

NOTES FROM OBSERVATORIES

THE SPECTRUM OF μ CENTAURI¹

BY P. SWINGS, C. T. ELVEY, AND O. STRUVE

This star has exhibited striking variations in the intensities of the bright lines. Prior to 1904, emission lines of H and $Fe\ II$ were well apparent and the star resembled γ Cassiopeiae. The entire set of emission lines was very weak in 1912 and was completely absent in 1918.² Merrill and Burwell³ state that "for several years after 1918, the bright lines were absent or of low intensity. Grating spectrograms taken at Mount Wilson on June 20, 1929; February 14, 1930; May 6, 1931; and February 27, 1932, show $H\alpha$ to be a conspicuous bright line, apparently gradually increasing in intensity."

Three spectrograms were secured at the McDonald Observatory on February 15 and on April 18, 1940. The absorption spectrum is of type B2. The emission lines of H and of $Fe\ II$ are again present, the former being very strong. The first few Balmer lines (especially $H\lambda$, $H\delta$, and $H\epsilon$) are very broad absorption lines, upon which are superposed strong double-emission lines, separated by sharp central absorptions. Rather abruptly, around H_{16} , the broad absorption lines fade out—probably because of the confluence of the wings—but the Balmer emission lines remain visible as far as H_{28} . The intervals between these emission lines, which are fairly broad, give the spectrum a very unusual appearance. They look like a series of sharp absorption lines spaced about halfway between the normal positions of the Balmer lines. The Balmer continuum, if present at all, is a weak emission. The $He\ I$ lines are very strong and are much sharper than the broad Balmer lines. The line $He\ I\ 3964.73$ is remarkably strong and it may be slightly sharper

¹ HD 120324; MWC 229; α (1900) $13^h\ 43^m\ 6$; δ (1900) — $41^\circ\ 59'$.

² Curtiss, *Pub. Obs. Univ. of Michigan*, 3, 16, 1923.

³ *Ap. J.*, 78, 105, 1933. This paper contains the complete bibliography for this star.

than the other *He* I lines. But the evidence is not sufficient to conclude that there is an appreciable effect of dilution. The absorption line *C* II 4267 is strong.

The radial velocity obtained from ten strong *He* I lines and from *Ca* II 3933.66 is +26 km/sec, whereas the central cores of the Balmer lines give +47 km/sec. The difference of +21 km/sec is probably real.

The strongest *Fe* II lines are present as emissions superposed over broad absorptions. They are listed in Table I.

TABLE I
Fe II LINES IN μ CENTAURI

λ Lab.	Lab. Intensity	Notation	Stellar Intensity
4233.17	11	$b^4P_{2\frac{1}{2}} - z^4D^0_{3\frac{1}{2}}$	2
4351.77	9	$b^4P_{1\frac{1}{2}} - z^4D^0_{2\frac{1}{2}}$	1
4555.89	8	$b^4F_{3\frac{1}{2}} - z^4F^0_{3\frac{1}{2}}$	1
4549.48	10	$b^4F_{3\frac{1}{2}} - z^4D^0_{2\frac{1}{2}}$	2
4583.84	11	$b^4F_{4\frac{1}{2}} - z^4D^0_{3\frac{1}{2}}$	2
4923.93	12	$a^6S_{2\frac{1}{2}} - z^6P^0_{1\frac{1}{2}}$	2
5018.45	12	$a^6S_{2\frac{1}{2}} - z^6P^0_{2\frac{1}{2}}$	2
5169.05	12	$a^6S_{2\frac{1}{2}} - z^6P^0_{3\frac{1}{2}}$	3

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THE SPECTRUM OF T CORONAE BOREALIS

BY P. SWINGS, C. T. ELVEY, AND O. STRUVE

T Coronae, which has shown an irregular increase in brightness since 1936, resembles Z Andromedae, and probably consists of an M-type star and an early-type companion of nova-like character.¹ Spectrograms of T Coronae were secured at the McDonald Observatory on the following dates: February 19, 20, and 21, April 20 and 24, 1940. The dispersions used were 53 A/mm and 125 A/mm, at λ 4000. A strong continuous spectrum of early type is superposed over that of an M star of ap-

¹ A. H. Joy, *Pub. A.S.P.*, **50**, 300, 1938; R. Minkowski, *ibid.*, **51**, 54, 1939; O. Hachenberg and P. Wellmann, *Zs. f. Ap.*, **17**, 246, 1939; P. Wellmann, *ibid.*, **19**, 16, 1939.