of the Miocene and Eocene mass extinctions. This supports the hypothesis that the encounters with GMC's were the triggering factor of comet falls that led to catastrophic extinctions of species. Besides, the trajectories of the Sun and Mon OB1 indicate that they travelled together for ~ 30 My, and the vertical vibrations of both about the galactic plane determined the Sun's passages through the cloud corresponding to the Cretaceous and Eocene extinctions. Furthermore, it is suggested that the Sun was attached, for 200 My, to the Mon OB1 Giant Cloud and that the Z-vibration about each other explains the extinction cycle of 25 My.

OXYGEN ABUNDANCES IN THE LMC

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Freitas Pacheco et al. (1993, A&A, in press) have studied a sample of type I planetary nebulae in the LMC. From the derived S/O and Ar/O ratios, a relative contribution to chemical enrichment due to type II and type I supernovae was estimated as

$$r = \frac{n_{SNII}}{n_{SNI} + n_{SNII}} = 0.62$$

where n_{SNI}, n_{SNII} are the number of supernovae of types I and II. We recall that in our Galaxy r = 0.80 at [Fe/H] ~ 0.0 (Freitas Pacheco 1993, ApJ, in press).

A plot of ϵ(O) versus ϵ(Fe) for supergiants analysed by (Juettner et al.; Spite & Spite 1992 in New Aspects of Magellanic Clouds Research, ed. G. Klare, Springer, in press) shows a good agreement with the prediction derived from planetary nebulae data in the metallicity range $-0.7 <$ [Fe/H] < -0.1.

For the Galaxy the r value could be estimated in the metallicity range $-1.0 <$ [Fe/H] $< +0.2$ using stellar data by Barbuy & Erdelyi-Mendes (1989, A&A, 214, 239) and planetary nebulae data by Freitas Pacheco et al. (1993).

Conclusions: (1) In a similar range of metallicity, the relative contribution of type Ia supernovae in the LMC is about twice that of our Galaxy. (2) In the same metallicity range, the enrichment in the Large Cloud is consistent with a constant r, while in the Galaxy we observe a decrease in the SNII/SNII ratio. This difference in behaviour may suggest that the IMF has been constant in the LMC in this metallicity interval whereas in our Galaxy the IMF could be enhanced in massive stars in the past.

PHYSICAL CONDITIONS IN H II REGIONS OF THE SMALL MAGELLANIC CLOUD AND THE PREGALACTIC HELIUM ABUNDANCE

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We present long slit spectroscopy in the 3700–7400 A range for NGC 346, NGC 456, NGC 602, N26, N63, N81, and N88 in the SMC. The observations were gathered with the 4-m telescope at CTIO. From these observations we determine the physical conditions and the chemical composition for these objects. By combining their abundances with those of M17 we determine the primordial helium abundance.

THE NEUTRAL PHASES IN THE LOCAL INTERSTELLAR MEDIUM AT $|b| \geq 10°$ AND LOW VELOCITIES

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Our study is based on the atlases of 21-cm profiles by Heiles & Habing (1974) and Colomb, Pöppel, & Heiles (1981) complemented with other data. We separated both neutral phases by fitting a broad Gaussian curve (velocity dispersion $\sigma \sim 10-14$ km s^{-1}) to the profiles and studying the peaks of the residual profiles. We also considered Lindblad's (1967) feature A of cool gas.

For $|b| \leq 40°$ the warm neutral medium (WNM) is very inhomogeneous with a trend for stratification in layers parallel to the galactic plane. The velocity V corresponds to a differential rotation with a nodal deviation. For $|b| > 40°$ V is negative.

The cold neutral medium (CNM) is generally defined by one component of $\sigma \sim 3-4$ km s^{-1}. Six maps were computed showing the distributions of column densities and velocities. The sampling is ~1 sq. degr. The CNM is concentrated at $|b| <$ 30° with kinematics consistent with an expansion. Olano's (1982) shell models fit the mean V at most values of ℓ. However, the data are not sensitive to the *shape* of the shell. We suggest the presence of additional *rolling* motions. Most of the CNM appears correlated with the large molecular complexes and dark clouds belonging to the Gould belt. For $|b|$

> 30° there are several faint extensions and clouds with a large predominance of negative V.

For both the WNM and the CNM there is a notorious asymmetry between both galactic hemispheres. We suggest a scenario for the formation and evolution of the Gould belt system of stars and gas on the basis of an explosive event. The scenario is consistent with several observational facts like Danly's (1989) optical and *UV* observations of interstellar cool gas.

SOME REFINEMENTS IN CHEMICAL EVOLUTION MODELS. II. A ONE-ZONE MODEL WITH REFUSES

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We present, for the one-zone chemical evolution model of the solar neighborhood, a formalism which takes into consideration a classification of galactic objects into three families, according to their condensation state: stars, *refuses* and gas. We define star as every condensed object with mass greater or equal to the minimum mass which ignites hydrogen and which will give rise to a track in the HR diagram on the left side of Hayashi's limit; the refuses can be separated in two subclasses: the remnants (compact objects resulting from stellar death) and the residues (objects whose mass is not large enough to ignite hydrogen); we define gas as the mass which can be condensed to form stars or residues. Under the sudden mass loss approximation, we developed equations for the mass evolution of each family. We have studied the metallicity distribution of our model, for the instantaneous recycling approximation, adopting several initial conditions. In order to constrain the model parameters we have also used preliminary evaluations of comet cloud masses based on Tinsley & Cameron (1974, Ap&SS, 31, 31) and Vanýsek (1987, 10^{th} IAU European Regional Meeting, 279).

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KINEMATICS OF THE IONIZED HYDROGEN IN THE SMALL MAGELLANIC CLOUD

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By means of a scanning Fabry-Pérot interferometer we have completed an Hα kinematical survey of the Small Magellanic Cloud (SMC). This survey has allowed us the elaboration of a catalogue of H II regions in the SMC. This catalogue reports radial velocities, velocity dispersions and Hα fluxes of the totality of emission nebulae catalogued by Davies, Elliott, & Meaburn (1976, MNRAS, 81, 89) in the SMC. Furthermore, we have detected nebulosities much fainter than those catalogued by these authors. We present the mean radial velocity field of this galaxy which allows the study of the kinematics of the ionized hydrogen and will help in the comprehension of the complicated structure of the SMC. On the other hand, the use of scanning Fabry-Pérot interferometers reveals to be an interesting tool for the detection of shocks in the interstellar medium of nearby galaxies. We discuss briefly this method of detection for the case of the SMC.

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MOLECULAR CLOUDS IN THE SMC

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Observations of the ^{12}CO(1–0) emission line from the Small Magellanic Cloud (SMC) have been done during the last four years with the 15-m SEST telescope as part of the ESO-Swedish SEST Key Programme: CO in the Magellanic Clouds. Two areas in the SW region of the SMC have been fully mapped with half-beam ($20'' = 6.1$ pc) sampling. These areas correspond to the SW-1 and SW-2 regions of Rubio et al. (1991) and the observations cover about 5×8 and 5×10 arcmin^2, respectively. The CO emission has been detected only in the lower (i.e., nearer) velocity component of this galaxy. The CO clouds appear associated to dark clouds: some are associated with H II regions and with far-infrared sources. The spatial and velocity distribution of the CO is complex showing structures in all scales and large-scale velocity gradients. In