procedures lead to an anomalous result when applied to the depth of the secondary minimum in the blue.

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Lee, Oliver J., Thomas J. Bartlett and Greenville D. Gore. Spectrographic observations of stars of types R, N and Oe.

In the Dearborn Survey of Faint Red Stars from declination $-4\frac{1}{2}^{\circ}$ to the north pole, most of the known stars of type R and N have been observed spectrographically. In addition, 143 other stars of these types have been discovered. Most but not all of these are faint, the limit being about visual magnitude 12.

In the main catalogue, soon to be published, we have included a further number of stars which probably are of these classes. They are designated as R? or N?

From magnitude 11.0 and on we had some difficulty in distinguishing the two types. Since, however, this uncertainty does not depend upon the position in the sky the conclusions which follow are not affected.

A chart of all known carbon stars, including the 283 listed by Sanford in his exhaustive paper¹ as well as our new ones shows that

1. Both types have high galactic concentration, the N stars more so than the R stars.
2. The maximum concentration of the N stars in the galactic anti-centric direction, which we noted in 1941, has been confirmed. It is apparent also in Sanford's graphs.
3. The R stars appear to avoid the N star nest around galactic longitude 170° and to be well distributed between 0° and 150° .

We have been surprised to find only four Oe stars, which are not recorded in the Draper Catalogue.

The scarceness of stars of types R, N and Oe and their somewhat specialized positions in the galaxy indicate that they are shortlived stages in stellar history, or that the abundance of carbon for the first two and the conditions for the development of the last one are quite localized.

1. *Ap. J.* 99, 145, 1944.

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Markowitz, Wm. Some systematic effects in radial velocities.

A study has been made of certain anomalies in the motions of the B-type stars brighter than

magnitude 5.51 such as the positive K -term and the high solar speed which they indicate. These appear to be due to the radial velocities being systematically too large in the southern part of the galaxy, longitudes 200° to 320° . Previous explanations have assumed that a southern star stream, the Scorpio-Centaurus cluster, exists.

It is suggested, however, that these large velocities may be due to:

- (a) A distortion of the galactic rotation double wave by irregular absorption.
- (b) A southern grouping of stars with a large gravitational red shift.
- (c) Systematic errors in the radial velocities.

The last effect appears to be the most important. The velocities of the southern stars were obtained only at the Chile station of the Lick Observatory. The velocities of the stars with nebulous lines, Bn, are systematically larger than those with sharp lines, Bs. A comparison of the Lick and Yerkes velocities for northern stars shows good agreement for the Bs stars, but large systematic differences for the Bn stars. The velocities of the latter are difficult to determine, and may well contain systematic errors.

The dispersion of the radial velocities along the galactic circle should have a quadruple-wave component because there is a double-wave rotation term and because the stars are dispersed in distance. The observed effect agrees with the theoretical in phase, but the amplitude appears to be much too large. The observed dispersion does not support the existence of a southern stream.

The numerical details will be given in a forthcoming publication.

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McLaughlin, Dean B. The absorption spectra of Nova Lacertae 1936.

Each investigator of this nova has given a different interpretation of the several absorption systems. This disagreement has been due chiefly to gaps in the series of observations. The Michigan series of spectrograms has only a few small gaps, and these have been completely filled by study of Lick and Mount Wilson spectrograms. Many of the Michigan plates were taken on process emulsion, which makes possible the recognition of faint lines and the separation of diffuse blends. Over 100 spectrograms have been measured. The resulting absorption velocities are given in Table I.