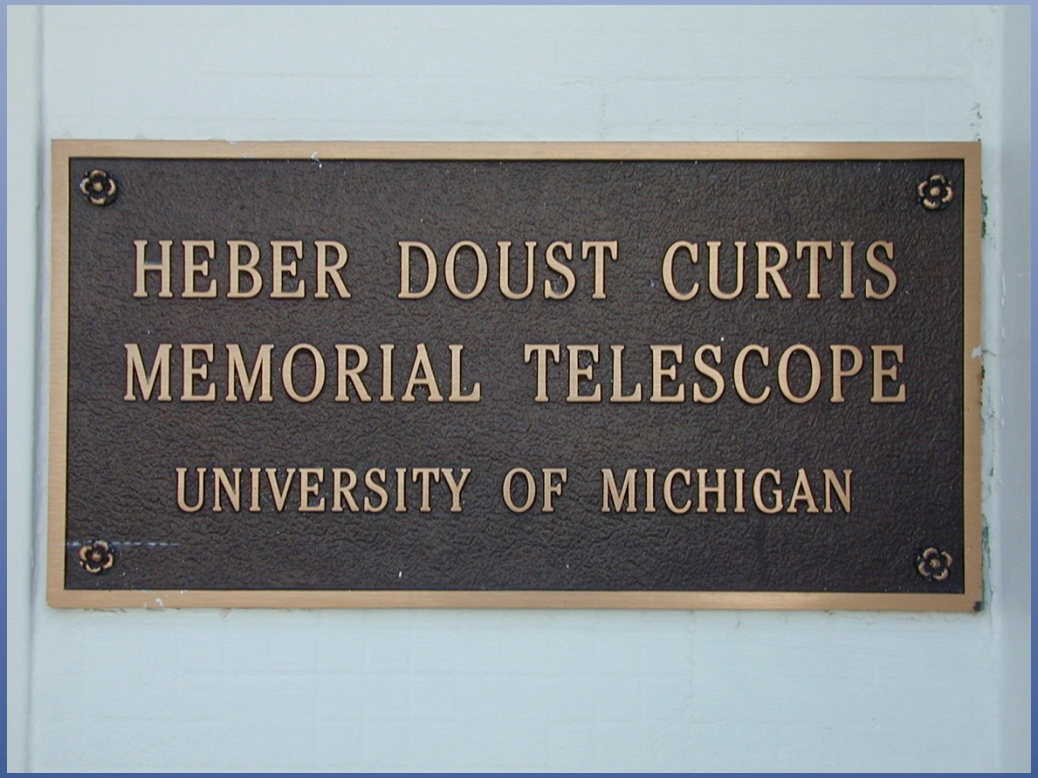
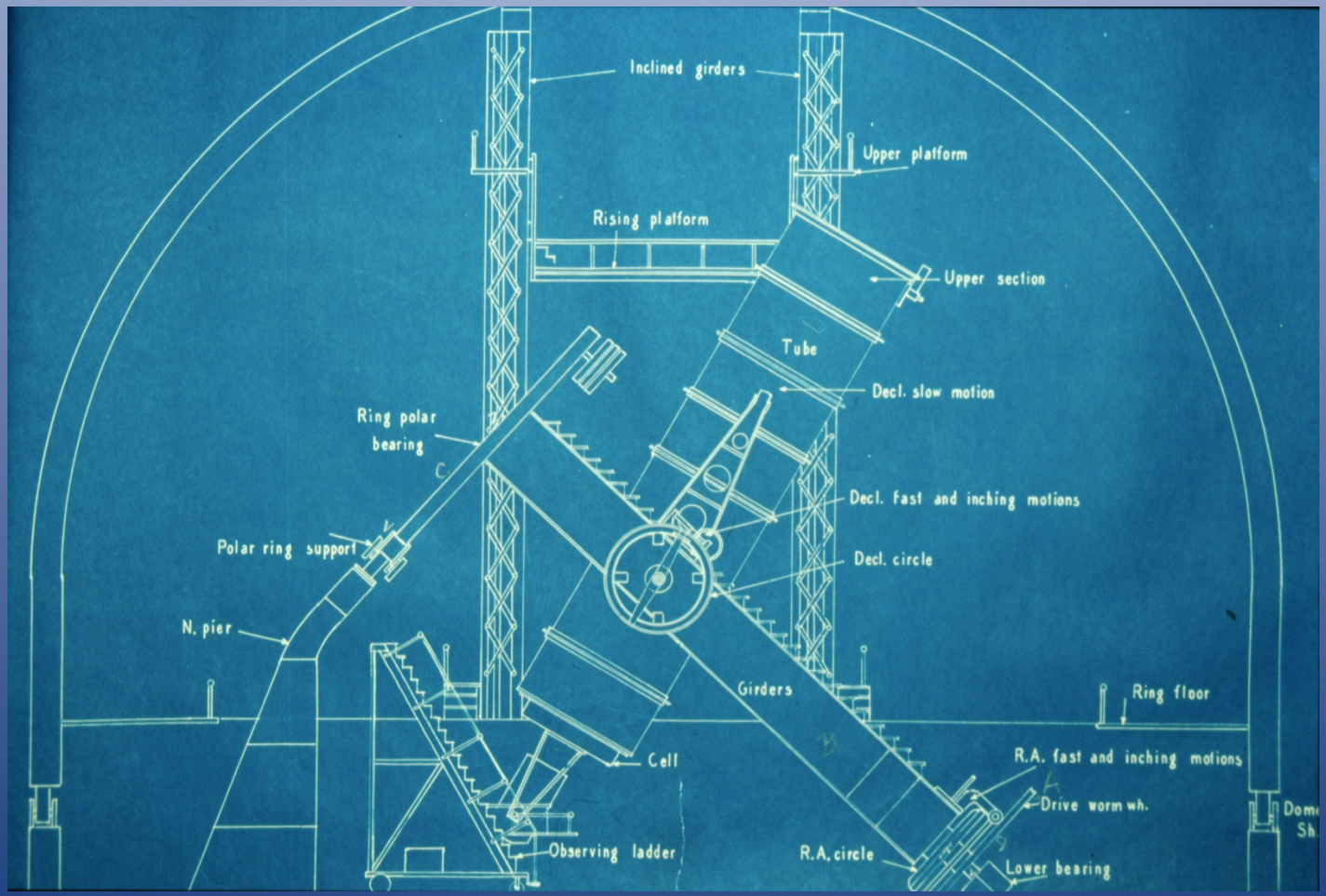
Cerro Tololo's first wide field telescope – the 0.6-m Curtis-Schmidt



