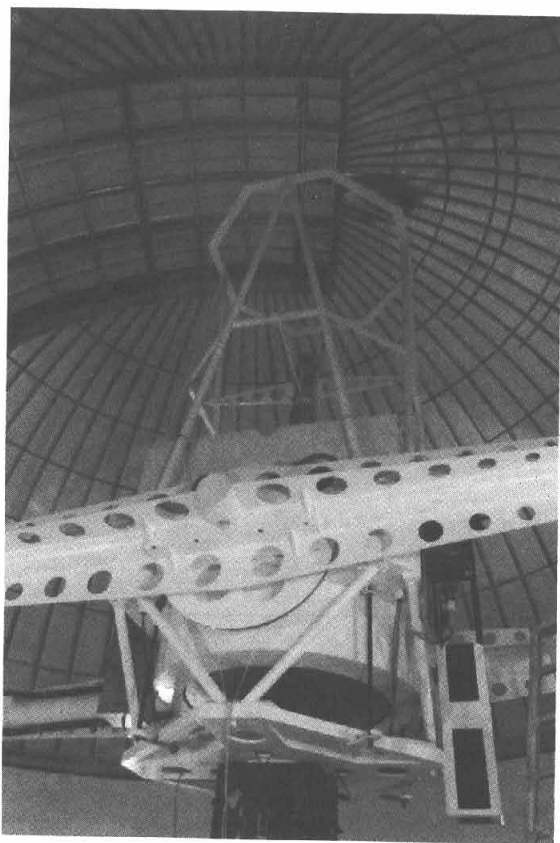


# REMOTE ACCESS AUTOMATIC TELESCOPES



**DONALD S. HAYES &**



*Figure 3. General view of the alt-alt mounting of the IR telescope.*

A simple image-intensified CCD camera system mounted on an auxiliary telescope is equipped with star-tracking electronics and generates DC control signals to the drive motors whenever the star image deviates from the center point of four fiducial marks injected into the video frame. This system, at present on 0.2-meter Schmidt-Cassegrain optics, is capable of reliable star tracking to  $\pm 2$  arc seconds on stars of 8th magnitude or brighter.

*c) Instrumentation for the IRT*

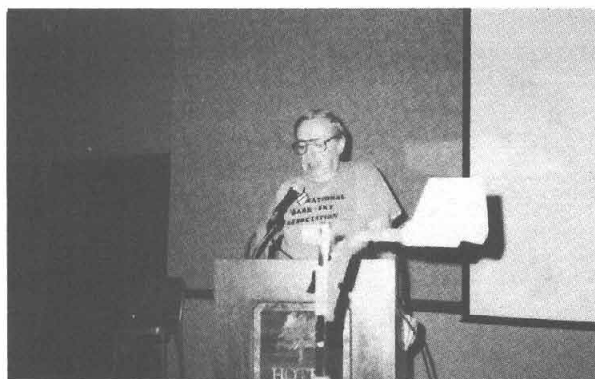
The telescope is now equipped with two InSb JHKLM photometers, one of which also contains a mid-IR Si:Ga detector fed by a cooled dichroic mirror. This dewar also contains two continuously-variable



*Lower-latitude observatories must contend only with mere mice. Alan Clark brought photographic evidence of the wildlife hazards found at their observatory near Calgary. (photo - T.A. Clark)*



*The participants pretend to be awake, while Russ Genet (behind the camera) records their presence for posterity. The session chair, J. Bruce Rafert (lower right in both photographs) ran a tight ship. (photos - R. M. Genet)*



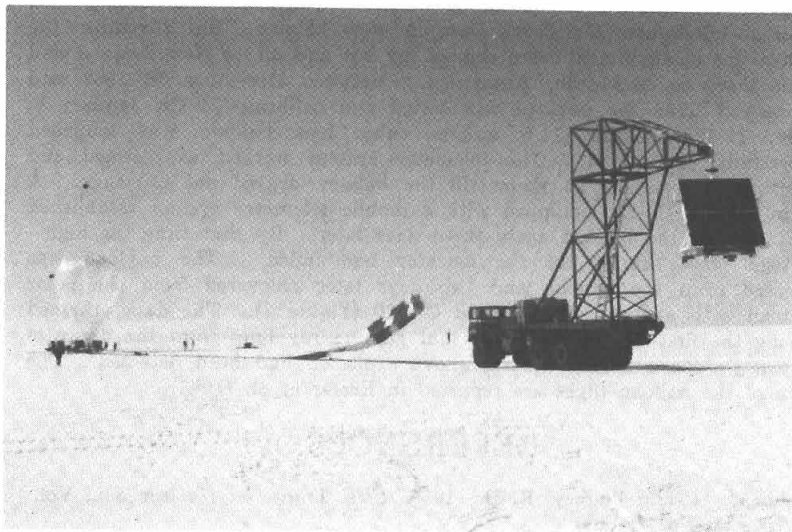
*a) Dave Crawford was the Symposium Chairman. b) Ray White was the Local Host of the Symposium. c) Sallie Baliunas represented the Smithsonian Institution, which sponsored the Banquet. She was also Master of Ceremonies for the after-dinner festivities. (photos - D. S. Hayes)*



a) Doug Hall smiles as he contemplates automating the delivery of his papers. b) Dave DuPuy presents a theoretical analysis of what it would be like if he could observe in Virginia. c) Kent Honeycutt tells how he will deal with the data rate from his CCD-based APT. (photos - D. S. Hayes)



a) Kelly Cowles asks the question: can you really see through the Earth's atmosphere? b) Russ Genet plays it cool while describing the next launching. The audience is skeptical. c) John Briggs thinks big. (photos - D. S. Hayes)

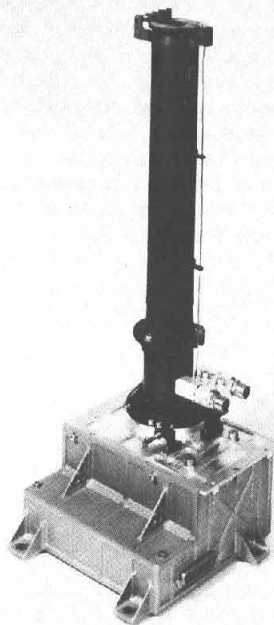


*Figure 6. Balloon launch in Antarctica.*



*Figure 7. Balloon payload during recovery on the polar plateau.*

clocking circuit which utilized clock pulses from the spacecraft which were related to the spin rate of the vehicle. Each integration was thus made over 45 degree of rotation of the spacecraft. Following an integration, the output of the counters were loaded into a shift register along with housekeeping information. This shift register was unloaded by the spacecraft and transmitted to earth. The third printed circuit board held the voltage conversion and timing circuits.



*Figure 7. Final HOPE instrument.*

The entire HOPE instrument package is illustrated in Figure 7. In flight it was covered with thermal foil. A cover, located at the top of the baffle, was used to protect the optics prior to the encounter. It housed a tritium phosphor source which was visible to the MCP-PMT and served as an operational check and quasi-calibrator. The cap was released by a pyro-release mechanism before encounter. The entire instrument as shown in Figure 7 is only about 30 cm tall.

The electronics and detector were built at the University of Florida's Space Astronomy Laboratory. The optics, baffle, and filters were constructed in France. The American built parts were shipped to France where they were assembled with the rest of the instrument. The