MEDICINE

Virus Attacks TB Germ

➤ AN "ANTI-GERM" germ some day may be the undoing of the tough, infectious tuberculosis organism.

It is a virus that attacks the TB germ outside the body, but cannot kill it within the body.

Dr. Margret I. Sellers, Dr. Seymour Froman and Zane Price of the University of California at Los Angeles Medical School are using bacterial viruses, or phages, as research tools rather than as "germ killers" in the study of the stealthy tuberculosis germ, which has the ability to infect its host and remain undetected longer than other germs.

Dr. Sellers recently discussed some of her findings in the *Journal of the California Tuberculosis and Health Association.*

To infect a germ, the phage must attach itself to the germ cell wall by its tail, she points out. Then by means of a syringe-like action the virus squirts its nucleic acid core into the bacterium. Inside, it takes over the bacterium's reproductive apparatus and reproduces itself so prolifically that the host bursts.

Although phage can attack and destroy TB germs outside the body in this manner, inside the body blood serum and other body fluids serve as a shield that protects the germs from the virus.

Dr. Sellers has found the presence of calcium ions is necessary before the phage can attach itself to the germ wall. The calcium apparently neutralizes a repellent effect on the germ surface.

She has also found that shortly after infection by the phage the TB germ is susceptible to rupture by enzymes and sonic vibrations, which previously did not affect it.

The UCLA medical scientist emphasized the research is just scratching the surface but that the new technique should be instrumental in helping to find ways to control tuberculosis which is a major problem still in many parts of the world.

Studies are being carried out in the Nina Anderton Laboratory for Electron Microscopy.

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TECHNOLOGY

Fibers Conduct Light

➤ GLASS AND plastic fibers that conduct light may replace photographic lenses and improve some medical instruments, developments in the new science of "fiber optics" at the Armour Research Foundation of Illinois Institute of Technology promise.

A Foundation scientist, Dr. Narinder S. Kapany, said present instruments for viewing inside stomachs are based on a periscope arrangement of lenses and are limited in their fields of view because they are not flexible.

Dr. Kapany said the flexibility of glass or plastic "ropes" allows them to be "navigated along curved channels" within the human body to eliminate "blind regions" and simplify examinations.

The need to insert a light bulb or light-carrying mirrored tube would be eliminated by using coarse fibers to conduct light from an outside source to illuminate the stomach. Fine fibers then would transmit a view of the stomach interior to outside the body for study by physicians. The same system also could be used for medical color photography.

The pick-up and transmission of images by plastic or glass fibers also may be used in photographing TV screens. Conventional photography suffers from large losses of light. This problem would be overcome by fiber optics. For the same reasons, he said, general color photography may be aided by fiber optics. At present, poorly lighted objects are not good color photography subjects.

One intriguing possible field of application for fiber optics mentioned by Dr. Kapany is in "cryphotography," the coding and decoding of pictures, maps and written matter by photography.

The fibers in a rope could be misaligned or improperly arranged, then used to photograph a map, Dr. Kapany said. The resulting photograph would be unintelligible to any person who might intercept it. However, if the map should reach its destination safely, it would be photographed again, through an identically misaligned fiber rope, and the final print would display the map correctly.

Science News Letter, April 12, 1958

ENGINEERING

Radar Antennas Detect Missiles 3,000 Miles

➤ RADAR ANTENNAS that will detect enemy missiles up to 3,000 miles away can be made smaller and more efficient, using a new technique reported to the Institute of Radio Engineers meeting in New York.

Antennas for the 3,000-mile range would normally be large and unwieldy, and difficult to sweep back and forth. J. M. Flaherty and E. Kadah of Westinghouse Electric Corporation have solved the problem by having the beam moved back and forth electrically while the antenna is held in a fixed position.

This feature becomes particularly important in the extremely gusty conditions of the far northern early warning radar defense lines.

A new method of conserving power and fuel in such defense lines was described by L. P. Yeh, also of Westinghouse. He said an automatic control system has been developed that will constantly tune in on signals from another station, reducing transmitter power when favorable propagation conditions make lower power practical.

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