

BIOLOGY

Wearing a Mink Coat? Give a Wolf a Chance

► A WOLF in sheep's clothing may not be as well off during a long cold winter as he would be in his own fur.

Experiments described in the *Canadian Journal of Zoology* (Feb.) by J. S. Hart of the Canadian National Research Laboratories in Ottawa show that, of nine Canadian mammals, the wolf's fur provides the best insulation for its thickness. Least effective in proportion to its thickness is the fur of the polar bear.

Animal furs tested included black bear, deer mouse, muskrat, hare, polar bear, red fox, red squirrel, wolf and wolverine.

The insulating power of small mammals' fur, the experiments reveal, does not vary as much from winter to summer as does the fur of large mammals. This, the investigators point out, is consistent with the high metabolic response to temperature changes among smaller mammals.

Seasonal differences were found in the fur of all species. Black bear fur showed the greatest differences, with a relative change of 52% of the winter value. Muskrat fur showed the smallest relative seasonal change, 12% of the winter value.

The scientists point out that muskrat fur is specially adapted to heat conservation in water. The dense, woolly under hair is only slightly wetted when the muskrat submerges, leaving an insulating layer of air in the fur.

Science News Letter, March 10, 1956

AERO-MEDICINE

Animals Show No Effects From High Level Flights

► MICE, guinea pigs and monkeys that have spent 24 hours in balloon flights at 90,000 feet and above showed no health hazard from heavy cosmic rays, Maj. David G. Simons told a Symposium on Space Medicine held in Berkeley, Calif.

Experiments with bread mold, grasshopper eggs and snapdragon seeds strongly suggest that the heavily ionized path of primary cosmic rays causes mutations, Maj. Simons said.

However, a single primary cosmic ray could not put a person out of commission, Maj. Simons believes. Humans, he pointed out, have surplus cells and they regenerate quickly.

Dr. Nello Pace, a University of California physiologist, told the symposium that man will be ready for space travel by the time space ships are developed. The physiological problems involved will be solved, he said.

The first rocket ships, Dr. Pace suggested, may resemble miniature planets, carrying their own atmosphere, their own day and night, and, possibly, even their own gravity.

Dr. Pace believes the atmosphere for early space travelers will include oxygen and some

inert gas, probably nitrogen. Green plants might be taken on the trip to supply oxygen and burn up carbon dioxide.

How cosmic rays in the upper atmosphere turn black mouse hairs white and so teach scientists about radiation effects on tissue was reported to the symposium by Dr. Herman B. Chase of Brown University, Providence, R. I.

When mice were flown to 95,000 and 120,000 feet, where heavy cosmic ray particles are found, they developed white hair faster than similar mice kept at the surface.

A cosmic ray striking four to six tiny pigment cells in a hair follicle causes destruction or inactivation of cells in the cluster, and eventually white hair grows from this follicle.

At 95,000 feet, Dr. Chase found 11 white hairs per mouse, out of an estimated 100,000 follicles on a mouse's back. A surface-bound mouse would normally have three white hairs.

At 120,000 feet, only one cosmic ray hit was seen.

Dr. Chase believes the cosmic ray hazard for extended space travel is minor compared to other problems.

Science News Letter, March 10, 1956

ORNITHOLOGY

Homing Pigeons Prefer Home to Be One Way

► HOW DO HOMING PIGEONS find home sweet home? Scientists are not quite sure, but they think the pigeons have a decided preference for the direction to fly to get home.

Tests conducted in the Carolinas show this direction difference. Birds released south of their homing loft made it back more times and with fewer losses than their coop-companions who were set free in the north and had to fly south.

The birds exhibited their taste for a south-to-north flight plan over a stretch of 16 to 17 miles, which suggests to the scientists "that even at this short distance orientation is not primarily based on landmarks."

If landmarks were the secret of the pigeon's success, comparable homing performance could be expected from all directions, they explain.

The scientists who are trying to learn the secrets of the homing pigeon's built-in radar also state "there is no reasonable ground for doubting that a south-to-north superiority of homing exists in these birds" so far as the North Carolina loft locations are concerned.

Similar tests in South Carolina and south Germany suggest that directional differences are a general phenomenon in pigeon homing.

