The micrometer motor is controlled by two photomultipliers. One of these receives light through a radial slit lying across the limb; the other, for comparison, has a small aperture outside the limb and a similar one a short distance inside. The micrometer motor causes the microscope to follow the limb along a line of constant light intensity by balancing the output of the two multipliers. After tracing the 180° arc of the bright limb, the rotation of the plate is automatically reversed and the profile is redrawn as a check against accidental and electrical disturbances.

The horizontal scale of the profiles is 1.6 inches per degree of position angle; the vertical scale, with the photographs used, is about 0.65 inch per second of arc on the moon's radius. Corrections for spindle errors, differential refraction, and eccentricity will be introduced by redrawing the reference line originally traced by the instrument.

Since variations in the brightness of the moon along the limb can produce corresponding changes in the profile of the photographic image, the density of the image is measured as the profile is traced. This is accomplished by a third multiplier receiving light from a small area about 0.025 inch inside the limb.

The accuracy of the measures is indicated by the intercomparisons of the profiles resulting from pairs of plates exposed in close succession. The probable error of a single profile point, based on such internal evidence, is $0''.05$.

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Weaver, Harold F. The occurrence of metallic-line stars in galactic clusters.

Examination of a number of galactic clusters has so far revealed metallic-line stars in all clusters except NGC 752, a peculiar object containing almost no stars earlier than F0-F2. Numbers of metallic-line stars in five representative clusters are as follows:

Pleiades	9
Hyades	9
Praesepe	9
Coma Berenices	6
M39	1

The photographic absolute magnitudes of these 34 metallic-line stars range from +1.7 to +3.3. There is a fairly strong indication that the luminosity function of the metallic-line stars is bimodal with maxima occurring at absolute magnitudes +1.9 and +2.4.

Within the absolute magnitude interval +1.7 to +3.3 the five representative clusters under discussion contain 65 ordinary stars in addition to the 34 metallic-line stars given in the above table. In these five clusters the metallic-line stars thus comprise 35 per cent of the total stellar population in the absolute magnitude interval +1.7 to +3.3. This is a significantly higher percentage of metallic-line stars than has been found by Slattebak for the general population of nearby stars.

In the galactic clusters the metallic-line stars always occur in certain well-defined regions—critical regions, they might be called—of the HR-diagram. In the vicinity of a critical region the spectra are normal or only slightly unusual. As we proceed into the critical region, the spectra become progressively more peculiar, and combine the spectral characteristics of stars occurring in different regions of the HR-diagram. One might say that, in the vicinity of these HR critical regions in which metallicism can occur, the physical parameters of a star exist in a very delicately balanced state. As we proceed into the critical region, the balance is upset, and some as yet unspecified physical process that takes place (producing, possibly, an extended, turbulent atmosphere) reveals itself in the metallic-line and high luminosity characteristics that we observe spectroscopically.

It is likely that high dispersion spectroscopic studies of the stars in and around HR critical regions in galactic clusters would yield important information on the nature of the metallic-line mechanism.

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Weston, Edwin B. The spectrum of the central star in the reflection nebula NGC 7023.

The spectrum of this star, BD +67°1283, HD 200775, MWC 361, has been described in a recent note submitted to *Publications of the Astronomical Society of the Pacific*. The results of measurement of additional plates of this star show that the central hydrogen absorption cores probably have a variable radial velocity. Very weak lines of Na I were also found on a more recent panchromatic plate of moderate dispersion.

The radial velocities determined from the [Fe II] lines agreed well with those determined for the star from the C II and Mg II absorption lines. The central absorption cores of the hydrogen lines gave highly accordant radial velocities that differed appreciably from those of the star.