

CORRESPONDENCE

*To the Editors of 'The Observatory'**31 Crateris Reëxamined*

GENTLEMEN,—

During 1974 *The Observatory* published¹ in its "Here and There" section the following extract from *The Boston Globe*: 'what moon scientists thought they saw on photographs of Mercury had turned out to be the star "31 Crater" in the constellation Corvus (the Crow)'. In the intervening six years I have carried out some research on this star and have obtained some results which may be of general interest.

First, 31 Crateris has been identified with BD $-18^{\circ} 3295$, alias HD 104337 (spectral type B₃), HR 4590 (B1.5 V) and SAO 157042 (B₃); its visual magnitude is² 5.28. Its 1950 coördinates are $\alpha = 11^{\text{h}} 58^{\text{m}} 17^{\text{s}}.515$, $\delta = -19^{\circ} 22' 50''.18$: thus, paradoxical as it may sound, 31 Crateris is indeed in Corvus.

From the astrophysical point of view it is interesting that the star was detected³ by *Mariner 10* in the far ultraviolet ($\lambda < 1000 \text{ \AA}$). This detection is surprising because "very short ultra-violet radiation can penetrate only a little way through the interstellar medium"³; furthermore, a normal early B-type star would not be expected to emit much EUV radiation owing to Lyman continuum absorption in its own atmosphere. Thus one would not expect a star of this type to be a detectable EUV source. In confirmation of this point, so far as it has been possible to find out the only other known stellar EUV sources are very hot white dwarfs with $T_e \gtrsim 6 \times 10^4 \text{ K}$, such as HZ 43 and Feige 24, cataclysmic variables such as SS Cygni and nearby stars like Proxima Centauri⁴.

Thus 31 Crateris seems to have an unexplained EUV excess. It may be significant, in connection with this excess radiation, that 31 Crateris is a close double-lined spectroscopic binary, with a period⁵ of 2.9631 days. This system is particularly interesting because the values given for $m_1 \sin^3 i$ and $m_2 \sin^3 i$ ($8.22 M_{\odot}$ and $4.40 M_{\odot}$) imply a large value for the orbital inclination; taken with the short period, it suggests the possibility that eclipses may occur. It is to be hoped, then, that further studies of this interesting star will be carried out.

I am, Gentlemen,

Yours faithfully,

R. L. STRATFORD

23 Baliol Road,
Hitchin,
Hertfordshire.

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References

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- (2) A. H. Batten, J. M. Fletcher & P. J. Mann, *P.D.A.O.*, **15**, 121, 1978.
- (3) *New Scientist*, **63**, 602, 1974. Reprinted in W. R. Corliss, *Mysterious Universe* (The Sourcebook Project, Glen Arm, Maryland), 1979, p. 82.
- (4) R. Stern & S. Bowyer, *A. & A.*, **83**, L1, 1980.
- (5) R. N. van Arnem, *Ap. J.*, **75**, 348, 1932.