

TWO FAINT WC STARS NEAR 30 DORADUS

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"Wolf-Rayet stars in the LMC : how faint do they go?" That was the title of a recent paper by Massey and Conti (1983) who found that the faintest WN star in Breysacher's (1981) catalogue of LMC WR stars has $m_v = 17.1$. The faintest WC star in that catalogue is Br74 which has $m_v = 15.6$. We have now detected two faint WC stars at $m_v \sim 18.6$, three magnitudes fainter than Br74.

These stars are 3 and 5 arcmin from the centre of the 30 Doradus nebula and were detected by blinking a pair of photographic plates taken with the UK 1.2m Schmidt Telescope (UKST). The plates were hypersensitized Kodak IIIa-J emulsion taken through narrow ($\Delta\lambda \sim 70\text{\AA}$) and broad ($\Delta\lambda \sim 1600\text{\AA}$) band filters centred on HeII $\lambda 4686$, and covered an area $\sim 2.3 \times 2.3$ centred near 30 Doradus. We found that with this filter combination we could easily detect WC stars but not WN stars.

The brighter of these two faint WC stars was later observed with the IPCS on the AAT in the wavelength range 3900-4900 \AA and was confirmed to be an early WC star. The fainter candidate was not observed. Estimates of the apparent continuum magnitudes near 5100 \AA made from the IPCS spectrum and other UKST plate material are $m_v \sim 18.3$ and 18.9. These are ~ 3 mag fainter than Br74.

There are several explanations of the surprising faintness of these stars. One is simply extinction by dust; but an extinction of 3 magnitudes or more is extremely large, even for the 30 Doradus region. A second is that the stars are the bright nuclei of planetary nebulae. However, we could detect no emission lines in the IPCS spectrum other than or stronger than those seen in the sky nearby. Moreover, we found both these objects close to 30 Doradus where there are many WR stars, but we found no similar objects on a second plate pair centred at $5^{\text{h}} 37^{\text{m}}, -66^{\circ} 35'$. We hope to be able to establish the nature of these stars from further observations. Details of these two objects, including finding charts will be given by Morgan and Good (1985) along with details of a further 4 new WR

stars ($m_v \sim 13.3 - 15.6$) not in Breysacher's (1981) catalogue, detected^v by us during searches of UKST objective prism plates.

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