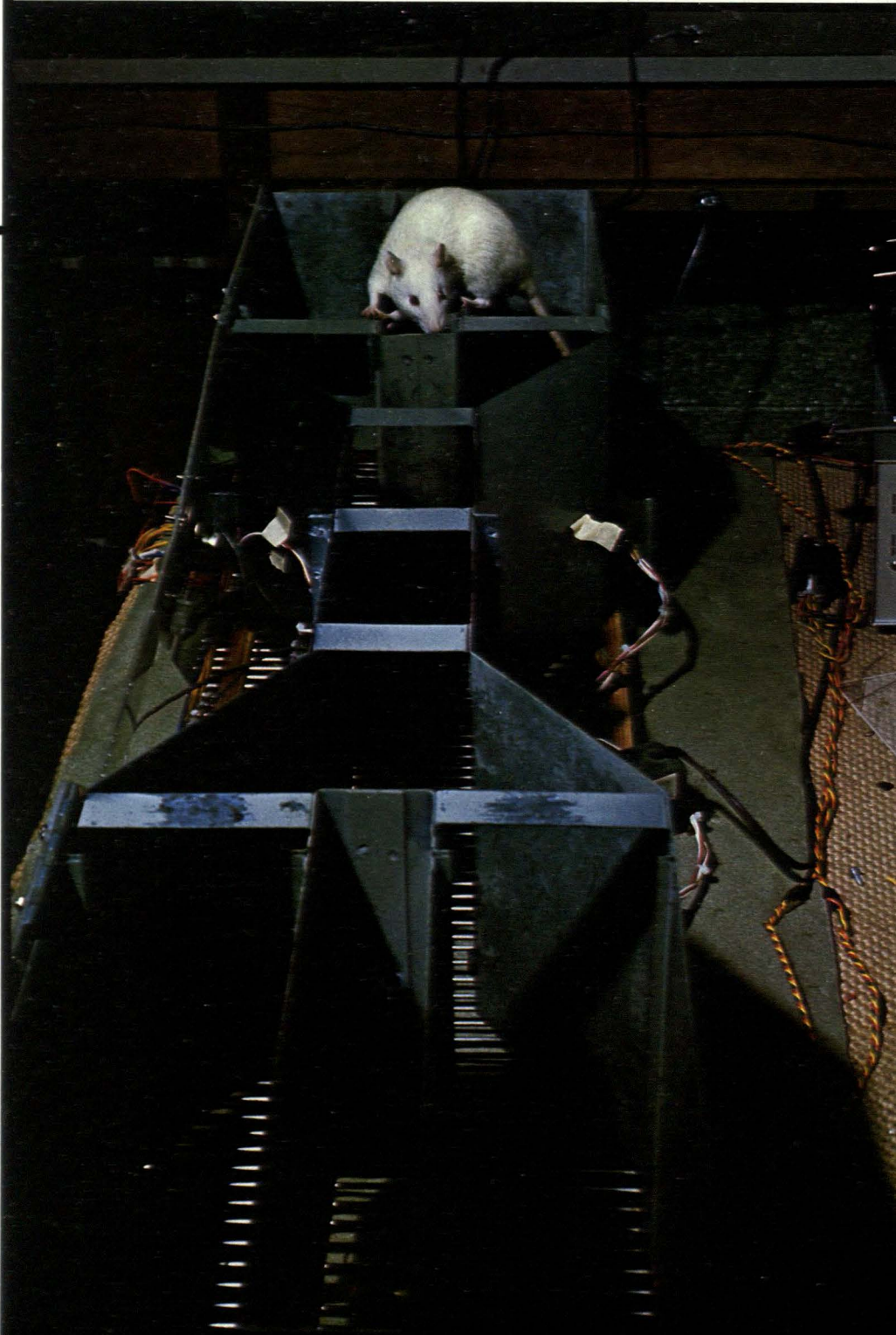


Never Underestimate the Rat (Etc.)

