

*DOWN HOME Gumbo  
Astronomy from Chaos  
Manor South!*

**Number 89 (New Series)**  
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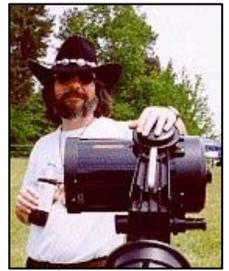
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**Skywatch**  
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*Uncle Rod Mollise's*

# **Skywatch**



## **Meade Forever!**

**Uncle Rod**

There's no denying America's number one (formerly, anyhow) telescope company has been struggling for the last couple of years. Combine the recession with a stack of Meade-specific economic dominos, and we've been wondering whether the company might survive till next year much less forever. The small amount of good news is that former Meade honcho Steve Murdock has returned to the fold, the company's finances seem (more) stable for now, and they are preparing an innovative product, the Meade LS series, which, if it works right and reliably, could very well put Big Blue right on top again.

However that turns out, Meade has given a lot of amateur astronomers a lot of pleasure over the nearly four decades of its existence. Including me. Yeah, I know that when it comes to SCTs I'm pretty much known as a

"Celestron man," and there is probably some truth to that, but I still have a soft spot for the little ol' scope company from Irvine. How could I not, muchachos? Meade is one of those old fashioned success stories Americans, including me, love. The last time I talked to the company's legendary founder, John Diebel, nearly a decade ago, he was still recounting the story of how he started America's favorite telescope company on his kitchen table—a story he



never tired of telling and I, for one, never tired of hearin'.

Despite that, I've never owned a Meade SCT. Oh, the university where I teach bought eight Meade LX10s for me to use with my students, and I've been happily doin' just that for a decade, but, no, never had a Blue Tube of my own. Always seemed as there was a Celestron I wanted a little bit more (though, in retrospect, I believe a time or two I would have been happier with Blue than Orange). Which is not to say I've never owned a Meade scope; I've owned several, includin' my much-loved ETX125, Charity Hope Valentine. But the telescope that turned the Unk – Meade relationship into a beautiful friendship was the one I want to tell you about today, an humble scope, but one that's given me untold pleasure over the years, my StarFinder 12.5-inch Dob. Oh, there were a few headaches along the way, but that's always been part of the Meade story.

Hokay...let's get Sherman to set the dials on the WABAC Machine to late 1993, to the time of the year when Meade, as was their wont, was addin'-on

ever more full-color glossy pages to their already huge astronomy-magazine-spreads for the approachin' holiday season. What caught my eye then was not that alluring new LX200, but a breed of scope that was at the time completely new to mass production, the Dobsonian. Yep, hard as it may be for you sprouts to believe, outside a few (very few) custom outfits sellin' them newfangled truss-tube scopes, the only person peddlin' Dobsonians in a major-time way was Jim Braginton, who was offering his cheap, optically OK Dobs to Joe and Jane Amateur through his company, Coulter Optical.

Soon as I saw the ads for Meade's Dobs, though, I got the sneakin' suspicion that Coulter's days was numbered. Why did I think that? The Meade ad showed amazingly good-lookin' scopes very much in contrast to the cobbled together look the Coulter Odysseys had assumed as the 1990s came in. Not that the little Idyllwild, California outfit's products had always been looked down on. Back in the 1960s, the company was noted for turning out pretty good to real good optics, including classical Cassegrain mirror sets, and their Odysseys caused quite

a lot of excitement in the beginnin'.

In that beginning, in 1980, Braginton's Dobs, which ranged in aperture from 13.1-inches to an amazing 29-inches (8 and 10-inchers were added after a while, and the 29-inch, of which only a few were made, disappeared post-haste) originally looked respectable, even attractive. They were initially patterned after the Dob design pioneered by The Man himself, John Dobson, and his aperture-hungry followers. That design consisted of a an optical tube assembly made from a length of concrete form tube, "Sonotube," held in and extending from a plywood (mirror) box. This OTA rode on a "cannon mount," the rocker box. At first, the mirror box and rocker were made of decently finished plywood, or, after a while, a good grade of particle board—if there is such a thing. The scopes were equipped with inexpensive but functional rack and pinion focusers. Yes, the primary mirror had to be removed for transport, and the secondary was held up by a thick strut extending across the tube rather than a real spider, but everything worked and looked good. Most scopes

were attractively finished with blue paint ("Zolotone," whatever the hell that was). The altitude and azimuth motions, the key to success with a Dobsonian, were pretty good despite Jim B. usin' something other than Teflon and Ebony Star formica for the bearing surfaces. *In toto*, the Odysseys looked good and performed as well as their somewhat plebian optics would allow.

If the Coulter Odysseys had stayed the way they were, they might have lived on at least through the 1990s. But they didn't. Braginton made the decision at the end of the 1980s to redesign his scopes with the goal of cheapening them to the point where he could maintain something close to his original prices. When the 13.1 debuted in '80, it sold for an amazing \$395.00, and ten years later it has increased only by one C note, to \$495.00, despite the considerable shrinkage of the dollar and the unrealistic original pricing.

