

## Remembering 35 years at Lowell

By Wes Lockwood



I arrived at Lowell Observatory to work on Director John Hall's "Solar Variations and Atmospheric Transparency" project in 1973. Astronomer Mikolaj "Mike" Jerzykiewicz was about to return to his home institution in Poland, and Dr. Hall needed a replacement in a hurry. Mike and I both regarded the project as a mundane adjunct to our personal research interests. I never imagined that it would command my attention and devotion, evolving and expanding over 35 years into 2,800 nights of observing at the 21-inch telescope by Don Thompson, Brian Skiff and me, and ultimately encompassing a dozen grants and 70 journal publications. (See Lowell Observer article, "2,713 Nights and Counting," Issue 64, Fall 2004).

By 1980 it was apparent from spacecraft observations that we could never detect solar variability from the ground, but serendipitous discoveries from the precision photometry of Solar System objects kept us soldiering on. A phone call from Richard Radick at Sacramento Peak Observatory presented an opportunity to turn our techniques away from the planets and toward the stars. We first studied the variability of stars a fraction of the Sun's age in the Hyades open cluster and were surprised to find in this heavily plowed ground that many vary by a few percent. With NSF and Air Force funding, we went on to tackle variability in stars similar to the Sun itself, a much tougher nut to crack that pushes the technique to its limit. A solo observing effort by research assistant Brian Skiff spanning 1,200 nights and 15 years led to three Astrophysical

Journal papers by our group between 1997 and 2007, thus marking this turf as the exclusive territory of Lowell Observatory. Just as we were beginning to tire of this theme, Gregory Henry at Tennessee State University turned his automated telescopes at the Fairborn Observatory towards our targets, allowing the work to progress robotically. (The Kepler spacecraft has now taken photometry into a regime of far higher precision — expect surprises).

The Solar Stellar Spectrograph "SSS" project that Jeff Hall and I work on today was an unanticipated spin-off of Lowell's interest in the Sun. That, too, began inauspiciously as a 1981 bull session in Boulder, Colorado involving Dimitri Mihalas of the High Altitude Observatory, Richard Radick of Sacramento Peak Observatory, and others. They were interested in finding a dedicated telescope to use for studying the magnetic activity of the Sun and sun-like stars over intervals longer than the famously short attention span of most telescope time allocation committees. The spectrograph was installed at the 42-inch Hall Telescope at Lowell in 1988, but the project didn't really get off the ground until Jeff Hall arrived as a post-doc in 1992 and we were able to get NSF funding to update the computer system that runs it.

Precision photometry of Uranus and Neptune continues at the 21-inch telescope in a 20+ year collaboration with Heidi Hammel of the Space Science Institute, newly funded by NASA until 2013. The seed for the project was planted for this work in 1950 and it has been ongoing with the exception of a hiatus from 1966 to 1971 that ended after NOAA climatologist Murray Mitchell Jr. urged Dr. Hall to revive it.

Shorter projects spiced up the relentless march of the decades. In 1975, I got an itch to relocate the Observatory library from the Rotunda to the Planetary Research Center, under the direction of the Observatory's first professional librarian. In the 1970s and 80s, Nat White and I used the photoelectric spectrum scanner to help our German colleague Helmut Tüg with two fundamental (and difficult!) calibration projects. The second of these, a 24/7 effort to measure the Sun in the daytime and the star Vega at night at the 24-inch Morgan telescope on Mars Hill was wrecked by the untimely arrival of the El Chichón volcanic dust cloud. A repeat in 1985 was finally successful. In the 1980s, Barry Lutz and I used the same scanner to measure the geometric albedos of Titan, Uranus, and Neptune over the visible and red spectral regions. Just two years ago a student intern and I repeated the measurements using the newly refurbished "DeVeny spectrograph." We wanted to see what had changed over the decades. Along the way I found time to work with the Naval Observatory's Christian B. Luginbuhl on getting local lighting ordinances updated and accepted by the populace. As a result, Flagstaff is now the world's first (and so far only) designated International Dark Sky City.

Congenial colleagues and coworkers at Lowell Observatory allowed the decades to pass without a cloud in the sky (the hard core astronomer's dream). Retirement offers more of the same, though on a more relaxed schedule that frees up time to finish some research projects and to help librarian Antoinette Beiser organize some of the Observatory's priceless archival materials.