emission seen in the chromosphere with sizes 5–10″. Profiles *c* and *d* are from regions which seem to be comparatively free from activity, and are presumed to represent typical λ 10830 emission from the chromosphere. The plates, from which the profiles in Figure 1 were taken, were calibrated using the intensity of the disk at λ 10830 as a standard source. By means of a wedge slit and a calibrated filter, it was possible to calibrate the plates in terms of units of $10^{-3}\ I_\odot$. We have found the average intensity of the chromosphere at λ 10830, seen at the limb, to be about $10^{-2}\ I_\odot$. Estimates of $\Delta\lambda_D$, $\tau_o(r)$, and $I/I_\odot$ made from the February 13 plates are presented in Table 1. In

TABLE 1

PARAMETERS OF OBSERVED λ 10830 PROFILES

Profile	$\Delta\lambda_D$ (Å)	$\tau_o(r)$	$I/I_\odot$
a	0.45	3 5	$2\ 4\times10^{-2}$
b .	.50	1 7	$2\ 1\times10^{-2}$
c ..	.55	4 0	$0\ 8\times10^{-2}$
d	0 55	2.0	$0\ 9\times10^{-2}$

general, the chromospheric profiles are characterized by values of $\Delta\lambda_D = 0.55$ Å, $\tau_o(r) = 2.0$–4.0, and $I/I_\odot = 10^{-2}$ for these parameters. These estimates of $\Delta\lambda_D$ and $\tau_o(r)$ are in good agreement with previously published values of the chromospheric λ 10830 emission (Mohler and Goldberg 1956; Tandberg-Hanssen 1960, 1962).

The author wishes to express his gratitude to Dr. E. Tandberg-Hanssen for his advice and criticism. This work was supported by the National Science Foundation.

RICHARD ROYAL FISHER

May 9, 1964
DEPARTMENT OF ASTROPHYSICS AND ATMOSPHERIC PHYSICS
UNIVERSITY OF COLORADO
AND
HIGH ALTITUDE OBSERVATORY
BOULDER, COLORADO

REFERENCES

Azambuja, L. and M. d'. 1938, *Bull. Ap.*, **9**, 350.
———. 1940, *Observatory*, **63**, 269.
Babcock, H. D. and H. W. 1934, *Pub. A.S.P.*, **46**, 132.
Firor, J. W., and Zirin, H. 1962, *Ap. J.*, **135**, 122.
Mohler, O. C., and Goldberg, L. 1956, *Ap. J.*, **124**, 13.
Tandberg-Hanssen, E. 1960, *Ap. Norvegica*, **6**, 161.
———. 1962, *Ann. d'ap.*, **25**, 357.
Tandberg-Hanssen, E., Curtis, G. W., and Watson, D. K. 1959, *Ap. J.*, **125**, 260.

AURORAL EMISSION LINES IN BOSS 1985*

Boss 1985 (HR 2902) is a binary system consisting of an M2 Iab (Bidelman 1954) and a B2 (V:) (Jaschek and Jaschek 1963). The spectrum is very similar to that of VV Cephei. Strong [Fe II] and [Ni II] emission lines are always present; emission of hydrogen, Ca II, and Fe II vary in intensity over a period of about 25 years (Cowley 1964).

During the winter of 1963–1964 six spectrograms of the visual region of Boss 1985 have

* *Contributions from the McDonald Observatory, University of Texas*, No. 390.

been obtained at 18 Å/mm with the coudé spectrograph of the McDonald 82-inch telescope. On all six plates a weak emission line at λ 6300 is visible. If this is one of the [O I] auroral lines one expects to find λ 6363 with an intensity of one-third that of λ 6300. Because of the weakness of λ 6300 it is not surprising that λ 6363 cannot be detected. No emission line is visible at λ 5577 which, in the Earth's aurora, is usually the strongest of the three lines. To rule out the possibility that the [O I] λ 6300 emission might have been formed in the Earth's atmosphere, plates of other stars taken on the same nights and with comparable exposure times and zenith distances have been examined. None shows any trace of the narrow emission seen in the spectrum of Boss 1985.

The measured velocities of the λ 6300 emission are given in Table 1. On the plate taken on March 25, 1964, the emission appeared as a very close double (or alternately as a wide emission with a fine central absorption), but the plate is very grainy and badly

TABLE 1

λ 6300 [O I] EMISSION VELOCITIES IN BOSS 1985

Date	λ 6300 Velocity (km/sec)	*M* Star Velocity (km/sec)	Quality of Plate
1963:			
Oct. 28. . . .	+24 7	+41 2	Very good
Nov. 7. .	+38 6	+38 0	Fair (emission poorly defined)
Dec. 26 . .	+29 6	+38 1	Good
Dec. 31 . . .	+21 9	+32 6	Weakly exposed
1964:			
Mar. 22 . . .	+29 7	+38 4	Somewhat fogged but good
Mar. 25. . . .	+21 4 −27.2	+37.4	Poor; grainy and fogged

fogged, so the effect may be spurious. The velocities tabulated for this plate refer to the two emission maxima. The mean velocity of the emission derived from the first five plates is +28.9 km/sec. This value is within a few kilometers per second of the center of mass velocity of the binary system (A. Cowley, in preparation).

It is presumed that the emission arises in an extremely tenuous envelope surrounding both stars. Auroral emissions have also been observed in some peculiar Be and symbiotic stars such as XX Ophiuchi (Merrill 1950) and BF Cygni (Merrill 1951) as well as in novae (Merrill 1935) and supernovae (Minkowski 1939).

This work has been partially supported by an NSF grant to the University of Chicago.

ANNE P. COWLEY
CHARLES R. COWLEY

May 18, 1964
YERKES OBSERVATORY
WILLIAMS BAY, WISCONSIN

REFERENCES

Bidelman, W. P. 1954, *Ap. J. Suppl.*, **1**, 175.
Cowley, A. 1964, A.A.S. Meeting, Flagstaff, Arizona.
Jaschek, C., and Jaschek, M. 1963, *Pub. A.S.P.*, **75**, 509.
Merrill, P. W. 1935, *Ap. J.*, **82**, 413.
———. 1950, *ibid.*, **111**, 484.
———. 1951, *ibid.*, **114**, 37.
Minkowski, R. 1939, *Ap. J.*, **89**, 156.