

American Astronomical Society
Austin, Texas
January 24, 2008

Thank you, Craig, for that stellar introduction.

Welcome to Austin and to the Lone Star State of Texas.

Texas astronomy began when William J. McDonald, a banker from Paris, Texas, left money to the University of Texas in 1926 to build an observatory.

At first, it seemed a star-crossed gift:

- McDonald had no known interest in astronomy. His relatives who wanted the money thought he was crazy to toss his money into outer space and contested the will.
- Nobody at the University had ever heard of McDonald.
- The University didn't have an astronomy department.

But the University won the lawsuit and built the 2.1 meter Otto Struve telescope, dedicated in 1939 and long operated by the University of Chicago.

Astronomy in Texas exploded like a supernova in the 1960s with the arrival of Harlan Smith. Harlan built the modern McDonald Observatory, the Astronomy Department and the 2.7 meter telescope that now bears his name. He created an outreach program that hosts over 10^5 people a year at the visitor's center in the Davis Mountains of West Texas and beams StarDate radio programs to millions of listeners.

The Hobby-Eberly Telescope (HET), the fourth largest optical telescope, is a huge spectroscope that scans the dark skies of West Texas from Mount Fowlkes at McDonald Observatory. With its special design, low cost and 9.2 meter effective aperture, you can see more sky for less money with the HET than with any of the other great new telescopes.

It was conceived by two Penn State astronomers, Dan Weedman, and Larry Ramsey. In 1983 Weedman was trying to figure out how to build large telescopes with the light-collecting ability necessary to reach into deep space. Eight-meter telescopes were too expensive for Penn State and little time was available on the existing large telescopes.

Weedman borrowed the idea of a large telescope with a fixed elevation from radio astronomy. So what if you have to wait a while for your part of the sky to come by?

Could it be made from several mirrors, much cheaper to build, rather than a single large mirror? He talked to Larry Ramsey, an expert in the construction of spectrographs.

In 1984, they took their idea for the Penn State Spectroscopic Survey Telescope to a conference near Munich exploring new ways to build big telescopes.

Harlan Smith was there. Harlan was dreaming large, as usual. His dream was the Eye of Texas, a 7.7 meter scope with a price tag of \$50 million. The University of Texas at Austin had committed to the project and already raised \$2 million for it by 1984. But another event was on the horizon: an oil bust that sent the Texas economy spiraling into a Black Hole.

Meanwhile, Weedman had met Frank Bash, a UT radio astronomer, who arranged a meeting with Harlan. Harlan embraced the idea, \$44 million cheaper than the Eye of Texas. Frank was a worthy successor to Harlan as Director of the McDonald Observatory.

When I eulogized Harlan in 1991, I called him “gentle and joyful in all that he did—a patient and lucid expositor in a way that only someone of great wisdom, as well as knowledge, can be.”

In the late 1980s UT, Penn State, Stanford, Munich and Goettingen formed a partnership to build a new large telescope. What was to become the HET was a first-of-its-kind machine. Building a working telescope producing good science took more time and money than anyone realized. With a cost then estimated at \$6 million, UT Chancellor William Cunningham committed \$1.5 million, so that a quarter of the money was in hand.

Bill Cunningham, the late George Christian and I started raising the money. But, like the universe, the time and money were ever-expanding. Like Hubble's constant, the cost in parsecs of dollars per second kept on increasing! No cosmological constant here!

At first the HET didn't work. The University was afraid millions of dollars had disappeared into yet another Black Hole, never to be seen again. But those dollars hadn't reached the event horizon after all so everything worked out.

The observatory's recent performance has vindicated William McDonald's and Harlan Smith's faith. Seth Redfield and his colleagues just announced the first detection of a planetary atmosphere from the ground, using the HET to make the observations. Another McDonald astronomer, Robert Quimby, has observed the two largest supernovae so far, perhaps a new class of explosion. Dr. Quimby was then Craig Wheeler's student. That discovery was number two on Time Magazine's Top Ten list of scientific discoveries of 2007, right after stem cells, just ahead of mapping J. Craig Ventner's DNA.

Now we are refurbishing the telescope to look at thousands of galaxies at a time and installing new instrumentation devised by Dr. Gary Hill to conduct the Hobby-Eberly Telescope Dark Energy Experiment, HETDEX, that will figure out what dark energy is. Contributions will be gratefully received!

Now if the astronomers can just figure out why everybody else is rushing away from Texas so fast—why Texas is so red-shifted on the electoral map—they'll really be doing something useful!

Have a great time in Austin! When you get a break from wandering among the galaxies, try wandering along East 6th Street! Keep Austin Weird! 2×10^3 astronomers in downtown Austin can surely do that.