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NOTES ON THE IDENTIFICATION OF NINE VARIABLE STARS

In the course of preparing finder charts for the Variable Star Section of the Royal Astronomical Society of New Zealand I have noted a number of variables whose data, as given in the New Catalogue of Suspected Variable Stars (Kholopov et al., 1982), and the General Catalogue of Variable Stars (Kholopov et al., 1985), appears to be in error. Generally speaking, coordinates are most frequently at fault. A very useful source of reliable coordinates for faint stars over the whole celestial sphere is the Guide Star Catalogue (GSC) created for the Hubble Space Telescope. The GSC reaches fifteenth magnitude stars in many sky regions, and therefore includes many variables which are too faint to be listed in other general star catalogues.

All of the variables discussed in this paper (with the exception of V449 Lyr) have been identified in the GSC. The bright variables QV Pup, GS Vel, NSV 2954 and NSV 5444 were easily found by inspecting a computer print-out of a small sky window centred on the variable: the faint stars AE Pup, AF Pup, AK Vel and AM Vel lie in rich Milky Way fields and their identities have been confirmed beyond doubt by plotting small charts from the GSC and matching them with the original published finder charts. Table 1 lists the main data extracted from the GSC. Additional notes for most of the variables are given below.

AE Pup, AF Pup, AK Vel, AM Vel. These four stars were first studied by Zagar (1935) who also published finder charts. The published coordinates for all of these stars are in error, the declinations being out by several minutes of arc.

AE Pup :

The GSC lists three close companions. They are

	mag	R.A. (J2000)	Dec. (J2000)
GSC 7667-3073	14.01	8 ^h 05 ^m 50.03 ^s	-42° 30' 08.5"
GSC 7667-3659	14.66	8 05 49.48	-42 30 09.6
GSC 7667-3979	15.01	8 05 50.43	-42 30 35.7

All of these values are means of three plate measurements.

AK Vel :

The error in the position was noted on the VSS, RASNZ chart for BL Vel (chart 828, Bateson and Morel, 1985). The corrected position has not yet appeared in the 4th edition of the GCVS.

AM Vel :

A somewhat brighter star (GSC 8154-445, mag. 12.1) lies 22" of arc to the SW. The error in the position of AM Vel was noted on the VSS, RASNZ chart for BB Vel (chart 367, Bateson et al., 1976), and the corrected position now appears in the 4th edition of the GCVS.

QV Pup :

This variable carbon star has been identified variously as CoD-29^o5141 (GCVS, 4th ed.) and CoD-29^o5142 (Stephenson, 1973). These two CoD stars lie only 1.5' apart on a line which is nearly North-South. Errors in the declinations of both CoD stars are responsible for the ambiguous identification. Comparison of blue and yellow light plates show the southern star, CoD-29^o5142, to be red, and the correct identification. Coordinates (1950): 7^h 53^m 13.0^s -29^o 31.2'.

GS Vel :

The photometric variability of this star was first noted by Humphries et al. (1972), where their UB_v measurements varied from 9.21 to 9.45 in V. They identified this M2 Ib supergiant by a CoD number, CD-55^o3622. This DM number corresponds, however, to HDE 301021, of spectral type F8, and hence appears to be incorrect. The correct identification appears to be a nearby star HDE 301022 (MO) = CPD-55^o3815. This star is not in the CoD.

Correct coordinates for GS Vel = CPD-55^o3815 are

(1875) 10^h 40^m 29.5^s -55^o 57.4' (CPD)

(1950) 10 43 30 -56 21.0 .

Finder charts. GS Vel is plotted incorrectly on VSS, RASNZ chart 554 (Bateson et al., 1981), but the correct identification is made on chart 869 (Bateson and Morel, 1986).

NSV 2954 :

There is a misprint in the paper by Hawarden (1975) where the star's variability was first suggested. The star is stated to be in the vicinity of the cluster NGC 2243 (R.A.=6^h 28.7^m Dec.= -31^o 16'). The star number cited is HD 45095, but this star is far from the cluster and its spectral type (G2 V) does not match the colours published by Hawarden. The cor-

Table 1:
IDENTIFICATIONS AND COORDINATES FOR NINE VARIABLE STARS.

STAR	GSC No.	GSC Mag(J)	Mean Position (J2000)						N
			h	m	s	o	'	''	
AE Pup	7667-3465	13.64	8	5	51.25	-42	30	38.3	3
AF Pup	7672-129	14.13	8	13	38.75	-43	7	46.4	3
AK Vel	8136-2430	12.99	8	5	53.88	-46	36	58.1	1
AM Vel	8154-114	13.96	8	35	37.03	-47	45	33.9	3
QV Pup	6565-1227* 6565-3198*	13.33 9.55	7	55	13.30	-29	39	7.2	2
GS Vel	8622-2228	8.96	10	45	30.86	-56	36	42.5	2
NSV 2954	7074-1253	7.53	6	30	0.64	-31	10	26.3	1
NSV 5444	8229-2057	9.40	12	4	5.31	-45	56	14.4	1
V449 Lyr	-----	----	19	7	37	+44	0.2	---	---

N = number of GSC plate measurements.

Note:

* For QV Pup, two GSC stars with nearly identical coordinates, differing only 0.03s in R.A. and 0.6" in declination. Assumed to be one and the same object.

rect identification is probably HD 46095 = SAO 196879 which lies only 8' from NGC 2243 and has suitable spectral type (AO V) and magnitudes (7.4v, 7.4p) to match the known colours.

Coordinates (1950): $6^{\text{h}} 28^{\text{m}} 7.0^{\text{s}}$ $-31^{\circ} 08' 21''$ (SAO).

NSV 5444 :

Is star 35 in standard region E5. This star is HD 104806 = CoD-45^o7506 = CPD-45^o5761. Declination in NSV is in error, and should be -45^o39.5'. NSV position apparently refers to CPD-45^o5762, a faint non-HD star 1'54" due S of the HD star.

V449 Lyr :

Announced by Romano (1972). Range 12.5 - 16.0p. Lies quite close to MV Lyr, for which a finder chart appeared in AAVSO Circular 47 (1974). V449 Lyr is situated slightly south-west of star '121', but is not plotted on the chart, which appears to reach thirteenth magnitude, at least. V449

Lyr is not listed in the GSC, whose limiting magnitude is about 14.4V in this region.

Possibly the published maximum magnitude is too bright, by as much as two magnitudes. The published position needs revision. An improved, but still approximate position is given in Table 1.

The identifications and coordinates found for these variables in the GSC are summarized in Table 1. The meanings of most column headings are self-evident. Column 3 gives mean values of GSC magnitudes. All of the southern GSC magnitudes are derived from plates of the UK SERC J Survey (blue-green sensitive). Column 5 gives the number of plate measurements, N.

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