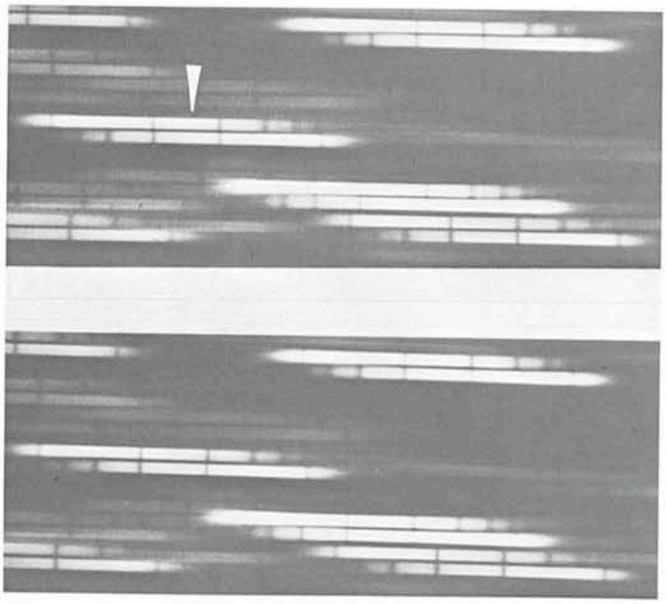

Fig. 2: *The figure at top represents a further enlargement of plate GPO 2557, taken on March 16, 1977, showing the region around HD 95878 (see fig. 1). The figure below shows the same section on plate GPO 2564, taken in the next night on March 17, 1977. Note the large relative Doppler shift of spectral lines of HD 95878 between the two observations (as compared with the line positions of surrounding reference stars). Measurement yields a difference in radial velocity of 165 km s^{-1} with an expected error of a single observation of ± 7 km s^{-1}. This star is one of the numerous spectroscopic binaries, discovered by the author on GPO plates.*

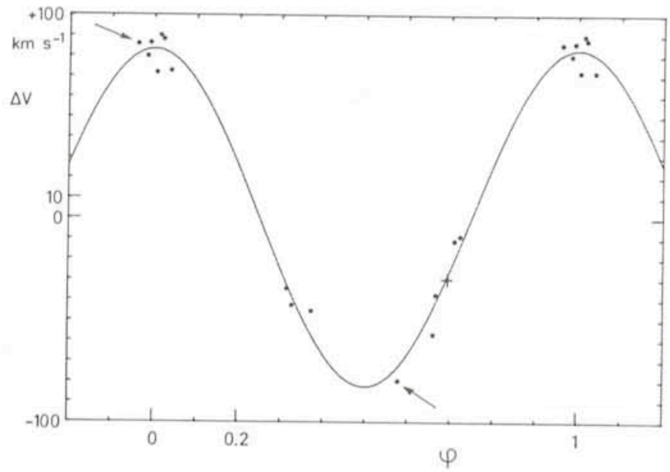

Fig. 3: *The relative radial velocity curve of HD 95878 as derived from the measurement of 17 GPO plates of the field around the open star cluster NGC 3532. The relative radial velocities determined from the spectra shown in figure 2 are identified by arrows. The zero point is arbitrary, but can be calibrated easily by one accurately known radial velocity in the field. The cross marks two independent measurements.*

compare the results for different clusters and eventually to correlate them with other physical parameters of these aggregates. In this context a comparison of the kinematical properties of stellar associations and open star clusters would be of special interest, because it may provide new insight into the dynamical evolution of these stellar systems. Beyond this, the discussion of the velocity distribution of the field stars and its dependence on spectral type and distance of the stars may provide important contributions to our knowledge of the kinematics and dynamics of our galaxy. For all kinematical investigations just mentioned, radial velocities are of special significance, if they can be combined with reasonably accurate proper motions to yield the space velocities of the stars.

Concerning the investigation of spectroscopic binaries, additional observations are also desirable: If for example membership probabilities for a larger number of open clusters are determined, the interesting question on possible differences of the binary frequencies in open clusters, stellar associations and the general star field can probably be answered. Furthermore, on the basis of a sufficiently extensive observation material, the correlation between binary frequency and spectral type and eventually other physical parameters of the stars can be investigated. Finally, continued observation of all star fields is desirable as well for improvement of the orbital elements of known and newly discovered spectroscopic binaries as for detection and investigation of long-period spectroscopic binaries (periods larger than about 200 days). For the latter a good detection probability can be predicted, since after construction of normal points, the individual identification of long-period variability of the radial velocity may be reliable down to radial velocity amplitudes of only K = 4 km s^{-1}.

The application of the objective prism for the determination of the radial velocities of the stars has opened new frontiers. The future will show how successful this instrument will be to contribute to the answers of numerous questions, a few of which have been outlined above.

Since 1977 all observations have been obtained by ESO night assistant Gorki Roman. I herewith gratefully acknowledge his very careful conduction of my observing programmes at the GPO.

Assembly of the Coudé Echelle Spectrograph (CES)

D. Enard, ESO Optics Section, Geneva

The coudé echelle spectrometer has already been described in the *Messenger* No. 11 of December 1977. It is a very high resolution spectrograph with a resolving power up to 100,000 fed by either the 3.6 m or the Coudé Auxiliary Telescope (CAT). Henceforth it will be complemented by the CASPEC which will provide a resolving power of 20 to 60,000 (cf. page 27).

After considerable delay in the delivery of several components, the assembly of the CES started early in April. The instrument is being assembled and tested in the ESO Optics Laboratory in Geneva, which, as a matter of fact, has become rather congested, as shown by the photographs.

