served by Greenstein [*Stellar Atmospheres* (University of Chicago Press, Chicago, 1960), Chap. 19] for 20 of these stars have shown excellent fit except for a few DAWK type stars. The established values of both the reciprocal temperature and the surface gravity are smaller than those previously estimated by Weidemann (*Z. Astrophys.* 57, 87, 1963) for practically all the stars.

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The Magnetic Field in an Actively Flaring Sunspot Group. RICHARD G. TESKE, *Department of Astronomy, University of Michigan*.—The photospheric magnetic field in an active region on the sun was mapped with photographic methods on 18 September 1963. In addition, a series of observations of umbral magnetic fields in the region was carried out during an importance 2 flare on that date. Time variations of umbral field strengths and the geometric relations between activity and magnetic fields are discussed.

The time series of magnetic measures, begun 16 min before flare maximum and ended 37 min after flare maximum, suggests that no large, permanent changes in sunspot field strength took place, although temporary changes were noted. The configurations of the importance 2 flare and of subsequent flares may have been largely independent of the observed geometry of the photospheric magnetic fields.

Is the Satellite Ionization Phenomenon Responsible for the Decametric Radiation from Jupiter? M. E. TIURI, *Finland Institute of Technology*, AND J. D. KRAUS, *Ohio State University Radio Observatory*.—Studies of the satellite ionization phenomenon indicate that large artificial satellites of the earth may produce ionospheric disturbances when the satellite is near magnetospheric shells with high L values of 4 to 7 and near local sunrise or sunset (Tiuri, M. E., and Kraus, J. D., *J. Geophys. Res.* 68, 5371, 1963; M. E. Tiuri, *COSPAR 6th Intern. Space Sci. Symposium*, La Plata 1965). The phenomenon is detected only during magnetic disturbances and is thought to be correlated with sharply defined magnetic shell enhancements of the electron density such as detected by the satellite Ariel (Willmore, A. P., and Henderson, C. L., *COSPAR 5th Intern. Space Sci. Symposium*, Florence 1964). For the case of Jupiter a tendency for the strongest decametric outbursts to occur when the satellite Io is near local sunrise or sunset has been reported (Bigg, E. K., *Nature* 203, 1008, 1964). The decametric outbursts also tend to occur

when Io is near magnetospheric shells with the highest L values (about 6.5). The similar circumstances involved in the satellite ionization phenomenon and the decametric radiation from Jupiter suggest that both may be different manifestations of the same basic mechanism in which a satellite interacts with an electron shell in the magnetosphere. In the terrestrial case the resulting disturbance can be detected by high-frequency radar in the vicinity of the northern and southern magnetic latitudes corresponding to the L value of the shell. In the Jupiter case it is suggested that the decametric radiation originates from the electrons in the disturbed shell.

Properties of a Stellar System in Rapid Rotation. PETER O. VANDERVOORT, *University of Chicago*.—For a rapidly rotating stellar system a formal solution of the Boltzmann equation in which the effects of encounters are ignored can be obtained by developing the distribution function as a series in inverse powers of the angular velocity of rotation. The Boltzmann equation is separated into a hierarchy of coupled equations governing terms of successively higher orders in the distribution function.

This method has been applied to the problem of an axisymmetric system in a steady state. The zero-order approximation corresponds to the separation of the orbit of an individual star into a rotation with the circular velocity about the axis of symmetry, an elliptical epicycle in the plane perpendicular to the axis, and an oscillation perpendicular to the plane. In this approximation the distribution function must be a function of the component of angular momentum parallel to the axis of symmetry, the energy of the epicyclic motion, and the energy of the oscillation perpendicular to the plane. In the first-order approximation terms of two kinds appear in the distribution function. The first kind represents the departure of the velocity of rotation of the system from the circular velocity. The remaining terms seem to correspond to terms of the first order in the formal third integral discovered by Contopoulos; however, this correspondence is not yet firmly established.

The method is also applicable to the investigation of small, non-axisymmetric departures of a rotating system from an axisymmetric steady state. Thus it may provide the basis for systematic investigations of the stability of rotating stellar systems.

Pre-White Dwarf Evolution and the Nuclei of Planetary Nebulae. SAMUEL C. VILA, *Indiana University*.—The evolution of stars of masses $\sim 1M_{\odot}$ in advanced phases of gravitational contraction has been followed for compositions of high atomic number and including energy losses due to production