outer boundary, with velocities of 0.3–0.5 km/sec. These cells are arranged in a more-or-less regular pattern over the solar surface, with an average cell diameter of $3.0\text{--}3.5 \times 10^4$ km. Cross-correlation measurements obtained by superposition of velocity plates and $\text{Ca}^+(\lambda 3933)$ plates show that the $K_{2,3}$ emission network occurs directly above the boundaries of the velocity cells. Downward velocities of 1.0–2.0 km/sec are observed in the wings of $H\alpha$ ($\Delta\lambda = 0.7 \text{ \AA}$) and $H\beta$ ($\Delta\lambda = 0.4 \text{ \AA}$). These localized motions exist in a network pattern which coincides with the position of the $K_{2,3}$ emission and the velocity cell boundaries. The lifetime of the $K_{2,3}$ network has been measured by cross-correlating plates taken at various time intervals and has a mean life of 17–21 h in excellent agreement with the finding of C. Macris (*Mem. Soc. Astron. Ital.* **33**, 85, 1962). Using magnetograph measurements obtained by R. Howard (*Astrophys. J.* **130**, 193, 1959), we find a very high degree of correlation between the positions of weak magnetic fields (1.5–5.0 G) and the $K_{2,3}$ network. The probability that the observed correlation is a random statistical fluctuation is 10^{-3} . For stronger fields (≥ 5 G) the corresponding probability is less than 10^{-11} . These observations suggest that the average solar magnetic field (0.5–1.0 G) is swept to the cell boundaries by the horizontal currents, and concentrates there in strengths perhaps two to ten times greater than the average field. These narrow regions of enhanced field strength could then account for the presence of the $K_{2,3}$ emission at the cell boundaries, and perhaps also for the downflow of chromospheric material in this region, as well as small “dots” of rising material seen at the edges of the downward flowing network, which may be spicules seen on the disk.

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Spectra and Rotational Velocities of the Components of 116 Visual Double Star Systems. ARNE SLETTEBAK, *Perkins Observatory*.—Spectral types, luminosity classes, and axial rotational velocities were estimated for the components of 116 physical visual double star systems. H-R diagrams for the systems with normal components are compatible with current theories of stellar evolution. No significant differences between the mean rotational velocities for double-star components and single stars were found, neither for main-sequence nor for giant stars. Absolute magnitudes for normal B-type components of double stars appear to be somewhat higher than determined in earlier calibrations. Absolute magnitudes for nine metallic-line stars and nine peculiar A-type stars are consistent with earlier determinations. Absolute magnitudes were derived for a number of additional peculiar stars of interest.

Results of Decameter-Wavelength Observations of the 1961 Apparition of Jupiter. ALEX G. SMITH, T. D. CARR, N. F. SIX, W. MOCK, AND H. BOLLHAGEN, *University of Florida and Maipú Radio-astronomical Observatory of the University of Chile*.—A complete reduction has now been made of the results of a year's observations of Jupiter from stations in both hemispheres of the earth; the frequency range covered is 5 to 31 Mc/sec. Computer techniques have been used to combine the 1961 data with those of previous years, and to combine the data from the two stations. The combined and smoothed observations suggest that the decameter sources have a four-fold symmetry, hinting at a quadrupole configuration of the planetary magnetic field. The apparent negative correlation of over-all Jovian activity with sunspot number is continued. The observed durations of the noise storms and the temporal distribution of these storms are not in accord with the Strom theory, which suggests that the outbursts represent merely a transient focusing by the Jovian ionosphere of energy from distant discrete sources. Detailed studies of the Jovian pulses indicate that at least three types of pulse are received, having mean durations of about 8 msec, 0.4 sec, and 8 sec. A tendency for the same pulse type to occur simultaneously at both stations indicates that if the pulse details are ionospheric in origin the responsible phenomenon must be global in extent.

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Light Variability and Nature of 3C273. HARLAN J. SMITH AND DORRIT HOFFLEIT, *Yale University Observatory*.—Recent studies (see, e.g., Greenstein and Matthews, Oke and Schmidt, this issue) strongly suggest that 3C273 is a peculiar radio galaxy redshifted by nearly 0.16 c (5×10^8 pc), characterized by an unresolved optical and radio central source smaller than $1''$. At this distance, its absolute photographic magnitude would be $M_{pg} \sim -26.5$.

With the kind permission and cooperation of the Harvard Observatory we have found, from the first 600 historical Harvard plates on which we could measure its image, that 3C273 varies in several ways. From 1887 through 1963 the apparent magnitude appears to have declined at the slow rate of 0.2 mag./century. The annual mean magnitude varies over the range 0.2 to 0.6 mag. with a roughly 10-yr cyclicity. Occasional flashes are observed reaching up to $M_{pg} \sim -27.5$, lasting for about a week.

While the emission lines and the radio emission could of course be produced in much larger external