

Watching a row of zeros come up on an odometer is fun. In March, 2001, I logged the ten thousandth observation made with Harvey, the Celestron 14 I have owned for twenty years. I thought this would be a good time to write an extended-use report on that magnificent telescope.

Some people buy a fancy car to celebrate finishing graduate school. I wanted a telescope. The 1980 market for big-iron astronomy was small: The truss-tube Dobson folks hadn't gotten it together yet. The largest units for sale were solid-tube Newtonians, both Dobsons and equatorials, of 16-inch aperture or perhaps a bit more.

My car was too tiny for a big tube, and buying and operating a van or truck was costly. Perhaps a cheaper combination would be Celestron's 14-inch Schmidt-Cassegrain, even at \$5000, and a little kit trailer, small enough for my car but big enough for the telescope, for a few hundred dollars more. The clincher came when a local telescope dealer announced that Celestron had given him a chance to sell a new C-14, with unusually good optics, to some valuable customer. He offered it to our astronomy club members at low street price, and my hand went up first.

It was an orange-tube model, with Celestron's big fork mount. The design was precisely scaled to the bounds of portability -- the 50-pound OTA lift (later models are lighter) was just within the ability of an average adult male in reasonable physical shape, like me. The fork arms dismounted for transport. OTA, fork, and drive base stowed in a foot locker and a steamer trunk. I got a stubby portable pier, like a sawed-off Cave or Criterion unit, to lower the eyepiece to seated level. Everything fit in my little trailer.

I practiced set-up in my living room. The telescope was huge! One of my cats, a small black kitten named "Muffin", curled up on the wedge and went to sleep. His fur so perfectly matched the black-crackle finish that it was nearly an hour before I noticed he was there.

First light was November 8-9, 1980, on Vega. Next I viewed objects in the northern summer Milky Way, high in the west. Seeing was fine enough that I spotted one and perhaps two stars within the ring of M57.

Shake-down turned up problems. Images were not as good as suggested, so the OTA went back to Celestron: The optics had "matched" astigmatism that could be tweaked out by rotating components about the optical axis. That hadn't been done right in final assembly, but a spell on an optical bench fixed it. The system came back well capable of reaching Dawes's limit on double stars. I suspect recent C-14s regularly have optics as good or better, but in the early 1980s, my telescope was an uncommonly fine large Schmidt-Cassegrain.

The corrector dewed easily. Heat-rope style anti-dew systems were not available, and hair dryers for un-dewing were a pain, so I kludged a dew cap from sheet aluminum and hose clamps. That helped.

It also helped that I repainted the telescope. I masked and sealed the OTA, then sprayed on titanium-dioxide white enamel with the optics still in it, and refinished the rest chrome silver. Side by side comparisons with orange-tube C-14s and with SCTs of other sizes and colors showed that when dew hits optics or exterior surfaces, my white tube is last and least affected, and that late afternoon sun, my OTA stays cool when nearby black parts are too hot to touch. The silver drive base tends to stay dew-free, as well.

The system flexed too much. Experiment and calculation suggested the webbed wedge base was at fault, so I replaced it with thick aluminum plate. That made a big difference. I considered replacing the wedge side plates, too, but the first fix was so effective I didn't need to. With these changes, the Celestron fork was an excellent, solid, compact mounting, whose only remaining problem was getting to the eyepiece and finder when working between the zenith and the north celestial pole.

At that time, a 14-inch telescope was gargantuan. Only a few in local clubs had more aperture, and they were too clumsy to show up often at star parties. My C-14's deep-sky views were a vast improvement over what I was used to, and over my previous largest telescope, a 6-inch Newtonian. Set up and take down took under an hour each, and I lived just 45 minutes from Fremont Peak -- a pretty dark site -- and had a job with flexible hours. So I used my new toy a lot. I did deep-sky observing with it fairly intensively for several years, logging 1440 observations in 36 setups.

Then I put The C-14 aside for more than a decade. There were two reasons why.

First, since my C-14 was usually one of the largest telescopes at star parties, everybody wanted to look through it, and I had no heart to say no. I would spend nearly four hours driving, setting up, and taking down, and get little time to look through my own telescope. So I started bringing smaller ones, just so I could get to use them.

Second, in the early 1980s, the only decent handy observing list was Burnham's Celestial\_Handbook\_, and the best charts were the AAVSO Variable\_Star\_Atlas\_. Burnham was a fine source of deep-sky targets, but soon I had seen most everything in it down nearly to my south horizon. The AAVSO atlas had a wonderful large scale and an unheard of

stellar magnitude limit of 9.5, but it was for variable star work: Many of its deep-sky objects were not labeled. In fields of galaxies, life got confusing. I had to precess coordinates and compare positions with the charts, to figure out which was which. That was a lot of work.

