

MEDICINE

TB as Cancer Treatment?

Artificially induced bacterial infections such as tuberculosis seem promising as treatment for cancer. But no definite conclusions can yet be made.

TUBERCULOSIS could possibly be used as a "treatment" for cancer. No one is making definite statements, but Dr. Louis Pelter of Swedish Hospital in Brooklyn, N. Y., believes the possibilities of using artificially induced bacterial infections such as tuberculosis should be studied.

The idea of using one disease to fight another is not new. The fever of malaria has been used to "burn up" syphilis parasites.

In 1891, Dr. W. B. Coley tried to produce erysipelas, an infection caused by *Streptococcus pyogenes*, in ten patients with inoperable cancer. But the procedure was difficult and dangerous so he began to experiment with mixed bacterial toxins.

Patients are still alive who have recovered from inoperable sarcomas after having been treated with a toxin mixture by Dr. Coley, Dr. Pelter asserts in the Journal of the American Geriatrics Society (July).

In 1916, Dr. W. M. Dabney gave tuberculin to seven cancer patients. One showed "remarkable" improvement, which continued after three months of tuberculin

therapy, and another showed "unexpected improvement."

"Unfortunately," Dr. Pelter states, "no further follow-up was undertaken, so the outcome of this . . . therapy is unknown."

Another report in the Journal states that more new cases of pulmonary tuberculosis are now being found in persons past 50 than in any other age group.

Dr. Harry B. Greenberg, instructor in medicine at Tulane University, New Orleans, La., says active tuberculosis in the aged often is obscured by other old-age symptoms, such as chronic bronchitis or cardiovascular disease. Often it is discovered only when a younger member of the family gets the disease, and a search is made for the source.

Resistance to TB is decreased in old age; therefore, the death rate is higher. Because the disease runs a milder, less explosive course in the elderly, it may be overlooked as the cause of death, which may be attributed instead to a degenerative disease.

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AEROMEDICINE

Legless Space Travelers

LEGLess YOUNG MEN otherwise in good physical condition can be trained for space flight and, theoretically, may be even better qualified for pioneer space missions because of their disability. However, a space flight training program for amputees is not, at this time, either probable or economically practical.

The possibility of employing a qualified double amputee for pioneer space efforts was suggested to SCIENCE SERVICE by Col. John Paul Stapp, chief of Aeromedical Laboratory, Wright Air Development Division, Wright-Patterson Air Force Base, Dayton, Ohio.

"As far as using an amputee is concerned," Col. Stapp said, "symbolically this emphasizes the fact that man does not use legs in space and will not need them under conditions of zero gravity for locomotion. If a space pilot does not have to have legs to accomplish his mission, using a qualified amputee would save on both food and oxygen consumption as well as weight and space, all major considerations in terms of any kind of extended space travel."

Manned flights as conceived in Project Mercury under the National Aeronautics and Space Administration allow the astronaut to use his hands to work instrumentation. His legs are not used because of both lack of space and lack of need for them.

In extended flights, man will be traveling for long periods under conditions of

zero gravity. There are medical indications that leg muscles may become weak from not being used. Under weightless conditions, it is the upper part of the body which is necessary for movement and stability.

Col. Stapp observed that amputees are constantly in a stressful condition and daily living presents them with the challenge of both physical and psychological adjustment on a continuing basis.

"This may make them better able to adjust to the stresses and strains of a space venture than able-bodied men," he said.

A double amputee, an Australian veteran of World War II, who obviously was aware of the limitations put upon a legged man in space, has already volunteered to Col. Stapp for astronaut training. However, he had no background of aviation or medicine.

"His only qualification was being a double amputee," said Col. Stapp, "and, therefore, we had to send him our regrets along with our compliments for his courage in volunteering."

It takes from a year to 18 months to turn a qualified jet pilot into an astronaut with the medical background to understand the conditions anticipated by space flight medical authorities.

Col. Stapp has acknowledged that amputees with flying experience, even lacking

other necessary qualifications, could be suitably trained for space flight. He emphasized that this would mean a new and specially designed program that would require a great additional investment of time and money, "which we cannot afford, at this time, to make," even though such astronauts might prove superior.

Col. Stapp, a pioneer in space medicine, is known as "the fastest man on earth" for his rocket sled rides at 632 miles per hour. He was a volunteer on 26 tests using the rocket sled. He undertook the rides to test man's ability to withstand stresses of deceleration at high speed. His ride at 632 miles per hour culminated in an exposure of more than 41 Gs.

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TECHNOLOGY

One-Armed Robot Lends a Hand

A ONE-ARMED ROBOT is assisting scientists at the Esso Research and Engineering Co. laboratories in Linden, N. J. Created by Koelsch Electronic Development Co., Boise, Idaho, the electric-powered robot can manipulate delicate materials used in sensitive chemical operations at the direction of a scientist many feet away. The robot is powerful enough to hold 45 pounds at the length of its single arm.

In Esso's program to develop super rocket fuels for the Government, scientists have had to compound chemicals by remote control, outside the concrete walls of test cells. The robot can work within the cells.

The robot consists of a manipulator arm mounted on a mobile platform. The arm can be raised or lowered the length of its steel body, and the entire robot assembly maneuvers in any direction.

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ROBOT ASSISTANT—This one-armed robot, designed by Koelsch Electronic Development Company, Boise, Idaho, assists in research.