

# RNA Vaccine Postulated

Genetic material could form the basis for a vaccine against tuberculosis, experiments by two Northwestern University microbiologists, Dr. Guy P. Youmans and his wife, Dr. Anne S. Youmans, indicate. They have found in tests with laboratory mice that ribonucleic acid, or RNA, isolated from TB bacilli imparts a high degree of protection against TB.

RNA plays a key role in translating the genetic information coded in DNA into new protein needed by all living cells.

Most existing vaccines function by creating within the animal or person antibodies that destroy infectious microbes. Genetic material is suspected of functioning in a different way, opening up the possibility for a new approach to developing vaccines against infectious diseases.

The Northwestern researchers suggest that the RNA may increase the number of white blood cells, which in turn destroy the bacilli.

Their experimental method was to break down live non-disease-producing TB bacilli into their cellular components and to test each one as a possible immunizing agent. Virulent TB mi-

crobes were injected into two groups of mice, one protected by the experimental immunizing agent and the other, or controls, unprotected.

The first indication that genetic machinery within the TB cell might have immunizing properties came when they were testing TB ribosomes—cell particles located outside of the nucleus—as vaccines. In the process of protein synthesis, RNA carries coded information from DNA within the nucleus to the ribosomes that then transform the information into living proteins.

They found that 90 percent of the unimmunized mice challenged by live virulent TB bacilli died. However, in the group receiving injections of ribosomes, 70 to 80 percent lived. Full protection against TB is not acquired until some four weeks after the RNA injections.

ASTRONOMY

## Lunar 'Scope to Double Known Universe

Air makes the stars twinkle; nice for lovers, but terrible for astronomers.

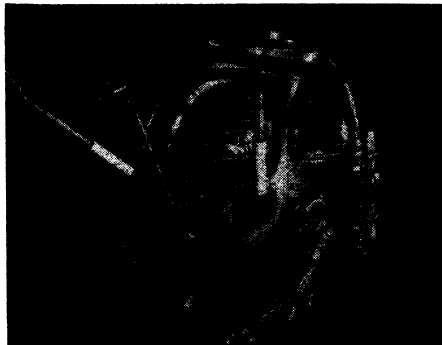
A team of astronomers at Northwestern University is studying the feasibility of a telescope, to be landed on the air-free moon. It would consist largely of a six-inch reflector loaded down with instruments for "seeing" light of different wavelengths.

If it reveals the lunar sky to be 1.5 magnitudes or more darker than earth's it could "double the size of the visible universe," said team co-director Dr. J. Allen Hynek, chairman of the Northwestern astronomy department. The visible universe now stretches nine billion light years into space.

The device, called a photometer, would probably be placed on the surface and turned on by an astronaut, though probably not on the first Apollo landing. The scientists hope for a six-month lifetime for their instrument, but that depends upon more information from spacecraft such as Surveyor about the wide extremes of temperature between the lunar night and day.

"If everything is great" and conditions are right, says Dr. Hynek, man may well have a 40-inch telescope on the moon within 20 years, and in 50 years, a monster optical instrument the size of the biggest now on earth—the 200-incher at Mt. Palomar.

Other co-directors of the present study include Dr. Karl G. Henize, who has already directed ultraviolet photographic missions aboard the last three Gemini flights and is now designing a camera-telescope to be attached to the airlock of an Apollo spacecraft; as well as two associate professors, Jay Burns and John Bahng.



NASA

FAR-OUT MR. FIXIT—Troubleshooting in orbit will become a vital necessity with the coming of long-life space stations. The bizarre craft in the picture is one of several ideas being studied by the National Aeronautics and Space Administration for service, repair and even rescue work in space. While a couple of the vehicle's arms cling to the side of the "patient," others can be performing a variety of tasks, either automatically or under the control of the operator. Launched by a Saturn rocket, the capsule could remain in orbit for years, treating the ills of a variety of space hardware.

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