

RADIAL VELOCITY AND PHOTOMETRIC STUDY  
of  
A SOUTHERN GROUP OF STARS

A THESIS

PRESENTED TO THE GRADUATE FACULTY  
OF WESTERN CONNECTICUT STATE COLLEGE

by

MICHAEL G. CUNNINGHAM

IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE  
MASTER OF SCIENCE

*Millie K. LJ*  
\_\_\_\_\_  
Thesis Advisor

*Kathryn Vacka*  
\_\_\_\_\_  
For the Graduate Division

*4/21/79*  
\_\_\_\_\_  
Date

## ABSTRACT

## RADIAL VELOCITY AND PHOTOMETRIC STUDY

OF

A SOUTHERN GROUP OF STARS

by

MICHAEL G. CUNNINGHAM

Since the publication of the Yale Zone Catalogues (Yale Trans. 30-1, Hoffleit et al, 1970; L<sup>d</sup>, 1971), numerous groups or clusters of stars with common proper motion ( $\mu > 0.1$ /yr in any one component) have been selected. These groups may either be stellar streams due to galactic rotation or galactic clusters of stars. Four of the larger groups consisting of a total of 322 stars were selected for the spectroscopic and photometric studies as a pilot project. The group mean magnitude is about 9 and most stars are population I stars of spectral types F, G, and K. Two of the groups (#27 and #38 Yale Trans. Vol 30) exhibit giant branches. Spectral types and DDO photometry were obtained for about 1/3 of the 322 stars during April 1978 at CTIO. At present, DDO photometric data are available only for a few groups. The (45-48) vs (42-45) diagrams have confirmed the giant branch of groups 27 and 38. Main sequence stars of spectral type earlier than G0 are too hot for the DDO system; however, none of the stars observed on the DDO system show unusual colors on the (45-48) vs (42-45) plot. Image tube spectra were obtained at the dispersion of  $43\text{\AA}/\text{mm}$  at H $\gamma$ . They were used for both spectral classification and radial velocity studies. Of the 23 stars in group 38 (64 stars) for

## ABSTRACT

2

which radial velocities are here reported, 70% yielded an average of about  $49 \pm 2$  km/sec. From the analyses of DDO photometry spectral classes and stellar parallaxes (for a few stars), the distance to the group is found to be about 60 pc.