By ANN BABER

**"We learn lots from rats,"
Dr. Dennis Wright says. This female
is a subject in research
on sex differences in problem solving.**





A young miniature pig moseyes over for a "screwdriver." Alcoholism researchers have found many pigs prefer their alcohol with orange juice.

Mizzou has more animals on Campus than students. The animal population is 33,247 (give or take a few hundred mice).

On the four campuses of the University of Missouri, the total animal population is an astonishing 46,000 or so, a large number for a Big Eight school. Yale, however, has "over two million and the University of Minnesota has one mouse colony that exceeds our U-wide total," Dr. Keith L. Kraner, director of animal resources and professor of veterinary medicine and surgery, says.

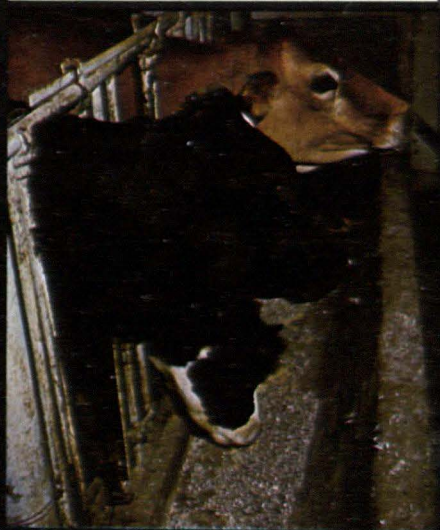
Most of the animals are bought with grant monies. The researcher writes a proposal to the funding agency and includes in his budget the cost of necessary animals for the research. Other animals are bought with teaching funds.

Some universities maintain large stocks of animals, keeping them constantly available for their researchers' use. But such an approach is costly. At the University of Missouri, the animals generally "belong" to one project and when the project ends, the animals are sold.

Currently involved in research projects are guinea pigs, ground squirrels, marmots, mystromys, chinchillas, sea lions, monkeys, opossum, raccoon, wild rats, kangaroo rats, cows, calves, horses, ponies, swine, goats, sheep, turkeys, chickens, pigeons, Japanese quail, miscellaneous birds, and amphibians and reptiles (turtles, frogs, and salamanders).

The animals are used (in projects too numerous to list) for teaching and research, and they are vital to both. Americans are funny people. On the one hand, they are proud of the medical advances and the improved foods of the past 50 years; on the other hand, some are squeamish about using animals in research. Yet, they are even more upset at the idea of using human beings to advance scientific knowledge.

There is no doubt in University researchers' minds about the desirability and necessity of animal research. "I've seen experiments done at other schools with college kids that made me sick," Dr. Dennis Wright, assistant professor of psychology, says. "In one (not at Missouri), freshman girls were interviewed. Then half of them were allowed to overhear someone say, 'That's just the kind of girl I'd like to marry.' The other half heard 'Boy, can you imagine getting stuck with a drip like that?' Then the interviews continued to see if the girls who had been given approval reacted differently from the girls who heard the negative comment. You don't know what kind of psychological trauma that was for the subjects. They were very young, had just been on campus a week and were very vulnerable. Of course, they were 'debriefed' and told that it was just an experiment, but I didn't approve of it. The worst thing I ever did was cut up a rat.



Cows like newspapers mixed with gold chloride. It provides a tracer element in research on how forage foods are digested.



At the Equine Center, Mizzou's newest research facility, studies on laminitis, a hoof disease, will begin as soon as a new barn is completed.

Joy complains about her harness. It will eventually carry equipment to give researchers data on her metabolism as she dives and sleeps.



"People say studying animals like the rat can't possibly tell you about humans. They don't give rats enough credit," Wright says. He did one project which suggested that the "Protestant (work) Ethic" is a misnomer. Even rats prefer to work for what they get and in fact devalue what they do not have to work for. "We ought to call it the 'Mammalian Ethic,' I guess."

