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VARIABLE STARS AND X-RAY SOURCES

The positions of the X-ray sources given by Giacconi, et al. (1971 "The Uhuru Catalogue of X-ray Sources" ASE-2855 preprint Ap.J., in press) in the Uhuru Catalogue have been compared to known variable stars (Kukarkin, et al. GCVS 1969) since the few stellar identifications for X-ray sources have all been with stars which are variable in light.

In Table I we present all of the known variable stars (with the exception of those already known as X-ray stars) found within the 90% certainly boxes given in the Uhuru Catalogue or a box 10% larger (as noted); the sizes of the boxes in square degrees are given in column 2. We list all of the variables found, but some are unlikely sources for the X-rays.

In view of the binary nature of Cyg X-1 and probably Cen X-3, we consider V506 Sco and V845 Oph potentially interesting possibilities. Further, the interesting irregular nebular variable RX Ori could be the X-ray source. X Per⁺ is nearly centrally placed in the error box, and its variable spectrum, emission characteristics, and irregular light variations are well known. The RR Lyrae star and the semi-regular variables seem to us unlikely identifications but have been included for completeness. The character of the variation of 100215 and 7831 is unknown. Unfortunately little is known about the spectral characteristics of all of these stars.

The probability of finding some variable stars within the error boxes is large, so that further investigation is necessary to show if any of these might be the source of the X-rays.

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⁺The possibility that X Per might be the X-ray source has recently been pointed out by Braes and Miley (1972 Nature 235, 273) and Van den Bergh (1972 Nature 235, 273).

Table I

Variable Stars within or very near the Error Boxes in the Uhuru Catalogue

X-ray Source	Sq. Deg.	Variable Star	Magnitude	Type of Variable	Remarks	Likelihood of Identification
2ASE 0240+44	0.45	CSVS 100215	13.9	?		?
0352+30	.023	X Per	6.0- 6.6	Irreg.	B0mne; spec. var.; V/R em. var.; nearly central in box	good
0440+7	0.59	BZ Tau	13.7-15.3	Semi-reg.	late type	unlikely
0525-6	2.30	RX Ori	13.7-(17.2)	Irreg.	in diffuse nebula	fair
1440-39	0.90	V544 Cen	14.9-15.9	Eclipsing	$p = 3.10^d$; 0.1° out of box	fair
1718-39	.14	V506 Sco	13.3-16.0	Eclipsing	$p = 2.14^d$	good
1735-28	.045	V845 Oph	13.8-14.5	Eclipsing	$p = 3.83^d$	good
1757-33	.14	V1720 Sgr	14.3-15.1	Semi-reg.?		unlikely
1822+0	.073	CSVS 7831	15.0-16.3	?		?
1822-37	.26	V593 CrA	12.6-14.3	RR Lyrae	$p = 0.39^d$; nearly central in box	unlikely
2130+47	0.07:	V623 Cyg	12.6-13.0	W UMa	$p = 0.65^d$; just outside box	?