# COMMISSIONS 27 AND 42 OF THE IAU INFORMATION BULLETIN ON VARIABLE STARS 

## PHOTOMETRY AND ASTROMETRY OF VARIABLE STARS

The Carlsberg Automatic Meridian Circle on the Canary Island of La Palma makes thousands of measurements of star positions and V magnitudes each year and the results have been published in a series of catalogues (CMC4 1989; CMC5 1991; CMC6 1992; CMC7 1993; CMC8 1994). Amongst these stars are several thousand variable stars. A specific programme of measuring the positions of variable stars with maxima in the range $\mathrm{V}=12$ to 14 was started in 1995 . This range was chosen to include stars which are too faint to be observed by the HIPPARCOS satellite.

This note is to draw the attention of those interested in both astrometry and photometry of variable stars that the compilation of these results will be available soon from the CAMC group and also to point out that a substantial archive of variable star photometry is already available in the Carlsberg Meridian Catalogues.

Photometry is carried out through a Johnson V filter (see Helmer and Morrison (1985) for full details of the passband). Nightly calibration is made using about 50 photoelectric standards. A colour equation is derived for each annual catalogue allowing corrections to be made if the spectral type of the star is known. If no spectral type is available the star is assumed to have a $B-V$ colour index of $+0^{m} 5$. Mean errors range from about 0.05 magnitude for a single observation at the zenith of stars of $\mathrm{V}=10^{\mathrm{m}}$ or brighter, to about $00^{\mathrm{m}} 40$ for a star near the limiting magnitude of $\mathrm{V}=15$. The results presented in an Appendix in each Carlsberg Meridian Catalogue give the observed V magnitude on each photometric night for all stars known to be variable.

Positions are made by reducing observations differentially with respect to a grid of FK5 stars. The accuracy of the position also depends on the brightness, the zenith distance and the number of observations made. A typical value for a star of $\mathrm{V}=13^{\mathrm{m}}$ observed at the zenith on 6 nights is $0^{\prime \prime} 07$ in RA and $0^{\prime \prime} 08$ in Dec. The CAMC can observe stars from $+90^{\circ}$ to $-40^{\circ}$ declination. Proper motions are also listed in the catalogues when first epoch positions are available (usually from the Astrographic Catalogue). The data taken by the CAMC between 1984 and 1995 is being prepared for inclusion on a CD-ROM which will be available in the near future. It will contain entries on 138,603 stars of which 2,457 are recognised variables. The total number of photometric observations of these stars is 33,406 . An additional 175 observations of 15 recent novae and supernovae are also included. In the meantime the CAMC group below will be glad to deal with any enquiries for data from individuals.

For further information contact the author at the address below or by E-mail to:
merlp@ast.cam.ac.uk
The CAMC project also has a WWW page at http://www.ast.cam.ac.uk/ dwe/SRF/camc.html

R.W. ARGYLE<br>Royal Greenwich Observatory, Madingley Road, Cambridge, CB3 0EZ, United Kingdom

## References:

Carlsberg Meridian Catalogue No 4. Observations of positions of stars and planets: May 1984 to Feb 1988. (CMC4), 1989. Copenhagen University Observatory, Royal Greenwich Observatory and the Real Instituto y Observatorio de la Armada en San Francisco.
Carlsberg Meridian Catalogue No 5. Observations of positions of stars and planets: May 1988 to Dec 1989, (CMC5), 1991. Copenhagen University Observatory, Royal Greenwich Observatory and the Real Instituto y Observatorio de la Armada en San Francisco.
Carlsberg Meridian Catalogue No 6. Observations of positions of stars and planets: Jan 1990 to Dec 1990. (CMC6), 1992. Copenhagen University Observatory, Royal Greenwich Observatory and the Real Instituto y Observatorio de la Armada en San Francisco.
Carlsberg Meridian Catalogue No 7. Observations of positions of stars and planets: Jan 1991 to Aug 1992. (CMC7), 1993. Copenhagen University Observatory, Royal Greenwich Observatory and the Real Instituto y Observatorio de la Armada en San Francisco.
Carlsberg Meridian Catalogue No 8. Observations of positions of stars and planets: Aug 1992 to Dec 1993. (CMC8), 1994. Copenhagen University Observatory, Royal Greenwich Observatory and the Real Instituto y Observatorio de la Armada en San Francisco.
Helmer, L. and Morrison, L.V., 1985, Vistas in Astronomy, 28, Part 3.

