as an elliptical ring of $H\text{I}$ centered at R.A. (1957) = $22^{\text{h}}29^{\text{m}}$ and Dec. = $+43^{\circ}08'$, about 4° north of its OB nucleus. The major and minor axes at an assumed distance of 500 pc are 65 and 35 parsecs, respectively, the major axis being oriented nearly parallel to a line of equal declination. In addition, an optical emission arc having approximately the same center and dimensions appears on Plate No. 537 of the Palomar-Schmidt Sky Atlas. The total neutral hydrogen mass associated with I Lac is on the order of 7000 solar masses.

From a total membership of 30 early-type stars between absolute magnitudes -3.75 and -1.25 a luminosity function for the association may be derived by the method outlined recently by Sandage. This function predicts 81 stars having absolute magnitudes $+1.25$ to $+2.75$ (A0 to A5 in spectral type). An excess of 90 A0 to A5 stars near I Lac has been found from statistical studies of the Henry Draper Catalogue. These stars are situated along the northeast quadrant of the neutral hydrogen ellipsoid. The luminosity function together with the mass-luminosity relation permits the determination of the total stellar mass of this association, 1700 solar masses. Thus the ratio of total neutral hydrogen mass to total stellar mass is about 4.

The expansion age of this association determined by Blaauw and Morgan, 4.2×10^6 years, is approximately the time required for a star of absolute magnitude $+1$ (spectral type B9) to have contracted to the main sequence. Hence stars of spectral type A0 and later should now be contracting toward the main sequence and should show a larger scatter on the H-R diagram than stars of earlier spectral type. This effect has been confirmed observationally by Seyfert and Hardie. Four $H\alpha$ emission stars have been discovered by Herbig near HD 213976 and lie at the edge of the neutral hydrogen ellipsoid. From their color indices it is inferred that these stars are of spectral type F or later, hence over 50 per cent of the final stellar mass of I Lacertae is now in the stellar state.

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Kerr, F. J. A 21-centimeter view of the whole Galaxy.

An extensive survey has been made of 21-centimeter line radiation from the part of the Milky Way which is visible from Sydney (Kerr

et al. 1957) and these observations have now been largely analyzed. The author has recently spent a period at the Leiden Observatory, with the object of bringing together the Sydney and Leiden results (Muller *et al.* 1957) on galactic structure.

The two sets of observations agree well in the region of overlap, so that a composite picture of the whole Galaxy can be assembled. In addition, some of the assumptions involved in the interpretation can be partially tested through symmetry considerations.

A new representation of the spiral pattern of the Galaxy will be shown. This picture is still incomplete in some respects, and it is apparent that the method of interpretation will need some modification, but the broad features are clear.

The rotation curve derived from the southern data agrees approximately with the Leiden curve; there are some significant differences, but these may arise from structural asymmetries. A large part of the gas in the nuclear region may be expanding outwards from the center. An attempt has been made to take both expansion and rotation into account in the interpretation.

The gas layer has an approximately constant thickness of about 220 pc between half-density points. The layer is very flat in the region within 5–6 kpc from the center, with deviations of less than 35 pc from the mean plane in this region, which may be called the "principal plane of the Galaxy". In the outer parts, however, there is a systematic distortion, possibly related to the Magellanic Clouds.

Integrated over the whole Galaxy, the proportion of neutral hydrogen is only around 2 per cent. The ratio increases from the center outwards, reaching about 15 per cent in the solar neighborhood.

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Muller, C. A., Westerhout, G. and Schmidt, M. 1957, *B. A. N.* **13**, 151, 201 and 247.

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McLaughlin, Dean B. Spectral variations of the Be star HD 20336.

For many years this star was one of the best examples of V/R variation among the brighter