A decade later, the world had changed. Star parties had become megalithic circles of looming Dobsons, that drew newcomers like magnets. Uranometria and Millennium Star Atlas plotted scads of labeled objects. On-line data bases and numerous books listed and categorized them in every useful way, and then some. And I was long since bored with small telescopes. It was time to recommission the C-14.

I had gotten an even tinier car, a Geo Metro with no place for a trailer hitch, with a cargo area too cramped for the C-14. I bought a Losmandy G-11 mount, heavier than the Celestron fork, but which broke down into smaller pieces, and learned to strap the OTA in the right front seat, where it provided an excuse not to take guests to star parties. They interfere with observing, you know.

For practice, I assembled the C-14 / G-11 combination in my dining room. It was even huger than before! I pointed the stark white OTA straight up and measured its height -- six feet, three and a half inches. That number rang a bell.

I had recently seen the classic Jimmy Stewart film, "Harvey", whose title character is an invisible white magic rabbit, six feet, three and a half inches tall. Few human creations are more magical than an astronomical telescope, and my white one was indeed "invisible": No one had seen it for years. Thus Harvey was born, or perhaps discovered. I haven't yet made long detachable ears for his OTA or painted a pink nose, whiskers, and soulful blue eyes on his dust cap, but I may.

I could lift Harvey's OTA, but not with enough finesse to get its new Losmandy dovetail plate into the mounting clamp. I made do by pointing the declination shaft horizontally and chaining it to a tripod leg, so I could support the OTA against my chest, grocery-bag fashion, as I wiggled it into place at the side of the mount. The chain kept the telescope from swinging down till I got the counterweights on -- the clutches couldn't hold either telescope or counterweights unbalanced. Eventually I rigged a dovetail plate with an upper tube ring and fittings to support the tube bottom, so I could install in two steps, with counterweights on and dovetail clamp above the equatorial head: I put the plate with fittings into the clamp, then lift the OTA into the tube ring -- no finesse required. That worked much better.

I bought a Kendrick anti-dew system and an Orion flexible plastic

dew shield, which keep my corrector dry even when fog shrouds the observing site. I installed a second finder, 120 degrees around from the first, which makes it easier to find objects in certain positions.

My G-11 was manufactured before Losmandy figured out not to mix lubricants. Before shipment, they smeared its bearings with better grease than they came with, but leftover old grease reacted with it and set like varnish, making hand slewing rough and jerky. I cleaned and re-lubed the bearings, and can now hand-set Harvey well enough to put an object in the field of a 300x eyepiece.

Harvey left retirement in July, 1998, and promptly became a deep-sky workhorse. As I write, I have set him up 138 times in all, for a total of 10022 observations -- over 72 per setup. That's almost half my total observing, over five times more than with any other telescope. On my busiest night, I logged 259 things with the big SCT. One reason I can find so much so fast is that I am good at star-hopping, but the speed also stems from a driven telescope, with good finders, that is easy to slew and set, and is mounted well enough not to jiggle overmuch when the wind plays tip-the-cow with big Dobsons.

One mechanical failure required OTA disassembly. After nearly twenty years, an internal thread got loose. The telescope would not focus. I had to remove corrector and primary to fix it, a nerve wracking process. While I had the OTA apart, I considered other maintenance, but the inside was well blackened, and there was no baffle tube lubricant to replace, so there wasn't much to do. (Some SCTs use grease between the primary's mounting collar and the baffle tube, but my C-14's dry slip fit of anodized aluminum on anodized aluminum works smoothly, with minimum mirror wobble.)

Harvey's deep-sky capability matches my current charts and observing lists. By and large, I see all individual galaxies and most all else plotted on `_Millennium_Star_Atlas_`, except that I see nothing of about half its Abell galaxy clusters, and that a fair portion of its planetary nebulae are too small to show as non-stellar or too dim to see. My main observing program for several years has been going through `_Millennium_`, chart by chart. Nearly all that work has been done with Harvey.

Highlights from Harvey's career include detecting structure in Einstein's Cross, finding Maffei I, observing the beautiful dark formation in the Eagle Nebula now dubbed the "Pillars of Creation", comparing the aerial view of Hadley Base with Apollo 15 travel photographs, logging globular clusters in galaxies beyond the Milky Way, walking Markarian's chain in the heart of the Virgo cluster, watching Mir whiz unexpectedly through the field of a 98x eyepiece while I was

looking for something else, enjoying the beautiful edge-on spiral galaxy NGC 4565, resolving Sirius B, spotting the jet in M87, and -- for simple humility -- not seeing anything at all in the Hubble Deep Field.

Humungous Dobsons and whizzy apochromats notwithstanding, a big Schmidt-Cassegrain is a wonderful choice for visual amateur astronomy. If Harvey returned to whatever magic realm he came from, I would seek to conjure up another Celestron 14 with no hesitation whatsoever.