

PSYCHOLOGY

Mice Prefer Square Wheels to Round Ones

► FOR MANY YEARS pet fanciers have been providing rodents with round activity wheels for exercise. Now it turns out that they may like square wheels better.

Drs. J. L. Kavanau and D. H. Brant, zoologists at the University of California at Los Angeles, suggest that wild mice prefer square activity wheels because these require more split-second timing and coordination of movements.

Captive rodents spend a great deal of their time running activity wheels. It appears that, in addition to providing a strenuous form of exercise not otherwise available to confined animals, wheel-running is fun to the animals.

The manipulation and control of the movements of an activity wheel may be rewarding to them, quite independent of exercise, Dr. Kavanau says.

In the experiments, wild mice were given a choice of three different types of round wheels and a square wheel. Mice, being very conservative animals, usually will stick to whatever wheel they try first, virtually ignoring the others.

After a wheel was selected and used for a time by a mouse, it was locked, forcing him to choose another. Each time a choice was made and experience was gained with a wheel it was locked, and on down the line until a mouse had had experience with each wheel. Then the wheels were unlocked in reverse order to which they were locked.

Results indicated that when the mice had experience with all wheels, they generally preferred the square one. It appears that the challenge of the square wheel (it required jumping at the corners at rates up to nine times per second) was more appealing to the animals.

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MEDICINE

Cancer Deaths Reported Equal to Cancer Cures

► ALMOST AS MANY cancer patients in the United States have been cured as have died in the past five years.

More than 1.3 million former cancer patients now living in the United States are considered "cured" of cancer since they have had no evidence of the disease for five years.

Another 700,000 persons who have been treated within the past five years are expected to join the ranks of the cured, the American Cancer Society reported.

The Society's booklet, 1965 Cancer Facts and Figures, contains these announcements along with significant figures on the status of different kinds of cancer. Here are some of the statements:

Lung cancer is the leading cause of cancer death. An estimated 52,000 new cases are expected in 1965, with 47,000 deaths. Three fourths of these deaths could be avoided if people did not smoke cigarettes.

Next highest number of estimated deaths in 1965 will be 43,000 from colon and rec-

tum cancer, although 73,000 new cases are expected. Examination with an instrument called a proctoscope once a year and prompt treatment could save three out of four of these cases.

Breast cancer is expected to cause 26,000 deaths in 1965, and is the leading cause of death in women. Estimated new cases will be 62,000.

Cancer of the stomach is expected to account for 18,000 deaths next year, although recent studies have shown a considerable reduction in deaths, 34% among men and 37% among women.

Cancer of the pancreas will cause 16,300 deaths and cancer of the prostate gland an estimated 16,000.

Deaths from lymphomas, which arise in the lymph system and include Hodgkin's disease, are expected to reach 15,000, out of 20,000 cases.

Next year, 17,000 cases of leukemia are expected, with 14,000 deaths.

In 1965, of every 100 cancer deaths, 55 are expected to be males while 45 will be females.

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PUBLIC HEALTH

Packaged Baby Formulas Could Prove Dangerous

► THE COMMERCIAL PREPARATION of baby formulas in prepackaged "nursery units" could pose a potential danger to infants unless there are sanitary controls which are carefully observed.

Edwin L. Ruppert of the U.S. Public Health Service's division of environmental engineering and food protection, speaking before the American Public Health Association in New York City said that the use of baby food formulas packaged in nursery units is a significant new pattern in baby feeding, estimated to be used in providing nourishment to more than three-quarters of a million babies in hospitals this year alone.

While firms which process these formulas cite greater variety and formula choice as well as freedom from the trouble of formula preparation as advantages, Mr. Ruppert declared that mass production of such liquids, if controls were lacking or inadequate, could possibly result in widespread infection or poisoning episodes.

Mr. Ruppert pointed out that a number of communities had developed control measures but added that standardization of such controls by the issuance of a Federal recommended standard of operation is necessary and will be forthcoming after a study of current infant feeding services and systems is made by the Public Health Service.

The studies are now underway, he said, in cooperation with the American Academy of Pediatrics, the American Medical Association and other interested organizations including the baby formula manufacturing industry. A standard of operations would provide uniform guides for state and local health agencies just as do the Public Health Service recommended Milk Ordinance and Code, the Food Service Sanitation Manual and the Frozen Desserts Ordinance and Code.