The bird study was made by Drs. Gustav Kramer and Ursula von St. Paul of the Max-Planck-Institut, Wilhelmshaven, Germany, and J. G. Pratt of the Parapsychology Laboratory at Duke University, Durham, N. C. They report their findings in *Science* (Feb. 24).

Science News Letter, March 10, 1956

IN SCIEN

PARASITOLOGY

Find "Swimmer's Itch" Flukes in Birds' Beaks

► BLOOD FLUKES like those that can cause "swimmer's itch" as well as more serious sickness have been found in the nasal cavities of the beaks of birds.

The discovery is announced by Dr. A. Fain of the Medical Laboratory of Ruanda-Urundi, Astrida, Africa, in *Nature* (Feb. 25).

The blood flukes, he suggests, may play a heretofore unsuspected part in causing the itching skin diseases of Central Africa.

It is the first time, apparently, that blood flukes, or schistosomes, have been discovered in the nasal cavities of birds, although they have been reported affecting nasal tissues of cattle in India.

Dr. Fain has found the schistosomes in the yellow-bill duck, the Egyptian goose, the white-faced duck, the knob-billed duck, the Hadeda ibis and in the grebes.

The adult flukes are found in the small veins of the nasal cavities and the eggs, often in great numbers, are found in the nasal mucus.

The *Schistosoma cercariae* flukes, which Dr. Fain found in birds' nasal cavities, are a parasite of snails in lakes in various parts of the world. They get through the skin of persons wading or bathing in such lakes and cause the skin irritation, and may attack other organs of the body.

Science News Letter, March 10, 1956

TECHNOLOGY

Drop Radios by Air Without Parachutes

► RADIO RECEIVERS and transmitters were successfully dropped from an airplane flying at 1,000 feet, without using parachutes, at Wright-Patterson Air Force Base, Dayton, Ohio.

A wooden container especially constructed for the parachuteless air-dropping of sensitive communications equipment was used. The container, described as simple enough to be made in the home workshop, uses a set of plywood retarder plates, known as air-drogues, and the proper placement of cushioning.

In the tests, a 125-pound radio receiver was dropped from a cargo plane traveling 150 miles per hour. The retarder plates slowed the fall to less than 52 miles per hour for the package and caused it to land on one corner for maximum energy absorption.

The parachuteless air-drop package was developed by Cargo Packers, Inc., of Brooklyn, N. Y.

Science News Letter, March 10, 1956

CE FIELDS

BIOPHYSICS

Atom Smasher Shows Brain Controls Glands

► A PENCIL-POINT beam of high energy atom-smasher particles, probing the craniums of rats, has shed new light on the brain's role in controlling hormone production, Dr. John H. Lawrence, director of the Donner Laboratory, University of California, disclosed at a Symposium on Space Medicine.

The research was done by Cornelius A. Tobias, James Roberts, O. K. Anderson, Joseph Garcia, Paul Blanquet of France, Julian Henry and B. O. Thorell of Sweden.

They destroyed various sites in the hypothalamus of rats with 380,000,000 electron volt protons from the 184-inch cyclotron. The hypothalamus is believed to be the switchboard through which the brain sends instructions to the pituitary gland on hormone production.

When one area is irradiated in young rats, two months later growth stops and appetite disappears. The animals are stunted and there is reduction in the number of pituitary cells that produce the growth hormone.

When a second site, the stalk of the hypothalamus, is irradiated, there is greatly reduced output of thyroxine by the thyroid gland in the neck, and a peculiar hypothyroidism develops.

The high-energy proton beam, which neatly excises tiny areas of internal tissue, shows promise as a new tool in investigating the roots of endocrinology. These particular effects have not been previously shown, although experimental surgery has shown that hypothalamus injury causes diabetes insipidus, ulcers and other effects.

Science News Letter, March 10, 1956

MEDICINE

Exercise Makes Hearts Sprout New Arteries

► HEARTS which, like President Eisenhower's, have suffered blockage of an artery apparently can be stimulated by exercise to sprout new artery branches.

Exercise may even play a role in saving hearts and lives by stimulating artery growth and sprouting before a heart artery has become blocked and while its narrowing is still so slight that new arteries would not start growing.

Preliminary findings suggesting this come from experiments by Dr. Richard W. Eckstein of Western Reserve University, Cleveland, outlined by the American Heart Association.

