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ON IDENTIFICATIONS OF SEVERAL VARIABLE STARS IN CYGNUS

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In the earlier practice of variable-star research, lack of sufficient attention to accurate coordinates created a number of problem cases even when discoverers presented quite accurate coordinates in their original announcements. In this paper, we present a solution of a problem case for several variable stars in Cygnus as it is accepted now by the GCVS team, based upon detailed discussions with T. Kato (Kyoto University, Japan), J. Manek (Stefanik Observatory, Czech Republic), and R. Webbink (University of Illinois, USA).

Baade (1928) announced his discovery of a number of new variable stars. He did not publish finding charts but presented rather accurate coordinates for the equinox 1925.0. Among stars designated in the Namelist (NL) No. 31 (Guthnick and Prager, 1933), there were Baade's variables OX Cyg (108.1928), OY Cyg (76.1928), and PR Cyg (70.1928).

OX Cyg. Baade's coordinates ($19^{\text{h}}52^{\text{m}}0^{\text{s}}.6$, $+39^{\circ}3'9''$, 1925.0) clearly correspond, in the USNO A1.0 catalog, to a star at $19^{\text{h}}54^{\text{m}}39^{\text{s}}.46$, $+39^{\circ}14'59''.2$, 2000.0 (USNO A1.0 blue magnitude: $16^{\text{m}}1$; red magnitude: $14^{\text{m}}7$). The discoverer attributed the star to eclipsing variables (NL No.31 calls it a short-period variable); the variability of the A1.0 star has been confirmed by J. Manek (private communication) on Sonneberg plates, with probable Algol-like changes. As it will be shown below, all other information published for 'OX Cyg' actually refers to OY Cyg.

OY Cyg. Baade's coordinates ($19^{\text{h}}52^{\text{m}}5^{\text{s}}.2$, $+39^{\circ}6'6''$, 1925.0) correspond to GSC 3137.1152 ($12^{\text{m}}9$; $19^{\text{h}}54^{\text{m}}43^{\text{s}}.86$, $+39^{\circ}17'58''.2$, 2000.0). For unclear reasons, NL No. 31 gives declination different by approximately $25'$; the GCVS accepted the NL coordinates, having in mind that the NL contains a reference to a letter from Baade concerning his new variables. Baade considered his star a Mira (in the NL, an irregular variable).

Nassau and van Albada (1949) identified OY Cyg with the red giant 23–30; their paper contains good photographic charts for program stars. The star 23–30 is actually in approximately $1'5$ from the NL position. The photometry presented by Nassau and van Albada shows only marginal evidence for variability.

Hoffleit (1975) published a detailed study of a large-amplitude variable, probably a symbiotic one, called OX Cyg in her paper. She presented a finding chart. The star, later included into catalogs of symbiotics and into programs of amateur groups, is definitely GSC 3137.1152. Note that, for OX Cyg, both references in the GCVS (4th edition) are to Hoffleit (1975).

PR Cyg. Baade's star, classified as an irregular variable, has coordinates $19^{\text{h}}52^{\text{m}}59^{\text{s}}.9$, $+38^{\circ}4'5''$, 1925.0. It is identical with GSC 3137.1721 ($13^{\text{m}}3$; $19^{\text{h}}55^{\text{m}}41^{\text{s}}.23$, $+38^{\circ}16'3''.9$, 2000.0). Nassau and van Albada (1949) identified it with their red giant 24–40 and presented several photographic and infrared measurements, again with only marginal evidence for variability. They stated, however, that their photographic data show PR Cyg as much as $1^{\text{m}}7$ fainter than the catalog value. The USNO A1.0 coordinates of 24–40 are: $19^{\text{h}}56^{\text{m}}11^{\text{s}}.20$, $+38^{\circ}15'52''.7$ (2000.0), about $0^{\text{m}}5$ in right ascension and $0'.2$ in declination from Baade's position. The star's magnitudes in the A1.0 catalog are: $18^{\text{m}}3$ (blue) and $15^{\text{m}}3$ (red). Baade's coordinates correspond, however, to Nassau and van Albada's star 24–39.

Decision taken by the GCVS team. We accept the following identifications to be used in future:

OX Cyg = Baade's original 108.1928. (Type EA:).

OY Cyg = Baade's original 76.1928 = Hoffleit's 'OX Cyg' = IRAS 19529+3910 = GSC 3137.1152. Not identical with Nassau and van Albada's 23–30. (Type ZAND:).

PR Cyg = Baade's original 70.1928 = Nassau and van Albada's 24–39 = GSC 3137.1721. (Type LB).

Nassau and van Albada's stars 23–30 and 24–40 are to be considered suspected variables; they will enter one of the future catalogs of suspects (supplementing the NSV catalog).

Versions of the GCSV with corrections regularly introduced can be retrieved from the GCVS home page (<http://zeus.sai.msu.su/groups/cluster/gcvs/gcvs/>).

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