close correlation of regions of maximum band intensity with those of maximum absorption. An interstellar D-line versus λ 4430 plot shows a definite correlation; however, the scatter is larger than in the case of reddening so that it may be due largely to correlation of both with distance. The data is therefore inconclusive as to the coincidence of regions where the D lines and 4430 are produced. The correlation of 4430 intensity with the intensity of the diffuse interstellar band at λ 6284 is good.

The observed data indicates that the 4430 absorption is produced largely in regions where interstellar reddening occurs, although they do not appear to result from the same agent. Therefore appreciable deviations from the average ratio of these quantities occur occasionally when large numbers of stars are considered.

Yerkes Observatory,
Williams Bay, Wis.

Halliday, Ian and John F. Heard. Observations of the variable spectrum of the star HD 218393.

A study has been made of about 90 spectrograms of this star taken at the David Dunlap Observatory during four seasons from 1946 to 1950. Spectral variations have been observed similar to those which have been described by Struve and others. A definite correlation has been established between the strength of the α Cygni lines and the velocities obtained from these lines, such that when the lines are strongest the velocities are most positive. A period, apparently not quite constant, of from 37 to 40 days seems to be associated with these variations. Hydrogen and calcium velocities may share these variations with smaller amplitudes, but the helium velocity probably does not vary. The hydrogen emission features and the occasional doubling of hydrogen absorption lines are not correlated with the periodic variations.

David Dunlap Observatory,
Richmond Hill, Ont.

Hamid, Salah, C. M. Huffer and Zdeněk Kopal. Computation of elements of eclipsing binaries by automatic methods.

The IBM electronic computer has now been adapted to the computation of eclipsing binaries. The Zessewitsch tables have been put on IBM cards and the computation of the elements of RZ Cass has been accomplished using 137 observations inside the primary eclipse. The table shows the difference between the former results using 26 normals and the new results using 137 original observations:

	26 Normals	137 Observations
C_1	+0.0589±0.0014	+0.0613±0.0017
C_2	+0.0695±0.0002	+0.0722±0.0008
$\Delta\lambda$	+0.0033±0.0023	+0.0014±0.0060
ΔU	−0.0001±0.0004	+0.0002±0.0014
r_a	0.2404±0.0016	0.2452±0.0025
r_b	0.2837±0.0017	0.2887±0.0026
i	82°.14±0°.06	82°.04±0°.08

The equation used is from Kopal's method, as follows:

$$W^{\frac{1}{2}}(p^2 - p_0^2)\,C_1 + 2W^{\frac{1}{2}}(p - p_0)\,C_2 + W^{\frac{1}{2}}C_3 + n\Delta\lambda + (1 - n)\,\Delta U = W\sin^2\theta.$$

The first members of each term have now been put on IBM cards, so the equations can now be formed by selecting the proper card and subtracting the appropriate data for the same members in p_0. About 500,000 cards are required for the table.

Copies of the Zessewitsch tables and for the final Hamid tables are available for those desiring to use this method and may be obtained from the Washburn Observatory or the Watson Computing Laboratory in New York.

Harvard College Observatory,
Cambridge, Mass.,
and Washburn Observatory,
Madison, Wis.

Hardie, Robert. The problem of U Cephei.

The eclipsing variable U Cephei has been investigated by many photometric observers and shown to have a circular orbit. Carpenter[1] and Struve[2] have obtained velocity curves from spectroscopic data giving orbits characterized by eccentricities of 0.47 and 0.2.

It has been pointed out by Struve [3, 4] that the spurious orbital curves provided by the spectroscopic material may be attributed to stream motions and possibly to an effect resulting from a combination of rotation and Stark effect.

The spectra which were used by Struve in 1943 were re-examined and studied with a view to making corrections to the measured velocities. At the phases around eclipse the *H* lines become very asymmetrical and an attempt was made to estimate the effect of the asymmetries on the velocity measurements. Microphotometer tracings were made for most of these spectra, and the skewness in the hydrogen lines, $H\gamma$, $H\delta$, $H\epsilon$, $H8$ was measured in a manner which determined how far the center of the core lay from the center