New Mexico.—A method of stellar model construction is described which allows easy steps from one model to the next in the course of evolution of a stellar mass. The equations which are solved simultaneously at each time step by using the IBM 704 are the following: the radiation flux equation, an approximate convective flux equation, the electron heat conduction equation, the equation of momentum conservation, and the conservation of energy equation. The calculation is done in a Lagrangian coordinate system making the conservation of mass equation very simple. Standard energy generation expressions are used. We have calculated the equations of state and opacities as needed. These data include, among other details, the effects of radiation pressure and energy, and those of electron degeneracy. Solution of these simultaneous equations at each time step allows one to watch the one-space-dimensional relaxation of stellar mass to its equilibrium in all the nonlinear nonadiabatic detail. Some results for one solar mass are given.

H-Beta Photometry for the Association I Lacertae. D. L. CRAWFORD, *Kitt Peak National Observatory and Arthur J. Dyer Observatory, Vanderbilt University.*—The association I Lacertae has been studied recently by R. H. Hardie and C. K. Seyfert (1959, *Astrophys. J.* **129**, 601). They utilized objective prism spectra and *U, B, V* photometry to obtain an H-R diagram. The present paper may be considered an extension of that work, employing new observational data.

All stars earlier in spectral type than A0 were measured with conventional H-beta filter (Crawford, D. L., 1958, *Astrophys. J.* **128**, 185). In addition, a few stars later than A0 and lying above the observed main sequence were measured as a test for membership. Membership of some late B-type stars in the dispersed area of the association has also been tested.

A revised list of members is presented, and a new H-R diagram shown.

The Extreme Ultraviolet Spectrum of the Sun. C. R. DETWILER, J. D. PURCELL, AND R. TOUSEY, *U. S. Naval Research Laboratory.*—Spectra obtained with a normal incidence grating spectrograph on April 19, 1960 confirmed all the emission lines appearing in the March 13, 1959 spectrum and added many new lines, extending to 500 Å. The identified lines are almost all resonance and low excitation potential lines of the abundant light elements through sulfur. About 30 lines have not yet been identified. Limb effects can be seen in several lines. New lines include the resonance lines of SiXII at 499 and 520 Å.

The 1960 spectrum was obtained free from stray light by double dispersion. It reveals a solar continuum extending to 1000 Å. The intensity is en-

hanced near Lyman- α and this may be the charge transfer continuum of H_2^+ . Below 1525 Å the continuum is free of Fraunhofer lines. However, it shows H_2O absorption bands produced by water from the rocket. The Lyman continuum is also present, and shows absorption by N_2 .

Two New Applications of 21-Cm Absorption Measurements. NANNIELOU H. DIETER, *Air Force Command and Control Development Division, L. G. Hanscom Field, Bedford, Massachusetts*, AND BRUCE C. MURRAY, *Air Force Research Division, L. G. Hanscom Field, Bedford, Massachusetts.*—The annual and diurnal motions of the earth produce corresponding variations in the observed frequency of 21-cm absorption lines present in the spectra of discrete radio sources. These lines result from absorption by neutral hydrogen clouds lying between the discrete source and the observer, and at a central frequency corresponding to the relative radial velocity of the earth and the absorption cloud. Lilley and Brouwer are already instrumenting an observation of the annual frequency shift to obtain an improved value of the solar parallax. The present paper proposes two other new applications of precise frequency variation measurement.

Measurements of both annual and diurnal frequency variations can yield apparent positions of the absorbing hydrogen clouds. The apparent positions of the clouds include, however, the aberration due to the relative motion of the cloud with respect to the earth. Measurements by long-wavelength interferometry, on the other hand, yield apparent positions of the same discrete sources which include aberration caused by the relative motion of the source with respect to the earth. Consequently, comparison of Doppler-derived apparent source positions with those obtained by interferometry will give the difference in proper motion between the source and cloud.

An indirect test of the transverse Doppler effect predicted by the special theory of relativity is also proposed. This test is based upon a comparison of the measured annual frequency variation with that corresponding to the value of the astronomical unit obtained independently by improved radar-ranging techniques.

A Uniform Statistical Analysis of Jovian Decameter Radiation, 1950–1960. JAMES N. DOUGLAS, *Yale University.*—A permanent IBM-card catalogue has been initiated of all of the known Jupiter decameter radio noise storms, kindly made available by C. Shain, B. Burke, K. Franklin, R. Gallet, J. Kraus, G. Reber, A. Smith, and T. Carr, and supplemented with four years of multichannel observations at Yale. Uniform statistical analysis of this material establishes the radio (presumably also the solid-body)