

BIOLOGY

Discuss Men and Mice

► NOT ALL scientific findings result in front-page news stories with grave implications for man's well-being in his constant battle for a comfortable survival.

This was demonstrated during a meeting of the nation's 3,000 leading biologists who gathered for the American Institute of Biological Sciences meeting at Stanford University. (See SNL, Sept. 7, p. 147.)

Dr. Julian H. Steward, University of Illinois anthropologist, for example, explained to his colleagues that man's year-round love life, the years of helplessness of his babies and his taste for meat are inherent human traits. These same traits have played a part in the development of all cultures.

The need to care for children through their years of comparative helplessness, for instance, is a cause of a division of labor that assigns the woman household chores and other tasks that do not take her far from home.

The native deer mouse, on the other hand, Drs. John A. King and Basil E. Eleftheriou of the Jackson Memorial Laboratory, Bar Harbor, Me., reported, behaves the way it does because it is a product of its past experiences and its inheritance. The deer mouse study showed that the associations

young deer mice strike up with other young deer mice enable them to make better social adjustments in nature than their brothers and sisters deprived of these get-togethers.

An asparagus fancier has produced a fancier asparagus. Dr. A. E. Thompson of the University of Illinois reported three types of spears that are minus the purple-colored anthocyanin pigment have been found.

Aquatic snakes are only partially aquatic, Dr. Kenneth E. Hutton of Tulane University has found. Studies with the water moccasin and the Florida water snake show that as far as physiology is concerned, there are no significant differences between the "land" and "water" snakes.

A free exchange of delegations between Asia and North America took place back before the fall of any "curtains"—15 to 20 million years ago. The interchange of many land mammals, including man, happened across the land bridge that connected the two continents, Dr. William H. Burt, curator of mammals at the University of Michigan said.

"Over one-half of the kinds of land mammals of western North America have close relatives on the Asiatic continent," Dr. Burt noted.

Minute gravitational sense organs guide a strange group of fish known as "head-standers" because they swim 50 degrees off the horizontal plane. This was discovered by a husband and wife team, Wolfgang and Helga Braemer of the University of Wisconsin.

The sense organs responsible for this up and down swimming position are thought to be tiny stones within the fish's semi-circular canal and are called utricle statoliths.

The discovery, the Braemers point out, is important because fish sense organs are very similar to man's sense organs and can be easily compared.

Monster From Radiation

► MONSTERS with more than one head, one body, or the normal number of arms and legs can result from radiation.

Such monsters have been created from normal baby grasshoppers in the Argonne National Laboratory, Lemont, Ill., scientists at the Palo Alto, Calif. meeting learned.

The grasshoppers, "with several heads or bodies or limbs" developed when a dose of radiation was applied to grasshopper embryos at the time of their cell differentiation or when the cells were changing to form the various organs of the baby insect.

This period of cell differentiation is the critical time for radiation-induced monster production, known scientifically as teratogenesis, Dr. T. N. Tahmisian and Betty Jean Wright of the laboratory reported.

It is a very short period in the embryo's development, but nevertheless, "the most susceptible to irradiation."

The studies showed that nothing happens if the embryos are irradiated at 250 roentgens before or after the critical time of cell differentiation. However, the same dosage during cell differentiation results in a large number of the insects developing into freak grasshoppers with "several heads or bodies or limbs."

The dosage was applied when the baby 'hoppers had reached an age of seven days, or one-third their total embryonic life.

The scientists said they had expected to find an intense rate of irradiation would be more effective than the same dose at a lower rate.

The study showed this to be the case. "We found," they reported, "that 250 roentgens at 200 roentgens per minute caused eight monsters out of every 10 embryos. But 250 roentgens at one roentgen per minute cause five monsters per 10 embryos."

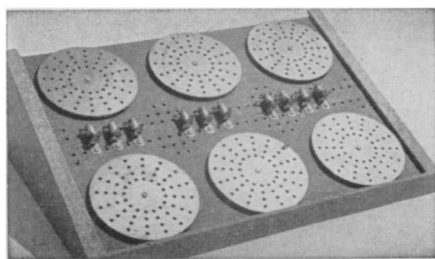
Cells undergoing differentiation can do so by molecule rearrangement. If such cells are subjected to irradiation, such as was applied to the embryonic grasshoppers, the energy absorbed interferes with the differentiation process at the molecular level and causes "abnormal development or monsters."

The dose rate dependence as shown in the study, the Argonne scientists said, implies that molecular rearrangement is easily upset.

The injury, they concluded, appears to be at the level of these intermolecular forces but not due to molecular rupture or chemical bond breakage.

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