Further Information Concerning the Atlas for Objective Prism Spectra. WALTRAUT CAROLA SEITTER, *University of Bonn*.—The first part of the spectral atlas announced 3 yr ago is to be published early this fall. It will contain the information pertaining to the dispersion of 240 Å/mm. Parts 2 and 3 for dispersions 645 and 1280 Å/mm will follow next year. Sample prints are shown of (1) A detailed chart of α Cyg A21a. (2) A chart of O9V to B5V stars. The first chart (one of four showing A, B, G, and K stars) aims at completeness in listing all lines visible between 3400 and 9000 Å on spectra with a dispersion of 240 Å/mm at $H\gamma$ and a wavelength resolution of 2–5 Å at $H\gamma$ for 2–3" image size. Identifications of lines are given in order of increasing excitation or ionization potentials.

The second chart is one of 24 charts giving all spectral types within a given luminosity class that are listed in the Johnson–Morgan catalogue of 1953. All major features are identified.

Thirty-two additional charts compare the different luminosity classes at a given spectral type. Luminosity indicators are shown in schematic spectra. Their estimated intensity ratios with respect to major features are given.

A series of tables lists all lines measured on any of the approximately 350 photographs of the 160 types represented in the atlas. They are intended to show with what accuracy the various features are measured and with what certainty the identifications may be made.

Gravitational Collapse of a Slowly Rotating Star.

JOSEPH SILK, *Harvard College Observatory*, AND JAMES P. WRIGHT, *Harvard College Observatory* and *Smithsonian Astrophysical Observatory*.—There is a lack of exact interior solutions of the Einstein field equations which include rotation. Approximate solutions are best obtained by perturbations about known exact solutions.

A technique is described for calculating deviations from Newtonian physics for a star in the case when slow rotation and radial motion are present. The method involves a rotational perturbation about a time-dependent spherically symmetric solution. An equation is derived which differs from the Newtonian equations for angular momentum by terms proportional to (GM/Rc^2) . This effect is calculated for a simple stellar model, and it is shown that the Newtonian angular momentum of the matter tends to decrease in the case of gravitational collapse.

Thermal Instability Resulting from Synchrotron Radiation. M. SIMON and W. I. AXFORD, *Cornell University*.—The thermal instability of a medium

containing relativistic electrons is discussed. The energy losses which govern the process are those due to synchrotron radiation and the inverse Compton effect. It is argued that filamentary condensations in the medium will grow only if their wave normals are essentially perpendicular to the magnetic field, since the thermal conductivity is heavily reduced in this direction and cannot quench the instability. Provided there is some continuing source of relativistic electrons, thermal instability can occur, but if there is no such source, small condensations initially present eventually decay after a short period of growth. A criterion for instability is given, and it is shown that disturbances with sufficiently short wavelengths grow at the maximum rate. As an example the results are applied to the case of the Crab Nebula.

Interpolation Laws for Chromospheric Ca II (Mg II) K or H Line Source Function for Complete Redistribution.

ANDREW SKUMANICH, *High Altitude Observatory*.—Interpolation formulas for the chromospheric contribution to the line source function are derived from numerical calculations for Ca II (Mg II) when formed by resonance scattering with selective absorption (two-level approximation) for various parameters (cf. Hummer, D. G., and Averett, E. H., *Monthly Notices Roy. Astron. Soc.* **130**, 295, 1965; and Skumanich, A., *Astron. J.* **71**, 871, 1966).

For a thin chromosphere, the contribution is constant at ϵB , where ϵ is the probability of a collisional de-excitation and B the line Planck function.

For a thick chromosphere which is thinner than the saturation length (cf. J. T. Jefferies, *Astrophys. J.* **132**, 775, 1960), the contribution has a boundary value of $\sim \epsilon B t^{\frac{1}{2}}$ and a peak value of $\sim \epsilon B t$ and varies as the square root of the depth for a Doppler "core" controlled line (i.e., $t < a^{-1}$); it is the chromospheric thickness at line center and a , the damping constant. For a "wing" controlled line (i.e., $t > a^{-1}$), the surface value is $\epsilon B (t/a)^{\frac{1}{2}}$ while the peak is $\epsilon B (t/a)^{\frac{1}{4}}$. Here the variation is as the square root for depths less than a^{-1} and as the fourth root for larger depths. For $a \gtrsim 1$, one obtains the dispersion profile results with $a = 1$. The location of the peak occurs at $\sim \frac{1}{2}t$.

For chromospheres thicker than the saturation length, the expected results are obtained by setting t to the saturation length.

Using the Eddington–Barbier approximation, we find that the intensity ratio $K_2/K_3 \simeq t^{\frac{1}{2}}$ if the "core" controlled case applies.

The solar K_2/K_3 ratio (Goldberg, Mohler, and Müller, *Astrophys. J.* **129**, 119, 1959) yields $t \simeq 4$, i.e., a fairly thin chromosphere. This value and the observed wavelength of K_2 yields a broadening tur-