

ZOOLOGY

Cold Rats Work Hard

► **SHIVERING RATS** at cold temperatures continue to function better than feverish rats at hot temperatures.

"We know that animals are far more tolerant to low body temperatures than they are to corresponding elevations of body temperature or fever," Dr. Joseph A. Panuska, a biologist from Georgetown University, Washington, D.C., reported to the American Institute of Biological Sciences in Urbana, Ill.

In contrast to feverish rats in a hot environment, cool rats placed in a constantly cold room where the air was near freezing performed very well until their body temperatures reached 78 degrees F.

The experimental rats were first trained to press a lever to obtain a reward of external heat from an overhead heating lamp. Every time they pressed the lever, the lamp would light for four seconds and then go off unless the lever were pressed again.

To further determine the effect of cold upon the rats, the rats were shaved to lessen the insulating effect of their fur, their skins were moistened to increase heat loss by evaporation, and the length of time the heat lamp remained on was reduced.

Normal rat body temperature is between 95 and 99 degrees. If a rat's body temperature rises a few degrees, the animal quickly becomes physically and mentally incapable of behaving normally. However, in cold temperatures, the rats began to slow down when their body temperatures dropped to 78 degrees, and they usually stopped pressing the lever to keep themselves warm when their temperatures reached 76 degrees.

At this temperature, the animals remained active and moved around, but they seemed to lack coordination. When the body was cooled to about 67 degrees, the animal was usually unable to move at all, and responded much as if under anesthesia.

Rats, like men, are homeotherms, which means they normally maintain their body temperature within narrow limits. The Georgetown University scientists are interested in the fact that the rats' performance failed within a very small range of body temperature. Studies on the cause of failure are underway in the Georgetown laboratory.

• Science News Letter, 88:132 August 28, 1965

Hawks Lose Way Home

► **MANY OF OUR BEST** flying friends lose their way when coming home to roost.

The navigational system of the sharp-eyed hawk is not very efficient, reported Dr. Helmut C. Mueller of the University of Wisconsin.

Contrary to the extraordinary homing instinct of many song birds during their spring and autumn migratory flights, hawks often have to fly back and forth to find their homes, using an erratic hit-or-miss method, Dr. Mueller told members of the annual meeting of the American Institute of Biological Sciences.

For years scientists have been puzzled over the fact that during spring migration, many hawks are observed flying south instead of north, the normal migratory direction at that season.

It is now believed that these hawks may have overshot their breeding area and are just trying to find their way home.

For the past 15 years, Dr. Mueller has studied spring hawk migrations on the western shore of Lake Michigan, where many of these birds congregate after being displaced by westerly winds and are reluctant to fly over large bodies of water.

More than 4,000 hawks, including the red-tailed, red-shouldered marsh and sparrow hawks, have been captured and studied at the Cedar Grove Ornithological Station north of Milwaukee, Wis. This station is well known around the world for its hawk behavior studies.

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Ruling Cocks Crow Most

► **THE RULING ROOSTER** in the poultry yard crows the most.

The higher the rank of young roosters in the "pecking order" of a group of chickens, the more frequently they crow, according to Dr. Martin W. Schein and researchers Miss Ann L. Salomon and Michael J. Lazorchek at Pennsylvania State University.

The "pecking order" is a term used by animal behaviorists to denote the ranking dominance of certain individuals over others.

In the animal kingdom, the system is manifested physically by the stronger animal pecking the weaker who in turn pecks the next weaker, and so on down the line. At the bottom of the heap is the one everyone can pick on. In human society, the pecking order can also exist, only it is expressed by more subtle, psychological methods.

In a series of experiments at Pennsylvania, Miss Salomon reported to the annual meeting of the American Institute of Biological Sciences, young roosters were put into isolation for a few days to observe their rate of crowing. All isolated birds showed nearly the same amount of crowing.

When the cocks were brought together, they attacked each other and fought for about an hour to establish dominance. The bullies who ended up ruling the roost crowed 20 to 30 times more often than the subordinate birds.

After a few days, the dominant cock was removed and the next bully moved up the line and took over the top spot, Miss Salomon reported. This cock soon began crowing as frequently as its dethroned predecessor.

Each successive removal of the "ruler" moved the next bird in line up the social registry ladder in the poultry farm.

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