aperture of the reflector, and the relative precision of the measurements is considerably higher. There is evidence of an anomalously high temperature, approximately 268°K, on April 30 to May 1, 1958.

The observed radiation is interpreted as thermal emission from ammonia in the region near the top of the cloud layer. The gaseous ammonia radiates through the inversion line at 1.28 cm, pressure broadened in the presence of hydrogen and helium. Thermal radiation from lower levels in the atmosphere probably accounts for an appreciable fraction of the higher temperature radiation reported at longer wave lengths in the centimeter and decimeter region.

Radiation associated with the planet Mars was observed at 3.14 cm, on December 22, 1958. The equivalent black body temperature was $211 \pm 28^\circ\text{K}$, in good agreement with previous measurements at this wavelength. Individual drift curves with peak antenna temperatures of about 0.08°K were averaged in this work.

REFERENCE

Giordmaine, J. A. *et al.* 1959, *Proc. Inst. Radio Engrs.* **47**, 1062.

Columbia University
New York, N. Y. and
Radio Astronomy Branch,
U. S. Naval Research Laboratory
Washington, D. C.

Goldstein, Samuel J., Jr. *The angular size of short-lived solar radio disturbances.*

A wide-band two-element adding interferometer which accepts simultaneously the radiation in the range 105–140 Mc/sec was used to observe short-lived solar disturbances. The angular size of Type I bursts was found to be less than 1.6 minutes of arc. The average angular size of type III bursts in three clusters was 3.2, and for four other clusters an average lower limit of 3.3 was obtained. The theory of these measurements is explained.

Harvard College Observatory
Cambridge, Mass.

Gum, Colin S. *Some similarities in the distribution of neutral hydrogen and radio continuum sources in the galaxy.*

21-cm surveys at Leiden (Westerhout 1957) and Sydney (Kerr, Hindman and Carpenter 1957) have demonstrated the existence of a very flat layer of neutral hydrogen in the inner

regions of the galaxy ($R < R_0$). In the outer regions ($R > R_0$) the hydrogen layer is systematically distorted.

Observations at various frequencies in the radio continuum show that one component (the disk component) of this radiation is strongly concentrated towards the galactic plane. Although the continuum results show only integrated effects along the line of sight, the two-dimensional distribution which is observed may be compared with that expected if the sources of the continuum radiation were distributed similarly to the hydrogen gas. The results of such comparisons for published surveys indicate that the sources are concentrated towards the same plane as the hydrogen gas in the regions $R < R_0$, and show a similarly distorted distribution for $R > R_0$. In addition, the observations of Mills, Hill and Slee (1958) suggest that the disk component radiation originates in the spiral arms delineated by the *H*-line observations.

These results imply a close physical interdependence of some type between the hydrogen gas and the radio continuum sources. Such studies may therefore help in the understanding of the mechanism of origin of the continuum emission.

REFERENCES

Westerhout, G. 1957, *B. A. N.* **475**, 201.
Kerr, F. J., Hindman, J. V. and Carpenter, M. S. 1957, *Nature* **180**, 677.
Mills, B. Y., Hill, E. R. and Slee, O. B. 1958, *Observatory* **78**, 116.

Mt. Wilson and Palomar Observatories
Pasadena, Calif.

Hamid, Salah and Nagib, Mary. *On the regression motion of the node of the Quadrantid meteor stream.*

The Quadrantid meteor stream has been studied recently by Hawkins and Southworth. From the determinations of times of shower maxima, as observed during the last 120 years, they found that the node of the stream is regressing at the rate of 0.6°/century.

It is known that the secular perturbations of the planets on a meteor stream cause such regression motion. The secular perturbations due to Jupiter and Earth have been computed numerically using Gauss's method. The orbital elements which were used in the computation are:

	a	e	Ω	ω	i
The stream	3.66	0.72	282°	170°	72°
Jupiter	5.202803	0.0484223	99.9	13.5	1.3
Earth	1.000000	0.016729	—	102.1	—