I DIDN'T KNOW THAT!

(MAMMALS)

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I DIDN'T KNOW THAT!!!!!
Robert Boles and Dwight Spencer

Most people know that man is a mammal - that is, he is warm-blooded, has hair on some part of his body, and the young are nourished by milk provided by the mother. However, this great class of animals includes many other interesting species besides humans.

This issue of the Naturalist contains a large number of “tid-bits” about various kinds of mammals. They were gleaned from many sources. Some were collected by interested students. Though a few of the statements may need further scientific verification, most of the items are accurate.

We hope these bits of information stimulate the readers to further investigation and reading about this fascinating class of animals—the mammals.

A female cottontail rabbit may produce up to six litters a year, depending upon the weather, amount of food and cover, and other environmental factors.

The supersonic sounds produced by the little brown bat’s mouth and larynx have a frequency of around 48,000 cycles per second. This is far above the limit of human detection.

Dr. Dwight Spencer is Professor of Biology at Emporia State University. His area of specialization is in the field of ecology.

Some of the items used in this issue of the Naturalist were suggested by students in the Wildlife Management and Mammalogy classes.

Other issues of the "I Didn't Know That!" series were about fishes, birds, and insects. Copies of these issues are still available upon request.

The smallest species of whale is only about 4.5 feet long when full grown. On the other hand, a female blue whale was measured at 113.5 feet in length. This giant mammal probably weighed over 170 tons (340,000 pounds). This is equivalent to 35 elephants, 2380 humans, or 136,000,000 pigmy shrews. (cover).

The klipspringer, a small antelope found in many mountainous areas of Africa, is said to be able to spring vertically to a height of 25 feet. This is no mean feat for an animal which stands only about 20 inches high at the shoulder, and usually weighs less than 40 pounds.

The American pronghorn ("antelope") can run at speeds of up to 60 miles per hour for two miles, and may average as much as 36 miles an hour for almost 30 miles.

Llamas of South America have an unusual method of self-defense. They are able to "spit" with uncanny accuracy on or at anyone who incurs their displeasure. Some say the llama is so accurate that it is the envy of many human tobacco-chewing "marksmen". They have also been reported to sometimes use gravel as "ammunition".

Whales don’t really “blow”. The old whaler’s cry of “thar she blows”
was based upon what appeared to be a column of water spouting from the nostrils of the whale when it came to the surface for air. Actually, whales cannot take water into their lungs, for if they did so they would drown. What appears to be a spout of water is really condensed water vapor from the air exhaled from the whale’s lungs, just as happens to the breath of humans on a cold, frosty day.

The beautiful, expensive white ermine coats are made from certain members of the weasel family in their winter color phase. During the rest of the year the weasel’s fur is not white.

The North American record for the largest raccoon was a huge 62-pound specimen taken in Washington on November 4, 1960.

A new-born squirrel weighs only about one-half ounce at birth.

If a koala baby is really “naughty” the mother will turn it over her knee and give it a good spanking on the bottom with the flat of her hand, during which the baby koala will give off heart-rending cries and shrieks.

Young kangaroos are referred to as “joeys”.

There are about 12,000 different kinds of mammals on Earth.

The smallest mammal, a shrew, weighs about as much as a dime (about one and one-half grams). At the other end of the size scale, the blue whale may be over 110 feet in length and weigh as much as 170 tons.

Mammals have a wider distribution and are more adaptable than any other group of animals on Earth, except possibly spiders and their relatives.

Fossils show that there were primitive mammals living on Earth as long as 180 million years ago.

The egg-laying mammals of Australia and New Zealand were not even known except to some primitive tribesmen until about 150 years ago.

The duckbill platypus and the spiny anteater feed their young on milk like other mammals but lay small, rubbery, squeezable eggs like lizards, snakes, and turtles.

A male spiny anteater or platypus has a sharp, recurved spur on its hind leg that may serve to inject a poison secreted by a large gland on the upper leg. This poison is deadly enough to kill some small animals and can give intense pain to a human being if he is jabbed by the spur.

Spiny anteaters and platypuses are the only truly venomous mammals known, though the bite of certain shrews is poisonous.

When ready to produce her young, a female platypus barricades the tunnel in which she will lay her eggs, and...
does not leave the nest until the eggs are hatched and the young have learned to suck or lick from her fur the milk that seeps through special pores on her skin.

