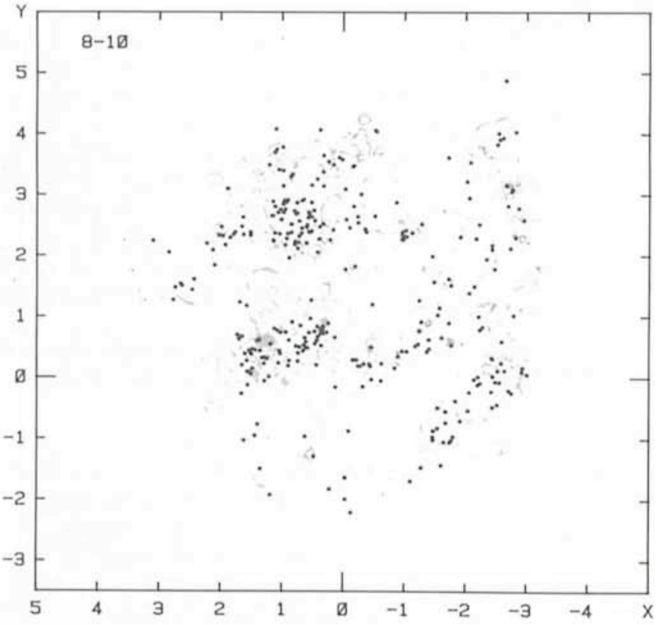

Fig. 7: *The distribution of supergiants and Cepheids with ages between 8 and 10 million years.*

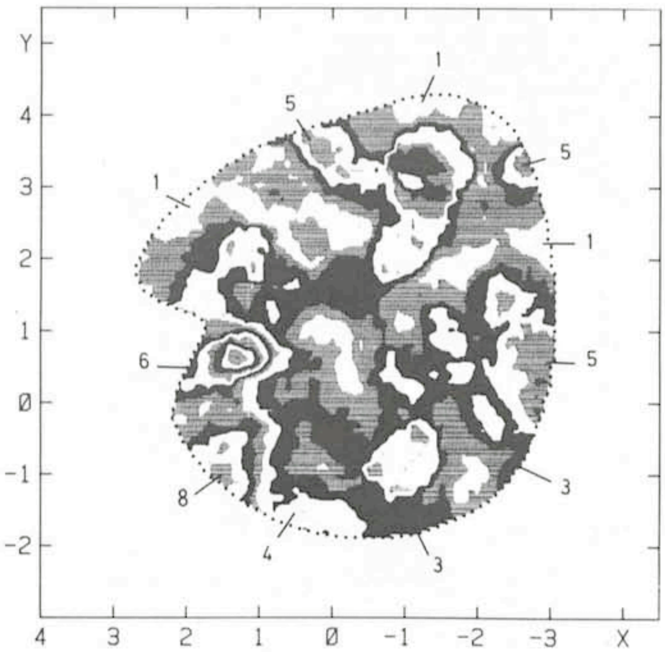

Fig. 9: *Isodensities of interstellar reddenings after subtraction of reddening from the galactic foreground. One step corresponds to △ E = 0ᵐ02.*

The Distribution of Interstellar Matter

In a forthcoming paper (Isserstedt and Kohl, in preparation) it will be shown that the star formation rate *in the past* T ≈ 10^7 years) is on average over the LMC proportional to the *nowadays* observed column density of neutral interstellar hydrogen HI, but that there is no correlation whatsoever between this star formation rate and the density of interstellar dust. This leads to the hypothesis that the dust is partly embedded in clouds of molecular hydrogen H_2 which seem to occur more often in regions were the star formation rate in the past was rather low (and might perhaps be high in the future).

The isodensities in Fig. 9 are describing the distribution of interstellar dust in the LMC. Reddening from dust in the galactic foreground has been subtracted. The sequence "white-grey-black-white ..." denotes increasing reddening. One step corresponds to △E = 0ᵐ02. Note that the Shapley III association has a low dust content but is surrounded by an extended cloud complex, while the otherwise similar association 30 Doradus contains far more interstellar dust. It is interesting to compare Fig. 9 with the distribution of atomic hydrogen from 21 cm measurements (McGee and Milton, 1964, *IAU Symposium* **20,** 291). In spite of some common features in both distributions they are mostly quite dissimilar. This again might be explained if the dust is partly embedded into extended regions of molecular hydrogen, which are otherwise not so easily observable. If these results could be confirmed by independent methods this might have severe consequences for our understanding of star formation and the development of large scale structures in galaxies.

