of the detected Hα emission-line stars are associated with the giant molecular cloud. A group of 6 stars coincides with an IR source. The colors of those stars show that 4 may be of early type. Thus, our results seem to support the arguments by Jaffe and Fazzio (1982).

We need more spectroscopic observations of those detected stars to know whether they are field emission-line stars or young objects.

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EVIDENCE OF COLLECTIVE FORMATION OF LOW MASS STARS IN THE DARK CLOUD KH141

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To find evidence for collective star formation without massive stars in the dark cloud complex Kh141 (Saito 1980), a search for T-Tauri stars has been made.

We surveyed for Hα emission stars on objective prism plates taken with the 105cm Schmidt of Kiso Observatory. An unobscured field neighbouring Kh141 was also surveyed as a comparison field. Nextly, U,B, V, and I direct plates were taken with the 40cm Schmidt of our department. Further, we obtained spectrograms of selected T-Tauri candidates (see below) with the image intensifier spectrograph attached to the 188 cm telescope at Okayama Astrophysical Observatory.

On the objective prism spectral plates, we have detected eighteen Hα emission stars projected on the Kh141 region. Seven of them have been identified with IRAS point sources. Two of the eighteen are known T-Tauri stars, and other two are known as early type stars. From the obtained spectrograms we tried to classify the other fourteen with the following results: two have been found to be new T-Tauri stars (Figure 1), three have been classified as early type stars, while the remaining nine objects are too faint to be classified.

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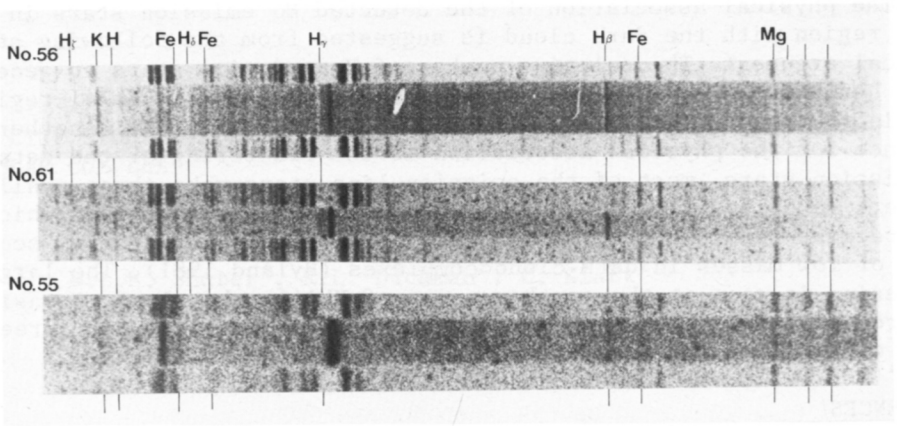

Fig. 1. Spectra of two newly found T-Tauri stars (Nos. 56 and 61) and a known T-Tauri star LkHα120.

On the direct UBV and I plates, U-B and V-I have been measured for sixteen Hα emission stars. The four T-Tauri stars are included in the sixteen. The colors of the other twelve stars are in the range of T-Tauri stars as is seen in Figure 2; four are of early type and the remaining eight have been unclassified. Since the number of early type stars is the same as that of the T-Tauri stars, one may expect that about half of the unclassified stars are T-Tauri stars.

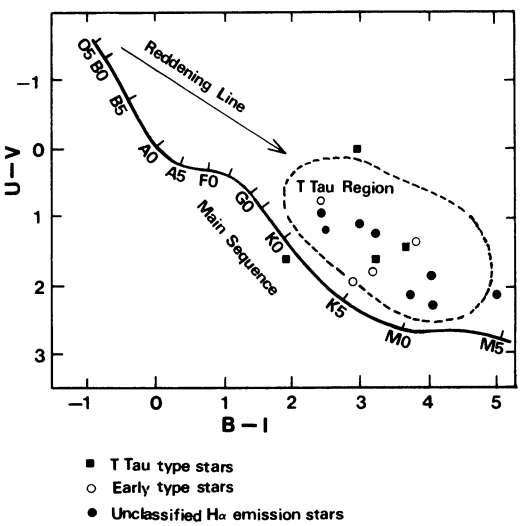

Fig. 2. The U-V vs. B-I color diagram for the Hα emission stars detected within the Kh141 cloud. The solid curve shows the main sequence locus, and the area encircled by the dashed curve is the region covered by previously known T-Tauri stars.

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The physical association of the detected Hα emission stars in the Kh141 region with the dark cloud is suggested from the following statistical argument. The relative number of Hα emission stars to general stars has been found to be about ten times larger in the Kh141 region than in the comparison field at the same galactic latitude. Another evidence for the physical association is the clustering of the detected Hα emission stars, most of the emission line stars make three small clusters in or near the opaque condensations of the dark cloud which is in agreement with the general tendency of clustering of premian sequence stars of low masses in dark cloud complexes (Hyland 1981). The largest clustering is seen at the southern part of Kh141; the cluster consists of three T-Tauri stars, 2 unclasified emission line stars and three stars with reflection nebulosities.

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A SOUTHERN HEMISPHERE AMMONIA SURVEY

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A spectral line survey for interstellar NH_3 is being carried out using the 64-m telescopes at Parkes and Tidbinbilla. Both telescopes are equipped with K-band masers yielding system temperatures below 100 K. The preliminary survey was to be made with the Parkes antenna (beam = 1.5' arc) with follow-up mapping of the more interesting sources at Tidbinbilla (beam = 0.9' arc). Sources have in general been H II regions from the H_2CO surveys made at Parkes. Approximately 70 sources (out of a target of ($\sim$ 100) have been observed simultaneously in the metastable (1,1), (2,2) and (3,3) transitions. The (1,1) line has been detected in about 70% of the sources surveyed. The other lines which involve higher excitation are detected primarily in the more compact sources, particularly those associated with OH and H_2O masers. Examples are given of spectra for different types of source.

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