cording is continuous and the observer or his assistant can read and partly reduce the data while the record is being made. Slides were shown to illustrate the stability of the tracings at magnitudes 9, 12, and 14, all of which are of photoelectric precision. The smallest sky diaphragm is 0.5 mm in diameter, corresponding to 0'.3. With this diaphragm, sky and star deflections are equal at magnitude 15.5, and can be read at full scale.

This work has been supported in part by the Office of Naval Research.

*Steward Observatory,
University of Arizona,
Tucson, Ariz.*

Denisse, J. F. Microwave solar noise and sunspot.

Covington's measurements of solar noise intensity in the 2800 megacycles band are compared over a period of 20 months with the relative sunspot number, the total sunspot area ΣA , and with a daily index $\Sigma A^{\frac{1}{2}} H_0$, where A is the spot area and H_0 the intensity of the magnetic field. The last comparison yields the best correlation, with a correlation coefficient of 0.9. The remaining discrepancies seem associated with rapid changes in the topography of certain spots. It is shown that these results are consistent with the expected gyromagnetic emissions associated with the magnetic field of the spots, assuming a kinetic temperature of several million degrees in the corona. Comparisons of the observed emission with the true areas and the projected areas of the spots allows an estimate of the shape of the emitting surface associated with the spots.

Some indications are given of possible relations between cosmic rays and radio emissions coming from the sun and the galaxy.

*Paris, France,
and U. S. Bureau of Standards,
Washington, D. C.*

Dodson, Helen W. Position and development of the great solar flare of May 10, 1949.

On May 10, 1949 a large bright flare occurred in a spot group, 17°S, 12°E, between 20^h03^m and 22^h20^m U.T. Observations made at Central Radio Propagation Laboratory indicate that it was accompanied by a great burst of solar noise and followed by a severe magnetic storm. $H\alpha$ spectroheliograms show that about 15 minutes before the principal outburst the region began to brighten in two widely separated points. The location and extent of the flare was strongly influenced by the underlying spots. Furthermore,

the most intense portion of the flare lay directly over one of the principal spot components.

The spectroheliograms of the flare were made with a band pass of 0.36 Å centered on $H\alpha$. Intensity measures indicate that at maximum the flare had four times the intensity of the undisturbed $H\alpha$ disk. The rate of decline suggests an exponential law.

Spectroheliograms of the spot group taken before and after this great flare are remarkably similar. A curved, dark filament was a conspicuous feature of the region before the flare. Its trace was clearly marked across the flare, and the filament itself was still strong and well defined on May 11. However, on this date a large neighboring filament had disappeared, and the spot associated with the most intense portion of the flare had become visible on the $H\alpha$ spectroheliograms.

On May 8 an earlier flare had been observed in the same spot group. Comparison of the two photographic records indicates that the pattern and location of the two outbreaks were very similar. On May 8th, a portion of the flare apparently moved directly towards a sun spot and both outbreaks showed a slow limbward drift of the flare position with time.

*McMath-Hulbert Observatory,
University of Michigan,
Ann Arbor, Michigan.*

Duff, G. F. D. and R. E. Williamson. Broken line guillotine factor models for late-type main sequence stars.

Two integrations of point source models for late-type main sequence dwarfs have been performed. The guillotine factor has been taken to vary with different powers of the density in the inner and outer fractions of the radiative envelope. The two models are found to represent Morse's guillotine factors with a uniformly low error. Chemical compositions have been calculated using a modified form of the usual mass-radius-luminosity equation. Fairly high central densities are predicted for late-type dwarfs, on the basis of these models. A definite departure from the perfect-gas law at the dwarf end of the main sequence is indicated. The models have been compared to determine the effect of a change of the guillotine factor in the outer layers of the star. It is found that the central conditions do not depend sensitively upon moderate variations of opacity in this region.

*David Dunlap Observatory,
Richmond Hill, Ontario.*