

2/19/66) is the subject of research under grants from the National Cancer Institute, Bethesda, Md., to eight different groups, and several independent institutions also are studying it.

**This is the way** it has worked in animals, including dogs. Some tumors in leukemia and lymph glands require an amino acid called L-asparagine for their growth. They cannot produce it but obtain it from the body fluids of normal cells. When the enzyme L-asparaginase is injected, the amino acid is eliminated from the body fluids and the cancer cells die.

The pressing question, scientists are reasoning, is whether lymphomas or any other tumors of man are susceptible to L-asparaginase.

Dr. Lloyd J. Old and his colleagues at Sloan-Kettering Institute for Cancer Research in New York have devised tests to find out exactly which individual tumors need the amino acid so they will know what patients could be helped by the treatment. They have treated three patients so far but it is too soon to make a report on the results. Their work with dogs, however, is extremely encouraging.

There has been one report of successful treatment of a nine-year-old boy with advanced leukemia in Dallas, Texas, at the J. K. and Susie Wadley Research Institute. But many longer remissions have been reported from other drugs.

With other treatment up to three and a half years' remission of leukemia was possible in one case, and two years' remission is now fairly common.

**What is important** with L-asparaginase is that it is the first example of cancer therapy based on a "distinct aberration of certain malignant cells," says Dr. Old.

Although the enzyme is scarce and expensive at present, it is being made from bacteria for experimental use, and within a year or so it is expected that scientists will find out whether it is a real advance in the attack on human cancer.

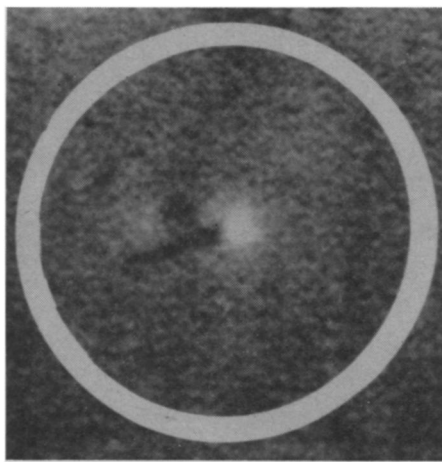
"Even if it is not," says THE LANCET of London, "these findings add new impetus to the search for biochemical peculiarities of malignant cells that may serve as leads to specific treatment."

## Moon Sampler

Six United States spacecraft have profitably flown around, crashed into, or landed on the moon; now one is about to "handle" the lunar rock and dust, chewing a hole in the lunar surface to discover whether the moon 18 inches down is the same stuff as the moon's face.

The soft-landing Surveyor 3, sched-

uled to leave earth April 17 and to reach the moon three days later, is assigned this task. Nestled low on its side is a two-inch wide scoop mounted on an extendable arm with a reach of 64 inches. Scientists at the University of California's Jet Propulsion Laboratory will try, while watching progress through a television camera on the spacecraft, to guide the digger through a series of



NASA

Glint and shadow of first Surveyor.

maneuvers, including scraping holes, lifting out samples and dropping the samples to see if they shatter.

**The scoop weighs** slightly less than six pounds on earth; it will weigh about a pound on the moon. The scientists may try using the scoop as a hammer, dropping it on rocks to learn their breaking strength.

A similar device will be part of Surveyor 4. The final three flights in the seven-mission series are to carry robot chemical laboratories to analyze lunar material and radio the results to earth. One likely experiment will bombard samples with alpha particles and evaluate the emissions given off in response.

Originally there were to have been 10 Surveyor flights, but the National Aeronautics and Space Administration knocked three off after the successes of Rangers 7, 8 and 9; Lunar Orbiters 1 and 2; and Surveyor 1.

**Surveyor 3** is being aimed at about the same latitude as Surveyor 1 (glimpsed by Orbiter 3 in the photograph above), just a few degrees below the moon's equator, and about 20 degrees or 375 miles farther east, but still in the Sea of Storms. Early manned landings will be restricted to a belt extending about five degrees north and south of the equator and 45 degrees east and west longitude, but NASA says that the final Surveyor shots may be allowed outside that region to do some general exploring if the early ones prove very successful.

## LSD for Sociopaths

After several years of controversy, reports that LSD helps cure alcoholics are beginning to achieve consistency. Two studies last week reported almost identical results. And the results were promising.

One came from the Veterans Administration hospital in Lexington, Ky. There, Drs. Murray F. Ables and Erling W. Eng treated 122 alcoholics with a single LSD session, plus before-and-after group therapy. A year later, the patients had fewer arrests, fewer cases of delirium tremens, more days of abstinence and gainful employment.

At Maryland's Spring Grove Hospital, another LSD study with 144 alcoholics reported similar success. Strangely enough, both studies reported 67 per cent of the patients had improved.

**But a third, smaller** and somewhat tighter research effort at the Psychopathic Hospital, Iowa City, suggests alcoholism may be only one of several conduct disorders that are susceptible to LSD therapy. It also indicates that the dramatic results of LSD tend to wear off after six months.

The Iowa patients were an unusual group. Ten of a total of 20 had been referred to the hospital by the courts for such things as homosexuality, exhibitionism, drug abuse, alcoholism and even embezzlement.

LSD was primarily effective with those patients classified as having a pathological personality, according to Dr. Charles Shagass of the Temple University Medical School in Philadelphia, who with Drs. Robert M. Bittle and Delmer C. Eggert, conducted the study.

Pathological meant, among other things, impulsive behavior, destructiveness, sexual perversion, repeated arrests, poor marital and work histories, drug abuse and lack of guilt feelings. Seven of nine such patients responded strongly to LSD, even to the extent of character reformation. In fact, lack of guilt feelings and a poor marriage were most indicative of the patient who profited from LSD.

**On the other hand,** only one of eleven neurotic or depressed patients reacted with meaningful insights.

It appears, says Dr. Shagass, that LSD is useful therapy for patients with specific behavior problems. His observations appear to bear out European studies.

"It follows that problems such as homosexuality, or consuming too much alcohol would be more amenable to change than a problem which involves multiple activities and which can be described only in a general way"—the neuroses like depression, anxiety and passive resentment.