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THE MEETING OF MAMMALOGISTS IN PHILADELPHIA

BY DR. FRANK THONE

PROBLEMS of fur-bearing animals, game animals and other forms of wildlife occupied a major portion of the attention of the American Society of Mammalogists, who opened their annual scientific sessions at the Academy of Natural Sciences in Philadelphia on May 8.

Mammalogists specialize on warm-blooded animals that wear fur or hair and not feathers; their interests range from mice to moose—indeed include man himself, for humans are mammals. Much of the high interest taken in the lower mammals now-a-days is due to the havoc that the "highest" mammal has wrought in their ranks by hunting, trapping, marsh-draining, forest-burning, sod-plowing and other destructive activities. So representatives of the U. S. Biological Survey, the U. S. National Park Service, various state conservation and game management bodies, as well as wildlife-studying private citizens, are having their say.

Topics really do range from mice to moose. The first scientific paper on the program is about North American shrews, which are even smaller than mice. Some species of shrews have bodies about the size of the last joint of a man's thumb. They are the smallest known mammals: many kinds of insects are bigger than shrews. And the last paper on the program is about a desert-dwelling mouse. In between, about halfway down the list, is a discussion of the moose of Isle Royale, in Lake Superior, which may some day become a national park.

OKAPI, queer-looking jungle cousin of the giraffe and one of the world's rarest mammals, is a "living fossil," 30 million years out of step with the times. This is the verdict rendered to the society by Edwin H. Colbert, research worker at the American Museum of Natural History. Mr. Colbert has made a careful examination of okapi skeletal material, and finds that though the animal is related to the modern giraffe, it is in all respects more primitive than any fossil giraffe known. He considers it to be more like what an ancestor-giraffe might have been, back in Miocene times, 30 million years ago. Although not an extinct animal, the okapi is apparently about as near extinction as a species can get, and still survive. It was never seen by white men until the beginning of the present century, when its discovery by Sir Harry Johnston, then governor of the British province of Uganda in Africa, caused a furor in the scientific world and even a newspaper sensation. It lives in the dense tropical jungle, which its extreme shyness and skill at concealing itself make its detection exceedingly difficult. Not so tall or long-necked as the giraffe, it still shows its zoological kinship in its high shoulders, peculiarly shaped head, and little nubbins of horns.

ONE of the most beautiful animals in America, the bighorn sheep, is in grave danger of becoming extinct according to field scientists who have followed their dwindled flocks into the remote fastnesses where they have taken refuge. Joseph S. Dixon, field naturalist of the U. S. National Park Service, told of climbing up almost vertical cliffs in the Sierra Nevada, to find out whether one little band numbered as few as six or as many as fifteen. The same grave situation is paralleled everywhere in the continental United States, other field workers agreed. Only in Mount McKinley National Park, in Alaska, do the bighorn seem to have a really good chance for their lives. Their near-extermination in the United States proper is due in part to poachers, who shoot them in defiance of protective laws, and in part apparently to diseases introduced by domestic sheep years ago. In this, the fate of the bighorn is tragically parallel to that of that other native of the American wilderness, the Indian, who, if he survived the white man's bullets, fell victim to the white man's smallpox.

ONE reason for the dwindling numbers of picturesque big game animals in our National Parks, especially in the Northwest and Rocky Mountain regions, is the loss of their pastures outside the present park boundaries. Seized by ranchers for commercial purposes, they cannot support the herds of deer and elk they once did—and the herds grow smaller. This factor in America's wildlife problem was laid before the meeting by four U. S. National Park Service naturalists: E. Lowell Summer, Adolph Murie, A. E. Borell, and Willis King. One notable case in point which they cited was that of the white-tailed deer of Yellowstone National Park. Once fairly abundant in the Yellowstone region, this species has totally vanished in comparatively recent times, due to the loss of its winter feeding grounds.

BATS, which would hardly be fancied as pets by most people, have been kept as more or less docile captives for months on end by Professor William H. Gates of Louisiana State University. He told of his experience in capturing and keeping bats of several species, and of his observations on their feeding and breeding habits. Captive bats, he found, would feed willingly on a large number of things that they cannot imaginably get in their native state. American cheese, cottage cheese, yeast, bees killed and cut into small pieces, minced insects of other kinds, bread, crackers, hard boiled eggs, any kind of vegetable, any kind of unsalted meat, milk of all kinds—sweet, sour, evaporated, buttermilk, malted milk—all these the bats fed and thrived on. They preferred cottage cheese above other artificial foods and would even drop other foods they had already picked up, if they found it available. Their preference for bees rather than other insects might appear strange at first, for bats fly at night and bees by day, so that they do not normally meet. However, Professor Gates suggested, the nectar carried by the bees may have given them an attractively sweetish taste. All the food had to be chopped up very fine, for bats are rather helpless, with both arms and legs involved in their wide "leathern" wings, and their mouths are adapted

only to the intake of very tiny morsels. Their meals must be served in very shallow dishes, as must also the necessary supply of drinking water.

