SCIENTIFIC NEWS

This column will become a regular feature in the Bulletin, with the intent to provide the astronomical community with a brief glimpse of the scientific results obtained during the current semester with the CFHT Telescope. Some of the results (not all) obtained during the first semester of 1983 are mentioned here. If you wish your work to be included you are warmly requested to send us a short note quickly after your observing run, with an illustration, in order to feed this column.

- Velocity curves of high precision, with a time resolution of 15 min (1/10 of period) have been measured by Yang and Walker (UBC) for β Cas (β Scuti variable) by looking at Paschen lines and CaII in the the 8600 Å region. The velocity curves are not found in phase for Ha and CaII. The spectra were obtained with the Reticon associated with the HP absorption cell.

- Stockton (IPA) is studying the origin of emission-line regions around QSOs. During his last run at the F/8 focus with the IPA-CCD associated with a transmission grating spectrograph he was able to find extensions in the redshifted OIII line around Ton 202, a bright QSO of z = 0.364 not previously known to have nebulosity. He interprets this as a tidal interaction with an invisible companion.

- Observations made in March by Nieto (Toulouse), Wlérick (Meudon), and Lelièvre (CFHT) with the wide field electronographic camera at the F/8 focus have revealed many new features in the morphology of the jets of M87 and 3C273. In M87 the plates show evidence for: a bent nuclear extension between 0.8 to 1.7 arc sec from the nucleus - a faint continuous constant component between the inner knots. The optical structures of the jet match perfectly the VLA radio map, stretching continuously from the nucleus to the radio lobe 27 arc sec away. The new picture of 3C273 shows four knots located where the orientation of the jet changes. Large scale oscillations are detectable between 9 and 16 arc sec from the quasar and small features are observed at the extremities of the jet.

- Hua, Cruvellier, Courtès (LAS Marseille) had the first run with the CFHT photon counting camera associated with narrow band filters (5 to 10 Å). Through such filters magnitudes of 24/sec² were reached in short exposure. Taking advantages of the image quality they clearly resolved for the first time in Ha the spiral structure of the nucleus of NGC 2976.

- The photon-counting camera associated with the revised focal reducer and the scanning Fabry-Perot has been used by Roy and Arsenault (Laval), and then by Boulesteix, Georgelin, Duval, Marcellin (Marseille), Monnet (Lyon-CFHT) for radial velocity surveys in nearby galaxies. Six spiral galaxies were fully scanned plus the central part of M51 and M101. The French team also scanned the central bulge of M81 in OIII. From the real-time images obtained at the telescope, several new planetary nebulae seem clearly apparent.

- E. Becklin (IPA), Chaffe and Hildebrand (Chicago) made the first run at CFHT at 350μm with a sub-mm photometer, an ideal region for measurement of the distribution of dust in galaxies. On three nights two were with less than 1mm of water. The dust thermal emission of M82 was detected, a total flux of 26 Jy being estimated. From the mapping with 30 arc sec of resolution the emission appears extended along the galactic plane. The large amount of dust detected proves the presence of an active region of star formation. W51 was also mapped; the densest portion of the molecular cloud was found in coincidence with the OH/H2O maser source.
B. Fort (Toulouse), L. Vigroux, M. Lachieze-Rey (CEA) A. Pellet (Marseille) and D. Carter (Mt Stromlo) had a successful run in April with the CEA/INAG CCD camera at the P/8 focus, equipped with the focal reducer. The camera was used in this mode for different photometric observations of elliptical galaxies. In particular Fort and Carter were able to detect extremely faint shells around the elliptical galaxies of their program, as shown on the figure. Detection of such shells is of interest to explain the missing mass in the clusters of galaxies.

At 14H25 UT, June 15, Neptune was starting to occult a V = 11.7 star in a near central occultation. This event, observed in the infrared K band, might provide the best opportunity for the detection of a suspected ring around Neptune. A. Brahic and B. Sicardy (Meudon) having enjoined CFHT to make the observation, the prime focus cage was removed and the infrared top end installed for one night. The data acquisition program of the IR photometer was specially modified in order to record the data with the shortest integration time. Finally, J.P. Maillard (CFHT) with E. Becklin and D. Cruikshank (IPAG) recorded the full light curve of the event which finished at 12h above the horizon at sunrise. Starting the observations one hour before the beginning of the immersion not the smallest interruption of light was detected in a signal of high signal-to-noise ratio. We do have to conclude that the last giant planet has no ring!

**OBSERVING SERVICE: a first appraisal**

As reported in "CPH Information Bulletin" No 8 an Observing Service has been experimented during the 1st semester of 1983. Half of the principal investigators (PIs) to whom the Service was offered accepted to participate in the experiment, for a total of 15 runs over 40 nights.

After 40 nights of Observing Service, the logistics of the runs' management have been straightforward, due to the relatively small number of assigned nights. The weather statistics during these 40 nights were somewhat worse than the expected 75% clear sky average (4.5 nights were lost to high winds and 7 nights to clouds, leaving 71% clear). The duty cycle of our teams and equipment was also lower than the expected 85% (by some 15%), mostly because some of our observing assistants had to be trained in the process. Thus we were able to accomplish approximately 80% of what we have hoped to do. Nevertheless, all the first priority data requested were obtained, and so were more than half of the second priority items. No one was "clouded out".

The main goal of the Service - the optimization of telescope use - was met in large part. By combining different programs during the course of single nights, hour angles were minimized and observing was tailored to seeing conditions.

Image of NGC 2865 through a wide blue filter centered at 4500Å, in 20 mn exposure, recorded in April with the CEA/INAG CCD camera. This camera includes a RCA chip of 320x512 pixels and gives a readout noise of 65e/px. By using the focal reducer at the Cassegrain focus a F/2 beam was produced delivering a field of 7.3x4.3 arc min corresponding to a resolution of 0.9 arc sec per pixel. On the picture a first shell can be seen (in S-W direction) with Hb approximately 25.5/arc sec². In the opposite direction a fainter shell is detectable with Hb=27/arc sec².

**Manpower**

Despite its modest scale, the experimental Service has been a rather heavy additional load on our manpower. The part-time availability of our 3rd Telescope Operator (TO) who acted as an Observing Assistant, was a crucial help to the resident astronomers. This, incidentally, provided a valuable opportunity to train our TO's in observing techniques. Instrumentation technicians and research assistants were also called upon to observe when the resident astronomers were not available.

Thus we do not wish to continue the experiment as long as our present resources are not increased. It is clear that the system would be used by a large segment of the community, but its definitive implementation requires additional staff in Walmea. The corresponding increase of the personnel budget would be largely compensated by the reduction in travel costs of the visiting astronomers. The main benefit remains the increased flexibility of telescope time use and the savings in travel time for the "non-visiting" astronomers.

The decision to offer the service on a regular basis must await the results of the final evaluation and the agreement of the Board of Directors and agencies to finance the necessary additional positions for resident observers.