The stomach of the spiny anteater resembles the gizzard of a chicken, and, using the grit and sand ingested along with the insects it eats, serves to reduce the food to tiny, digestible particles.

Paleontologists have found the fossilized remains of a pouched mammal, known as Diprotodon, that grew as big as a rhinoceros and looked something like a giant rabbit.

The koala of Australia is so specialized in its feeding habits that a seasonal change in the oils produced by the leaves of certain eucalyptus trees on which it feeds can kill it, and it may have to travel a considerable distance to find other leaves with oils that are not poisonous.

Not all the so-called “pouched animals”, or Marsupials, have pouches. Some have large bags, some shallow cups, others only folds or flaps of skin, and some have none at all.

An American opossum sometimes gives birth to as many as 18 young at a time, but there are only 13 nipples (“feeding stations”)! Seldom do more than a half-dozen from each litter survive to adulthood.

The Tasmanian devil is a fierce, gruesome-looking mammal, but is reported to be readily tamed, and to become docile in captivity.

The pronghorn is the only horned animal in the world to shed its horns (actually, only the outer core is shed, but the horn core is retained), and the only one whose horns are branched or pronged.

The pronghorn is a strictly North American animal, being found nowhere else in the world.

Even though the pronghorn’s legs look as thin as pipe stems, the bones are exceptionally strong. In actual pressure tests, it took 45,300 pounds of pressure to the square inch to crush a pronghorn’s leg bone.

The eyes of the prairie dog are situated high on its head, an adaptation which allows for maximum concealment while looking from the burrow for aerial enemies, such as hawks and eagles.

A shrew’s heart may beat up to 1200 times a minute.

Some shrews can actually “run on water”, aided by stiff hairs on their feet and tail.

Some mammalogists believe that all mammals, except the primates, are color-blind.

The North American sand rat obtains water from the fleshy leaves of
plants which grow along the dry river beds in desert areas. These leaves are 80 to 90 percent water, but contain higher concentrations of salt than does sea water.

During the last 400 years or so 36 species of mammals have become extinct, and today over 120 species are threatened with extinction.

Except under the most extenuating circumstances, no predator except man will ever exterminate a prey species.

The hump on a camel's back is an adaptation to arid climates. Fat is concentrated there, with the rest of the body having relatively little fatty insulation. This speeds the flow of heat outward. Contrary to popular opinion, camels do not store water in their humps.

In terms of the number of glands per unit of body area, humans sweat most on the palms of their hands and the soles of their feet.

One of the reasons the beaver, an air-breathing mammal, can stay under water so long is the presence of myoglobin, an oxygen-holding pigment found in muscle tissue.

The fox squirrel may occur in three different color phases. The usual color is red or reddish gray, but there may also be black, or melanistic individuals, and occasionally a white, or albinistic, specimen can be seen.

Beaver have unique double claws on the second and third toes of their rear feet, with which they comb their fur.

The female Alaskan brown bear only reproduces every third year, whereas some female rodents may have up to 11 litters each year.

Though many animals are colored some shade of blue, the only mammal that is purple in color is the blesbok, a small South African antelope.

Contraction of the victim's muscles tends to work the quills of a porcupine into the flesh.

Porcupines cannot "throw" their quills. The quills are so loosely attached to the animal's body that an intruder need only touch them slightly for the quills to become detached.

Years of high rabbit populations may be expensive to the cattleman, as 60 will eat about as much plant material as one cow.

A coyote is valuable to the cattleman, in that it may eat over 180 rabbits in a year's time, along with great numbers of mice.

The sea otter is probably now more abundant in its present range than it has been for centuries. For example, sea otters off the coast of California only numbered about 150 in 1938, but now the population is estimated to be as many as 2000 animals.
The incidence of malaria in certain areas has been shown to vary in inverse proportion to the numbers of certain bats found in the area—the more bats the fewer malaria-carrying mosquitoes.

One mammalogist claims that bats are so sensitive and have such fast reactions that as many as half a million of these flying mammals, with a wingspread of up to a foot, may mill around for hours in total darkness in a cave without colliding with each other.

Some bats hibernate more than half of their lives.

There are species of bats that actually catch fish for a part of their diet.

Vampire bats are the only true mammalian parasites.

The largest marsupial (pouched animal) known is the great red kangaroo, which may stand seven feet tall on the tripod formed by its toes and heavily muscled tail.

Moles, shrews, gophers, and badgers can run almost as fast backward as forward.

