FUTURE RELEASE: Friday morning, Dec. 29 12/27/50

ECLIPSE EXPEDITION SUCCESSFUL
DESPITE RAIN, GALE

By MARTHA G. MORROW
Science Service Staff Writer

HAVERFORD, Pa., Dec. 28 - The first eclipse ever successfully observed by an expedition party soaked to the skin in a torrential downpour during a gale was reported in a series of three papers presented before members of the American Astronomical Society meeting here at Strawbridge Observatory.

The expedition to Attu, Alaska, to observe the solar eclipse last Sept. 12 was conceived and organized by Dr. John P. Hagen of the Naval Research Laboratory. It was designed for the express purpose of making measurements at a variety of frequencies in the radio spectrum. Radar antennae instead of telescopes and other optical instruments were used to study the solar eclipse.

Grote Reber of the National Bureau of Standards reported on the observations he and E. A. Beck, also of the Bureau, made at 65-centimeter wavelength with war-developed radar-like instruments.

Fred T. Haddock of the Naval Research Laboratory told of measurements of three- and ten-centimeter radiation he had made along with Cornell H. Mayer, Timothy P. McCullough, Donald R. White and Russell M. Sloanaker, all of the Naval Research Laboratory.

Almost a month was spent on the island installing equipment and making preparations. The small island of Attu, last and most westerly of the Aleutian chain, was chosen because it was the only place the eclipse path crossed American territory.

Dish-pan shaped "mirrors" of solid metal were used to capture outbursts from the sun. These antennae were set up on an old runway on Alexai Point, one of the few open flat places on the whole island. Two of these "mirrors" were six feet across and another 10 feet. A fourth antenna, two feet across, was also installed, but it proved inoperable because of the rain.

The sun is constantly radiating vast amounts of energy of one sort or another. Light and heat are those with which we are most familiar.

Through radio receivers you make use of radio waves about a quarter of a mile long. Radio hams communicate on waves about the length of a city lot. Experimental scientists, however, are using

much shorter waves to explore the sun.

The sun explored by radio waves is slightly larger than that seen visually. Visually, we see energy originating in the sun's bright photosphere: with a radio we hear static coming from the sun's outer atmosphere or corona.

Preliminary results indicate that at the time of totality the sun is not totally eclipsed. A total of 5.6%, 22.5% and 25% of the sun's effective disk is left exposed at three-, 10- and 65-centimeter wavelengths, the radio experts reported.

Because the "radio" sun is larger than the moon, all eclipses viewed with radio apparatus will be annular rather than total -- the moon just never can quite blot them all out.

A minimum of radio signals from the sun was observed not when the moon first visually covered the sun's disk, but a few minutes after totality. This delay in minimum was observed at all three wavelengths.

The delay was probably due, astronomers were told, to the fact that the sun's outer envelope or corona was not entirely symmetrical in intensity. It was made irregular by a group of sunspots near the east limb.

In the visible region sunspots appear much darker than the rest of the sun because they are radiating less energy. But at the centimeter wavelengths used, sunspots radiate great amounts of radio energy and thus are many times "brighter" than the rest of the sun. Thus extra energy radiated from these spots, upsetting the symmetry of the corona.

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1719 N Street, N. W. WASHINGTON 6, D. C.

Telephone NOrth 2255 Cable Address Scienserve

January 9, 1951

Mr. Grote Reber
National Bureau of Standards
Washington, D. C.

Dear Mr. Reber:

A sheet from one of our reports on science that has been issued to newspapers and magazines is enclosed because of your connection with one of the items that it contains. It is sent you for your information and files.

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I thank you for your cooperation with Science Service. If you will continue to keep us in touch with your own work and that of your associates, we shall value this aid to our work of science popularization.

Sincerely,

Watson Davis

Watson Davis,
Director

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