have acquired $UBV$ and $H\beta$ photometry for a large number of mid B- to late A-type stars which are within or surrounding the association. Photoelectric measures in $UBV$ and $H\beta$ have been obtained for all the B stars without previous observations and for many of those previously observed in the large field $280^\circ \leq l \leq 370^\circ$, $+10^\circ \leq b \leq +40^\circ$, and $m - M \leq 7^m.5$. Particular emphasis has been placed on the Upper-Scorpius subgroup where $UBV$ measures were extended to the late A-type stars down to the HD catalogue limit. All observations were acquired with the same 1P21 photometer at the University of Toronto’s Southern Observatory (Las Campanas, Chile) and are strongly tied to the E-region standards. Here we present a synopsis of the catalogue and first applications of the new data towards determining membership in the association.

Global $O/H$ gradients in late-type spiral galaxies and possible bar interaction for NGC 6946, J. Belley. Université de Moncton, N-B, J-R. Roy, Université Laval, Québec.

Reliable global $O/H$ gradients (disk + inner zone) for nearly 300 $H\upi$ regions, using an imaging spectrophotometric technique with narrow-band interference filters, were measured as far as 2.0 $R_{\text{eff}}$ for NGC 628 and 1.4 $R_{\text{eff}}$ for NGC 6946. The global gradient in NGC 628 (M74), at an assumed distance of 7.2 Mpc, is of a constant value of $-0.081 \pm 0.002$ dex/kpc. The global gradient in the barred spiral galaxy NGC 6946 (5.9 Mpc) is estimated to be $-0.089 \pm 0.003$ dex/kpc. However, there seems to be a region of “flatter” gradient for $R/R_{\text{eff}} \leq 0.5$ in NGC 6946.

A detailed analysis of 74 inner $H\upi$ regions ($R/R_{\text{eff}} \leq 0.5$) in NGC 6946, extending as far as the end of its northern molecular bar ($R \leq 2.5$ kpc), indicates a large scatter in the values of $[O\upi]/H\beta$. The question of the possible influence of the molecular bar on the excitation process is raised.

The $H\upi$ Content of the Local Group Dwarf Irregular Galaxy in Phoenix, Claude Carignan and Serge Demers, Université de Montréal.

Optical CCD photometry and $H\upi$ radio observations show clearly that the suspected dwarf galaxy in Phoenix is indeed a dwarf “irregular” galaxy (dl) well within the Local Group. From the $V$ and $I$ magnitudes of its red giants, a distance of about 400 kiloparsecs is derived, making this galaxy the nearest dl galaxy after the Magellanic Clouds. From the $H\upi$ profile, its radial velocity relative to the local standard of rest is $+47$ km s$^{-1}$; this is similar to the velocity of the Fornax dwarf galaxy, which is located 14° away. The $H\upi$ emission, detected at the position of the Phoenix galaxy, implies a total $H\upi$ mass of $1.0 \times 10^5 M_\odot$. This system should most probably be classified “intermediate dwarf”, because it has the size and brightness of a dwarf spheroidal galaxy while containing a young stellar population and $H\upi$ gas as typically seen in dwarf irregular galaxies.

Spectroscopic Gradients in the Compact Elliptical Galaxies NGC 4478 and NGC 4486B, T.J. Davidge, Canada-France-Hawaii Telescope Corporation.

Using the 3.6 metre Canada-France-Hawaii Telescope, I have obtained long-slit spectra of the low luminosity, high central surface brightness elliptical galaxies NGC 4478 and NGC 4486B. The spectra cover the wavelength range 4000–7000 Å, and have been used to examine the radial behaviour of various absorption features in these galaxies. These data reveal that relatively large spectroscopic gradients are present in both galaxies, and the strengths of these gradients are consistent with radial variations in mean metallicity in excess of $\Delta[Fe/H]/\Delta\log(r) \sim -0.2$. If compact systems like NGC 4478 and NGC 4486B represent the low-mass extension of the classical elliptical galaxy sequence, then the current data suggest that chemical composition gradients in elliptical galaxies may not flatten with decreasing mass.