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 $\sim$ 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] $\sim$ 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 $\sim$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 $|b|$