Shrews are so “nervous” and active that their rate of output of energy, and thus their fuel requirements, far surpass those of any other mammal. They must consume more than their own weight of food each day.

The fur of the mole grows straight outward, so that its “lay” will not hinder the animal in going either backward or forward in its underground tunnel.

The star-nosed mole has 22 bright pink fleshy “fingers” on its snout, arranged radially like the petals of a small flower.

There has been a great decrease in the numbers of bats, especially in North America. One reason appears to be the widespread use of insecticides, which not only cuts down on the bats’ food supply, but poisons the little mammals themselves.

Some ground squirrels, kangaroo mice, and pocket-mice appear never to drink water. They use metabolic water to fill their moisture needs.

Squirrels are a valuable aid in reforestation, burying acorns and other seeds, which they may fail to dig up later and consume.

One “old-wives tale” claims that foxes and some other animals may slowly submerge themselves backwards into the water so that all their fleas are finally concentrated on the tip of their nose and are then floated off or made to retreat into a tuft of grass or stick held in the mouth. The grass or stick is then dropped along with the fleas that have climbed on.

Picas spend their lives gathering grass and other vegetable matter for a
winter food supply, sorting it out into piles to dry on the rocks besides the holes in which they live. If rain threatens, they carry the hay below, bringing it out again to dry when the bad weather has passed.

A frightened jack rabbit may cover 20 feet at a leap.

Rabbits eat large amounts of green food when it is available, and then excrete it as a semi-digested form. After some time these pellets are reingested, and the process may be repeated more than once.

Over one-third of all genera and one-half of the total species of living mammals are classed as rodents, or gnawing mammals.

Rodents may sometimes occur in enormous numbers. One account claims that at one time in western North America an estimated 12,000 meadow mice per acre built up over a large area. Prairie dogs once covered an estimated 25,000 square miles, with perhaps as many as 400,000,000 individuals living in the “prairie dog towns.”

In terms of distance, a trained human racer can outrun a horse.

The giant anteater has a worm-like tongue which may be up to a foot in length.

The hair of a sloth’s fur is filled with tiny pits, in which minute green algal plants grow. This may make the animal appear to be a bright green, so that it is difficult to see among the green leaves of the trees in which it lives.

Armadillos usually have four young, all of the same sex. They are really two sets of identical twins, derived from a single fertilized ovum.

Not all Primates, the order of mammals to which man belongs, have finger nails. Some have claws on their fingers, instead of finger nails.

If the eyes of a man were proportionally as wide as the eyes of the tiny primate called a tarsier, they would about be a foot across!

The strength of a gorilla is almost unbelievable. Frightened gorillas have been known to bend two-inch tempered bars. In spite of their great strength, these big, easily-frightened vegetarians never deliberately attack human beings.

A large gorilla may have an arm-spread of over nine feet.

The skin color of chimpanzees may range from pinkish, yellow, brown, to black.
Man is probably the most numerous of all large mammals alive today.

Packrats may carry shiny tin cans, jewelry, bits of glass, and other objects and place them on their houses. The habit of dropping what they were carrying and picking up another object gave rise to the name "trade rat" used by the early settlers for this rodent.

The hamster is sometimes kept as a pet in the United States. However, throughout the ages in Middle Europe and Russia it periodically increased to such numbers that it literally mowed down fields of oats, wheat, or other grain crops, chewing every stem off at the ground.

Our common brown rat originally lived in Central Asia. It moved westward with the slavonic and mongaloid hordes that swept Europe centuries ago.

Rats and mice may be dangerous and expensive animals to have around. For example, the black rat harbors the fleas that carry bubonic plague (the "Black Death" of the Middle Ages), contaminates food, and destroys billions of dollars worth of food and property annually.

House mice may be of some benefit in helping to keep down the numbers of cockroaches (but there must be a better way!).

The name of the animal referred to in the expression, "dead as a dormouse", is derived from the French word "dormir" (meaning "to sleep"), in reference to its profound hibernation for long periods of time in the northern part of its range.

Porcupines are almost as noted for their chewing as for their quills. One report claims that they have been guilty of causing the collapse of large log cabins by chewing through cabin's "underpinnings."

"Guinea pigs" are not true pigs at all, but belong to the rodent group of animals. A more common name for the group is "cavies."

