

MEDICINE

TB Germ Makes Poison

Isolate chemical that may give clue concerning how the cord factor, which is substance in TB germs believed toxic to human tissue, is synthesized by the virulent form of TB bacilli.

► A DISCOVERY that may be the clue to learning how the tuberculosis germ makes its poison has been made by a Wisconsin scientist who received a Christmas Seal grant from the National Tuberculosis Association, New York.

Dr. Dexter S. Goldman, a biochemist at the Veterans Administration Hospital, Madison, Wis., isolated a chemical that causes a radical transformation in one of the many types of tuberculosis germs. Some tubercle bacilli are virulent, or capable of causing disease. Others are avirulent, or harmless.

Certain exterior distinctions have been made between the virulent and harmless strains. For example, when virulent germs are grown in the laboratory, they tend to cling together sideways in a cord formation. This is not characteristic of the harmless germs.

Some scientists now believe they have identified the exact element in the virulent germs that is toxic to human tissue and thus causes disease.

This substance, called the "cord factor," is a fatty material present in the virulent strain and can be isolated from it. The isolation and identification of this cord factor resulted from many years of work by many scientists.

The discovery by Dr. Goldman and his colleagues may give a clue as to how the toxic cord factor is synthesized by the virulent tuberculosis germ. Dr. Goldman isolated a chemical that appears to change the uncorded growth pattern of the harmless germs to a cord-like formation similar to that of the disease-causing strains.

He calls the chemical CIF, or cord-inducing factor. It was discovered when colonies of harmless TB germs changed their growth pattern to a corded form because a foreign organism had contaminated the culture plate.

Dr. Goldman does not yet know whether the change to cord-like formation is accompanied by a change from harmless to virulent strain.

He believes the harmless TB bacilli are genetically incapable of carrying out one step in the chain of reactions leading to formation of the cord factor, and that the material produced by the foreign organism in the culture plate acted to overcome the genetic block.

With his associates at the VA hospital, Dr. Goldman is now trying to find a way to reverse the procedure. He hopes to find a chemical means of blocking the formation of the cord factor, and thus eliminate or reduce the virulence of the TB germs.

A special contribution to Dr. Goldman's

research was made by the Wisconsin Anti-Tuberculosis Association, Dr. Floyd M. Feldmann, medical director of the National Tuberculosis Association, said.

The grant to Dr. Goldman is one of 42 that has been made recently by the National Tuberculosis Association. The NTA's research program, according to Dr. Feldman, is made possible by Christmas Seal funds from its affiliated associations throughout the country.

Science News Letter, December 15, 1956

GENERAL SCIENCE

Life Span Same in Space as on Earth

► EINSTEIN'S THEORY suggests to some that space travel may be the fountain of youth, but to a Harvard medical man, it does not.

Dr. William R. Brewster, Jr., of Harvard Medical School debunked many popularly held theories that man will not age as fast in space as he does on earth, at the meeting of the American Rocket Society in New York.

According to some interpretations of Ein-

stein's Special Theory of Relativity, if you go sailing around in space at half the speed of light and leave a twin brother back home, he will get twice as old as you do.

If your space trip takes ten years, when you get back you will find your earthly twin ten years older, while you would have aged only five years.

This effect of slowing up life's processes by extreme speed has been compared to hibernation, where the motion of the space ship causes a kind of suspended animation.

Slowing up life's processes works both ways, Dr. Brewster said. It depends on whether you say the space ship is moving away from the earth or the earth is moving away from the space ship. No matter which twin brother you are, you will see the other aging faster. When the two of you are back home, however, one will not be any older than the other.

Dr. Brewster also questioned what will happen to man when he gets completely away from the earth's gravitational pull. There is no way to tell, he said, for now he can only be made weightless within the earth's gravity. That is not the same kind of weightlessness he will experience in space.

Another important factor being overlooked, Dr. Brewster said, is the effect of the earth's magnetism on people. The vital combination of oxygen and iron in the blood may be influenced by magnetism. Without this magnetic attraction, the blood might lose its ability to carry oxygen.

Associated with Dr. Brewster in this study were Drs. Harriet B. Brewster, Majic S. Potsaid and James P. Isaacs.

Science News Letter, December 15, 1956



GROUND LEVEL BAIL-OUT—Royal Air Force squadron leader J. S. Fifield gave living proof of the ground-level efficiency of a British automatic ejector seat at Chalgrove Airfield, Oxfordshire, England, when he was hurled from a jet moving along the runway and floated safely to earth. He is shown here seated in the air before his parachute opened.