The preliminary tables which have been computed include values for k , the ratio of the radii, of 0.1, 0.2, and 0.3. For each of these, light losses have been computed for thirty-five geometric depths of eclipse, and in each case for six values of n .

The presence of a thick atmosphere leads to an under-estimate of k if the solution uses the usual tables of α functions.

*Amherst College Observatory,
Amherst, Mass.*

Lippincott, Sarah Lee. The spicule structure of the chromosphere.

The structure and distribution of spicules has been studied from films taken by Richard B. Dunn with the multiple-image chromosphere camera at the Upper Air Research Observatory, Sunspot, New Mexico. Spicules are found on the $H\alpha$ films at all heliographic latitudes, but their frequency decreases with decreasing latitude, reaching a minimum at $\pm 35^\circ$, where the frequency is 70 per cent of that at the poles, and followed by a slight increase from $\pm 35^\circ$ to the equator. A maximum number of 34×10^4 spicules is found for the entire surface of the sun, and a more probable value of 11000 is determined.

A dependence on latitudes was also found for the heights of the spicules; the average height 9500 km above the photosphere at the poles decreases with latitude to 7300 km, the average at the equator. A minimum average lifetime of 5 minutes was determined from 77 spicules. The growth in height in $H\alpha$ light has an average rate 19 km/sec; 40 per cent fade at maximum height, while the rest fade from the top downward at the average rate 24 km/sec.

*Sproul Observatory,
Swarthmore College,
Swarthmore, Pa.*

Lowenthal, M. and Newkirk, Gordon J. Temperature anomalies aloft and their correlation with solar activity (1952-1954).

The first reports of abnormally high stratospheric temperatures were by Scherhag (1951-2) and Willett (1952). The phenomenon has since been observed and reported by Scrase (1953). At the Signal Corps Engineering Laboratories, Belmar, New Jersey, daily ozonosphere flights have been made since November 1952. A report on the high stratospheric temperatures in January 1953 has been made by Arnold and Brasefield (1953). The purpose of this memoran-

dum is to note three incidences of high stratospheric temperatures during the winter season of 1953-54, and to correlate the abnormal warming periods during 1952-54 with any observed changes in solar activity.

The occurrence of a temperature rise appears to be related to the dynamics of the air at the high altitudes and to solar phenomena.

An examination of solar activity data about the time of eight temperature-rise episodes suggests the following relations to solar phenomena: 1) absence of flares for the week preceding the peak temperature well beyond absences expected from chance and 2) undisturbed areas appearing on the solar meridian more frequently during the week preceding the peak temperature day.

Arnold, A. and Brasefield, C. J. 1953, *Proc. Toronto Met. Conf.*, pp. 14-16.

Scherhag, R. 1951-2, Die Explosionsartigen Stratosphärenenerwärmungen des Spät winters, *Ber. Dtsch. Wetter., US Zone*, No. 38, 51.

Scrase, F. J. 1953, *Met. Mag.*, June.

Willett, H. C. 1952, *Bull. Amer. Met. Soc.*, 33, 255-258.

*University of Michigan Observatory,
Ann Arbor, Mich.*

McClain, Edward F. An approximate distance determination for radio source Sagittarius A.

The absorption of continuum radiation from a discrete radio source by interstellar neutral hydrogen (Hagen and McClain 1954; Williams and Davies 1954, 1955; Hagen, Lilley and McClain 1955) permits one to assign relative distance positions to the source and the hydrogen gas along the line of sight. The absorption effect does not of itself yield an absolute distance scale. The ability of the absorption technique to reveal structure in distance is based on the assumption that the radial velocity along the line of sight is a function of distance. This is generally conceded to be true and to be a function of differential galactic rotation for all galactic longitudes with the exception of the galactic center and anticenter. Here the classical assumption of pure circular motion would preclude the existence of a radial velocity other than zero.

An approximate distance scale has been derived in the direction of the galactic center from a study of the hydrogen as a function of radial velocity.

If one assumes that the galaxy is a flat disk of thickness t , an observer inside the disk can relate the angular width ϕ of the disk, normal to the plane, to the distance d at which the angle was measured by the relation