A porcupine at birth is the largest in proportion to the size of the parent of any mammal known; a baby may be twelve times as big, comparatively, as a normal human baby of seven pounds, and would thus be the equivalent of a woman giving birth to an 84-pound child!

A blind man once trained a capybara, a large rodent, to act as a reliable "seeing-eye."

The paca (sometimes seen in circuses as "the world's largest rat") occasionally appears under various innocent and high-sounding titles on the dinner table of Argentinian and Mexican tourists.

Sperm whales may vomit up great wads of a most mysterious substance called ambergris. It has a delightful
aromatic color. It is created by a special bacterium that lives in the sperm whale's stomach. It is the finest fixative known for the floral essences used in the manufacture of the most expensive perfumes.

Male narwhals may have a greatly elongated upper left canine tooth (rarely both upper tusks); one 10 feet long and seven inches in girth at the base has been recorded. The tusks always have a left-hand twist. The narwhal may have been the animal responsible for tales of the legendary unicorn.

Thirteen porpoises and 14 whole seals were taken from the stomach of one killer whale.

The tongue of a baleen whale may weigh almost two tons.

“Right Whales” got their names because they used to be considered the right ones to hunt, and because they floated after death, and so could be towed ashore or cut up at sea.

A century ago the value of baleen (“Whale bone”), mostly for use in women's corset stays and hooped skirts, rose to such an exaggerated figure that the plates from the mouth of one bowhead whale would pay for the outfitting of a whaler for a season. As a result, these huge mammals were often slaughtered for their baleen alone, the many tons of meat and blubber left as “waste.” This species is now a very rare mammal. (As far as that goes, corsets and hoop skirts are also pretty rare today).

A young whale may be almost 25 feet long when born. In spite of this great size, the gestation period is only about ten months, or about half that for an elephant.

There is a record of an enraged sperm whale charging and sinking a steel whaling vessel in three minutes.

Some whales may dive to depths of almost a mile (over 5000 feet) though they are air-breathers like humans, and remain underwater for as much as an hour or more.

The largest whales appear to feed exclusively upon a tiny, one-half to one-inch long shrimp-like crustacean called “krill.” Excessive harvest of krill by humans may be directly responsible for the reduction in numbers of some baleen whales.

Though a whale may have a thick layer of blubber, the skin itself may actually be not much thicker than a sheet of carbon paper.

Men have been hunting whales on the high seas for at least 10,000 years. For years, mammalian products derived from whales were exceeded in importance only by those derived from domestic animals.

After the discovery of the chinchilla high in the Andes Mountains of South America, it was so ruthlessly trapped for its fine fur that its pursuit was
finally abandoned, and it was considered to be extinct. A few specimens did escape man’s predation, however, and later supplied the stock for some 70,000 or so specimens now being raised in the United States.

Evidence suggests that some of the whales originated in tropical rivers from semi-aquatic land mammals having bony protective coverings rather than mere fur.

There are almost 100 known species of whales.

The forward drive of a whale is almost unbelievable. A female blue whale once pulled a twin-screw, steel-hulled, 90-foot whale cruiser with engines going at full speed in reverse, forward at an average speed of five knots (almost six miles an hour) for eight and one-half hours, in spite of the fact that there was a quarter-ton harpoon embedded in the animal’s back and a half mile of four-inch rope between the whale and the ship.

Badgers sometimes go into what appears to be a profound sleep or coma, so that they appear dead and somewhat rigid. If mistakenly handled while in this state, however, they may suddenly “snap out of it” fighting and inflict nasty wounds.

When the scent of a skunk was tested in diluted amounts without the people knowing where the scent came from, practically every person tested declared they thought it was a rather pleasant odor.

Though skunks are rather intelligent animals, and quick to learn, they apparently cannot adjust to the modern automobile, as can be attested to by the great number of dead skunks seen along our highways.

The color of the pelts of a litter of skunks may range from pure black to almost pure white.

Skunk “oil” is a good substitute for musk or ambergris as a fixative for perfumes.

Though bears do not normally and deliberately molest humans, they are actually more dangerous to man than the great cats, such as the lion and tiger.

Polar bears are not all white; some are yellowish, or even a dirty gray color.

Millions of minks are now raised in captivity for their furs. By taking advantage of rare mutations, a great variety of new colors has been produced in this caged stock.

The fisher, a relative of the badger and skunk, got its name not because it fished, but because it stole fish out of traps.

