Reber, Grote, and E. Beck. The measurement of 65 centimeter radiation during the total eclipse of September 12, 1950.

The eclipse of September 12 at Attu, Alaska, was observed by means of radio equipment operating at a wave length of approximately 65 cm. A superheterodyne receiver was used with two stages of radio frequency amplification. The collector of radio waves was a mirror 10 feet in diameter with a focal length of 3 feet. It was placed upon an altazimuth mounting. Measurements of solar radio intensity were made from two to four times a minute. The sky at about 90° from the sun was used as a zero reference.

The sun was observed for 2 hours before first contact and found to be reasonably quiet and free from transients. The minimum value of intensity observed was 26 per cent of the unobscured sun. This minimum occurred about 2 minutes after optical totality. It is probably due to an asymmetrical excitation of the corona caused by a large group of spots near the east limb of the sun. Another large group of spots was near the center of the solar disk. A marked fall and rise of the solar radio intensity was observed when the moon covered and uncovered this group. The effects of this group were so large that no good evidence was obtained upon the question of solar limb brightening. At first and fourth contact the solar intensity increased about 10 per cent above the quiet background. This effect is so far unexplained, but may be due to reflection of radio waves from the surface of the moon at grazing incidence.

*National Bureau of Standards,
Central Radio Propagation Laboratory,
Washington, D. C.*

Roberts, Walter Orr, Dorothy Trotter, and Bruno Witte. Solar activity at the time of the eclipse of September 12, 1950.

Solar coronal observations were carried out at the Climax and Sacramento Peak coronagraph stations on the days preceding and following the total solar eclipse visible at Attu Island, Alaska, on September 12, 1950. We combined these observations to get isophotal contour maps of the sun's green line coronal emission for September 11, 1950, treating the data from each station independently. We also obtained detailed prominence observations from both stations at times as close to the eclipse date as possible.

The coronal contour maps show that there were intense green-line coronal emission zones

near the east limb in both hemispheres, and near the central meridian in the northern hemisphere. The coronal intensities near the west limb were relatively low. On the other hand, the total area of all limb prominences of the west limb greatly exceeded the total area of all east-limb prominences.

Except for one region of the maps, the two stations gave results that were reasonably concordant. In one area, about three days west of the central meridian and about 25° north, there were substantial disagreements of an unexplained origin. Some evidence exists that this region was also one of unusually changeable coronal emission.

Solar flare observations could not be made at Boulder on September 11 or 12 because of cloudy weather. However, September was a month of generally lower solar activity than prevailed during the earlier portions of the year.

This Research was supported in part by the Central Radio Propagation Laboratory of the National Bureau of Standards and the Air Force Cambridge Research Laboratory.

*High Altitude Observatory,
Boulder, Colo.*

Rubin, Vera Cooper. Differential rotation of the inner metagalaxy.

Radial velocities of external galaxies are examined to see if there is evidence indicating a differential rotation of the observed system of galaxies about a center beyond the reach of our telescopes. The theory of differential rotation of Oort and Lindblad is extended to apply to this problem.

The space distribution of 38 galaxies with distances from 0.2×10^6 to 1.6×10^6 parsecs is such that our galaxy is at one end of an ellipsoidal agglomeration. The peculiar motion of our galaxy is found to be 179 km/sec toward the center of this group ($l = 105^\circ$, $b = +39^\circ$), and a K term of the order of 600 km/sec per 10^6 parsecs is derived. It is therefore concluded that these nearby galaxies are receding from our galaxy, but because of their asymmetrical space distribution, the peculiar motion of our galaxy into the group is sufficient to mask the presence of the linear expansion. The effects of a differential rotation are negligible at this distance.

Analysis of the radial velocities of 70 galaxies with distances in the range from 1.6×10^6 to 4.0×10^6 parsecs indicates a K term of 612 km/sec per 10^6 parsecs, and a peculiar motion of our