



### Spring Awakenings

➤ **SPRING**, for most of us, signals its coming mainly with flowers and birds. We take notice sharply when we see the first dandelion or hear the first robin, and the good news is confirmed by the coming of the first bluebird and the opening of the first violet.

However, there are plenty of other creatures that have been missing all winter, and that begin to turn up about now. Although they belong to the animal kingdom, they have been more like the flowers than like the birds; they did not go south for the winter, but slept it out in burrows or nests or hidden chinks and crannies.

The "death-seeming sleep" of hibernation is resorted to by a wide variety of animals, and in a wide variety of ways. They range in evolutionary kinship all the way from worms and spiders to bats and bears, and their dormancy may be only a fitful few days at a time or it may be a solid unbroken slumber that lasts from the first frost to the last thaw.

There are very few safe generalizations about the winter sleep of any given class of animals. True, practically all reptiles



### WYOMING

Ride, fish, geologize or just relax. How?

Paton Ranch will give you trout fishing in a mountain stream as it flows out of a canyon in the Big Horn Mountains, daily horseback rides along the picturesque trails and excellent food—most of which is grown on the ranch.

The region abounds in geological and historical interest—dinosaur bones, marine fossils and Indian implements are found nearby.

Write for folder—Paton Ranch, Shell, Wyoming.

and amphibia that live in wintry countries retire for the winter into burrows in the ground, or into the mud at the bottom of ponds and streams. But you cannot extend that generalization either up or down the evolutionary scale. Fish do not hibernate, and only a relatively small number of mammals do. It used to be thought that no birds indulged in winter sleep, but lately a number of cases have come to light that seem to indicate that some birds do have at least short periods of dormancy in cold weather.

Even among the warm-blooded animals that evade winter by sleeping, there is no set rule. Some of the ground-squirrels are such complete hibernators

that if one of them is dug out of his burrow before he is ready to awaken he is very likely to be taken for dead. He will be limp and cold, with no perceptible pulse or breath. Shaking and noises have no effect on him—not even being struck with a pin will rouse him. Only several hours of slow warming will bring him to life.

Near the other extreme are the bears. They do retire into dens and are rarely seen again before spring. Yet they are known to emerge, for at least brief prowls, when a few bright, warm days interrupt the severity of winter. And in areas like the Gulf Coast, where winter troubles but little, they will scarcely hibernate at all.

*Science News Letter, March 27, 1948*

### PHYSICS

## Close to Absolute Zero

➤ **TEMPERATURES** lower than ever obtained, close to absolute zero at which substances contain no heat, are expected at Rutgers University with the assistance of a six-ton electromagnet just completed for the institution by General Electric at Schenectady.

The electromagnet, claimed to be the largest and most powerful of its kind, is not so designed that it could be used for lifting purposes. But it has a magnetic force equivalent to some 40,000 pounds. The influence of a strong magnetic field on certain salts will remove heat, and such fields have been used in recent years in attempts to reach temperatures in the range of absolute zero.

Absolute zero, approximately 460 degrees below the ordinary zero on the Fahrenheit thermometer, is the theoretic temperature at which a substance loses all molecular motion and the body would be without any heat. It is an unattainable temperature, scientists say, but it has already been approached to within a small fraction of a degree.

Temperatures within a few degrees of absolute zero have been obtained at the university with a complicated machine known as the Collins helium cryostat, named after its designer, Dr. Samuel Collins of the Massachusetts Institute of Technology, and built by Arthur D. Little, Inc., of Cambridge, Mass.

This device works somewhat like the ordinary household refrigerator. Highly compressed helium gas is forced through a tiny jet. The cryostat, in addition, makes the helium gas used in it operate a piston-driven engine as another means

of cooling the gas. For lower temperatures than obtainable with it the magnetic method is used.

This method utilizes what is called the magnetic cooling cycle. The magnetic field is said to influence the inner core of the atom instead of the cloud of electrons about it. The influence of the magnetic field upon the spinning atoms makes possible the drop in temperature. When a piece of soft iron, for instance, is demagnetized by taking the magnetic field away from it, it absorbs heat.

This new G. E. electromagnet is 56 inches long, 39 inches wide and 20 inches high. The electromagnet's two coils are 36 inches in diameter. They are precision built, with the pole faces almost perfectly parallel. The instrument will be used also to study magnetic susceptibility at extreme low temperatures and nuclear magnetic properties of various isotopes.

*Science News Letter, March 27, 1948*

### Science Service Radio

➤ **LISTEN** in to a discussion on science and education in the Middle South on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p.m. EST Saturday, April 3. Dr. Rufus Harris, president of Tulane University, Dr. Joseph Morris, vice-president, and Dean Fred Cole, dean of College of Arts and Sciences, will be guests of Watson Davis, director of Science Service. The program will be in connection with the launching of an area development of the Middle South.

*Science News Letter, March 27, 1948*