ture of the camera (equivalent to a telescope aperture of 1.2 m) and fast guiding. The FWHM in this image is 0.36 arc sec. This shows the impressive improvement over the present average seeing at CFHT that could be made with a little hard work and ingenuity. The fast shutter was not yet working for these runs, so examples cannot be shown of improvements that could further be made in this way.

All in all, the HR camera's first try was very successful, especially considering the rush in getting the instrument to CFHT after very late completion of the optical components. The camera has now been shipped back to DAO for a bit of surgery to correct some problems and inconveniences that were found under real observing conditions. We hope that with these improvements and with continuing improvements to the optical quality of the telescope itself, that the HR camera will soon be a much sought after instrument at CFHT.

Robert McClure, René Racine and Carol Christian

Detection Rates for the Herzberg Spectrograph + TH1 in the Blue

During the past year, the TH1 CCD has seen increased use as a detector for the Herzberg spectrograph. Because of its low read-noise, TH1 has generally been selected for relatively ambitious programs, involving observations of faint or low surface-brightness objects. Unfortunately, it has not been possible to predict accurate signal-to-noise ratios for observations of this nature since the TH1 + Herzberg spectrograph combination has remained uncalibrated. Moreover, in some cases the optimum choice of optics (ie: red, blue or white) and grating has not been obvious. The purpose of the investigation described below was to provide (1) absolute detection rates for the Herzberg/TH1 combination in the wavelength range 4000-5500 Å and (2) a relative comparison of various grating/optics combinations over a wide wavelength range to supplement the results reported by Salmon, Christian and Crowe (CFHT Information Bulletin 14, pg. 7). A summary of the gratings currently available for use with the Herzberg spectrograph is given in Table 1.

Table 1

Grating #	Lines/mm	Blaze 1 (Å)	Dispersion (Å/mm)	Dispersion (Å/23 μm)
1	1200	4000	41	.94
2	1200	7500	41	.94
3	830	8125	46	.06
4	600	4000	83	.91
5	300	7500	166	3.82
6	300	4200	166	3.82
7	300	10000	166	3.82
8	150	5000	332	7.64

Note: Blaze wavelength is for first-order.

The night of March 9/10, 1988 was used to observe a number of standard stars in the wavelength region between 4000 and 5500Å. The spectrograph was configured with grating #6 and blue optics. The slit was opened to a width of 12 arc-seconds and Cd/Ne comparison arcs were obtained periodically throughout the night. Roughly fifty standard stars observations were obtained during this photometric night.

A series of continuum lamp exposures were recorded during the last week of March when the spectrograph and TH1 were set-up in the 4th floor observing area in order to obtain absolute and relative calibrations of additional grating/optics combinations. Observations were made with grating #6 using the blue, red and white optics in order to evaluate their relative efficiencies. The optical quality of the white corrector is poor so the blue Schmidt corrector plate was used for the measurements involving the white optics. No data was recorded for gratings #2 and #8; the restrictions imposed on grating rotation by the moonlight eliminator assembly severely restrict the usefulness of the former, while the latter was not available for use during the test period. All observations were reduced with the Sun-based IRAF system at CFHT's Waimea headquarters.

The count rates, integrated across the seeing profile, expected for a V=0 AOV star at 1 airmass are given for gratings #1, 4 and 6 in Table 2. The relative efficiencies of other grating/optics combinations, spanning a larger wavelength range than could be calibrated by the standard star observations and measured with respect to grating #6 with blue optics, are given in Table 3. An interesting result is that the white optics are never more efficient than the red, while the efficiency of the latter appears to be roughly comparable with that of the blue at wavelengths shortward of 5000 Å. Consequently, the red optics should probably be used for programs which have traditionally required the white optics.

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Table 2

	Grating/Optics				
λ (Å)	#1/Blue	#4/Blue	#6/Blue	#6/Red	#6/White
4000	1.2	2.3	11.8	10.9	6.2
4500	2.4	4.9	13.9	15.9	12.6
5000	3.1	6.3	17.5	16.7	16.6
5500	2.9	7.6	14.8	18.1	18.0

Absolute detection rates for selected grating/optics combinations in the wavelength region 4000-5500 Å The values quoted are the number of electrons per second per TH1 pixel (in units of 10^6 electrons) expected from a V=0 AOV star, integrated across the seeing profile at one airmass.

Table 3

	Grating/Optics						
λ (Å)	#1 Blue	#3 Red	#4 Blue	#5 Red	#6 Red	#6 White	#7 Red
3500	0.013	—	0.030	—	1.023	0.506	—
4000	0.103	—	0.194	—	0.926	0.523	—
4500	0.169	—	0.354	—	1.146	0.905	—
5000	0.174	—	0.359	—	0.952	0.951	—
5500	0.193	0.025	0.513	1.498	1.226	1.214	—
6000	—	0.043	0.447	1.884	1.393	1.316	—
6500	—	0.184	—	2.759	1.746	1.506	2.317
7000	—	0.074	—	2.040	1.134	0.847	1.937
7500	—	0.122	—	2.572	1.333	1.016	2.691
8000	—	0.192	—	2.725	1.335	1.020	3.273
8500	—	0.287	—	3.354	1.524	1.027	4.509
9000	—	—	—	3.387	1.489	0.990	4.905
9500	—	—	—	3.086	1.412	1.149	4.624
10000	—	—	—	3.179	1.351	1.150	5.353