Because no equipment has yet been installed at the 3.6 m coudé focus, the whole instrument including the computer, is assembled in Geneva for a complete test before it will be shipped to Chile. However, the temperature stability of the laboratory is not very good and may somewhat limit the measured performance level.

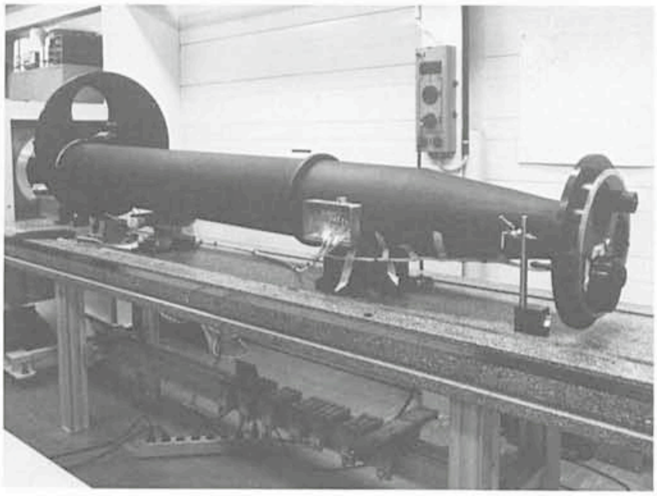

Fig. 1.

Figure 1 shows the CAT focal reducer being tested. After completion of some minor modifications, the focal reducer will be shipped to Chile where it will be aligned on the common 3.6 m/CAT telescope axis defined by the "centre" of mirror 5 of the 3.6 m and the "centre" of mirror 3 of the CAT.

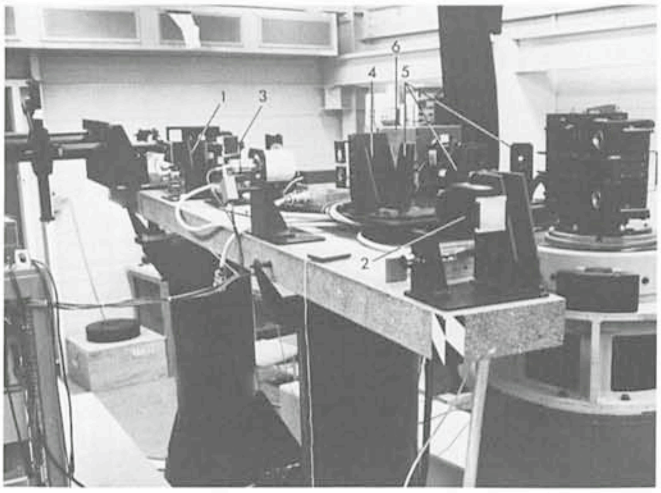

Fig. 2.

Figure 2 shows the marble supporting the entrance slit and the associated facilities (calibration, viewer, etc. . . .) and the pre-disperser. One can see the entrance slit (1), the collimator unit (2), the prism unit (3) and the exit slit (4), the double pass system (5) and the scanner detector (6).

Figure 3 shows the grating on its turn-table and Figure 4 the collimators and the multichannel camera. The Digicon detector will be attached below the camera.

The optical alignment and completion of the last mechanical modifications will continue until early July. Complete integration with electronics and software and initial instrument assessment will take another 2 to 3 months, and the official presentation to the Review Team will take place in October. Installation on La Silla could start in January 1980 and, therefore, the CES and CAT could become available at the same time, i.e. in April 1980.

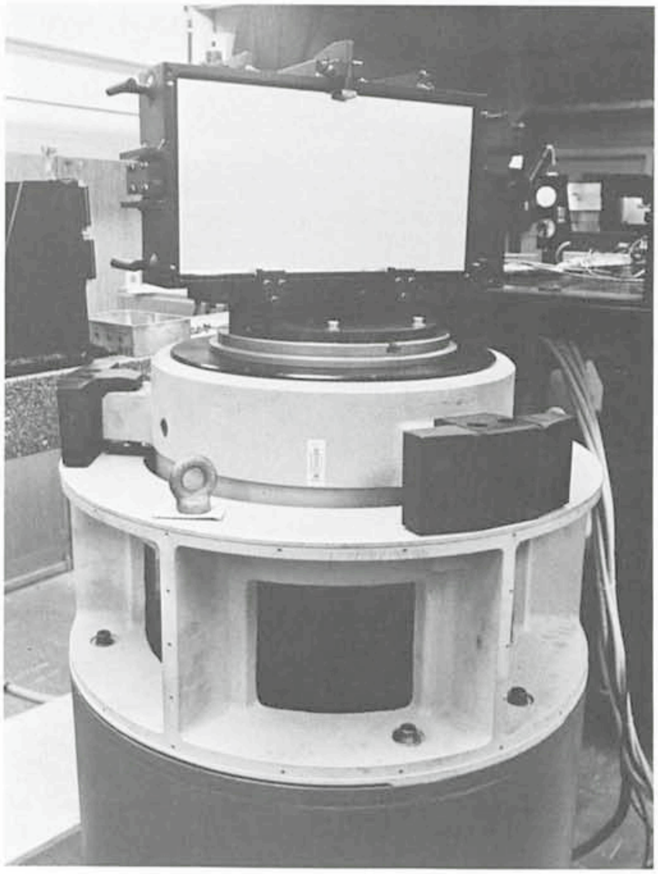

Fig. 3.

Fig. 4.

OUT THERE

Beyond the Milky Way?!

How far do bars extend?

(ESO Scientific Preprint No. 53—Title)