

ASTRONOMY

# Stars and Comets Affected By Cosmic Radiation

**No Corner of Space Escapes These Tiny Bullets;  
Wherever They Strike, They Break Atoms Asunder**

**C**OSMIC rays and other sorts of fast-flying atomic particles which are shooting continually about the universe between the stars, planets, and galaxies may explain many of the mysteries of astronomy, it is suggested in a scientific report published by the National Academy of Sciences.

Dr. Fritz Zwicky, California Institute of Technology physicist, points out in the *Proceedings of the Academy* (May) that cosmic rays may be responsible for some of the light received from giant stars and that the rays also produce forces sufficiently great to cause—in the course of time—astronomical changes. So far, Dr. Zwicky intimates, only the terrestrial aspects of cosmic rays have been studied by scientists.

Cosmic rays, the California scientist

states, may be expected to be scattering continually the clouds of gas molecules which are thought to be the first step in the formation of a new galaxy of stars. Gravity is the force which tends to build up these clouds of molecules.

### Must Be Considered

Thus, contends Dr. Zwicky, astronomers may some day need to consider cosmic rays as an additional active force when they construct their astronomical hypotheses.

No corner of interstellar space escapes these tiny bullets. Wherever they hit matter they break up atoms, and wherever atoms are dismembered light is emitted when the pieces come together again.

The faint glow of the sky on clear

moonless nights is partly due to this unceasing rain of high speed particles. Likewise, says the California scientist, the luminosity of comet tails, certain interstellar gas clouds, and outer atmospheres of giant stars, may be due in some measure to this cosmic bombardment.

No one knows, as yet, just where cosmic rays come from or how they acquire their enormous energy. Some kind of super-thunderstorm in stars may create them. In any case they form a sort of contact between different stars and galaxies. Light is not the only messenger which one star sends to another. Actual material substance in the form of speeding atoms, ions, and electrons, are shot out from one stellar body and absorbed by another. Prof. Zwicky points out that this dissemination of matter and energy throughout the universe "may play an essential role in the evolution of stars and galaxies."

*Science News Letter, June 20, 1936*

PUBLIC HEALTH

## Smallpox is Unnecessary But Still On the Increase

**A**MERICANS like to point with pride to achievements resulting from their readiness to make prompt practical application of scientific research. The smallpox situation in the United States provides a distinct blow to any such feeling of pride.

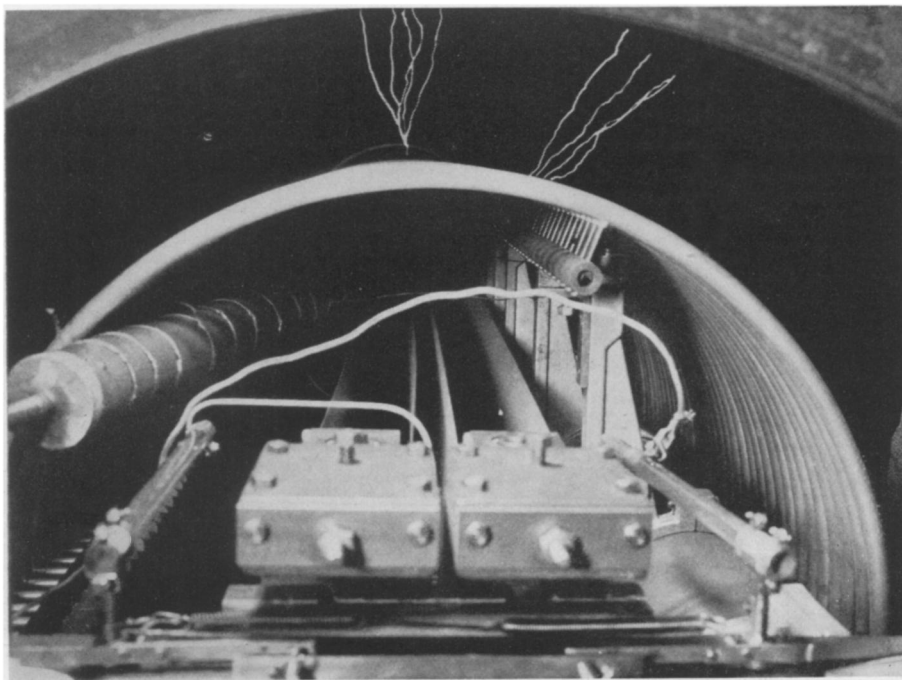
Science provided a way to prevent this disease by vaccination against it—as early as the eighteenth century. The method, which protects the individual as well as preventing the spread of the disease, was introduced into America as early as 1800. Yet in 1935 there were over 8,000 cases of smallpox in the United States.

### Fifty Per Cent More

Instead of decreasing, this preventable disease has been increasing again in the United States, figures collected by the Metropolitan Life Insurance Company show. Half again as many cases were reported last year as in the year 1934.

"In view of the almost complete success attained by many other leading civilized nations in their campaigns against smallpox, this loss of ground in America last year is disturbing," state officials of the life insurance company.

The black spots on the smallpox map are in the northwestern part of the country. Seven eastern states—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Pennsylvania and



**WISCONSIN ATOM SMASHER**

Looking down the twenty-foot long chamber which houses the new University of Wisconsin apparatus for accelerating atom particles in research on cracking atomic nuclei. Potential energy of 2,500,000 electron-volts will be developed by the device. This photograph shows a 600,000-volt electric spark jumping from the inner accelerator to the outer metal shield.