nal X-ray emission. Our spectroscopic observations revealed that, in fact, a significant fraction of the identified optical counterparts are WTTS.

Here we discuss a sub–sample of the new WTTS in Orion for which we have both spectroscopic and photometric data. We also discuss the spatial distribution and the evolutionary status of these stars, and present an analysis of the relationship between X-ray emission and the physical properties (M_*, R_*, and L_*) of these WTTS.

DUST IN PRE-MS SYSTEMS: GRAIN GROWTH?

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Dust grains associated with pre-main sequence low-mass (T Tauri) stars and intermediate-mass (Herbig Ae/Be) stars have been observed in submm continuum. Twin aims are to estimate total amounts of circumstellar material and to seek evidence for grain growth. Spectral fits to optically thin submm emission from DG Tauri, Haro 6-13 and DO Tauri suggest that circumstellar grain opacities ($\kappa \propto \lambda^{-0.6}$) fall off much more slowly with increasing wavelength than is found for grains in the interstellar medium, a result also indicated by preliminary analysis of submm photometry of the Herbig Ae system HD 163296. Such low opacity indices might be indicative of the accumulation of grains. Absolute values of both the grain opacity and the total mass of material cannot be separated out using model fits alone; however, such fits can yield useful constraints on the appropriate opacity scaling when considered in combination with mass accretion rates inferred from integrated bolometric luminosities. In this way, the submm photometry of the T Tauri systems provides a lower limit to the mm/submm opacity of $\kappa \geq 0.003\ [1100/\lambda(\mu m)]^{0.6}$ [cm^2 g^{-1}], with corresponding disk masses being up to a few tenths of a solar mass. A rough estimate of the 2 mm opacity of the outer regions of the compact continuum source in HL Tauri suggests κ(1100 μm) $\sim$ 0.03 [cm^2 g^{-1}]. It is interesting that such an opacity scaling would, if applied directly to the disks in DG Tauri, Haro 6-13 and DO Tauri, still imply disk masses which are in excess of the minimum-mass solar nebula. If the grains in HD 163296 are also distributed primarily in the form of a disk, then the implied total mass of gas+dust is $\sim$ 0.19 $M_\odot$. The shallow submm opacity law for this Herbig Ae system indicates that, as for the T Tauri circumstellar environments, it is possible that grains might be comparatively evolved.

RADIO CONTINUUM, AMMONIA AND WATER MASER OBSERVATIONS OF BRIGHT UNASSOCIATED *IRAS* POINT SOURCES

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We present matching-beam 6 and 2-cm radio contin uum observations made with the Very Large Arra and ammonia and water maser observations made a the Haystack Observatory of 12 *IRAS* point source selected from the survey of Scalise et al. (1989, A&A 221, 105) of bright, unassociated *IRAS* point source These sources have 60 or 100 μm flux densities in ex cess of 10^3 Jy and have no previous reference in an of the 37 catalogs considered for association of *IRAS* sources with known sources. Six of the twelve source have associated radio continuum, ammonia and wa ter maser emission and all of them show at least on of these three emissions. In all sources detected, th ammonia is warm (T$\sim$ 20 K) and suggests the asso ciation of dense molecular gas with embedded heat ing sources. It is argued that all sources in the sampl could be associated with time-variable H_2O maser emission. The radio and far-infrared data appear t indicate that these sources are star-forming region powered by a late O or early B-type star. Several o the sources of lower luminosity ($\sim 5 \times 10^3\ L_\odot$) ap pear to have ionizing photon fluxes *in excess* of thos expected for a ZAMS star. Possible explanations fo this discrepancy are discussed.

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KINEMATICS OF THE GALACTIC SUPERNOV REMNANTS RCW 86, MSH 15-56, AND MSH 11-61

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We present radial velocity fields of the optical coun terparts of three supernova remnants (SNRs): RCW 86, MSH 15-56 and MSH 11-61, obtained from scan ning Fabry-Perot interferometer observations at Hα.

