mean q , 0.66. One is of uncertain period and $i = 179^\circ$. No meteor with a reliably determined hyperbolic motion has been observed.

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Williams, Emma T. R. and A. N. Vyssotsky.
Distribution of faint red giants in galactic longitude as compared with faint A stars.

At a distance of approximately 800 parsecs towards the galactic center, the ratio of the frequency of red giants to A stars appears to be about three times as large as the same ratio among stars at about the same distance towards the anticenter. This conclusion is based primarily upon spectral statistics in 87 sample regions between galactic latitudes $\pm 11^\circ$ and $\pm 20^\circ$ distributed through 240° of galactic longitude. At intermediate longitudes the ratio appears to have intermediate values. The ratios in both the northern and the southern zones show the same trend as do also the ratios among stars at somewhat smaller distances. In the discussion, the unknown influence of varying absorption is lessened by the use of ratios rather than simple frequencies. Thus although the observed number of A stars per square degree in these latitudes is nearly the same in the direction of the center as toward the anticenter very little may be concluded as to their space frequencies without accurate knowledge of the distribution of absorption. McCormick statistics in regions closer to the galactic plane are not suited to this particular investigation since they are selectively affected by incompleteness due to overlapping spectra. In higher latitudes the greater proportion of nearby late-type dwarfs of the same apparent magnitude and the dearth of A stars, hamper the investigation. These statistics are from the second McCormick catalogue of proper motions, as yet unpublished. They are independently confirmed by the statistics of the first proper motion catalogue where we have 54 sample regions in the zones from $\pm 11^\circ$ to $\pm 20^\circ$.

This considerably greater concentration of red giants than of A stars towards the galactic center is believed to be sufficient to explain the difference in shape of the respective velocity ellipsoids (following Bottlinger). It is also in agreement with Baade's work on M31. It calls attention

again to a kind of duality in the dynamics and distribution of stars in our vicinity, the red giants having much larger kinetic energies, and being much less concentrated towards the galactic plane although more concentrated towards the galactic center.

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Wright, K. O. Curves of growth of neutral and ionized atoms in the spectrum of α Persei.

Intensities of one thousand lines in the spectrum of α Persei have been determined recently from high dispersion spectra, 4 to 7 Å/mm, using the Observatory intensitometer. Curves of growth, which relate the intensity of a line to the number of atoms which produce it, have been obtained for a number of atoms by plotting the stellar line intensities against solar f -values. It was found that the shape of the curves for neutral atoms is different from that for ionized atoms. The observations were fitted to theoretical curves given by Menzel and by Unsöld, and the variable parameters of excitation temperature, damping factor and turbulent velocity were calculated for each atom. Values for a few atoms are given in the accompanying table.

Atom	T_{exc}	$\frac{\Gamma}{\nu}$	v km/sec	No. of Lines
Fe I	4950°K	1.3×10^6	5.0	325
Ti I	5600	—	3.9	53
Cr I	5350	1.6	4.6	29
Fe II	4500	0.2	7.5	60
Ti II	5350	0.1	6.1	62
Cr II	5400	—	8.3	25

When lines produced by neutral and ionized atoms of the same element are compared it appears that, for the neutral atom,

1. the excitation temperature is somewhat higher;
2. the damping factor is greater, i.e., the pressure is greater;
3. the turbulent velocity is less.

Though the observations and the method are such that these conclusions cannot be considered final, they suggest that there is appreciable stratification in the atmosphere of this supergiant star, with the mean position of the ionized atoms lying above that of the neutral atoms.

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