Beginnings : 1930's and Curtis' design for large telescope in Michigan. 97-inch mirror obtained as part of 200-inch mirror program



The 97-inch mirror leaves Ann Arbor ….

Next stop Herstmonceux ….

First mirror in Isaac Newton Telescope

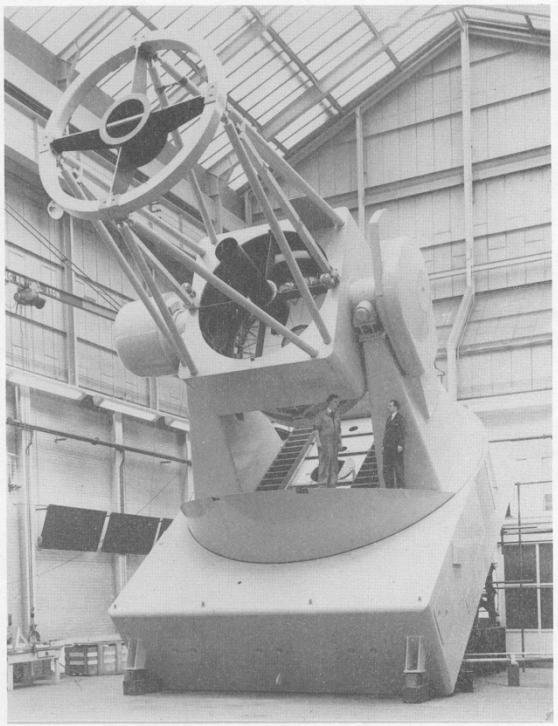
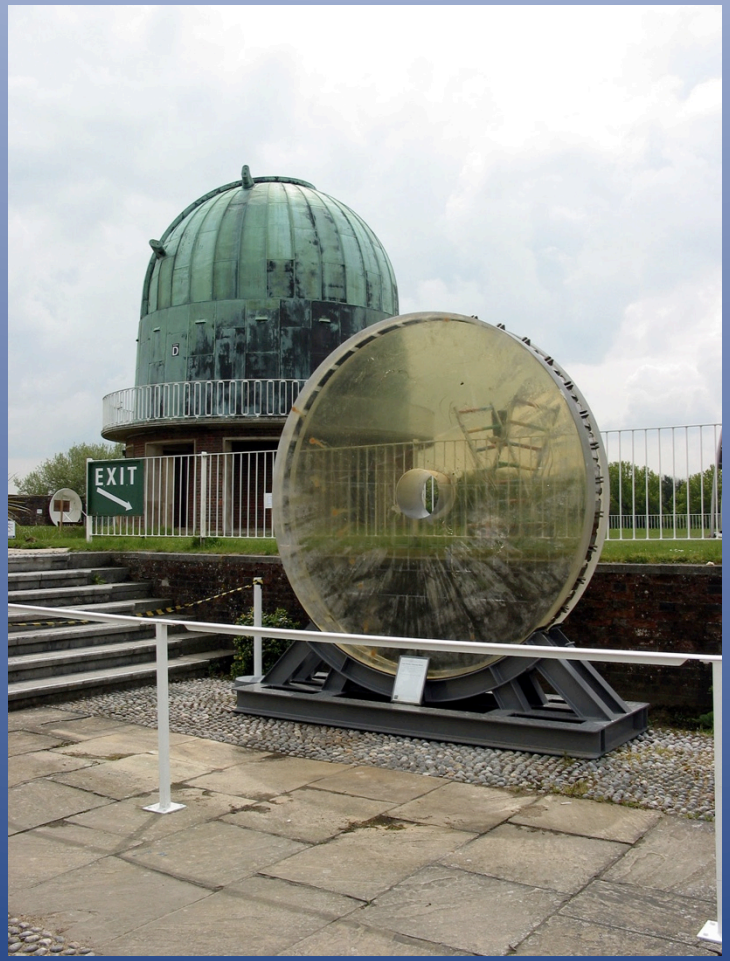


Fig. 185. The 98-inch Isaac Newton Telescope near completion (Courtesy NEI Grubb Parsons). The observing astronomer was originally seated suspended at the Cassegrain focus (behind the giant mirror) in radio link with the night assistant. This instrument was initially erected at the Royal Greenwich Observatory, Herstmonceux Castle, Sussex (1967), and subsequently moved to Roque de los Muchachos, La Palma in the Canary Islands. The observatory belongs to the Instituto de Astrofisica de Canarias, and is the result of international agreements between Spain and several European countries.