Doctors have known for some time, of course, that when a coronary artery that

feeds blood to the heart muscle is narrowed or even completely blocked, the heart usually provides its own system of repairs. It does this through growth of arteries near the danger area and through the sprouting of new artery branches. These collateral blood vessels take over the job of supplying the heart muscle with blood.

How to encourage growth of collateral blood vessels has been an important question for doctors of heart patients. Some of them may have suspected exercise might help. Dr. Eckstein is now trying to get the facts of the matter.

He works with a group of animals in which the coronary artery has been surgically narrowed, simulating a condition usually found in persons with the dangerous artery condition called atherosclerosis.

Half of the animals are permitted no exercise. The other half get a standard amount of exercise on a treadmill. After five to eight weeks, the amount of collateral circulation is measured by an indirect laboratory technique.

The work is still incomplete. It may be another year before Dr. Eckstein can report definite conclusions. However, the American Heart Association, which supports Dr. Eckstein's work, announced that "preliminary data seem to suggest that when the artery which winds around the top of the heart (circumflex coronary) is narrowed in dogs, collateral growth is improved by exercise.

Science News Letter, March 10, 1956

TECHNOLOGY

Telephones to Sing Instead of Ring

► "THE TELEPHONE is singing!" may outmode the familiar phrase "The telephone is ringing!" in homes across the nation.

Field trials with a new musical tone device that may replace the telephone bell will take place in the vicinity of Crystal Lake, Ill., this spring, Bell Telephone Laboratories has announced.

The transistorized device installed in experimental phones sounds like "an oboe or clarinet giving forth a string of staccato notes all of the same pitch," one engineer said. The musical tone can be varied in pitch, however, to signal party-line customers or to please private line customers. Its range, musically, is from A sharp above middle C to two C's above middle C.

Experiments have shown the musical tone can be heard over greater distances than the regular bell, and can also be distinguished from ringing doorbells, alarm clocks and fire alarms.

Another advantage, Bell scientists said, is that it is an aid to the hard-of-hearing because it employs more energy in the middle frequency range, where hearing is most often impaired.

Whereas the ordinary telephone ring requires 85 volts, the new tone operates on less than one volt.

Science News Letter, March 10, 1956

MEDICINE

Attack Cancer With Mold Drug, Viruses

► ANTIBIOTICS, or so-called mold drugs, and viruses are now being used in the fight against cancer, Dr. John R. Heller, director of the National Cancer Institute, Bethesda, Md., has stated.

One mold remedy, called actinomycin-D, is one of thousands of chemicals being screened for possible use in treating cancer.

It has not yet been tried in patients but some "preliminary evidence at the preclinical stage suggests the usefulness" of this drug, Dr. Heller told a House appropriations subcommittee.

The viruses have reached the stage of being given to patients at the Clinical Center at Bethesda. The ones being tested are some of the APC viruses that cause illnesses like common colds.

Patients getting the virus treatment had been treated by other methods without avail. The viruses were injected first into the cancer, then into the patient's blood stream, and finally injections were given both into the cancer and into the blood stream. The cancers were damaged, but unfortunately the patients began building resistance to the viruses, after which they no longer were effective against the cancer.

The hope now is to find some way of concentrating the virus agent or of discovering other, cancer-destroying viruses against which the patient does not build resistance.

Hope of developing a blood test for detecting early cancer comes from another study reported by Dr. Heller. In this study scientists found that women with advanced breast cancer have abnormally high proportions of large molecule fatty chemicals and low proportions of small molecule fatty chemicals, as compared to the proportions in the blood of normal women.

This finding, Dr. Heller said, may be a "potential aid" in developing blood tests for early cancer.

Science News Letter, March 10, 1956

SURGERY

Trace Finger Tingling To Slipped Elbow Nerve

► IF ELBOW BENDING leads to occasional pain or tingling in the fingers, a loosely anchored elbow nerve that habitually slips out of place may be the cause.

The condition is more common than believed, Dr. Harold M. Childress of Jamestown, N. Y., who has two slipping nerves himself, reported at the meeting of the American Academy of Orthopaedic Surgeons in Chicago.

Examination of 2,000 supposedly normal elbows in 1,000 individuals, including soldiers, athletes, nurses, physicians, medical students and children with congenital defects, showed 16% had the condition.

Many of those examined did not know they had it.

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