

## PHYSIOLOGY

# Artificial Heart Used

**A small, electrically driven pump encased in plastic, designed to substitute for the heart permanently, has been successfully tested in laboratory animals.**

► A THREE-POUND, electrically driven pump designed to be placed permanently in the body to substitute for the heart was described to the American Society for Artificial Internal Organs meeting in Philadelphia.

Still in its earliest stages of development, the plastic-encased machine represents initial attempts to build a small implantable blood pump that can substitute for cardiac function, Dr. B. J. Kusserow of Yale University told the scientific meeting.

The pump and its tiny alternating current motor fit into a watertight and airtight polyethylene plastic case that measures seven inches in length and two and three-fourths inches in diameter. The internal substitute heart has only a single wire connection leading outside the body. This is a polyethylene tube that is plugged into an ordinary wall outlet to supply electricity to power the motor.

The electro-mechanical pump has been used on experimental animals to substitute for only the right side of the heart to date. When implanted in the animal, it is placed in the abdomen, which Dr. Kusserow described as a "wonderful radiator."

One reason for putting this device into the abdomen is that it does not encroach on the respiratory function, Dr. Kusserow explained.

To date, the longest continuous pumping for the substitute heart in which an animal has been on "his own" has been ten and one-half hours.

The pumping rate of the small machine can be varied from 40 to 180 strokes per minute "simply by changing the voltage," the young medical researcher reported. It delivers from 600 to 650 cubic centimeters of blood per minute, only a small fraction below that of the experimental animal's normal heart pumping action.

The device has a small cup-like lucite pump connected to a diaphragm made of rubber and stainless steel. The pumping action, initiated by the motor, causes the pump to move back and forth. This action oscillates the rubber diaphragm against the rigid steel diaphragm.

Dr. Kusserow cautioned that much more work will have to be done before the pump becomes practical. One of the chief problems encountered is the breakdown of blood elements. Changes were noted, for example, in the plasma and the hemoglobin of the animal after the small pump was implanted in the abdomen.

Science News Letter, April 26, 1958

## MEDICINE

## Anti-Leukemia Drug Found Effective in Lab

► A DRUG that greatly increases the life span of mice with advanced leukemia has been discovered by National Cancer Institute scientists.

The new synthetic compound has produced a 75% increase in survival time beyond that achieved with methotrexate, a

drug widely used to treat human leukemia, when tested against mouse leukemia.

The drug has not yet been tested against leukemia in humans. It was found during a program of routinely testing the anti-leukemic action of a large number of chemicals by scientists at the National Cancer Institute, National Institutes of Health, Bethesda, Md. They reported its discovery to the American Chemical Society meeting in San Francisco.

The drug was identified as 3',5'-dichloro-amethopterin, a derivative of the drug now in use to fight human leukemia, by Dr. Abraham Goldin, head of the biochemical section of the laboratory of chemical pharmacology.

Mice that normally would live only two or three days after leukemia has spread throughout their bodies can live for more than 50 days when treated with the new drug.

Survival time increases with increasing dosage until a level is reached at which the drug is too toxic, the scientists found.

Co-authors of the report were John M. Venditti, Stewart R. Humphreys, Drs. Louis Shuster and Robert A. Darrow, laboratory of chemical pharmacology, and Nathan Mantel of the biometry branch.

The drug was synthesized by chemists of the American Cyanamid Company, Pearl River, N. Y. Drs. Robert B. Angier and William V. Curran of American Cyanamid reported on the chemistry of the drug at the same meeting.

Dr. Goldin said results of the NIH experiments emphasize the need to study systematically compounds related to chemicals with known medical value. Other compounds related to methotrexate are undergoing similar study.

Science News Letter, April 26, 1958

## PSYCHOLOGY

## If You Watch too Long You May Miss "Moon"

► THE SKY WATCHER who keeps his eye glued to a telescope looking for one of the earth satellites for an hour may not see it at all when it finally streaks over.

Observing efficiency starts to drop off after only five minutes of continuous watching, a research team of the U. S. Naval Research Laboratory reported to the Eastern Psychological Association meeting in Philadelphia.

After as much as an hour of watching, the "moon," in order to be picked up, would have to be two and a half times as bright as a satellite that could be observed when the sky watchers started their vigil.

The team of scientists includes Drs. W. D. Garvey, Irene S. Gullledge and Jean B. Henson. The sky watchers were eight Navy enlisted men. Conditions of actual moon observing were simulated in the laboratory for this test. The "satellite" was made to appear after six different intervals of observation: 5, 15, 30, 60, 90 and 120 minutes.

Science News Letter, April 26, 1958



**JET INTERCEPTOR**—The U. S. Air Force's fastest and highest-flying all-weather jet interceptor, the delta-winged F-106B, retracts its landing gear soon after take-off from Edwards Air Force Base, Calif., on its maiden test flight. John M. Fitzpatrick, Convair Division, General Dynamics Corporation, piloted the jet during its 40-minute, supersonic flight.