Curtis' mirror today

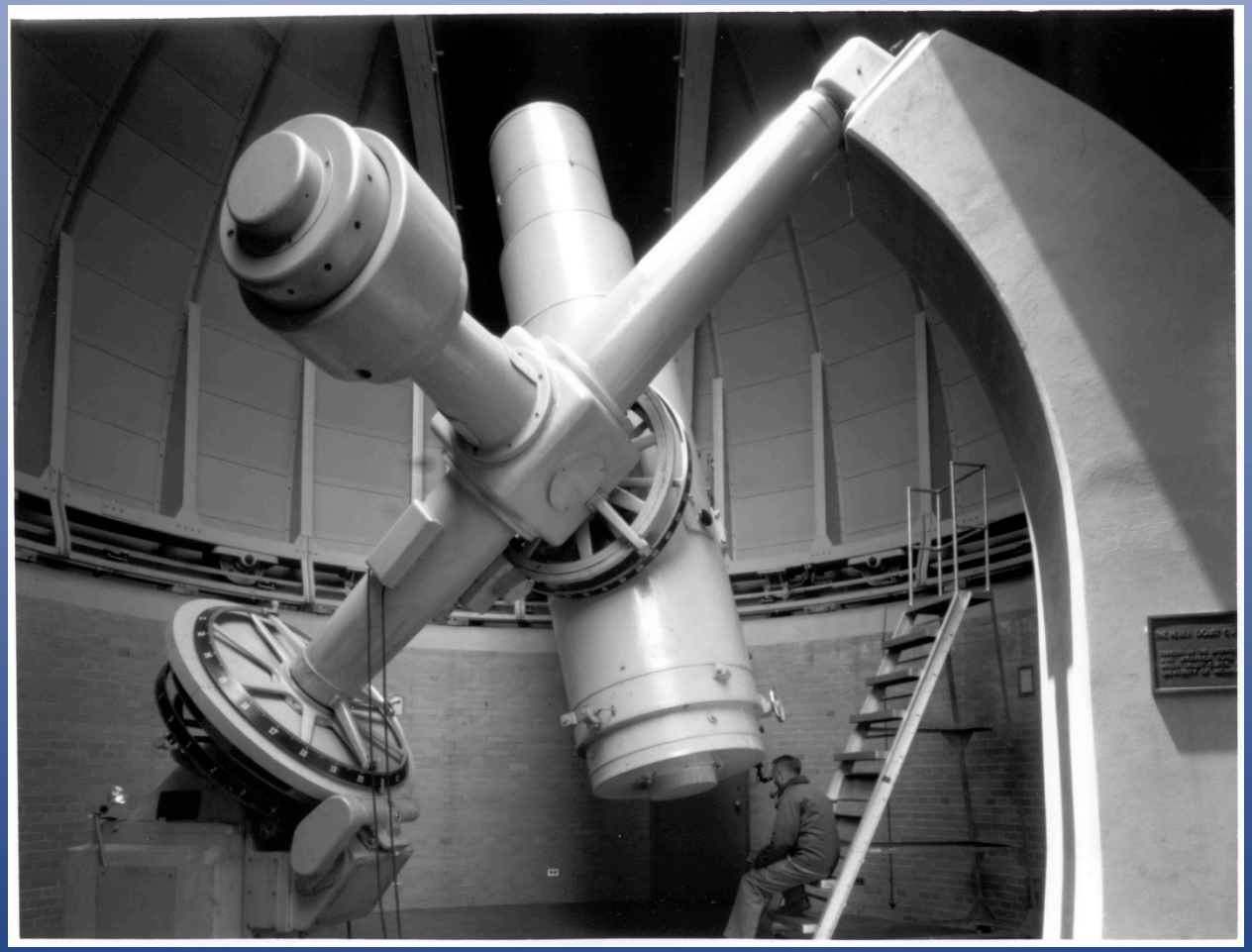


Trade: 97-inch mirror for 0.6-m Schmidt telescope

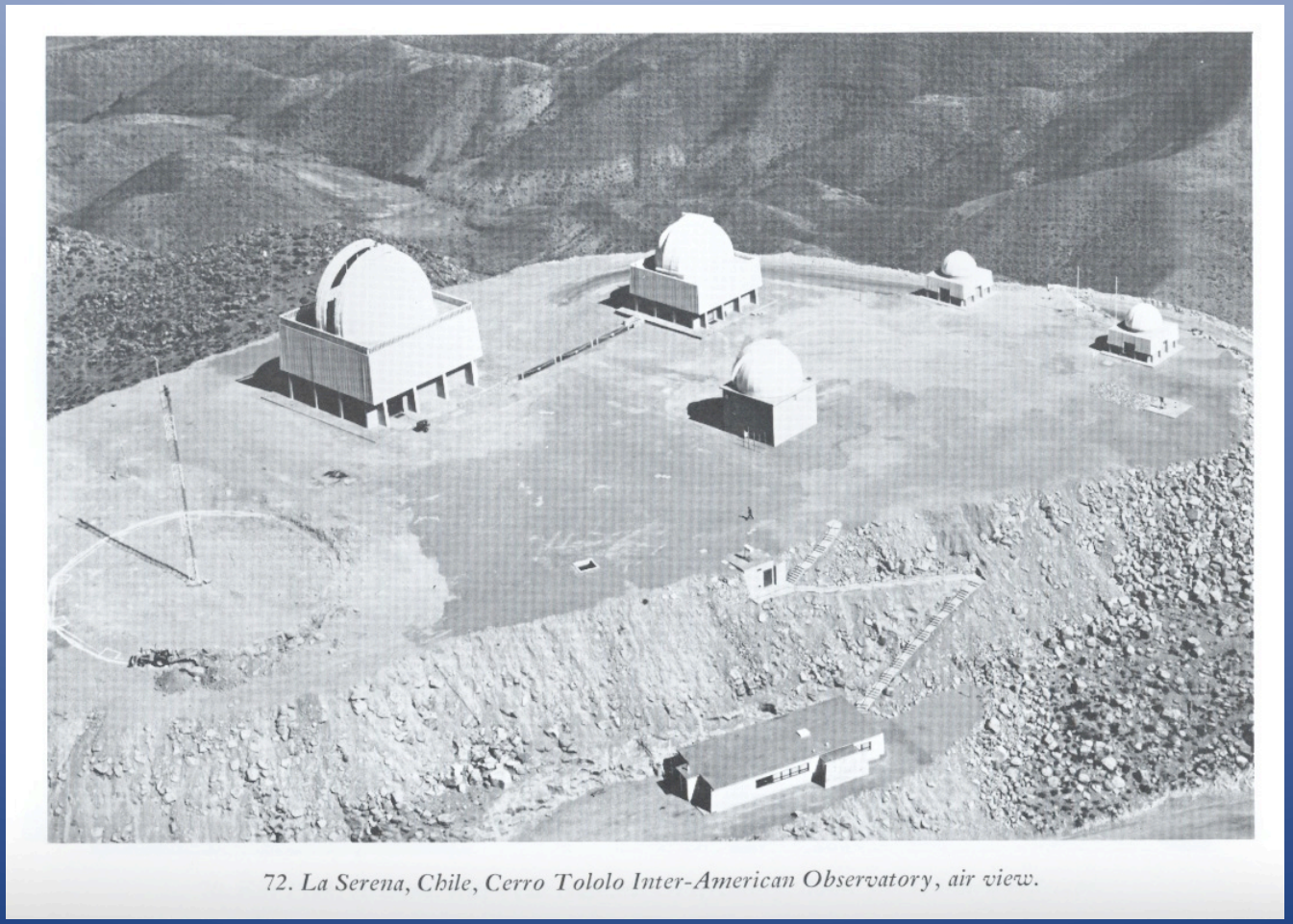
- McGregor Foundation (Detroit) funded Curtis' telescope project and mirror purchase.
- Not enough money for both large telescope and completion of Schmidt.
- 97-inch mirror to UK.
- Funds raised for completion of Schmidt telescope (clone of Burrell Schmidt) and installation at Portage Lake Observatory near Dexter, Michigan.

