

seismometers left by the Apollo astronauts. The blast would create a crater about one kilometer wide, says Dr. Latham, who maintains that it would be the only way of producing seismic waves capable of penetrating all the way to the lunar core.

Despite possible treaty violations, Dr. Latham says, "I don't think the project is impossible if we include the Russians." He plans to submit the proposal to the National Academy of Sciences for approval, since "It won't work without their cooperation."

APOLLO 12

Manmade lightning

When the launch vehicle carrying the moonbound Apollo 12 astronauts lifted into the thick cloud cover above Cape Kennedy last month, the crew suddenly found itself staring in astonishment at a fully lighted panel of warning lights (SN: 11/22, p. 470).

A surge of electricity had caused the spacecraft fuel cells to disconnect automatically and had given an on-board computer incorrect instructions to realign a gimbal on a device that indicates orientation of the spacecraft. Five minor temperature sensors were burned out, and 100 types of measurement were affected for somewhat less than a second. None were essential to the mission.

The blowout was caused, scientists at the fall American Geophysical Union meeting in San Francisco were told this week, by two moderate-sized lightning strikes triggered by the passage of the launch rocket into the clouds. The first came 36.5 seconds after launch, when the vehicle and its three-quarter-mile-long ionized plume served as a conducting rod for the cloud to discharge its electrical energy to the ground. The second came 52

seconds after launch, when a bolt of lesser intensity passed between two cloud layers.

"It was, in effect, man-created lightning," said Donald Arabian, chief of the Apollo test division at the National Aeronautics and Space Administration's Manned Spacecraft Center.

"We didn't realize we could discharge a cloud this easily," Glenn E. Daniels of NASA's Marshall Space Flight Center noted. "We had no evidence before that this would happen."

"As a result, NASA officials are planning to revise launch rules on lifting off into electrically charged clouds. No hardware changes are planned on the spacecraft or booster, however.

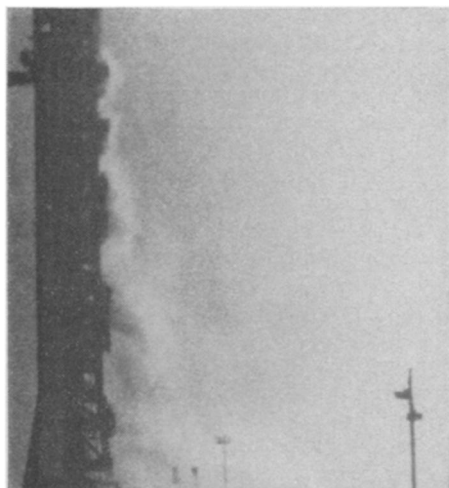
"If we were to have the same conditions in March for the Apollo 13 flight, my hunch is that we would not launch," said Arabian. He heads the NASA group investigating the incident.

Discussions with atmospheric physicists at the AGU meeting this week are part of that effort. The group's report will be completed about the end of January. This will be in time to put modified rules into effect before the Apollo 13 mission.

"We probably will make some restriction on launching," Arabian says, but he expects the increase in restrictions to be very small.

In present launch procedures the vertical differences in the electric field are measured continually at eight sites in the Cape Kennedy area. Radars search out thunderstorms and another set of instruments records and locates lightning strikes.

To provide greater insurance, some instrument modifications may be proposed; some lightning experts, for instance, feel a different kind of potential gradient recorder could give better results. But the major problem is one of scientific interpretation. They are seeking to arrive at some guidelines on how better to predict man-caused lightning—a problem not previously anticipated by NASA personnel.



NASA

Glitch on 12; now preventive action.

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STIMULATING INTERFERON

Human trials with poly I:C

Interferon is the body's first line of defense against viral infection. In response to invading viruses, levels of interferon, a protein, rise in the blood as this natural agent begins combatting the invaders. It appears to act against viruses of all types.

For some time immunologists have been working with a synthetic drug that mimics the infectious core of a virus to stimulate the production of interferon. Increased interferon production could theoretically control virus infections that are otherwise unassailable.

First identified two years ago by Dr. Maurice R. Hilleman (SN: 8/19/67, p. 173), the synthetic polymer called poly I:C (polyriboinosinic-polyribocytidylic acid) has been shown to stimulate interferon production in animals and in cultures of human cells. It also possesses some antitumor properties that have reduced cancers in mice (SN: 1/18, p. 60).

Now Dr. Hilleman, of the Merck Institute for Therapeutic Research in West Point, Pa., and two physicians from the Sloan Kettering Institute for Cancer Research in New York, report evidence that poly I:C actually induces interferon production in man.

Clinical trials of the drug began only a few months ago and data are preliminary, but, Dr. Hilleman says, "We have successfully taken another step in our research for an antiviral agent." With Drs. Charles W. Young and Erwin H. Krakoff, Dr. Hilleman announced experimental results this week at the Third Annual Symposium on Medical and Applied Virology in Ft. Lauderdale, Fla.

The scientists have been giving varying but generally low doses of poly I:C to cancer patients who were initially free of detectable levels of inter-



Merck

Hilleman: Another successful step.

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