Telescope Progress

Most of the work of this first semester of 1982 was concentrated around the commissioning of the Cassegrain focus and the installation of the new prime focus module. This engineering period which lasted 43 days was the heaviest work on the telescope since its assembly three years ago.

First light was obtained at the Cassegrain focus on the night of 9-10 April. Visual analysis of the image and pupil showed substantial spherical aberration in addition to slight coma. This was later confirmed by Hartmann tests.

Unfortunately, bad weather inhibited the additional optical tests which had been planned. It has not then been possible to determine which of the optical quality of the mirror, the optical alignment or mirror support system was responsible for the noted defects.

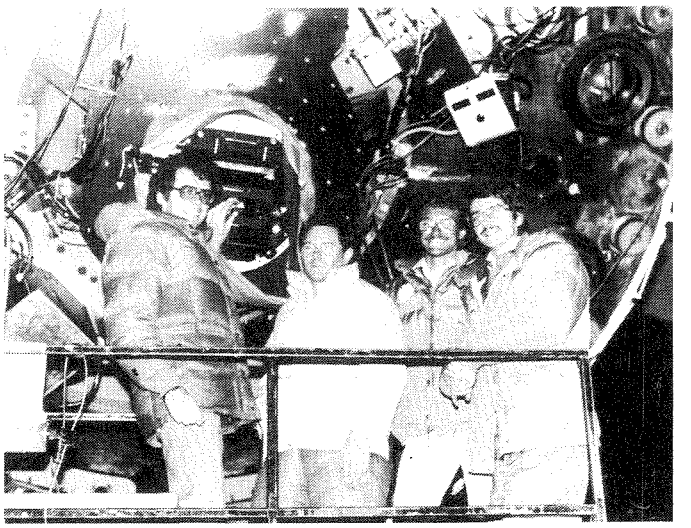
The observing run which followed was in general very satisfactory but it will however be necessary to wait for the additional tests schedules for September before a final evaluation of the Cassegrain optics can be made. In the mean time the mirror support system will be fully inspected in order to ascertain its proper operation.

It was realized soon after the telescope was commissioned that the mechanics of the prime focus module showed some design weaknesses. To correct these a new module had to be constructed which would accept a larger instrumental load, permit adequate alignment of the correctors, and have greater reliability.

The new unit was designed in-house and was fabricated in Honolulu. Unfortunately several machining defects slowed its fabrication and it was even necessary to remachine some major parts at the last minute. Final quality was not to suffer however and the assembly is completely satisfactory.

Sky tests over five nights have allowed the final and perfect alignment of the UV and wide field correctors, and of the grenses. Observers will at last fully benefit from the excellent quality of the primary optics of our telescope.

Earlier in the year the polar axis had been finely tuned and the residual errors are now very small and will be corrected by software.



Part of the crew attending to the Cassegrain focus engineering and tests. From left, Derrick Salmon, Bruce Dancey (DAO), Peter Wizinowich, and Jean-Claude Fouéré.

Also after months of search the cause of the infamous "glitches" (jumps of the telescope during tracking) was finally found. Nuts holding the mirror cell to the serrurier truss had been improperly tightened during the assembly on Mauna Kea and some of them were coming loose resulting in minute motions of the cell.

With the new prime focus module installed and the Cassegrain focus tested work has now started on the few remaining important tasks which have to be completed before our telescope can be fully operational. They include:

- installation of the Cassegrain "environment" which will incorporate a cable wrap up, support for electronic racks and heat extraction,
- improvement of the upper-end handling system,
- final implementation of the telescope computer control,
- installation of a new mirror cover drive system, which will be much faster and will eliminate all obstruction at the mirror edge,
- slight enlargement of the prime focus cage,
- remote control of the dome shutter and windscreen,

It is hoped that all of the above should be finished by the end of the year.