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IN SCIEN

MEDICINE

Fear and Anger Appear The Same to the Heart

► THOUGH ANGER AND FEAR are two different emotions, the heart cannot tell the difference.

Doctors from University Hospital, Columbus, Ohio, told a meeting of the American Heart Association in Atlantic City how they hypnotized nine people repeatedly so that each experienced either intense anger or fear.

While the person was hypnotized, the doctors took a series of measurements to see how the heart and circulatory system performed.

Results showed that anger and fear produced virtually identical responses; the heart beat much faster; the breathing rate more than doubled; blood pressure rose in the arteries.

Generally, these and other mechanisms work together to improve the body's "defense" capacity when threatened.

However, in this study, when one of these defense mechanisms—an outpouring of adrenalin in response to strong emotion—was blocked, the heart turned to others.

The adrenalin response, which for 40 years has been thought to represent the means by which emotions cause the heart to deliver more blood to the body, was suppressed by a new drug.

With adrenalin blocked, the normal emotion-induced speed-up in the heart rate was reduced by 60%. But the heart still increased its output per minute by simply pumping out more blood during each beat.

Drs. Willard S. Harris, Clyde D. Schoenfeld, Peter H. Gwynne, Arnold M. Weissler and James V. Warren, all of Columbus, reported the study.

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MARINE BIOLOGY

Sea Animals Show Resistance to Disease

► FISH AND OTHER CREATURES of the sea seem to have fewer infections and fewer cancers than land animals.

In a study of how primitive animals manage to cope with infectious diseases, 200 fish are now under careful observation for the Variety Children's Research Foundation, a non-profit organization conducting research in children's diseases.

Fifty sharks and 150 other varieties of fish swim around in large tanks and are readily identified by colored nylon tags, harmlessly attached to the cartilage of their dorsal fins.

The continuing program is being conducted by Dr. Michael Sigel and Dr. L. William Clem, at the Lerner Marine Laboratory near Miami, Fla.

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CE FIELDS

TECHNOLOGY

Insulating System Creates Square Vacuum Bottles

➤ A GOAL that has eluded scientists for more than half a century, a square vacuum bottle, has now been reached because of a newly developed vacuum insulation system.

A major obstacle to "squaring the vacuum bottle," which would give it more storage space, was the need for a filler material that would prevent the walls of a bottle from collapsing under atmospheric pressure and would not transmit too much heat by conduction.

Flat panels of the new system, called P-Zero, have passed the atmospheric and thermal tests with great success, the General Electric Research Laboratory, Schenectady, N.Y., developer of the new system, reported.

The system consists of a thin metal envelope that encloses a specially compacted pad of glass fiber. It has potential applications in the trucking, railroad, chemical and food industries as well as in the manufacture and storage of liquid rocket fuels.

Fundamental studies on thermal insulation by Dr. Herbert M. Strong, Dr. Francis P. Bundy and Harold P. Bovenkerk produced this new system.

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TECHNOLOGY

Computer Shows How Shelley Aped Milton

➤ BECAUSE OF electronic computers readers can now get more accurate versions of literary classics.

By comparing different editions of a writer's work, literary data processing is catching changes and errors. The reader is thus offered a version closer to the author's intent.

The computer is also being used as a never-miss proofreader; its eyes do not grow tired, and its attention never wanders. It can rapidly compile indexes, and concordances which are alphabetical listings of the principal words in a work and cite the passages in which they occur.

Dr. Vinton Dearing, an English professor at the University of California at Los Angeles, is using a computer in his work on the 17th century English poet, dramatist and critic, John Dryden.

A computer has been used to show how the diction of the 17th century Puritan poet, John Milton, was apparently purposely imitated by the 19th century romantic poet, Percy Shelley, to refute Milton's philosophical contentions.

Development of a writer's unconscious thought and the growth of language by charting changes in the meaning of words also have been the subjects of computer study. Other computers have produced indexes and concordances of the Dead Sea

Scrolls, the works of St. Thomas Aquinas and other great writings.

Dr. Dearing says the computer is not only freeing scholars from a large amount of tedious, repetitious clerical work but is giving them more time for research and for the enjoyment of literature.

