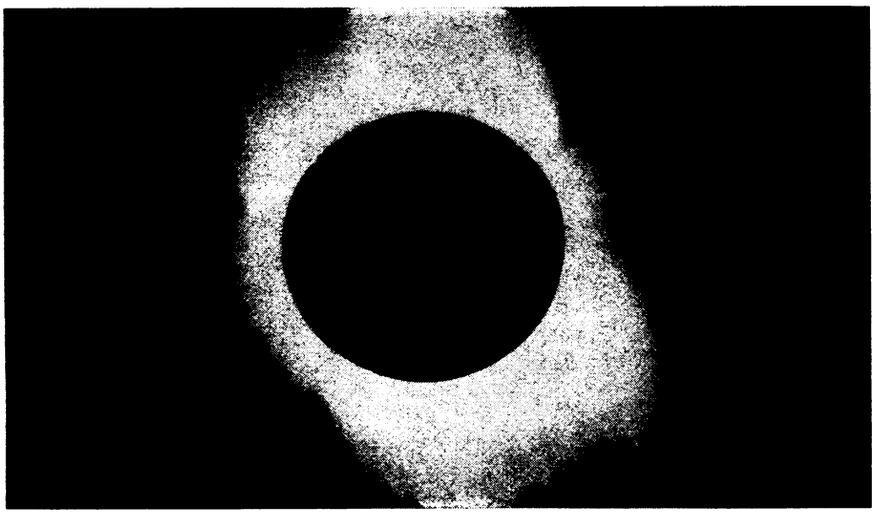

NASA

Over the ocean, last year's eclipse denied observers chance available this time around.

ASTRONOMY

Eclipse Offers Answers

➤ THE FIRST total solar eclipse in three years to show itself to land-based observers is being seen by many strange, new eyes.

The eyes are instruments, developed since the eclipse of 1963, which was visible from Maine and Canada. The only total eclipse of the sun since then appeared over Tahiti in the South Pacific, allowing very little opportunity for land-based observations.

The present Nov. 12 eclipse is being watched, photographed and analyzed by more than 300 scientists from the U.S., as well as others from at least eight foreign countries. Stationed in deserts, mountains and tiny rural villages as well as in planes and on shipboard, the researchers are measuring the eclipse's effects on the ionosphere, stratosphere and magnetosphere; the chromosphere, photosphere and corona of the sun; the solar wind and other phenomena. They are armed with an array of radio-frequency instruments they didn't have in 1963, and couldn't use from seaborne stations last year.

The Defense Atomic Support Agency wants to know what happens to the ionosphere—the layer of earth's atmosphere that makes long-range radio transmission possible—when the solar radiation that makes it possible is blocked by the eclipse.

Ideally, scientists would like to be able to monitor the whole spectrum of electromagnetic radiation at once during the eclipse. To come as close as possible, they are launching more than two dozen sounding rockets bristling with probes to measure visible and ultraviolet light, low-frequency (LF) and very-low-frequency (VLF) radio waves, and X-rays. Eclipse: 1966, should give them their chance.

The path of the eclipse, beginning at sunrise in the Pacific Ocean west of the Galapagos Islands, touches Peru, Chile, Bolivia, Argentina, Paraguay and Brazil. A partial eclipse can be seen over the extreme southeast part of the U.S., as well as over most of Central America, the West Indies, Antarctica and southern Africa.

TECHNOLOGY

SSTs May Create Source Of Own Destruction

➤ A SUPERSONIC transport traveling at 2,000 miles per hour through the earth's atmosphere could destroy itself, a pair of Massachusetts scientists warned.

They contend that new techniques for establishing design standards for SSTs and space vehicles are needed to measure damage air turbulence pressure can do to the surface.

The two, Richard H. Lyon and K. L. Chandiramani of Bolt Beranek and Newman Inc., Cambridge, Mass., discussed the stress problem at the Acoustical Society of America, meeting in Los Angeles.

Air resists the force of an SST pushing through it and a thin layer of turbulence results over the surface of the vehicle. Pressure fluctuations associated with this turbulence cause vibrations of the aircraft's exterior surface and may cause severe damage.

Estimates of this potential destruction must be made before Federal Aviation Agency (FAA) certification can be given and are one reason for the longer test time being required for SSTs. They will be subjected to about 3,600 hours of testing, about 1,900 hours more than ordinary aircraft.

FAA is stretching out testing time for another reason:

The aircraft will grow a foot in length during the heating process on each supersonic flight engineers have found, producing critical stresses between the hot external and cool internal structure.

Before extensive in-flight tests can be made, static and fatigue tests must be conducted to qualify the SST to meet these thermal stresses. Scientists are trying to develop such ground tests and determine procedures that will not delay flight schedules.

The Government will pay the estimated four billion dollar bill for development and production costs before the finished plane is delivered in 1973 or 1974.