Animals can be raised "culture free." Wright is doing research on sex differences in problem solving. "We can get at the organic and structural differences without the cultural interference. Baby rats don't get pink and blue booties," he says.

And research animals can help scientists find cures for diseases like cancer, heart disease, leukemia, alcoholism, diabetes and many, many more.

The miniature pig is perhaps one of the University's best known research subjects. The mini-pigs were first developed at the University of Minnesota, but the University is credited with their recent development and popularity. They are bred on a small scale and supplied nationwide to other researchers. The pig is used in research on alcoholism, heart disease and cancer at Sinclair Farm, the U-wide research facility, about five miles from the central Campus. They are miniature only by comparison. A full grown hog might weigh as much as 800 pounds and consume seven to eight pounds of feed a day. The miniature pig weighs only about 180-200 pounds and eats only 1 to 1½ pounds of feed. The pigs' hearts and digestive systems are similar to man's, and a pig is the only creature other than man who will voluntarily consume more than half his daily calories in alcohol.

Animals obviously can be bred for specific purposes; people can't. Dr. Gordon Sharp, professor of medicine, is using a strain of mice in which 95 to 100 percent develop a kidney disease similar to man's.

A unique family of beagles at Sinclair Farm may provide medical researchers with insights into the causes and prevention of human coronary heart disease—the nation's number one killer. The beagles were acquired from a commercial firm that was using them to test the nutritional value of pet foods. In the course of their testing, however, the firm discovered an unnaturally high level of cholesterol in the dogs' blood. The dogs are, therefore, excellent heart disease research subjects.

"One thrust of research is to find animals that naturally develop diseases like those of man," Dr. Richard Doyle, director of laboratory animals at the Medical Center, says. "Much of what we know about ulcers in man, for example, is a result of work done with dogs that have ulcers. We have rats that spontaneously develop hypertension and rabbits that have arthritis."

Some animals can even be raised "germ free."

At the Medical Center are isolators that house sterile mice. All the microbiological variables are controlled and the researcher can study, for example, the effects of individual bacteria on the gut wall.

Some animals have capabilities that might be desirable for man. The two sea lions at the University-wide Dalton Research Center, like all sea lions, can sleep submerged, don't get "the bends" when they dive and return to the surface quickly, and adapt to drastic temperature changes. Sea lion studies may help astronauts sleep better in weightless space, and will provide a "model" for other mammals and man as scientists try to learn more about adapting animals to changing environments.

"We can't make a man into a sea lion," says Dr. Frank South, professor of veterinary physiology and investigator at the Dalton Research Center, but we might learn something about how the animal adjusts to water pressure and nitrogen build-up which causes 'bends'. There is some evidence that man can eventually adjust to working in deep waters, and we hope the sea lion will give us a clue as to how this is possible."

But not all research is aimed at curing disease or investigating human behavior. Mizzou has long been known for research on animals we use for food. Research is being done on cows, poultry and pigs—and even game fish and birds.

Even *Time Magazine* (September 24) took note when Mizzou began to feed cows newspaper. Ag College researchers, using ground-up newspapers to filter water containing algae, found that the newsprint effectively trapped the single-celled plants. The algae layer that builds up over a period of time is higher in crude protein than dried beef, soybean meal, dried yeast, or skim milk powder. Though the research is still in the experimental stage, the newspapers could provide a useful high-protein feed for livestock, with obvious ecological advantages.

At the School of Forestry, Fisheries and Wildlife, the primary thrust of the research is to improve game fish and birds and animals. Still other research tries to insure the preservation of disappearing wildlife, such as the prairie chicken, and to improve the existence of wild and domestic animals.

The School of Veterinary Medicine's new Equine Center will soon begin research on laminitis, a common hoof disease of horses.

From the tiniest mouse to the largest hog, from the ordinary guinea pig to the unique beagles and our midwestern sea lions, all the animals are helping increase man's knowledge about himself and his world. □