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### 30a. SOUS-COMMISSION DES VITESSES RADIALES FONDAMENTALES

PRÉSIDENT: Dr J. F. Heard, Director of the David Dunlap Observatory, Richmond Hill, Ontario, Canada.

MEMBRES: D. S. Evans, Gratton, Pearce.

#### STANDARD VELOCITY STARS

It will be recalled that at the last meeting of the Sub-Commission it was decided to drop the super-giant stars  $\alpha$  Per and  $\alpha$  Car from the last lists of standard velocity stars published by the Sub-Commission (1), and to view the other super-giants on the lists with suspicion.

During the past three years little or no other dissatisfaction with the adopted velocities has been expressed, although it is noted that the Cape astronomers use a list of eleven reference stars (2) (of which seven are from the IAU lists) which includes what Evans describes as improved values of the velocities. The differences amount to a few tenths of a km/sec.

#### USE OF STANDARD VELOCITY STARS

Differing practices in the use to which the standard velocities are put have been emphasized in the correspondence preceding this draft report. Evans, reporting for the Cape astronomers, has emphasized their practice of establishing corrections applicable to each measurer by ensuring that each measures all reference star spectra, at least one of which is taken on each night of radial velocity observation. By contrast, the practice at Mount Stromlo, as reported by Buscombe, is to reduce their programme velocity measures in an absolute manner without recourse to constant comparison with measures of standard velocity spectra. They do use regular measures of the standards, however, to check the performance of their instruments and to satisfy themselves that their system is consistent with the Lick system. A similar use of standard velocity stars has been the practice at David Dunlap and at Victoria.

Despite the confidence which most observers have in their radial velocity systems, Evans has expressed concern over our lack of progress in reducing the uncertainties of radial velocities at a time when increasing accuracy is being demanded by the theoreticians. Two points in particular worry him: (a) the links between northern and southern velocity measures, and (b) the links between velocities for B- and A-stars and solar-type stars. In respect to (a), he has suggested a programme of observation of a few stars jointly by northern and southern observatories. In respect to (b) he has no specific recommendation to make, but he would like to see both points discussed at the forthcoming IAU meeting.

The Mount Stromlo observers likewise have raised the point of linking the B- and A-stars with the solar-type stars; they would like to see both B- and A-stars included in IAU velocity lists (a proposal which is not new in the discussions of the Sub-Commission), and Buscombe has listed eleven B-stars for which the Mount Stromlo observers find especially small internal probable errors. Pearce and Petrie, speaking from experience with early-type stars, are doubtful of the wisdom of attempting to settle on standard velocities for such stars; they doubt that the

velocities are constant for one thing, and they believe, moreover, that the role of standard velocity lists is to check instruments and measuring techniques, and that for this purpose, only the solar-type stars are suitable.

Although some of the foregoing points may transcend the original purpose of the Sub-Commission, they are of importance to all investigators of radial velocities, and they should be discussed at the forthcoming meeting.

J. F. HEARD  
*President of the Sub-Commission*

## REFERENCES

1. *Trans. IAU* 9, 442, 1955.
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### 30b. SOUS-COMMISSION POUR L'OBSERVATION DES ETOILES DOUBLES SPECTROSCOPIQUES

PRÉSIDENT: Professor D. B. McLaughlin, Observatory of the University of Michigan, Ann Arbor, Michigan, U.S.A.

MEMBRES: Gollnow, Herbig, Mille Northcott, Pearce, Struve, O. C. Wilson.

As in previous years, a list has been compiled that includes spectroscopic binaries and other stars with variable line displacements currently or recently under observation. The list was distributed in mimeographed form, in December 1960, to all members of Commission 30, and to a few observatories where slit spectrographic work is done, but which now have no representative on Commission 30.

Activity in this area is less than in previous years. The number of stars on the current list is 267, a considerable reduction from the 329 reported three years ago. There is very little duplication; only 8 stars are on the programs of more than one observatory.

The list contains 187 stars that are being observed primarily for determination of orbital elements. Of these, 30 were indicated as being observed for 'velocity variations' but it may be assumed that almost all of these are genuine binaries. Thirteen of the 187 have other features of interest, such as circumstellar lines, atmospheric eclipses, etc.

Another large class of objects are the class Be spectrum variables, in which changing structure of the emission lines is accompanied by variations of velocity of the emitting and absorbing gases. The list contains 60 of these objects, most of which probably should not be designated as binaries, in view of the demonstrated irregularity of most such stars.

The remaining stars on the list are miscellaneous objects of special interest, including Cepheids, magnetic variables, and  $\beta$  Canis Majoris stars.

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