium Never Stimulates; Effects Always Lethal

RADIUM'S effects on living cells are always in the direction of breakdown and death; its powerful radiations, principally of alpha particles, never act to stimulate more rapid growth.

These are the conclusions reached by Prof. Frederick B. Flinn of the College of Physicians and Surgeons, New York, as the result of experiments on tissue cultures from living embryo chick hearts, checked up with other animal cells and with one species of primitive one-celled plants.

Prof. Flinn's interest was aroused by the tragic fate of a number of women workers on radium-illuminated watch faces, who suffered breakdown of their bones, particularly of their jaws, from the effects of radium unwittingly taken into their systems.

In his researches, the New York physiologist used chick heart tissues, cultured in the way developed many years ago by Dr. Alexis Carrel, of the Rocke-