COMMISSION 25: STELLAR PHOTOMETRY
(PHOTOMÉTRIE STELLAIRE)

Report of Meeting, 20 August 1970

PRESIDENT: A. W. J. Cousins.
VICE-PRESIDENT: D. L. Crawford.

Business and Scientific Meeting

Business

The proposed officers of the Commission were approved.

STANDARDS FOR THE UBV SYSTEM

A. W. J. Cousins reported that the Working Group appointed at the Prague Meeting had held no actual meetings but conducted business through correspondence. Its terms of reference had been to arrive at 'a new definition of the UBV-system' (*Proceedings* 1967, 142). Hitherto the system had been defined by the stars in the Johnson and Harris list (1954, *Astrophys. J.* **120**, 196 and 1955, *Astrophys. J.* **121**, 779), but these stars were not all observable from the Southern Hemisphere. Cousins made the following proposal: "that the non-variable HR stars brighter than visual magnitude 5.0 and located between $\pm 10°$ declination be adopted as primary standards for the UBV system, with the fainter HR stars in the same zone as secondary standards to assist in defining the colour system". This was accepted by the meeting.

Copies of a memorandum putting forward the case for the equatorial HR stars may be obtained on application to the Cape Royal Observatory. The available UBV photometry of equatorial stars in the *Bright Star Catalogue* has been collected and mean magnitudes and colours are to be published, probably in Royal Observatory Annals. A list of the stars brighter than 5.0 has already appeared as a Cape Royal Observatory Mimeogram and a further compilation will be found in *Commun. Lunar Planet. Lab.*, No. 63. Of the two, the Cape compilation has appreciably smaller random errors, and Johnson has given his approval to the adoption of the Cape list as standards for V and B − V.

POSSIBLE ALTERNATIVES TO THE U SYSTEM

A. W. J. Cousins reported that there have been complaints about difficulties in reproducing U − B with apparently similar equipment and filters. Some observers use the Corning 9863 filter as originally specified for U, others the Schott UG 2 (or UG 1) on account of its lower red leak. Contributory factors are mirror reflectivity, atmospheric transmission and the method used for correcting for the latter. Without knowledge of the wavelength variation of spectral intensity at the shortwave end of the U band outside the atmosphere it is impossible to 'reduce' ground-based observations rigorously to outside the atmosphere. It is simpler to reduce all observations to a fixed air mass. If all observers were to adopt similar procedures, then we should end up with mutually consistent results. Johnson, while admitting deficiencies in the present U − B, was opposed to introducing any minor changes.

J. Stock agreed that changes would be premature, and advocated more theoretical and observational work. Johnson's U − B measurements are supposed to be 'extra-atmospheric' but are not in fact completely so, and comparison with the Cape 'inside atmosphere' measurements gave residuals that depend on declination.

LISTING OF SEQUENCES SUITABLE FOR CALIBRATION OF PHOTOGRAPHIC PLATES

The President requested Bok and Argue to contact interested parties with a view to drawing up lists of suitable sequences (cf. *Reports* 1970, 234, 245).

Scientific Reports

V. Straižys – 'The Vilnius System for Photometric Three-Dimensional Classification of Stars'. An eight-colour intermediate-band system obtainable with glass and interference filters and photoelectric or photographic photometry. Region 3000–6600 Å. (cf. *Bulletin Vilnius Astr. Obs*, 1970, Nr. 28, 29).

E. E. Mendoza and T. Gómez: 'BVR, Potsdam and Harvard Photometries'. Intercomparison by multiple regression analysis (*Bol. Tonantzintla y Tacubaya* 1969, **5**, 111).

J. Stock: 'Reduction Procedures'. Broad-band colour transformations derived from observations of unreddened stars are not generally applicable to reddened stars (cf. A. Gutiérrez-Moreno and H. Moreno: 1970, *Astron. Astrophys.* **7**, 35). Conventional methods for extinction correction may leave considerable residuals, especially in U − B. A more rigorous method has been proposed by Gutiérrez-Moreno *et al.* (1966, *Publ. Dept. Astr. Univ. Chile* **1**, 1).

C. Jaschek: 'Information Problems in Photometry and Possible Solutions'. Discussion followed from Jaschek's contribution to the Report (p. 231). Members highly commended the *U.S. Naval Observatory Photoelectric Catalogue* (V. M. Blanco *et al.*, 1968. *Publ. USNO* **21**) but no formal resolution was passed urging continuation or extension. Stoy urged the need for critical judgment in compiling such data. Hauck referred members to the work of the European Centre de Données Stellaires de Strasbourg.

G. E. Kron: 'Stellar Photometry with the Navy Electronic Camera'.

M. F. Walker: 'Application of Electronography to Stellar Photometry'. (*Sky Telesc*, 1970, **40**, 132).

G. Wlérick: 'Photométrie d'objects très faibles identifiés avec des radiosources du Catalogue 3CR'. (Soumis à Astronomy and Astrophysics).

R. V. Willstrop: 'High Speed Photoelectric Photometry'. (cf. *IAU Symp.* **46**: 'The Crab Nebula').

K. Serkowski: 'Development of Ten-Channel Polarimeter'. A Wollaston prism polariser, dichroic filters and ten photomultipliers and integrators. Tested at Siding Spring.

N. G. Roman: 'Comparison of Roman's Photometry of Moderately Faint Stars with Measurements by other Observers'.

W. Liller: 'Photometry of CH Cygni'. Well known rapid variation in UV gradually diminished and disappeared during 1970.