The scent of the little skunk-like zorilla is so potent that one was once seen to use it to drive nine full-grown lions away from a fleshy-killed zebra, keeping them at a distance for some hours while the little “stinker” ate and took short naps.
The giant panda is one of the rarest of the large mammals. Europeans considered it to be a myth until not too many years ago.

If you were to examine the carcasses of a skinned wolf, coyote, and dog, you probably would be unable to tell them apart.

Jackals have been known to inter-breed with the domestic dog in India.

The mongoose probably deserves its reputation as a snake-killer, as it destroys many of these reptiles. It is not, however, as some think, immune to the bite of a poisonous snake.

After its introduction into the West Indies the mongooses did significantly reduce populations of rats that were destroying plantation crops. Unfortunately, they also killed off most of the small native animals as well (along with quite a few domestic ones, too).

If raised from an early age, a mongoose makes an intelligent and reliable pet and will follow "to heel" like a dog.

The introduction of the mongoose into the United States is absolutely forbidden.

The striped hyena of India is looked upon with extreme loathing because of its habit of digging up human burials.

There is a widely held belief that hyenas can change their sex, or are hermaphrodites. The story arose because it is almost impossible to tell the sexes apart without dissection. Hyenas, however, can tell the sexes apart, which is probably what really matters.

The cheetah may be the swiftest of all animals that move on four legs. There have been claims of them reaching speeds of 75 miles an hour for short distances.

Cheetahs have proved to be a successful means of killing coyotes in the Southwest of the United States, but enough trained animals to make a dent in the numbers of coyotes would strain even the U.S. Treasury, since cheetahs are worth several thousand dollars a pair.

True civets are raised in some parts of Africa, where their scent glands are "milked" to secure a material used in making some of the most expensive perfumes. (The "milkers" probably don't have to be reminded to wash their hands before going to dinner!)

The second largest land mammal, Cotton's white rhinoceros, was not discovered until 1910, less than 70 years ago.

The puma, or mountain lion, is probably the least aggressive toward humans of all the great or not-so-great cats. Most, if not all, of the stories of them attacking humans are subject to doubt.
The systematic slaughter of the mountain lion is not warranted, for stock raisers can readily eliminate any individual that has turned to killing livestock.

The chopped whiskers of the golden cat were once used as a man-killing poison by some African tribesmen.

Cats do not dislike water; they dislike cold water.

Bobcats have been known to mate with domestic cats, especially if housed together in captivity; the kittens, however, seldom if ever survive.

A large tiger may eat 200 pounds of meat at one meal.

A water buffalo was once seen to kill a pair of tigers with a single left and right sweep of its great horns.

Leopards are among the few large mammals for which an authenticated case of albinism has not been recorded. Also, black leopards do not breed true, and many with this color phase are sterile. Leopard litters frequently contain both spotted and black kittens.

In early historic times lions inhabited Eastern Europe as far north as Romania and possibly Italy, the whole of the Near East from Turkey to India, Arabia, and the whole of Africa, outside of the Equatorial forests.

A British officer once killed 400 lions in a few years hunting in one central area in India. As the result of such slaughter, only a few pairs survive today in that country.

Unlike many captive animals, lions and Bengal tigers breed readily in captivity. Zoos sometime have more lions and tigers than they know what to do with.

Although tigers externally look quite different from lions, it is extremely difficult to tell them apart if skinned and laid side by side.

Male tigers with a total length of over 10 feet have been recorded.

The northern fur seal was reduced in numbers to about a hundred thousand by 1910 as a result of hunting, but has now passed the three million mark again because of stern protective measures.

The ivory of the upper tusks of a walrus may grow to over two feet in length.

A male walrus may grow to be over 12 feet in length and to weigh more than a ton and a half.

If a lion mates with a tigress, the offspring are called ligers, but if a tiger mates with a lioness, the young are called tiglons.

Female lions, rather than the larger
males, do most of the killing of prey animals.

Lions do not live in the “jungle” or in true forests or woodlands. They are savanna, grass-plain, scrubland, and semi-desert animals.

The African elephant is the largest living land mammal. However, the Indian elephant is not second largest. Second place is held by the white rhinoceros of Africa.

The largest African elephant measured was over 12.5 feet in height.

A record African elephant tusk was measured to be almost 11.5 feet in length, and to weigh 293 pounds. Some of the mammoth ivory dug from the frozen muck of Siberia, however, was of far greater dimensions.