The 1980 Odysseys dispensed, first of all, with the mirror box. The tube of the latter day scopes is supported by two round

bearings bolted directly to the Sonotube. The primary mirror is no longer removable, nor is it held in an edge-supporting sling as in the original, but is instead RTVed and duct taped (!) onto a simple push-pull mirror cell. The decent rack and pinion focuser went, too, replaced by a crazy-ass assemblage of plumbing parts. The rocker box became not just particle board, but rough, barely sanded particle board that appears to have been cut-out with a chain saw. The never buttery smooth motions of the Coulters were not improved on the new scopes, and were often substantially worse. Finally, their crazy-thick Sonotubes were painted fire-engine red, leading to the sobriquets "Red Tube" and "Blue tube" to distinguish new and older Coulter scopes. How did the newuns work? Install a real focuser and maybe swap the plastic and floor tile bearings out for Teflon and Ebony Star and you had a scope that, like the Blue Tubes, performed as well as average-quality optics would allow. Which could be pretty darned good on the deep sky. But you sure didn't have a scope that looked good, and when the Meade StarFinder Dobs came out, yeah, I knew Coulter's epitaph was written in the

big advertisin' spreads in *Sky and Telescope* and *Astronomy*.

Not only were the new telescopes on display in the Meade advertisements prettier, with their nicely finished white tubes and rocker boxes, they included things the Coulters didn't anymore, like real rack and pinion focusers, and things they never did, like genuine spiders and secondary holders and finders (by red tube time finders were strictly optional on the Odysseys).

These "StarFinders," which were made available in apertures of 6, 8, 10, 12.5, and 16-inches just looked far more professionally made than the Odyssey Red Tubes or, yes, even the Blue Tubes. Lots of amateurs hungry for deep sky aperture, but wary of 1-wave Coulter mirrors (which could happen with the 17.5-inch Odyssey II primaries, if only occasionally with the 13.1s) sat up and took notice of the new Meade scopes, including your ol' Uncle Rod.

How Unk got involved with Dobs is a story in itself. The short form is a somewhat nasty divorce drained his pockets as the

1990s began. At the time I had been cruisin' along happily with a Celestron Super C8 Plus I'd had for a few years. Alas, there came the point where a need for ready cash dictated the C8 had to go—I had already sold my beloved TRS-80 computer. That wasn't as bitter a pill to swallow as you might think. The Plus had never satisfied me like my Orange Tube or my Super C8 had. Frankly, its optics, while not horrible, were just not as good as those on my first two SCTs. Let us say "sub-par for Celestron." I sold the SCT but made a promise to myself that it would be replaced with somethin' nice—an Ultima 8 or one o' them new LX200s—once I got back on my feet. That was not going to happen overnight, though, and in the interim I needed a decent aperture scope to use. Something. Anything. That "anything" was a Coulter Odyssey Red Tube. What led me down that path? Jim B. began advertising an 8-inch f/7 scope for the astounding price of \$249.00.

A complete 8-inch telescope for that price seemed unbelievable to the point of irrationality. Being a curious sort, I just

had to find out what Coulter could do for 250 George Washingtons. Quite a bit, it turned out. The Odyssey 8-inch f/7 was not a bad scope at all. It was possessed of all the minuses of the other Red Tubes as mentioned above, but for the price it couldn't be beat—then or now. And Jim even got it to my door in about a month (Coulter was notorious for long delivery waits). All I had to do was slap a Telrad on it and I was out lookin' at galaxies; I got a good peep at a cool supernova in M81 with her at First Light. Hell, there was even an eyepiece of sorts in the box, a Kellner of surplus binocular heritage. While the mirror suffered from a bit of turned down edge, it did a good enough job, even on the Moon and planets, and kept me happy for quite a few months. Even did some imagin' with the scope, believe it or not, holdin' my K1000 up to the eyepiece to snap-shoot the December 1993 Lunar eclipse. Yeah, I was satisfied. Till the prospect of More Better Gooder came along in the form of the StarFinders, that is.

I'm still not completely sure why I began considerin' the purchase of a Meade Dob rather than just continuing to marshal my forces for the purchase of another SCT.