Curtis-Schmidt dedicated 1950

Curtis-Schmidt in Michigan 1950



Cerro Tololo circa 1966

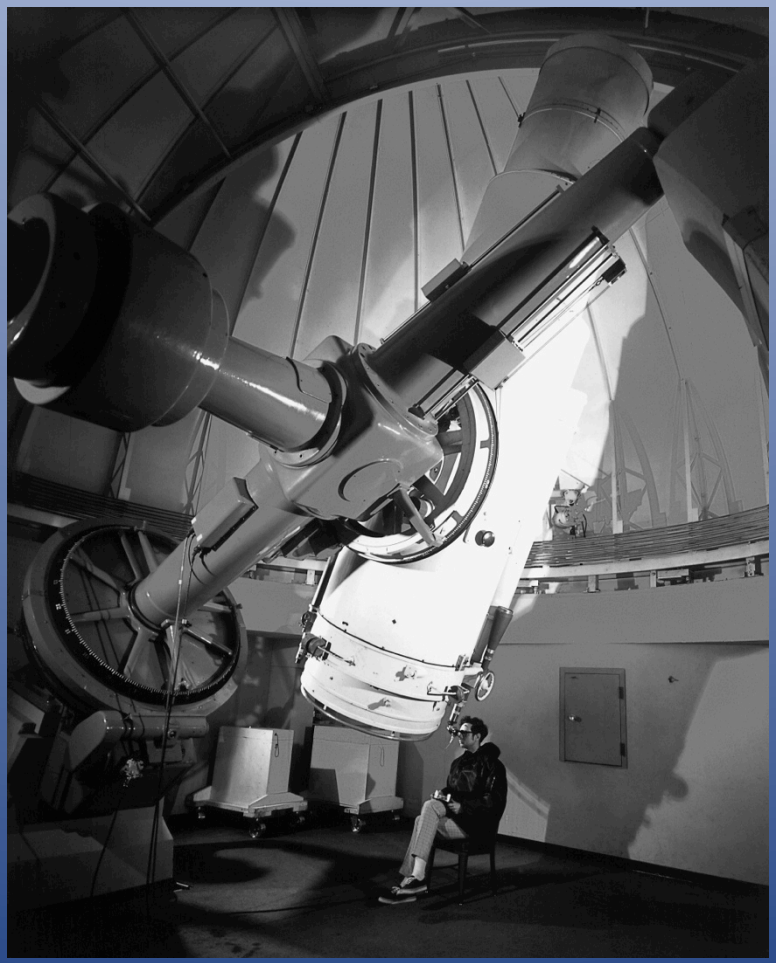


72. *La Serena, Chile, Cerro Tololo Inter-American Observatory, air view.*

Curtis-Schmidt to Cerro Tololo in 1966

- Gap in historical record – how and why decision reached to send telescope to Cerro Tololo?
- Known – unhappiness with low productivity of telescope in Michigan.
- Initial plan was Schmidt to Cerro Tololo for 10 years. *Fortunately it never returned to Michigan.*
- CTIO paid all moving and operating expenses: 2/3rd time to national community, 1/3rd to Michigan.
- Burrell Schmidt of Case Western to Kitt Peak in 1978

John Graham and the Curtis-Schmidt



Significant Science Programs on the Curtis-Schmidt

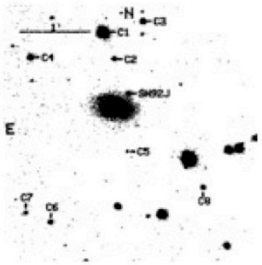
- Michigan Spectral Catalog
- Objective Prism Surveys with 4 and 6 deg prisms
  - Blanco and new thin (1.5 deg) prism
- Calán/Tololo Supernova Survey
- MCELS – Magellanic Clouds Emission Line Survey.
- PRECAM – calibration survey for Dark Energy Survey.

From Mark Phillips describing 1990 operations:

The Calán/Tololo SN Survey: Methodology

• Observe ~25 fields (5°x5° each) photographically with the Curtis Schmidt telescope twice per month in order to improve the chances of catching SNe Ia on the rise.

• Send the plates by bus to Cerro Calán in Santiago where they were blinked to find candidate SNe



