they are associated rotates with a nonsynchronous angular velocity. The impact point at which the trajectory intersects its parent star should be locally heated, and this point is typically displaced slightly from the line connecting the centers of the component stars.

The asymmetric shape of the secondary minimum of many close binaries is postulated to be evidence that the locally-heated impact spot is eclipsed in a number of systems. From the aspect of the asymmetry it is possible to discern the sense of the rotation of the spectroscopically invisible component and sometimes to set limits to its angular velocity. The effect has been studied for a number of familiar binaries, and some numerical results are presented.

At present only approximate corrections for this complication can be made, and photometric solutions are consequently vitiated by the complication in the following sense: the fractional luminosity of the cool component is overestimated and the mean ratio of the surface brightness of the component stars is underestimated. A cool component is thus erroneously positioned in the H-R diagram at a point which is both too hot and too bright. For some cool components, although not apparently for the more familiar ones, the true positions in the H-R diagram may be in the domain of flare activity.

The Transition to Adiabatic Flow in Hydrodynamic Models of the Solar Wind. ROGER A. KOPP, *Harvard College Observatory*.—Quantitative models of the outer solar corona ($R/\bar{R}_\odot \gtrsim 2$) and interplanetary gas have been constructed by a simultaneous solution of the solar wind equations expressing conservation of mass, energy, and momentum. These models, all of which exhibit supersonic flow beyond some critical distance r_c , have vanishing temperature at infinity.

For a variety of mass and (total) energy fluxes, models have been calculated and compared for the following situations: (a) Unrestricted heat flow by thermal conduction at all distances (i.e., infinitesimal heat flow theory used to evaluate the transport coefficient for thermal conduction). (b) Heat flow by conduction restricted at large heliocentric distances by the spiralling interplanetary magnetic field. (c) Heat flow depressed at large distances below that of case (a) due to the fact that the solar plasma must support a noninfinitesimal heat flux (or, equivalently, that the fractional temperature change over a mean free path becomes large at great distances, thereby invalidating the linear heat theory approach). (d) Heat flow cut off at large distances by both of the effects (b) and (c).

The numerical results indicate that, at least for

the equatorial regions of the solar corona, restrictions (b) and (c) on the radial conductive heat flux are sufficient to ensure that the gas flow is rapidly becoming adiabatic by the time the plasma reaches the vicinity of earth. Turbulence and plasma instabilities, which lead to kinking of the magnetic field lines and further reduction of the radial heat flow, should enhance this effect.

The Absorption Coefficient of Negative Hydrogen. W. S. KROGDahl AND JAMES E. MILLER, *University of Kentucky*.—The absorption coefficient of the negative hydrogen ion has been re-calculated, using as bound-state wave function the solution of the Schrödinger equation obtained by a finite atom approximation method. This wave function has been tested by the virial theorem test which shows it to be accurate to about one part in 10^4 . The absorption coefficient has been calculated using this wave function and the plane-wave free-state wave function. A sum rule test indicates some improvement over previous results.

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The Dynamics of Old H II Regions. BARRY M. LASKER, *Princeton University Observatory* (present address: Mount Wilson and Palomar Observatories; Carnegie Institution of Washington).—Models of spherical H II regions are obtained with ages up to 2×10^6 yr. The shells of compressed H I are about 10% of the nebular radius in thickness if radiative cooling in the compressed material is ineffective and much thinner if effective. The average radial velocities of the older models are about 4 km/sec in the H II regions and about 8 km/sec in the H I shells. During the advanced expansion stages, the H II regions become substantially rarefied. The models are compared with observations; the need for further investigation in both areas is evident.

On the Spectra of Extragalactic Radio Sources. DAVID LAYZER, *Harvard University*.—Considerations of the development of magnetoturbulence in a collapsing gas cloud suggest a model for radio galaxies that seems to offer the possibility of accounting in a simple way for the existence of a power-law energy spectrum for the trapped electrons and that predicts a gradual steepening of the spectrum as the radio galaxy evolves.

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