BIOCHEMISTRY

## Furan Chemical Makes Male Infertile—in Rats

➤ IF RATS were men or at least lived a man's life span, a chemical compound derived from peanuts, corncobs or oat hulls might sterilize them for about four years. Ten-month-old rats have had their sperm production stopped by such compounds, called nitrofurans, for as long as six weeks. Translated into terms of how long a man lives, this would be about four years in which a man so treated could not produce children.

Dr. Warren O. Nelson and Emil Steinberger of the State University of Iowa College of Medicine reported on this cessation of sperm production in rats to the American Physiological Society meeting in Chicago.

They said they gave the nitrofuran compounds to the rats either by mouth or by injection. The three compounds used are furacin, furadorxyl and furadantin which were effective in that order. The doses required to make the rats sterile caused no other detectable change in the animal and no evidence of permanent damage was found.

The scientists said nothing about any effect on man. They said that, in the presence of nitrofurans, the sperm-producing cells in rats are unable to secure the necessary energy for continued development and remained as immature cells until treatment was withdrawn.

Science News Letter, April 25, 1953

ELECTRONICS

## Machine Reproduces Itself by Using "Brain"

➤ NOW SCIENCE promises a mechanical "brain" or electronic computer that can reproduce itself, a behavior considered unique to living things.

Dr. Claude E. Shannon of Bell Telephone Laboratories told the Case Institute of Technology diamond jubilee convocation in Cleveland that an abstract mathematical model of such a machine that begets other similar machines has been developed. This machine which he termed "fascinating but somewhat sinister" is not yet in production.

Such a machine would collect parts such as it was built from, assemble them into a second machine of the same sort. The "baby" machine, which, however, would be full-grown at "birth," would itself start collecting parts to construct a third machine. And this could continue so long as the parts supply lasted.

Computers can be made to act very much as though they were thinking, Dr. Shannon explained. They can be set up to play various kinds of games, such as bridge and chess, applying general principles so effectively that they defeat the people who designed them.

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*LIFELIKE PELYCOSAUR—A fossil skeleton of the giant reptile that lived in Texas some 230,000,000 years ago has just been added to exhibits at the Chicago Natural History Museum. Pelycosaurs were ancestors of the mammal-like reptiles called therapsids, and both belong to groups that form links between mammals and reptiles.*

MEDICINE

# Blood Substance X

➤ A MYSTERIOUS substance X in the blood causes people to produce the white blood cells which fight disease when they are subject to physical or emotional stress.

Dr. Thomas F. Dougherty and Dr. Jules A. Frank of the University of Utah announced that they had discovered this substance X and that it counteracts the white blood cell killing action of the adrenals, the organs of stress. Too much hormone from the adrenals causes the production of these cells to go down, substance X brings production back up.

This substance X actually stimulates production of one of two kinds of white blood cells which they call the stress lymphocytes. The normal cells, or lymphocytes, are killed, destroyed, broken up by the action of the hormones.

Thus patients with many kinds of diseases depending on the production of white blood cells may have those diseases influenced by the balance between how much adrenal hormone is produced and how much substance X is produced.

The two scientists said they actually have seen this substance, which is a chemical that can be separated from the blood, but they do not know what it is yet. They think it may be an amine, similar to histamine.

Such diseases as rheumatoid arthritis, tuberculosis, allergies are affected by the amount of white blood cells produced. In some cases it is a good thing to have greater production of white blood cells, in other cases, too many white blood cells may be produced for the good of the patient.

Dr. Dougherty believes that the white blood cells of leukemia, incurable cancer of the blood, may be even more resistant to the killing effects of adrenal hormones than his stress cells. Thus the stress cells may be one key to the overproduction of leukemia cells.

Measurement of the balance between adrenal hormone production and substance X may be a tool in deciding how good a chance a patient has to survive a disease. Drs. Dougherty and Frank examined blood specimens of 30 patients sent by mail from a Denver tuberculosis sanitarium. They were able to tell from the white blood cell counts and blood reactions to hormones whether the patients miles away in Denver were very ill, cured or responding to treatment. A check with Denver showed they were right in all cases.

Dr. Dougherty has a hunch that substance X is a product or a result of the destruction of normal white blood cells, but his studies have not gone far enough to tell whether that hunch is correct.

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