• Schedule nights on the 0.9 m for follow-up CCD imaging in BVI

• Use the 1.5 m and 4.0 m telescopes to obtain classification spectra

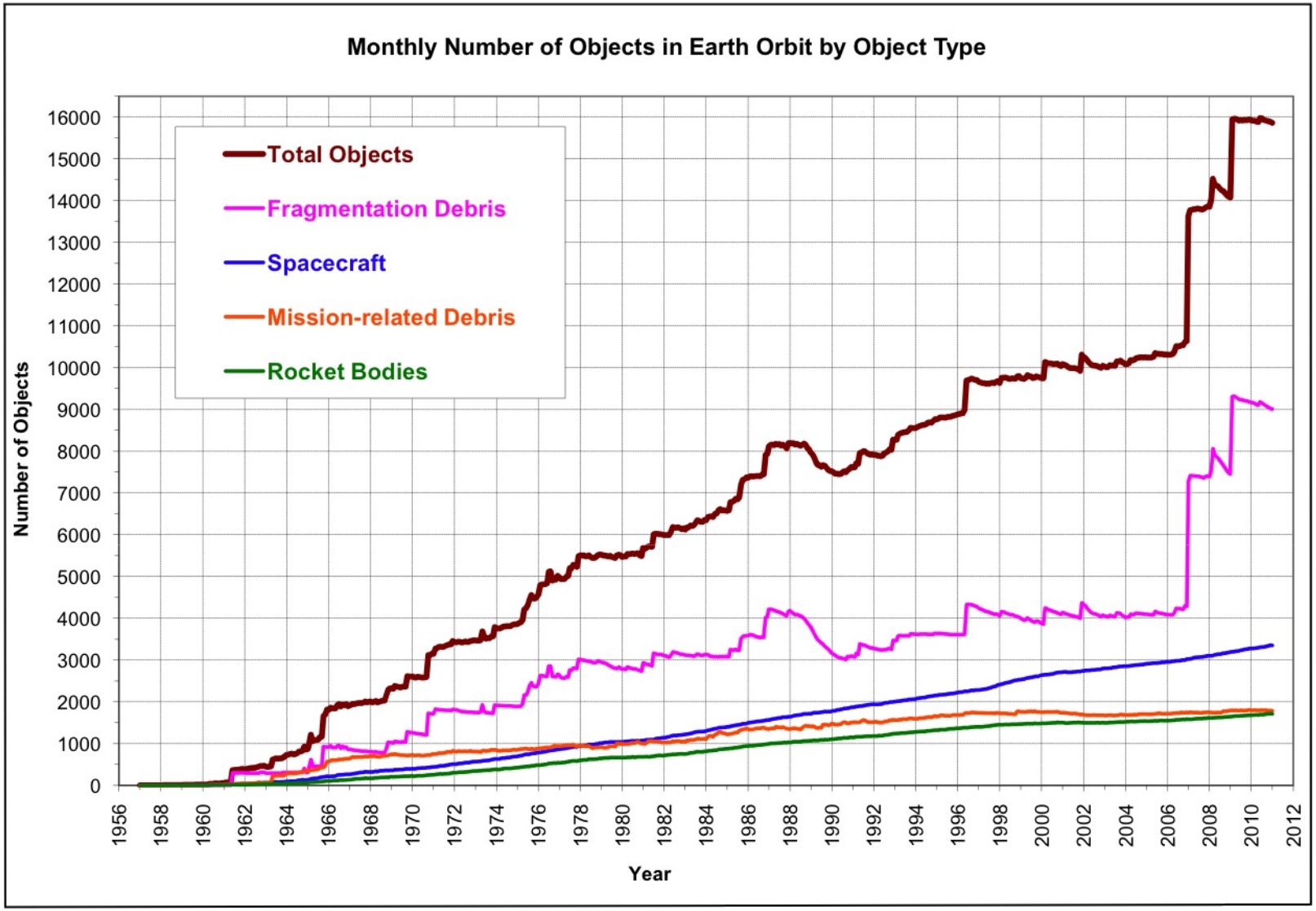
Change : late 1990s and NOAO

- NOAO instructed to ‘divest’ itself of operating small telescopes.
- Visit by Malcolm Smith, CTIO Director, to Michigan in 2000 to discuss future of Curtis-Schmidt.
- Offered (threatened?) to return telescope to Michigan.

Original Curtis-Schmidt dome circa 2000

The Curtis-Schmidt in the 21st Century

- Telescope remained on Cerro Tololo – 100% Michigan time beginning 2001B (and paid 100% by Michigan).
- *"You can do anything you want with that ***** telescope as long as it doesn't cost me any money!"* as expressed by Michigan Astronomy Department chair.
- All Michigan Astronomy resources to Magellan.
- Visit by John Africano, Dave Monet and myself in summer 2000 to NASA Orbital Debris Program Office, Johnson Space Center, Houston.