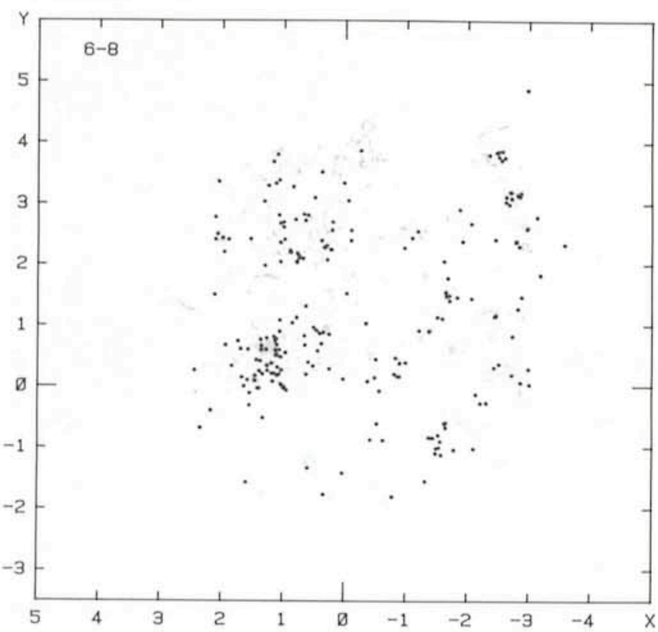

Fig. 8: *The distribution of supergiants and Cepheids with ages between 6 and 8 million years.*

List of Preprints Published at ESO Scientific Group

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221. I.J. Danziger: Optical Properties of Supernova Remnants. To appear in the proceedings of the IAU Symposium 101 "Supernova Remnants and Their X-ray Emission", Venice, Sept. 1982. December 1982.
222. J. Koornneef: Near-Infrared Photometry. Paper I: Homogenization of Near-Infrared Data from Southern Bright Stars. *Astronomy and Astrophysics Suppl.* December 1982.
223. S. D'Odorico and M. Dopita: Chemical Abundances in the Interstellar Medium of Galaxies from Spectrophotometry of Supernova Remnants. To appear in the proceedings of the IAU Symposium 101 "Supernova Remnants and Their X-ray Emission", Venice, Sept. 1982. December 1982.
224. I. Semeniuk: Core Radii Determination for 11 Southern Clusters of Galaxies. *Acta Astronomica.* December 1982.
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227. G.L. Chincarini, R. Giovanelli and M.P. Haynes: 21 cm Observations of Supercluster Galaxies: The Bridge Between Coma and A 1367. *Astrophysical Journal.* December 1982.
228. R. Braun, W. M. Goss, I.J. Danziger and A. Boksenberg: The Kinematics of the SNR G 292.0+1.8. To appear in the proceedings of the IAU Symposium 101 "Supernova Remnants and Their X-ray Emission", Venice, Sept. 1982. December 1982.
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234. A.C. Danks and D.L. Lambert: Interstellar C_2 in the Ophiuchus Clouds. *Astronomy and Astrophysics.* January 1983.
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The Telescope of Geneva Observatory and the Development of Geneva Photometry at La Silla

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When Geneva Observatory set up its observing station at La Silla (Chile), the main objective was to extend its 7-colour photometric system to the southern hemisphere. Indeed, several programmes necessitated the covering of the whole celestial sphere.

Since November 1975, when the 40 cm telescope was put into operation and equipped with a photoelectric photometer for the Geneva 7-colour photometry, the Geneva station has experienced a series of development stages (cf. *Messenger* 6, 1976). This first photometer, simple and strong, was conceived for one optical channel with direct current detection registered by strip chart millivoltmeter. Various precautions were taken in order to stabilize the definition of the pass-bands, in particular by means of careful regulation of the temperature for the photomultiplier as well as for the filters and the main components of the measuring circuit. A differential photometer controlled by a minicomputer HP 2100 is in operation since 1977. This instrument works with a photomultiplier and a performant photon counting system (resolution time 50 ns). Behind a selective set of diaphragms, a quick sampling allows comparison of the flux arriving from both fields, one (A) on the optical axis and the other (B) taken on a chosen polar radius. This second field can be selected by the observer by varying the angular separation (ϱ) of A and B and by choosing the direction (θ) of B relative to A by rotation of the photometer on its own axis.

The sampling of channels A and B takes place behind each of the seven filters of Geneva photometry, arranged on a wheel. Thus, at each revolution of this wheel, we have at our disposal 14 samples summed up on 14 counters. Most of the time beam A takes measures of a star while beam B measures the nearby sky. When the wheel is turning at a speed of 5 revolutions per second each sample is equivalent to an exposure time of about 14 milliseconds. Fourteen averages for each colour on each channel are recorded on magnetic tapes after approximately one minute of total exposure time. This time span allows the collection of 256 samples for each colour. Each mean value is recorded with statistical criteria established in real time. They are based on observed variances as well as on the theoretical variance of the signals. All this information indicates that registration of the measurements proceeds normally; it also allows a subsequent control of the measurement conditions. This photometer has been briefly described by Burnet and Rufener (1979). The nature of the statistical criteria applied, their characteristics and their usefulness have been presented by Burnet (1976). A more detailed analysis by Bartholdi and Rufener will follow shortly. Mr. Burnet, an astronomy engineer who is stationed in Chile since 1977, has brought about several improvements to the controls of the

Fig. 1: *The 70 cm telescope installed at La Silla in 1980. We notice on the optical axis the differential photometer which allows rapid sampling and on one of the Nasmyth focuses the photometer for occultations.*