



#### MAKING READY FOR FLIGHT

*Prof. Robert Goddard, of Clark University, inspecting one of the great rockets with which he has been experimenting in his Roswell, New Mexico, laboratory. The inset is from a motion picture film and shows the rocket in vertical flight.*

#### MEDICINE

## Discovery of "Germ-Eater" For TB Bacillus Claimed

**D**ISCOVERY of a bacteriophage or "germ-eater" for the bacillus that causes tuberculosis has been reported by William Steenken, young bacteriologist at Trudeau Research Institute for Tuberculosis.

Trials are now being made to determine the new phage's effectiveness as a treatment for tuberculosis. It is too early to know the value of the new substance, but there seems a possibility that it may prove to be the long-sought "cure" for the white plague.

Since the discovery of bacteriophage in 1918 by Prof. F. d'Herelle, the eminent French-Canadian scientist, a search has been in progress to obtain a principle of this sort which would be active against man's great enemy, the tubercle bacillus. Success seems to have crowned Mr. Steenken's efforts along this line.

Paralleling the observations of Prof. d'Herelle that bacteriophage destroyed the dysentery bacillus by a process known as lysis, Mr. Steenken has noted lysis or destruction of the tubercle bacilli in cultures of them kept at a certain degree of acidity. Scientific details of the investigation were reported

by Mr. Steenken in a preliminary note to the Society of Experimental Biology and Medicine. (*Proceedings*, Nov. 1935.)

The phage or lytic principle obtained by Mr. Steenken is said to convert virulent types of tubercle bacilli into avirulent harmless ones, when in the test tube. There seems to be a possibility that the lytic principle may do the same thing to tubercle bacilli in the body, and experiments are now under way to determine this point.

Mr. Steenken's bacteriophage has not yet been tried on human cases. Tests on animals, however, already indicate the value of attempting to use it to vaccinate human beings.

Another similar substance with possible value as a weapon against tuberculosis has been isolated by Dr. Hugh E. Burke of New York State Hospital at Ray Brook, near Saranac Lake, N. Y. Working along lines similar to Mr. Steenken's research, Dr. Burke has obtained a substance from organisms other than the tuberculosis bacillus—namely, *Bacillus pentaceticus*—which digests the starch out of the tuberculosis

"germ," leaving the latter in a harmless form. Mr. Steenken's tubercle-bacillus-destroying principle, on the other hand, is intrinsic in the virulent tubercle bacillus giving rise to the avirulent form.

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#### AERONAUTICS

## Rocket Sent to 7,500 Feet At 700 Miles an Hour

**E**XPERIMENTAL rocket flight to altitudes of 7,500 feet, with speeds up to 700 miles an hour, were reported by Prof. Robert Goddard of Clark University to the meeting of the American Association for the Advancement of Science.

Motion pictures of his rockets in actual flight were shown by Prof. Goddard, and gathered scientists witnessed on the screen some of the tests which Col. Charles A. Lindbergh and Harry F. Guggenheim saw last September at Roswell, N. M.

The experimental flights, based on five years of research, are designed to provide science with a mechanism for probing the stratosphere beyond the reach of balloons, either manned or without human pilots. Flights to the moon and other astronomical objects have never been considered by Prof. Goddard as a crucial goal in his experiments.

Three needs were cited by the rocket scientist for rocket research: (1) a suitable combustion chamber which can withstand the high temperatures and pressures encountered when the rocket fuel is burned; (2) a means of keeping the rocket in vertical flight; (3) construction of very light weight rockets.

The first two goals have been achieved, Prof. Goddard pointed out. A rocket "motor" has been perfected which yields 209 horsepower per pound of combustion chamber. A superlative airplane engine, for comparison, will give slightly less than one horsepower per pound of weight.

Stabilization in flight, declared Prof. Goddard, is accomplished with a gyroscope which serves to move vanes placed in the rocket's flaming blast.

Working in almost desert country near Roswell, N. M., Prof. Goddard launches his rockets from a vertical tower sixty feet high looking something like the derrick of an oil well.

The whole series of experiments has been highly dangerous. The start is ac-