The kinematical distances, expansion velocities ages, energies and phases of evolution are obtained

rom these observations. These results are compared vith those obtained from other types of observations n order to have a complete view and in order to earch for possible association with H II regions as it eems to be the case in Magellanic Clouds SNRs.

It was found that RCW 86 is associated with an I II region and, consequently, the supernova (SN) rogenitor is a massive star confirming the suggestion f Westerlund (1969, AJ, 74, 879), which had been uestioned in more recent works. It was found, also, hat this SNR has an age of 4×10^4 yr implying that t was not formed by the explosion of the historical N AD 185 as it had been suggested by Clark & tephenson (1977, in The Historical Supernovae, ed. ergamon Press, Oxford, p. 83).

The observations on the SNR MSH 15-56 reveal a omplete spherical shell of 36 arcmin diameter while revious observations have detected only the bright- st filaments. Our results show that MSH 15-56 is ssociated also with an H II region. It is found that his SNR is in the radiative phase of evolution.

The SNR MSH 11-61 has a radial velocity field vhich suggests a regular radial expansion. The slow hock velocity derived this way is in agreement with he low [O III]/Hα line-ratio derived from spec- roscopy.

THE O^{++}/H^+ ABUNDANCE RATIO IN GASEOUS NEBULAE DERIVED FROM RECOMBINATION LINES

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We present O^{++}/H^+ values for the Orion nebula, M17 and NGC 6572 which are independent of the temperature structure of the observed nebulae based on O II and H I recombination lines. In the H II regions sampled (Orion and M17) the O^{++}/H^+ values derived from O II recombination lines are about a factor of two higher than those derived from O III forbidden lines. These differences can be accounted for by the presence of spatial temperature variations over the observed volumes. The abundances derived from the recombination lines eliminate the O/H discrepancy between the stellar values and the H II region values of the solar neighborhood.

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INTERSTELLAR MATTER IN THE REGION OF THE OPEN CLUSTER IC 4665

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We studied the distribution of obscuring material in the region of IC 4665. The interstellar extinction was determined for F8-M2 type stars brighter than 13.5 mag in a 19.5 square degree field (Frontó et al. 1990, Mitt. Sternwarte Ung. Ak. Wiss., No. 95). In the direction of IC 4665 the mean $E(B-V)$ color excess is only 0.15 mag. However, on a larger scale a stronger absorption feature (up to 0.45 mag) appears close to the cluster. Plotting a Wolf-diagram for the apparent B distance modulii of stars, there is a clear indication for an interstellar cloud at 160 pc. Since the distance of IC 4665 is 320 pc, this cloud is a foreground object while the vicinity of the cluster is free of obscuring material. The cloud shows possible physical connections with a larger object which appears on the map of Khavtassi (1960, Atlas of Galactic Dark Nebulae, Abastumani Astrophys. Obs., No. 743) between the Serpens and Ophiuchus molecular clouds.

We compared the *IRAS* sky flux maps with our data. The field is divided into two parts (at $l \approx 30°$) with different extinction values. We studied this field using the Heiles-Habing (1974, A&AS, 14, 1) H I survey. The interstellar matter appears between -10 and 0 km s^{-1}.

Hackwell et al. (1991, ApJ, 375, 163) investigated the interstellar matter in this area. They suggested that the obscuring material in this region is associated with the outskirts of the ρ Oph dark cloud. Our distance estimate supports their statement, but the radial velocities are different.

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THE LOW LUMINOSITY CENTRAL STAR OF THE PN ESO 166-21

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We present low dispersion UV and optical spectrophotometry of the central star of the PN ESO 166-21. The stellar spectrum, from 1200 to 6600 A, is a featureless continuum. The energy distribution is consistent with a black body of $120\,000 \pm 20\,000$ K. The observed visual magnitude is 18.1. Ruiz et al. (1989, IAU Symp. 131, p. 192) showed that the nebula is very extended ($\Phi = 160$ arcsec) with a spherical shape and bright knots. The emission lines indicate a high ionization degree and the chemical