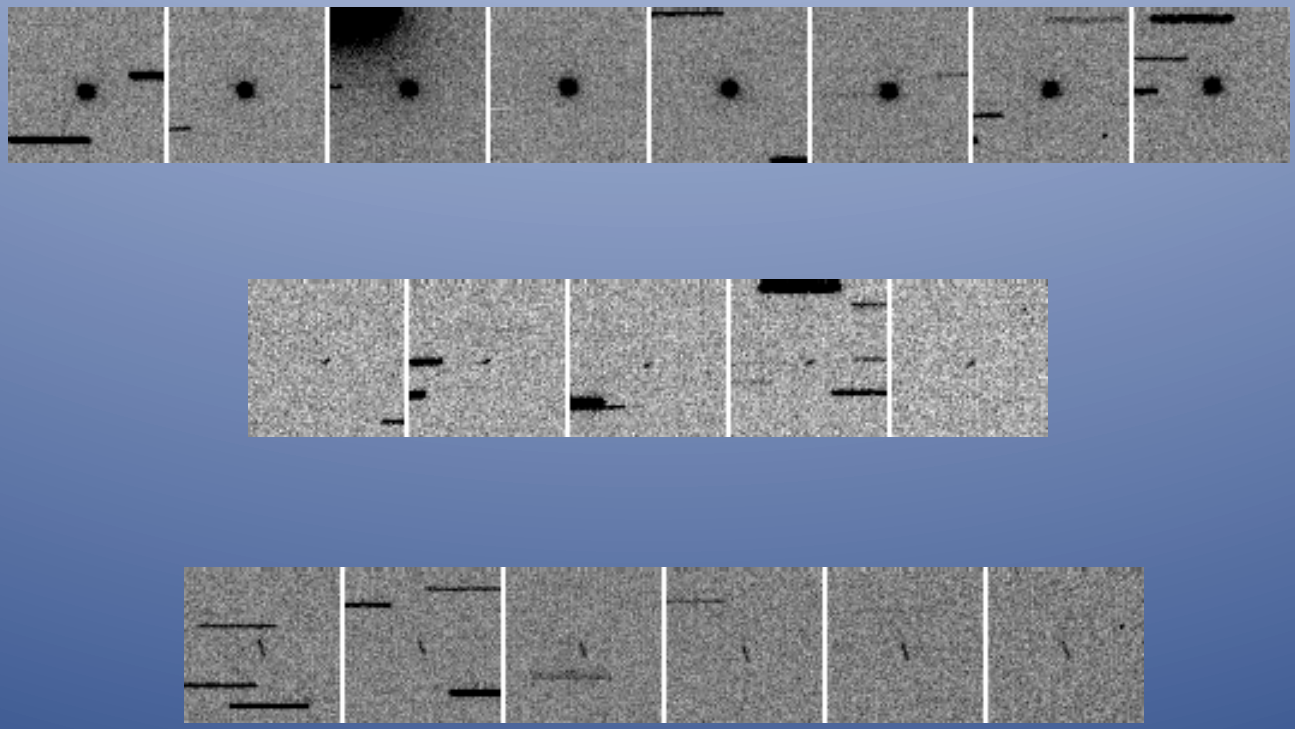


Monthly Number of Cataloged Objects in Earth Orbit by Object Type: This chart displays a summary of all objects in Earth orbit officially cataloged by the U.S. Space Surveillance Network. "Fragmentation debris" includes satellite breakup debris and anomalous event debris, while "mission-related debris" includes all objects dispensed, separated, or released as part of the planned mission.

Project **MODEST**

- MODEST – Michigan Orbital DEbris Survey Telescope
- Dedicated to optical studies of orbital debris at geosynchronous orbit (GEO) for NASA's Orbital Debris Program Office. Debris with period = 23h 56m. First observation December 2000.
- All expenses (operating, maintenance, and upgrades) paid for by my NASA grants. Nothing from UM. Dept Chair(s) happy.
- Surveys and follow-up astrometry and photometry.
- Simultaneous observations with CTIO/SMARTS 0.9-m. Finder telescope for Magellan spectrographic observations. Remote operation experiments.
- Importance of ARCON for survey operations. *Thanks to Roger Smith for microcode changes in Schmidt ARCON controller in Feb 2001.*

Examples of Detections of GEO objects



Thanks to Tololo staff for their superb care and upgrades of the Curtis-Schmidt telescope since 1966.