APT illustration of the old adage, that "what's one man's meat's another man's poison," was presented by Adolph Murie, naturalist of the National Park Service. Or rather, what's "poison" for man is meat for bears. Last summer grasshoppers and Mormon crickets were unusually abundant in the Jackson Hole—Yellowstone region. They were so thick they made the roads slippery, and they were everywhere in the grass. Bears ate them by the bushel, even deserting their usual unsavory but favored "combination salad" of hotel garbage. Mr. Murie watched an old mother bear with a couple of cubs. About every two steps, she would stop, snatch up a fat cricket, munch it a couple of times, and move on to the next victim. Mr. Murie found evidences that the bears in that region were feeding almost exclusively on insects.

PANDA, one of the strangest-looking animals that wears fur, has been put in the same family pew with raccoons, though to outward appearance it is more like a bear. The newest effort toward a correct classification of this puzzling beast was reported by Professor William K. Gregory, of the American Museum of Natural History. The panda, which lives in the most inaccessible parts of the Himalayas, is about as big as an American black bear, and is bear-like in appearance and general habits. It is marked like nothing else alive, with black legs, a black band around its body at the shoulders, black ears and a black spot around each eye; the rest of the creature is light-colored. Professor Gregory made an exhaustive comparison of the bones of panda specimens, detail for detail, with the bones of bears and of raccoons, as well as with fossil remains of bear- and raccoon-like animals now extinct. Despite differences in size, there were more fundamental shape-resemblances between the bones of panda and raccoon.

THE CAUSE OF DEATHS BY LOW VOLTAGE ELECTRIC SHOCKS

How and why people can die from low voltage shocks on the electric lines which run toasters, vacuum cleaners and refrigerators in their homes has been described for the American Institute of Electrical Engineers after nine years of research. The amount of electric current passing through the body, rather than the voltage of the circuit, appears to be the important factor according to the joint study made by scientists from The College of Physicians and Surgeons of Columbia University and the Bell Telephone Laboratories.

Dr. H. B. Williams, Dr. B. G. King, L. P. Ferris and P. W. Spence will describe their study of the effect of electric currents on the heart at the forthcoming meeting of the American Institute of Electrical Engineers at Pasadena, Calif.

The aim of the study was to find out what happens to the heart during electric shock and under what conditions it is fatal. Using experimental animals, under an anesthetic, the scientists found that death may result from a shock of relatively weak current lasting only a few hundredths of a second. This fraction of time is far too short to bring death by interrupting circulation and is also much too brief to think of any type of rescue.

Death in such cases is brought about by the stoppage of the heart's normal pumping action and the establishment of what doctors call ventricular fibrillation, it is found. In fibrillation the muscle fibers of the heart contract in an uncoordinated manner, twitching and quivering spasmodically in contrast to their normal rhythmic movements. If fibrillation is not stopped shortly, there results an asphyxial death within a few minutes.

It was discovered that the sensitivity of the heart to electric shock varies with the point in the heart beat cycle at which shock occurs. The brief partially relaxed period at the end of a heart contraction seems to be much more sensitive than other times. Currents of several amperes through the body, it was found, could be successfully withstood if they lasted less than one-third of the time of one heart beat and did not occur during the one-tenth of a second when the heart was partially relaxed. Also investigated was the ability of a "counter-shock" to bring a heart out of the death-bringing fibrillation. A shock of high intensity and short duration will serve as such a counter-shock. The explanation seems to be that large currents appear less likely to cause the dangerous fibrillation than do smaller ones. In other respects, as in burning, large currents are more harmful than weaker ones.

THE SEVENTEEN-YEAR CICADAS

CICADAS, usually called seventeen-year locusts, will appear from Georgia on the south to Michigan on the north, from Long Island on the east to the Mississippi river on the west, with smaller outlying swarms in Wisconsin, New England, and other border areas. Similar insects, the 13-year cicadas, will appear in a single compact area, where the "corner" of Mississippi fits into Louisiana. They are rather large insects, about the size of big bumblebees, with transparent, dark-veined wings.

They are not really locusts. True locusts, the kind that were one of the Plagues of Egypt, are long-winged grasshoppers, and are terribly destructive. The 17-year cicadas are strictly American insects, and they are usually harmless. The only damage they cause is by laying their eggs in the young green twigs of trees. This causes leaves to drop off, and sometimes kills young nursery and orchard stock. But for the most part they are more noisy than they are economically important.

The cicadas are the longest-lived insects known. After their eggs are hatched, the tiny young ones, no bigger than ants, dig into the ground, and there they live for 17 long years (13, in the Southern species), sucking sap from the roots of trees. In the late spring of the seventeenth year, they burrow to the surface, climb up the trees and bushes, split their "baby-clothes" up the back, and emerge as winged, singing insects. They live for a few weeks in the sunlight, mate, lay their eggs—and die. The brood now emerging are the orphan offspring of the brood that emerged and died in 1919.

Of the 17-year species there are 17 broods; of the 13-year species in the South, 13 broods. Each brood has its

known area, and of course its known years of appearance. This year's brood has an unusually large area. Last year's was confined mainly to West Virginia and the mountainous parts of Virginia and northwestern North Carolina. Next year's brood is known only from Massachusetts, Connecticut and Rhode Island.