Dr. Dearing points out, however, that a computer deals only with quantity—not quality.

"It cannot decide whether a piece of writing is good literature, nor can it tell us, at the present time, about the personality of the author," he said.

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MEDICINE

Cervical Cancer Need Not Injure Baby

➤ IN RARE CASES of pregnancy accompanied by cancer of the cervix or neck of the womb, babies need not be sacrificed for early treatment of the mother unless the malignancy has invaded the womb, an Air Force physician reported.

Six babies were allowed to come to term when the cancers were "in situ," or confined to the site of origin on the outside of the womb, Dr. Calvin N. Ladner told SCIENCE SERVICE.

Caesarian operations were performed when the cancer had become invasive, however, which occurred in 11 cases. All patients were treated, of course, after the babies were delivered.

At Madigan General Hospital in Tacoma, where Dr. Ladner is on the staff, approximately one in 2,200 deliveries occurred when cancer was present, he said. He warned that individual cases require different treatment, and especially emphasized that no woman should allow herself to become pregnant if she knows she has cancer.

"We were able to follow eight of our patients for three years," Dr. Ladner said, "and only one mother had died."

Dr. Ladner made his report to the annual scientific meetings of the Armed Forces Chapter of the American College of Obstetricians and Gynecologists at Andrews Air Force Base, Washington, D.C.

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AGRICULTURE

New Kind of Onion Resists Storm Damage

➤ THE LOWLY ONION can now stand up to the mighty thunderstorms.

A new hybrid, dark golden onion called Sunburst has recently been bred to resist tipburn—a damaging burn on the plant tips caused by ozone accumulated during thunderstorms. Tipburn is a serious problem to many Midwest farmers.

This globe-type onion, developed by biologists at the University of Wisconsin, is bred from two other onions called W4A and W101B. The Sunburst has a dense upright top with leaves that do not break as the plant grows and scales that do not rub off when handled. During storage the onion will shrink slightly, and over the winter months it will not sprout roots.

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AGRICULTURE

Fruitful Results from 'Air Conditioning' Fruits

➤ BY "AIR CONDITIONING" fruits and vegetables with a fine spray of water, a scientist has produced healthy crops, even during a summer with above-average temperatures.

With tiny water nozzles, one-sixth of an inch in diameter, Dr. Robert Carolus of Michigan State University, East Lansing, sprayed tomatoes, lettuce, strawberries and other garden crops. By reducing the water loss from the leaves, a satisfactory water balance in plants was maintained.

Mist irrigation has several advantages over common soil irrigation, Dr. Carolus said. It cools the vegetables, reduces their transpiration and conserves their energy for producing higher yields.

Dr. Carolus found that the "air conditioning" reduced transpiration or water loss by more than 80% when the air temperature was 85 degrees Fahrenheit and humidity 35%.

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PUBLIC HEALTH

Asbestos Workers Live Longer But Get Cancer

➤ ASBESTOS WORKERS used to die young of tuberculosis or pneumonia brought about by poor factory conditions and lack of drugs to control these diseases. Now they live longer but get cancer.

Later effects of asbestosis, or lung disease caused by inhaling asbestos dust, included severe bronchial conditions and enlargement of the heart, Dr. J. C. Gilson, researcher of Glamorgan, Wales, told an international conference on biological effects of asbestos in New York City.

"Still more recently," said Dr. Gilson, "the workers who have developed only moderate degrees of asbestosis have survived long enough to develop the associated bronchial carcinoma."

In addition, and unexpectedly, the researcher reported, malignant tumors called mesotheliomas, arising from the linings of the chest and abdominal cavities, are now occurring in workers after a delay of 40 or more years.

Another speaker from the Pneumoconiosis Research Unit of Glamorgan was Dr. J. C. Wagner, who told the conference that it is not known exactly how asbestos causes disease, nor how asbestos fibers migrate in the body.

Injections of the major varieties of asbestos—chrysotile, crocidolite and amosite—have apparently caused mesotheliomas in the chest cavities of animals.

These pleural mesotheliomas have also been the result of injections of silica, which occurs naturally in asbestos as well as in sand and quartz.

To find out more about the effects of asbestos, Dr. Wagner said there is a need for a joint effort by the experimental biologist, mineralogist and chemist.

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