

Secret of Hibernation

(Continued from p. 262)

comes with the autumn. One by one, as the streams freeze and the woods fill with leaves, the tiny creatures drowsily creep to their burrows or nests and prepare themselves for their naps.

Sometimes they slip off into the coma-like sleep in one smooth sweep, Dr. Lyman observes. Sometimes they reach it by a series of steps, dipping deeper and deeper into sleep with each try, like a timid bather dipping into a cold ocean.

Entering hibernation is an active process in which vital body processes such as heartbeats, breathing, and the metabolic rates slow down, resulting in lowering of body temperatures as much as 40 degrees.

This behavior is in contrast to that of the cold-blooded animals preparing for cold weather—the snakes, lizards, frogs, toads and fish. These creatures cannot produce their own body heat, and must depend upon warmth they get from air, water, rocks, earth and any other material upon which they creep, crawl or swim.

When the climate cools down, their whole body cools down with it, with a resulting lowering of heartbeats, respiration and other processes. Finally the animal is as cold as his frigid environment, with his body temperature fluctuating with the temperature of the weather.

Body Cools Down

Body temperature of a warm-blooded animal in hibernation also fluctuates, Dr. Lyman states, and passively follows the temperature changes that occur in the cave or burrow. His temperature remains a few degrees above that of the air, the two rising and falling together in a range from about 38 to 55 degrees Fahrenheit. If the temperature of the environment approaches the freezing point of water, however, a remarkable increase in metabolic rate sets in to warm his body just enough to keep him from freezing.

Once a small animal is in a hibernating trance, the breathing rate, which normally can be as rapid as one to two hundred times a minute, is reduced to less than one per minute. The tiny creature usually takes a series of two or three quick gasps, then rests for a while.

His heart rate may drop to one, two or three beats per minute, compared to a normal 200 or 350 beats per minute. Even with this slow beating, however, the blood pressure remains normal. During the sleep, very little cell growth has been observed.

When spring's fair winds start to melt the snows, the hibernator awakens with a stupendous physiological effort. With shakings and shiverings, his metabolic rate speeds up as much as if he were doing violent exercises—almost a hundred times as fast as its rate in dormancy. During this bursting awakening, clumps of brown fat in specialized body tissues seem to be the key to supplying the heat and energy necessary for such action.

In a process that may take two or three hours, or maybe a few minutes, the animal awakens to the world again—a world of

warm sun, germinating plants and resurgence of life.

Man Seeks Secret

In an effort to protect himself from the stern vicissitudes of winter, man has imitated various activities of animal life. He sometimes goes south like the swallows and whales, or simply puts on heavier coats like the caribou or asses. Like mice and other rodents, he has learned to store excess food in the pantry when outdoor fields lie barren. He seems to have balked, however, at calmly passing the winter simply by freezing, like fish, frogs or mosquito larvae.

Now, with his eyes on space travel and the stars, man is also watching the humble earthy woodchuck to understand his mysterious secret of hibernation.

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GENERAL SCIENCE

Monkey Research Center To Cost About \$2,000,000

► IF MONKEYS could talk, the chief topic of status symbol conversation these days would be about the awarding of a contract for building the Delta Regional Primate Research Center near Covington, La.

The Perrilliat-Rickey Construction Company, Inc., of New Orleans was given the contract for the center, which will be built at a cost of \$1,918,842. Architects are Freret and Wolf, also of New Orleans.

Six universities will be associated with Tulane University, which is responsible for the center's operation and administration under a \$5,461,000 grant from the National Institutes of Health, Bethesda, Md.

Director of the center, whose initial research will include infectious diseases, developmental biology, genetic development and behavioral problems, is Dr. Arthur J. Riopelle. Dr. Riopelle was formerly director of the Yerkes Laboratories of Primate Biology, Orange Park, Fla.

The primates would chatter away in anticipation of the animal food preparation room, two operating rooms, recovery room, 45 individual laboratories and a nursery.

Not only will the animal primates serve as models for humans, their own physical and psychological problems will be studied.

The six universities to be associated with Tulane in the research are Louisiana State University, Loyola University, University of Alabama, University of Mississippi, University of Texas and University of Arkansas. Other universities are expected to participate later.

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VETERINARY MEDICINE

New Virus Discovered In Race Horse Disease

► A NEW INFLUENZA VIRUS has been linked to a highly infectious respiratory disease involving large numbers of race horses in Florida.

This virus is different from previously recognized respiratory viruses of horses, reported Dr. G. H. Waddell of the Variety Children's Research Foundation in Miami, Fla., Dr. M. B. Teigland, veterinarian from Opa-locka, Fla., and Dr. M. M. Sigel, department of microbiology, University of Miami, Coral Gables.

Outbreak of the disease occurred suddenly last year, and affected as many as 70% of all race horses three years of age and older stabled in Southern Florida, the doctors reported in the Journal of the American Veterinary Medical Association, Sept. 15, 1963.

They suggest that the virus be called A/equi/Miami/63.

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