

## MEDICINE

# New Fronts in Cancer Fight

Hope now is that cancer can be stopped by a vaccine. Effective chemical remedies also are sought and may come ahead of vaccine.

By JANE STAFFORD

► NEW FRONTS are opening in the fight against cancer, the nation's second greatest and perhaps most feared disease killer.

Medical scientists now wonder if they can stop cancer with a vaccine as polio seems to be on the way to control. True, the two diseases are vastly different. Polio is seldom a killer, it is caused by a virus that scientists could grow outside the body, study and make into a vaccine.

The exact cause of cancer in man, or even whether there is a single cause, is not known. Cancer does not spread from person to person as does polio.

However, now for the first time, a true cancer-producing virus is available for study. It causes leukemia in adult animals, regularly and quickly. It is filterable, its size is known, and it can be grown in tissue culture—all steps that had to be conquered before a vaccine which would combat the polio virus could be developed. Yet some people, even without benefit of vaccine, are immune to polio. And some people apparently have a resistance or immunity to cancer, although the mechanism seems to be dissimilar.

## Prison Volunteers Given Cancer

Why and how are questions that may soon be answered. From the answers scientists hope for a way to give cancer immunity to about everyone.

Out in Ohio, in studies under the direction of Dr. Chester M. Southam and Dr. Alice E. Moore of Sloan-Kettering Institute for Cancer Research, New York, and Dr. Charles A. Doan of Ohio State University Medical School, 14 men are giving their bodies to help find answers to these questions.

They are the prisoners at the State Penitentiary in Columbus who volunteered to let scientists inject living human cancer cells under the skin of both forearms.

Some of these men were inspired by the memory of dear ones who were cancer victims. Others saw a way to make up to their own consciences for having been, as they put it, "such plain stinkers" all their lives.

None expect or will get any benefit except the knowledge that they have helped in a great humanitarian fight.

Before these 14 men were injected with living human cancer cells, however, came much work and study. An important first step was finding a way to grow human cancer cells outside of the body, just as it was necessary to grow the strains of polio virus

outside the body before a vaccine could be made against that disease.

Dr. George Gey of Johns Hopkins University, Baltimore, was one of the first to accomplish perpetual cultivation for one type of cancer.

The polio vaccine and other vaccines stimulate the body's own defensive forces, through substances called antibodies. Hard and long as the struggle was to develop a safe, effective polio vaccine, development of a vaccine against cancer will certainly be even harder and take longer to accomplish if at all possible.

For one thing, although scientists see signs that man has some resistance to spontaneous cancer, they very much doubt that it is due to the kind of antibodies that are produced by vaccination.

The body, however, has other ways of developing immunity or resistance to disease. One of these consists of certain white blood cells called lymphocytes. These cells are able to fight any invading cells, cancer, viruses or bacteria.

Under the microscope, lymphocytes can be seen mobilizing around the cancer to form a barrier in an effort to restrain the cancer cells. In the case of animals, lympho-

cytes that have succeeded in stopping a transplanted cancer can be injected into another animal and make it immune to transplanted cancer cells.

From animals comes another clue to resistance against cancer. Transplanted cancers in animals sometimes disappear spontaneously. It may be that these transplanted cells are different enough from the animal's own cells so that its body calls up all defensive forces and succeeds in fighting off the invader.

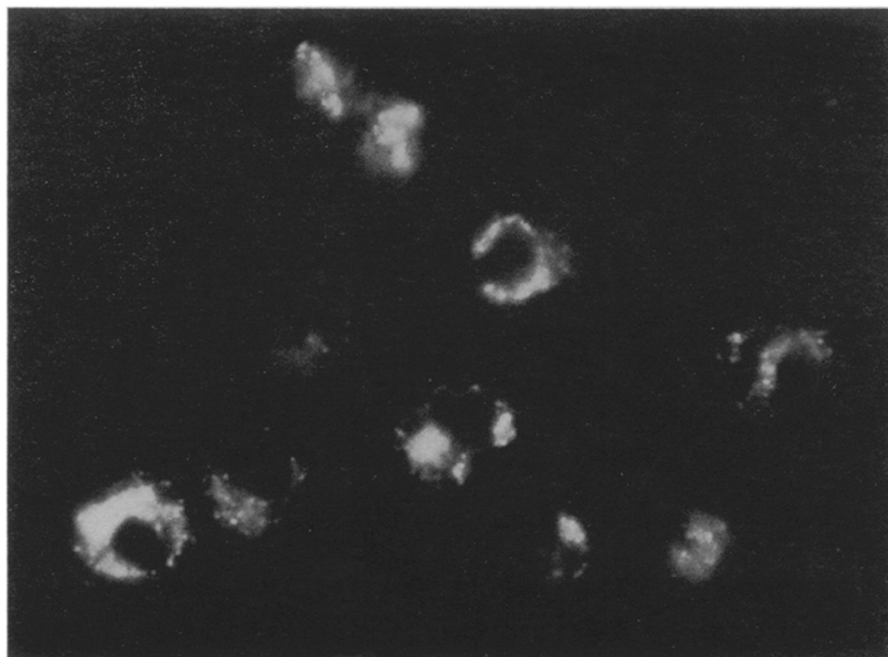
Cancers that arise on their own in the body may at first be so much like other body cells that they are not recognized as an enemy until too late.

