Observations at the Coude

Of the 11 runs with the coudé spectrograph plus Reticon during the past semester, all were successful, in that at least some data were obtained. Poor weather did affect the run of J. Climenhaga and J. Smolinski, but they were able to acquire a few spectra of carbon stars. Two sets of observers found the spectrograph to be too slow in the second order blue, and had to switch to backup programs. J. Lester had to be content with observing Am stars in the near infrared, while G. Fontaine, F. Wesemael and P. Lacombe abandoned their primary program and looked instead for H-alpha variations in Be stars.

T. Moffat and R. Lamontagne obtained a series of spectra in a study of winds from two hot stars. Also observing hot stars were S. Wolff and J. Heasley. They accumulated a large number of spectra in their program of helium abundance determination.

In consecutive runs by A. Boesgaard and R. Lavery; and A. Talavera and J. Czarny (for P. Felenbok), chromospheric activity in young stars was studied . In both runs, spectra were obtained of a number of stars, including the very active object AB Aur. F. Spite and J. Czarny then observed Population I dwarfs in a continuation of the program to determine the primordial abundance of lithium. They also observed some Hyades dwarfs for G. Cayrel. B. Campbell continued his precision radial velocity program with three runs in this semester.

H. Richer and P. Bennett broke all records by observing the faintest star yet attempted with the Reticon. They observed a magnitude 10.7 star in the second order blue, obtaining three exposures of up to 6 hours. During this observation they discovered a dark current problem in the Reticon (see Reticon News).

The coudé was also used for a visiting instrument, a differential speckle interferometer from Nice. G. Ricort, F. Martin, and R. Romain resolved, with a good signal-to-noise ratio at different visible wavelengths and directions, the diameter of giant stars like α Ori, β Peg, α Tau.

Telescope Progress

In July, the infrared upper end, which was too tight a fit onto the telescope top, was machined down in size and now fits perfectly. Also, sectors totalling about half of the circumference have been "relieved" to reduce friction during the exchange process. This last action was so successful, the Cassegrain and prime focus upper ends were relieved in the same manner.

The handling ring has also been greatly improved, both mechanically and electrically. The brass plates carrying the load of the upper ends are of a new design, and all the controls have been rewired. The system is now very reliable and safe.

The cassegrain "environment", (a large turntable to support electronic crates combined with a cable wrap up and air exhaust) was fabricated in Los Angeles and delivered at the beginning of November. Unfortunately this was a little too late for the mid-November installation on the telescope as scheduled. This installation has been postponed until March 1983.

The mirror cover drive was redesigned using individual pneumatic cylinders from each leaf instead of a common electromechanical drive. The system was installed in early September and is quite fast (opening and closing in about 12 seconds instead of about 5 minutes with the old system), and the mirror cover leaves now open fully out of the beam.

The primary mirror was realuminized in September and a very high quality coat was obtained. Last aluminizing was in September 1981.

<u>Software</u>

Over the years, several modifications were made to the original Marconi software, making it more reliable or, in some cases, debugging some sections of it. The "intertwined" character of this software makes it exceedingly difficult to modify and upgrade; consequently a completely new modular package has been under development over the last 12 months.

This new software (TCS Mk II) enables us to incorporate several desirable functions in the telescope control: pointing and tracking corrections, offsets and nods, star catalog and observing log. The major tasks have been coded and tested (interface driver, TCS cards handler). Work is progressing on the slewing and tracking algorithms and on the correction tables.

<u>Building</u>

The original plan for the building ventilation called for a crawl space under the observing floor. It has to be cold and under negative pressure to minimize heat transfer to the observing floor through conduction and leaks. Because of the number of electronic racks and electrical panels in the crawl space and unexpected heat leaks from the rest of the building, this area under the observing floor is quite warm. The cooling floor acts as a general barrier, but cannot prevent the telescope sub base from conducting heat to the observing floor.

To counteract this effect the telescope sub base has been completely covered with insulating material and the crawl space exhaust is being increased in capacity.