

LETTERS TO THE EDITOR

DIFFERENCE BETWEEN VISUAL AND PHOTOELECTRIC MAGNITUDES

To The Editor,

I was particularly interested in Howard Landis' paper on the differences between visual and photoelectric measurements (1977 Journ. A.A.V.S.O., 6, 4.) As part of a separate programme I recently carried out a similar investigation, using 39 stars near the Cepheus/Lacerta border. For each star a visual magnitude was available (from Harvard Annals, vols. 50 & 54), together with photoelectric B and V measures, the range in colour index being almost 2^m. These data were examined for a relationship of the form

$$v = a + b(B-V) + cV \quad (1)$$

In the present context the second term on the right-hand side is the most fascinating. Landis correctly pointed out the different spectral responses of the eye and V system, but spectral type is not necessarily a good measure of apparent colour, because of interstellar reddening (though this is unlikely to have a major effect on stars as bright as those used by Landis). This is why (B-V) colour index was chosen as one of the independent variables in my least-squares fit.

I found $b = +0.124 \pm 0.031$, in qualitative agreement with Landis' principal conclusion that redder stars appear brighter in the V system than the v. By substituting appropriate values for the other coefficients in equation 1 ($a = +0.200 \pm 0.051$, $c = +0.964 \pm 0.009$ from my sample, though setting them to 0.00 and 1.00 respectively would be more satisfactory) it is simple to obtain magnitudes which should be acceptable to the average eye from photoelectric photometry on the Johnson system.

Ian D. Howarth
Department of Physics and Astronomy
University College London
Gower Street
London WC1E 6BT