## Chemical Features May Differ

The differences may lie in some chemical features of cancer cells and normal cells. Human cancers have one fatty chemical that can cause an immune reaction when injected into animals of other species. Human and animal cancers also contain some protein chemicals that can produce the immune reaction.

These protein and fatty chemicals are either not present in normal tissue or present in very much smaller amounts than in the cancer tissue.

The adrenal glands, source of anti-arthritis cortisone and other important steroid hormones, can apparently check the growth



**CANCER PICTURED**—This micrograph shows the localization of gamma globulins stained with fluorescent dye in plasma cells in a human cancer of the cervix. Studies suggest the possible existence of antibodies, which belong to the gamma globulin fraction of blood, against cancer cells.

of three kinds of cancer. Perhaps these important little glands hold the secret of the body's defense against cancer, a defense that may normally be weak but perhaps could be strengthened if its mechanism were learned.

Findings such as these from studies at the Sloan-Kettering Institute give hope that some day man may be able to protect himself against cancer. These and other studies elsewhere, moreover, are likely to help the fight against cancer in other ways.

For example, the fatty substance in human cancer that can cause an immune reaction in other animals might show the exact substance in the cancer cell against which a chemical attack could be launched.

It might also give a diagnostic test for picking up cancer in early, curable stages.

A good test for early silent cancers hidden deep in the body is urgently needed in the fight against this killer. When cancer is detected early enough, it can be cut out by the surgeon's knife or destroyed by powerful radiation from X-rays, radium and radioactive substances such as used in the cobalt bomb.

The battle against cancer might be won if scientists could find the answer to one of two questions:

What do cancer cells have that other cells cannot cope with?

What do cancer cells lack that other cells have?

To find answers to these questions, scientists have been probing the very nucleus of the cancer cell, trying to find a vulnerable point against which to launch warfare with exactly the right chemical. Some progress has been made on this chemical front.

Many chemicals have been created and more are coming from the laboratories all the time. Some have proved able to stop the cancer growth, at least temporarily. This gives hope that one day there may be a chemical that can starve or poison the cancer cell without harming normal cells.

Right now, some patients with far advanced cancers have been given added weeks or months of comfortable life, thanks to these chemicals. Doctors call these new chemicals "palliative," meaning they give relief but do not cure.

Yet for the patient and his relatives, each

month of palliation means much, including the chance of living until a real cure is found.

Meanwhile, in Ohio, those 14 men showed that a well person has some kind of immunity or natural defense against cancer. In all 14, there was a vigorous local reaction to the cancer cells. If the implanted cancer was not promptly cut out, as it was in some, it was completely sloughed off in "a vigorous rejection reaction."

In volunteer patients with far-advanced cancers, on the other hand, implanted cancers took and grew at the site of implantation until removed some weeks later.

Science News Letter, October 20, 1956

#### AERONAUTICS

### Auxiliary Power Stops Noise and Flame of Jets

► THE NOISE, flame and heat of jet engines can be eliminated on the loading aprons if future jet airliners are equipped with wheel mover devices attached to their main landing gear.


The Air Transport Association was shown a model of such a device by Consolidated Diesel Electric Corporation, Stamford, Conn. The main jet engines would be cut off upon landing and the jet would taxi in under power of the auxiliary unit.

Science News Letter, October 20, 1956

#### CORRECTION

Due to an oversight, our advertisement in Science News Letter, issue of Sept. 22, 1956, incorrectly listed our Telescope Kit at \$2.50 instead of the correct \$20.50 price. We regret and apologize for any inconvenience caused to readers of Science News Letter.

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