

## PHYSIOLOGY

# Experiments Hint Existence Of Paternity Chemical

**Ability To Become Fathers Lost By Human Volunteers Living on Arginine-Lacking Diet; Is an Amino Acid**

**E**XISTENCE of a paternity chemical, without which fatherhood is impossible, is hinted by researches now under way at the Johns Hopkins Hospital and Medical School.

Arginine, a basic constituent of certain foods, is the substance suspected of being the paternity chemical. This chemical is one of the ten essential amino acids, which are the building blocks of protein found in meat, fish, poultry, eggs, cheese, milk and some vegetables.

Its possible role as a paternity chemical was revealed in studies with human volunteers. When these young men lived on a diet otherwise adequate but lacking arginine, the number of male reproductive cells, the spermatozoa, were greatly reduced and those that were produced showed scarcely any motion, indicating that the men on the arginine-lacking diet had lost the ability to become fathers. When arginine was restored to their diet, spermatozoa production returned to normal.

Arginine was discovered in 1895 and it has long been known that spermatozoa are four-fifths (80%) arginine. The present studies are the first, however, in which human need for this chemical and the symptoms of its lack have been shown. Hitherto human need for this and the other essential amino acids has been assumed from the fact that rats require them. Knowledge of the rat's need for amino acids came from research initiated by the late Professors Thomas B. Osborne and Lafayette B. Mendel, of Yale University, and recently completed by Prof. W. C. Rose, of the University of Illinois.

The studies on the role of the amino acids in humans are being made at Johns Hopkins by Dr. Anthony A. Albanese, Dr. Joseph E. Brumback, Jr., Dr. Marjorie Hayes, Dr. L. Emmett Holt, Jr., Dr. Charlotte Kadji, Dr. Landrum B. Shettles and Dr. Dorothy M. Wangerin.

Two other amino acids, tryptophane and lysine, are also required by humans, the Johns Hopkins scientists found.

Lysine may be a maternity chemical. The studies show that in women as well as in female rats the female reproductive cycle is upset by lack of lysine.

The experimental diets were made up of Crisco and other fats, sugar, starchy foods, and fruits and vegetables selected for their low protein content, such as tomatoes, mushrooms, carrots, asparagus, apples and oranges. Satisfactory meals, including such items as banana flour muffins (wheat flour which contains protein could not be used) were devised by Miss Anne Lyddane, dietitian of the Johns Hopkins Hospital.

In order to eliminate all the amino acids except the one being studied, a mixture of the other acids was given. This proved very unpalatable, so it was given in a vegetable juice cocktail which the men gulped down like a dose of bitter medicine.

During the diet experiments, the human volunteers kept a good appetite, slept well and lived essentially normal,

active lives. During hot weather they were allowed two beers a day or its equivalent in other alcoholic beverages. They found, however, that their tolerance for alcohol was lessened, and that one beer or none at all was all they could take.

Details of the studies thus far have been reported to the American Academy of Pediatrics and the Society for Experimental Biology and Medicine.

*Science News Letter, March 7, 1942*

## ZOOLOGY

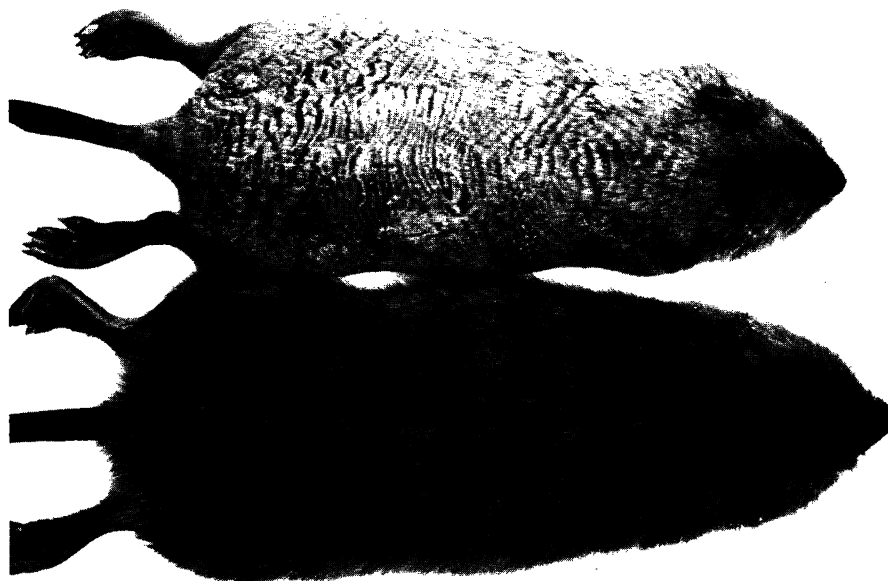
## Find Muskrats With Fur In "Permanent Waves"

**T**WO muskrats with their fur in "permanent waves," trapped on the Blackwater National Wildlife Refuge near Cambridge, Md., are the novelty reported by Dr. Herbert L. Dozier of the U. S. Fur Animal Field Station (*Journal of Mammalogy*, February).

The animals, a male and a female, lacked the long, coarse guard hairs that have to be plucked in preparing the higher-priced grade of muskrat pelts. The soft fur was rippled or wavy, with a beautiful silky sheen.

"That of the female," Dr. Dozier states, "was distinctly more waved and in a manner quite similar to the permanent wave that is usually obtained only in a beauty shop."

Trappers and fur buyers were very



NATURAL "PERMANENT" (ABOVE)