

## SURGERY

## Cut-Off Liver Kept Alive

► POSSIBLE HOPE for patients with advanced and inoperable cancer in the liver is foreseen as a result of animal experiments.

Three surgeons have completely isolated the liver from dogs, and with heart-lung machines have kept the animals and their livers alive for as long as eight hours. They were able to replant the livers in place, rejoin the numerous blood vessel connections and restore the animals to health.

The American Cancer Society, which helped support the research, reported that Drs. William V. McDermott Jr., Paul J. Kestens and W. Gerald Austen of the Harvard Medical School and Massachusetts General Hospital, Boston, had successfully cut off and perfused the animal livers.

The purpose of the experiments was to

determine whether it might be feasible to perform a much simpler operation—perfusion of the liver without removing it—on human beings.

Without physically removing the liver, the organ might be cut off from the rest of the body and blood loaded with anti-cancer drugs could be pumped through the isolated liver without exposing the rest of the system to the toxic effects of the medication, the Society said.

The operation requires ultramodern surgical facilities and highly specialized surgical skills. The feasibility of ultimate application to cancer of the liver in man will depend on continued work in medical centers.

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## MEDICINE

## Skin Grafts and Cancer

► HUMAN SKIN and baby pig skin have been successfully grafted on volunteer cancer patients.

Success of the grafts may be associated with an immunological defect similar to an immunological defect assumed to be responsible for cancer growth, researchers at the Sloan-Kettering Institute for Cancer Research in New York reported. This is because tissue grafts from other human beings or from other species will usually not grow in healthy individuals.

"The search for immunological responses to cancer," Dr. Frank L. Horsfall Jr., president and director of the Institute, said in a progress report, "requires that one assume that cancer is in some sense a tissue foreign to its host."

The grafting studies are very preliminary but suggest that a new era of lifesaving surgery might possibly result if the immunological barriers could be defined and lowered to permit the transplantation of whole organs.

In some instances, an immunological

response against cancer may exist, the Institute reported.

Pathologists of the Memorial Sloan-Kettering Cancer Center reported a study of women with breast cancer, some of whom died within three years after surgery, and some of whom were cured.

They said the only difference found in a large proportion of the cured group was a marked inflammatory response with white cells forming a border around the edges of the cancer. This response appeared identical to that seen previously in a study of healthy individuals who rejected implants of cancer cells.

Other investigations reported underway include studies of ways in which the diseased bone marrow of leukemic children can be replaced with healthy bone marrow. Exploration is being made of various chemicals, such as nitrogen mustard and 6-mercaptopurine, that may both destroy the leukemic cells and depress the immunologic responses to an extent making grafts of healthy marrow possible.

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## AEROMEDICINE

## Medicine's Role in Space

► AIR FORCE aerospace medical research is looking ahead ten years to having man in space part of the military defense system, Gen. Oliver K. Niess, Surgeon General of the Air Force, has reported.

But the immediate responsibility is "to support in every way we can" Project Mercury, the man-in-space program of the National Aeronautics and Space Administration, he emphasized.

The Air Force medical service commanded by Gen. Niess has played a major role in the national space effort of the civilian agency. Its experts participated in

the selection of the Mercury astronauts, their testing, conditioning, training, and have participated in the development of the recovery program so vital to man's first launch into space. Its veterinarians are responsible for the training and preparation for the Project Mercury animal launches.

Future Mercury shots still have top priority in the Air Force space medicine program, as will any national space effort that needs our support, Gen. Niess said.

In order to be able to move more swiftly in its vital space research, the Surgeon General announced that he has coordinated all

medical research under his direct command. "This will avoid duplication and subsequent waste," he explained.

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## ROCKETS AND MISSILES

## Solid-Fuel Blue Scout Scores 100% in Space

► THE SOLID-FUEL Blue Scout, the Air Force "economy rocket," scored 100% in its space test, the Air Force Research and Development Command reported in Washington.

Primary objective was to test its propulsion and guidance systems for carrying a 172-pound scientific payload to an altitude of 1,500 nautical miles. No recovery of payload was planned, information was telemetered as scheduled.

The Blue Scout surpassed its primary goal by zooming to 1,580 nautical miles in the planned path, which passed through the lower edges of the lower Van Allen belt in order to obtain detailed radiation measurements. Proton, electron, neutron and gamma fluxes and energies were measured as well as radiation effects from energy passing through simulated human tissue.

The telemetered data on radiation will be reduced and evaluated within two or three weeks, SCIENCE SERVICE was told. Radiation data of this kind help to determine the hazards to which man may be exposed even in sub-orbital flight.

Maximum velocity of the Blue Scout was more than 20,000 feet per second or about four miles per second.

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## ROCKETS AND MISSILES

## Many Failures in Space Caused by Human Error

► FAILURES in missile weapons and space systems are from 20% to 53% due to human factors, a study conducted at Stanford Research Institute on seven missile systems showed.

The study also showed that 23% of all unscheduled missile holds were human-initiated.

One disastrous launch or flight failure was human-initiated, Joel Cooper, Lynn Rigby and William Spickard of the human engineering branch of Northrop Corporation, Hawthorne, Calif., reported to the American Rocket Society meeting in Los Angeles.

Information on human-initiated failures in a missile or space system is not now adequate enough for the human factors specialist.

This is because reporting systems tend to show malfunctioning of equipment, not men, the Northrop human factors experts found. Persons involved in the failures are reluctant to give information concerning either themselves or their co-workers.

Their conclusions were upheld by a comparison of written and verbal reports obtained from test personnel.

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