as far as the shape is concerned. Because, however, the relative occupation of the two hyper-fine-structure components of the ground state depends only upon the shape of the spectrum near the $L\alpha$ frequency, this occupation will be the one corresponding to equilibrium at the gas temperature.

The conclusion is that the resonance radiation provides a long-range interaction between gas atoms, which forces the internal (spin-)degree of freedom into thermal equilibrium with the thermal motion of the atoms.

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Zechiel, Leon N. and Geoffrey Keller. A survey of eclipsing binary systems showing apsidal motion.

Thirty eclipsing binary systems of known or suspected apsidal motion were analyzed to determine whether a correlation could be made between the mass distribution within the stars and the spectral type. A set of combined photometric and spectroscopic elements for each system was assembled. Some systems have not been observed spectroscopically, and the values of the eccentricity and the apsidal period had to be estimated from photometric data alone in these cases. The data has been tabulated for all systems which have been adequately observed. Fourteen cases in which apsidal motion has been indicated, but for which the data are insufficient to support detailed analysis, were rejected.

The final sets of elements for each system were analyzed by the method of Sterne, yielding the apsidal coefficients, k_2 , which are a measure of the degree of central condensation of the mass of the stars. Values of the effective polytropic index of each star were obtained from the quantities k_2 in the usual manner. The absolute dimensions of the systems were derived from the elements by various methods suited to the data available in each case.

The final results were embodied in a table, and a plot of the effective polytropic index versus the spectral type was made. A similar plot was constructed from the analysis by Russell in 1939. A comparison shows considerable change in the plot due to the reclassification of the spectra of several of the stars and to the inclusion of new

data. There appears to be a limitation of n_{eff} to values between 2.9 and 4.1, with the lower values tending to be associated with earlier spectral types. The ratio of central density to mean density is 54 for a polytrope of index 3.0 and 614 for a polytrope of index 4.0. While the stars in this survey were not assumed to be polytropes these two cases represent models having values of k_2 corresponding roughly to the observed range. The spectral types represented in the survey ranged from O8.5 to F2.

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**TITLES OF ADDITIONAL PAPERS PRESENTED
AT THE MEETING IN CLEVELAND, OHIO**

- Anderson, J. Pamela. The position of the moon at the time of the 1948 eclipse.
 Bidelman, W. P. and W. W. Morgan. A remarkable O-type star.
 Binnendijk, L. The space distribution of interstellar material in the Milky Way.
 Bok, Bart J. and Margaret Olmsted. Magnitude standards for the southern hemisphere.
 Cook, Allan F. II. Radiative equilibrium in a hydrogen atmosphere.
 Eckert, W. J., Rebecca B. Jones and H. K. Clark. A precise lunar ephemeris.
 Genatt, Sol H. Note on a graphical method for the prediction of occultations.
 Goldberg, Leo, R. R. McMath, O. C. Mohler and A. K. Pierce. Identification of CO in the solar atmosphere.
 Harwood, Margaret. The nova-like variable CM Aquilae.
 Henriksen, S. W. Note on the kinematics of the moon's motion.
 Johnson, Harold L. Magnitude systems.
 McKellar, Andrew, G. J. Odgers and L. H. Aller. The chromospheric K-line during the recent eclipse of 31 Cygni.
 Mears, D. D. Field techniques for occultation observation.
 Millis, John. The genesis of Saturn and its rings.
 Neyman, J. and C. D. Shane. A model of spatial distribution of galaxies. Preliminary report.
 O'Keefe, John A. and J. Pamela Anderson. Calculation of the earth's radius from occultation data.
 Osterbrock, Donald A. The time of relaxation for stars in a fluctuating density field.
 Panay, T. N. and John A. O'Keefe. Progress on the measurements of darkening at the sun's limb from the results of the 1948 eclipse.
 Scott, Elizabeth R. Theoretical counterparts of certain observable distributions relating to galaxies.
 Swope, Henrietta H. Photographic magnitudes and colors in the globular cluster NGC 6397.
 Thomsen, Warren J. The path and orbit of the detonating meteor of August 29, 1951.
 White, Marvin S. Note on the accuracy of Hayn's charts as measured by photoelectric observation.
 Wrubel, Marshal H. On the decay of a primeval stellar magnetic field.
 Wylie, C. C. The path and orbit of the detonating meteor of July 28, 1951.