It is untrue that the bull elephant is untamable and that African elephants cannot be tamed. The elephants used by Hannibal in crossing the Alps to attack Rome were African elephants.

Some kinds of elephants and mastadons lived in North America at the same time as early man. Stone weapons have been found along with the bones of these now extinct mammals at several locations.

The water buffalo of India is a patient beast, tolerant of small children but deadly to strangers, and particularly to “foreigners.”

One species of sheep, the argalis, may have a horn measurement of over 75 inches around the inside curve.

The Greeks were reported to have once considered sea-cows to be mermaids.

The gestation period for an elephant may be up to 21 months.

The rate of growth, age at which they reach puberty, life span, and aging process of elephants are about the same as that of man.

Indian elephants live to a greater age than African elephants.

A reindeer once pulled two men in a sled for 16 hours at an average rate of 18 miles an hour. Another reindeer was reported to have run 800 miles in 49 hours.

Reindeer milk is so rich it must be mixed with three times its volume of water before it can be drunk.

Carabou and reindeer are not the same; they belong to different species.

Giraffes may browse on the leaves of acacia trees as much as 20 feet above the ground.

A giraffe was reported to have kicked the head “clean off” the shoulders of a lioness.

Giraffes are not absolutely
voiceless, as is commonly believed.

Camels are noted for being able to go for a considerable time between drinks. However, a giraffe can go without water almost as long as a camel can.

Giraffes may not be able to swim. At least, there appear to be no records of anyone having seen one swimming.

The llama may carry a load of over 100 pounds at altitudes which other animals cannot tolerate.

Musk-deer have a large gland in the skin of the belly called a "pod" which secretes a powerful aromatic substance that is one of the best fixatives for perfumes.

Purdus are the tiniest of the deer, a large male is only about the size of a small terrier.

What Americans call a moose is called an elk in other countries.

Without the even-toed hoofed mammals for work, food, and clothing, man probably would never have attained his present numbers or status on earth.

Pigs may sometimes kill and eat rattlesnakes.

An enraged hippopotamus has been known to bite a man in two at one "chomp."

Zebras are invariably heavily infested with intestinal parasites of many kinds; so many, in fact, that some scientists think that their digestion might fail if these "guests" were not present.

Africans insist that a zebra is a black animal with white stripes, while most Americans assume that it is a white animal with black stripes.

The "horn" of a rhinoceros is in fact neither bone nor horn, but is composed of hairs tightly glued together.

The horn of the rhinoceros has been held in the highest esteem as a medicine for centuries, especially by the Chinese, a fact that has, perhaps more than anything, contributed to the severe decline in this huge mammal.

There is a report of a charging rhinoceros derailing a locomotive.

A white rhinoceros isn't white, but gets its name from the Dutch word weid, meaning wide, and originally referred to the wide, almost square, upper lip and muzzle of the animal.

Aard-varks are found only in Africa today, though they once lived in Europe and Asia as well.

The aard-vark has ears like a donkey, a nose like a trombone, and large eyes with fine long lashes.
A GREAT OPPORTUNITY!

It is not too early to start making plans for expanding your education this coming summer. The Division of Biological Sciences at Emporia State University will offer a variety of interesting and informative courses from which to choose.

For example, would you elementary teachers like to learn more ways to give your students worthwhile experiences in the outdoors around your school? If so, enroll in Field and Lab Biology (GB 303), Workshop in Environmental Biology (EB 736), or Environmental Interpretation for Teachers (EB 459C or EB 859C).

Would you like to know more about Kansas and the Great Plains? Look at these choices: Summer Flora of the Great Plains (BO 459 or BO 859), or Prairie Ecology (EB 459A or EB 859A).

Would you like to be able to answer your students' questions about frogs, salamanders, toads, turtles, and snakes? Try Dr. Clarke's course in Herpetology (ZO 459C or ZO 859C).

What about your spirit of adventure? Do you like the mountains, camping, and hiking? You have a great opportunity to go on the Mountain Ecology (EB 459B or EB 859B) course. If you like both the mountains and birds, how about Rocky Mountain Avian Ecology (ZO 459B or ZO 859B)?

Would you high school teachers like some new ideas for teaching about bacteria in your courses? Dr. Keeling's class in Microbiology for High School Teachers (MC 859) is a great opportunity.

These are but a few of our summer's bill of fare. Write or call the Division of Biology for our Summer School Brochure or for any additional information.