The enormous numbers and the shrill noisiness of the 17-year cicadas, as they swarm in the woods, sometimes cause a good deal of alarm. Superstitious folk are also prone to think that the orange-red W-shaped mark near the tip of each wing is a sure omen of war. However, since these insects appear somewhere in this country every year, and since there is almost always a war going on somewhere in the world, the cicada's powers of prophecy are not really put to a very severe test.

ITEMS

A FIND of fossils has been reported from the region of Lake Balkash in Kazakstan, near the Mongolian border. Especially noteworthy are skeletal remains of Noropus, a "missing-link" animal, between horse and rhinoceros, extinct some 15,000,000 years. The Institute of Evolutional Morphology and Paleozoology is sending an expedition to explore the deposits.

AIRPLANES will attempt to find the great meteor whose fall in 1908 in Siberia felled a forest, burned an area over 35 miles in length and caused an earthquake. The meteorite commission of the USSR Academy of Sciences has announced its determination to continue the search until this meteorite, considered the largest known in the history of mankind, is actually found in the Siberian valley of the Podkamennaya Tunguska River. All attempts to find the meteorite, undertaken during the past few years by a staff member of the academy, L. A. Kulik, have so far failed. This year, the study of the area of fall will be made from airplanes. It is believed that a photo taken from an airplane in the spring when the snow vanishes and the woods are still bare, will show both the direction in which the trees fell, when swept by the fall of the meteorite, and the craters formed by the impact of the meteorite which apparently broke into several pieces during the fall.

THE newest combination instrument of science which can be used either as a microscope, a telescope or as a "lens" for focussing the tiny negative charges of electricity known as electrons was described before a joint meeting of the American Physical Society and the Institute of Radio Engineers by Dr. V. K. Zworykin, famed radio engineer of the RCA Corporation, Camden, N. J. Dr. Zworykin discussed the operation of the electronic instrument and told of some of the general improvements in design which have been made in the past few months.

Used as a lens for focussing electrons, the apparatus employs electric fields which bend the electric particles so that they can be collected into a single small spot in a fashion analogous to the collection of light rays to a focus by an ordinary optical lens. Used as a microscope the Zworykin apparatus shoots electrons at the object to be examined and the reflected electron image is properly brought to a focus and examined with an infra-red sensitive layer which in a camera would correspond to the photographic plate. As a telescope, a large aperture lens is mounted so as to image the scene, toward which the telescope is pointed, onto an infra-red sensitive cathode of an image tube. The electron picture falling on the fluorescent screen renders visible the infra-red image. Such a device can be used to test haze and smoke penetration by infra-red and for signalling.

PLANTS can be made to grow bigger, producing a larger seed yield, by "stuffing" them with carbon dioxide, the atmospheric gas which they use as initial raw material in food-making, Dr. Earl S. Johnston, of the Smithsonian Institution, has determined in a series of laboratory experiments. Dr. Johnston grew wheat plants in open-topped glass enclosures, in which he maintained the carbon dioxide content at four times its usual percentage in the air. The plants produced more stalk and larger and more numerous heads than did similar plants in neighboring glass cages where only ordinary air was used. As yet, Dr. Johnston's results, like somewhat similar results obtained in European experiments, have no practical application, since the cost of raising the carbon dioxide content of the atmosphere under ordinary field conditions is much greater than the increased yields thus obtainable would justify.

QUACK GRASS, hated in this country as a noxious weed, has been hybridized with wheat by a Russian plant breeder, Dr. H. B. Tzitsin, of the Tass Agency in Washington. The new grain grows perennially, like its quack-grass parent. This would presumably give it the double advantage of not having to be sown every year, and of covering and binding the soil against erosion with a continuous mat of roots. Small-scale experiments with the hybrid grain indicate that it will yield more flour, bushel for bushel, than "straight" wheat. Bread baked from the hybrid grain flour is said to be of good quality and flavor. Another hybrid wheat combines four wheat varieties in its pedigree, and is stated to be a phenomenally heavy yielder, one stalk producing as many as 400 grains. Still another hybrid wheat has been evolved for growing in the short-summered North; its grain can be matured in as little as 67 days.

BACTERIA that live in nodules on the roots of plants of the pea family and capture nitrogen from the air seem to be preyed upon by a bacteriophage, or group of bacteriophages, of their own. H. Katznelson, of the State College of Washington, tried producing bacteriophages from several different kinds of legume root nodules. Several of his plants, including clover, alfalfa and Austrian lentil, did not do very well and yielded nothing. But a good strong "phage" was obtained from the nodules of vetch plants. Thinned out in water to one billionth of full strength, it could still dissolve the bacteria from which it had been derived. Bacteriophages are a strange group of invisible germ-dissolvers that may be living organisms and may be merely complex "almost-alive" chemical compounds. First discovered some years ago by the Canadian bacteriologist D'Herelle, they are still a great riddle to biologists. Mr. Katznelson's studies on this new type of bacteriophage were reported before the annual meeting of the scientific honor society Phi Sigma.