TABLE 2

PHYSICAL PARAMETERS AND PHOTOMETRIC INDICES FOR A SAMPLE OF post-AGB AND RV TAU STARS

Star	$T_{\rm eff}$ (K)	log g (dex)	$[c_1]$	$[m_1]$	$\Delta[c_1]$	Sp. T.	Comment
HD 46703	6000	0.40	1.069	0.165	−0.463	F7 IVw	pAGB
HD 56126	7167	0.67	1.375	0.393	0.700	F5 Iab:	pAGB
HD 95767	7300	1.30	1.111	0.266	0.049	F3 II	pAGB
HD 107369	7600	1.50	1.575	0.119	−0.213	A2 II/III	pAGB
HD 108015	6800	1.25	1.187	0.237	0.000	F4 Ib/II	pAGB
HD 112374	6600	0.80	1.057	0.272	0.020	F3 Ia	pAGB
HD 148743	7200	0.50	1.509	0.169	0.000	A7 Ib	pAGB
HD 161796	6850	0.37	1.447	0.251	0.312	F3 Ib	pAGB
HD 163506	6550	0.60	1.309	0.193	−0.085	F2 Ibe	pAGB
HD 172481	7250	1.50	1.297	0.164	−0.257	F2 Ia0	pAGB
HD 179821	6775	0.90	1.003	0.601	0.675	G5 Ia	pAGB
HD 190390	6600	1.60	1.071	0.190	−0.338	F1 III	pAGB
HD 170756	5900	1.13	0.679	0.534	0.281	K0 III	RV Tau
AR Pup	6300	1.50	0.879	0.328	0.025	F0 Iab	RV Tau
IW Car	6700	2.00	1.211	0.270	0.160	A4 Ib/II	RV Tau
RU Cen	6000	1.00	0.741	0.457	0.234	F7/F8;A4 Ib	RV Tau
EN TrA	6150	1.25	0.968	0.312	0.074	F2 Ib	RV Tau

Since there are evidences that log g depends on $T_{\rm eff}$ for a given luminosity class (Straizys & Kuriliene 1981) we attempted to incorporate the color term $(b-y)_0$ but found it to be insignificant.

Equation (5), when compared with equation (5) of Arellano Ferro & Mendoza (1993), has smaller dispersion and a slightly higher correlation coefficient. However, we should note that the present calibration indicates lower gravities by 0.3–0.5 dex for a given $\Delta[c_1]$. This invited a comparison of the gravities used by Arellano Ferro & Mendoza (1993), taken from Luck & Bond (1989), with the gravities used in the present work from Lyubimkov et al. (2010) which are listed in Table 1. There are ten F and early G type stars in common; Figure 4 shows that the gravities of Luck & Bond (1989) are systematically smaller. Luck & Bond (1989) found that their spectroscopic gravities, obtained mostly from the ionization equilibrium condition on Fe I and Fe II lines, are systematically smaller by 0.3 dex than gravities derived via the membership of stars in clusters and their photometry. Similar discrepancies were found by Luck & Lambert (1985) for classical cepheids when spectroscopic gravities were compared with gravities obtained via PLC relationship. These authors forward a possible explanation as due to the fact that models built under the assumption of hydrostatic equilibrium may not be a good representation for the extended atmospheres of supergiant stars. The reader is referred to the detailed discussions on this point given in the above papers, and similar arguments might be invoked to explain the discrepancies displayed in Figure 4.

5. THE CASE OF post-AGB STARS

We often have wondered if the calibrations of physical parameters that have been worked out for young yellow supergiants would be equally valid for more evolved and less massive post-AGB stars of similar temperature and gravity. We found a few well known post-AGB and RV Tau stars in the catalogue of Stasińska et al. (2006) with reported values of effective temperature and gravity estimated by spectroscopic techniques, and with Strömgren photometry available in the Simbad database. These stars are listed in Table 2 and plotted in Figure 5 with blue and red symbols on the $[c_1]$-$T_{\rm eff}$ and $[m_1]$-$T_{\rm eff}$ planes of Figures 1 and 2. The stars are rather faint, and their spectral types may be difficult to determine with high accuracy. For this reason, and to avoid too small a sample we included several late