Maybe because I wanted a *cool* SCT; one that would come in at well over two grand, the aforementioned Ultima or LX200. I'd get something I could use a little longer and more happily than the admittedly crude Coulter, and save for an extra special long time for a top-o-the-line CAT. Anyhoo, after talkin' the Meade Dobs over with my buddy Pat Rochford at length, *I did the deed*. On a pretty (must have been) March day in 1994 I picked up the phone and gave the bubbas at Astronomics a ring—and a credit card number. Which StarFinder? That was easy to cipher. I wanted the most aperture **I could handle**. That meant the 12.5-inch. I was reasonably sure it would fit in my little hatchback Hyundai Excel, and I believed I could carry the OTA short distances without goin' to Herniatown. The 16-inch? That, I thought, would be like totin' a water heater around. The good folks at Astronomics took my order and advised me the telescope would drop ship from Meade. How long? "Couple of months at least," they thought. Though, honest then as now, they advised that it could easily be longer than that—the StarFinders were

new and immediately popular. In addition to the telescope, I ordered an upgrade. At the time Meade was including a tiny 30-mm finder with all the StarFinders, even the 16, but for a few dollars more you could replace that with a 50-mm and get a couple of extra eyepieces to boot. Orderin' done, I went back to the Red Tube and kept on truckin'.

Not unexpectedly, March drifted into April, and April into May, and another Gulf Coast summer arrived without the appearance of the StarFinder. I wasn't overly concerned, and, at any rate, had my mind on other things. The Saturday I ordered the Meade (yes, Astronomics had and still has Saturday hours) was, coincidentally, the evening of my first date with the wonderful Miss Dorothy. That first date soon became a real romance, and the rest, as they say, is *history*. I did do a bit of observin' that summer, and took Miss D to her first public outreach session, an event with the Boy Scouts where we showed off Jupiter. Dorothy, though very knowledgeable about astronomy, didn't know much about *amateur* astronomy, and thought

the Coulter and its views of Jupe were *quite* impressive.

As summer began to die, I wondered about the Meade once in a while. I suppose I coulda called somebody, but it was a busy late summer at work and, more importantly, Dorothy and I were now makin' plans for a Labor Day weekend wedding. I still occasionally kept an ear out for the UPS truck, but only occasionally. In fact, I gotta say I was flabbergasted when a Big Brown Tuck stopped in front of my new domicile (soon to be dubbed "Chaos Manor South"). Even more surprised was I when the dude began unloadin' some huge boxes emblazoned with the Meade logo. Well, maybe not quite as surprised as Miss D. was when she arrived home to find the formerly spic-and-span living room where our nuptials were to take place the next day covered with packing foam and peanuts, the remains of several boxes, and one *honkin'* big telescope. When the surprise wore off, Dorothy was almost as excited as I was, or at least excited for me. If I needed another indication I was now walkin' in high cotton that was it.

Just what kind of scope was it? How good did the Meadesters do? Assembly

was straightforward enough, and consisted of bolting the separately packaged primary mirror/cell onto one end of the tube, attaching finder and bracket, screwing together the sides/bottom of the rocker box, and, finally, attaching rocker to ground board via a simple pivot bolt. The only trouble I ran into was with the latter. If you used all the included Nylon washers on the pivot bolt as Meade instructed in the scope's slim manual, the Dob not only gained smoother action, but a distinct wobble as well, since the azimuth bearing surfaces were no longer in good contact. I experimented and found the right number of these Milk Jug Washers to ensure OK movement and no wobble.

Initial impressions? Good, *not* perfect. The tube was a thing of beauty, finished/coated a gleaming white. The rocker box was attractive, obviously bein' composed of particle board, but nicely finished with white laminate/Formica. The finder was Meade's standard non-illuminated job I'd used before and I was purty sure would perform adequately. That was the extent of "impressive" as far as the

mechanical qualities of the new baby. The rest was "so-so" or "what-the?!" The most obvious downcheck was the focuser. While it was OK/smooth enough as far as I could judge indoors, it was not what I'd expected. The first Meade StarFinders, German Equatorial Mount Newtonians, were equipped with surprisingly good 1.25-inch rack and pinion focusers. Reminded me of what Old Man Novak used to sell back in The Day. The StarFinder Dobsonians maintained the 1.25-inch rack-and-pinion paradigm, but with one change: the focuser body (not the drawtube or gears) was now plastic. You might say Unk was a *mite* disappointed.

Wut else? The spider's legs looked awful thin. Almost in piano-wire territory. The secondary holder they supported was OK, but wasn't the secondary mirror a mighty *large* at 2.6-inches across its minor axis? That was necessitated, I reckon, by a focuser that was not just plastic but overly tall. Didn't think much of the primary mirror cell, either. The mirror was glued (RTV) into a fixture not much different from the Coulter, if a lot less crude

looking. Unlike the Coulter, it didn't use pairs of push/pull adjustment/locking bolts, but three Allen head screws. *Allen heads?* I hoped to heck the gull-dern thing held collimation well. I was not impressed by the small (about 6-inches) altitude bearings, either. Given the weight of the telescope and their small diameters, Meade had tried to make balance less fussy—I guess—by using Nylon rather than Teflon for the altitude bearing pads. That helped balance, but when you moved the scope in altitude, the side bearings wanted to turn independently of the tube due to stiction with the Nylon, causing backlash. The scope's motions in both altitude and azimuth were nowhere near the "buttery" goal of Dob users. Nonplussed was I. I'd expected to do *some* fine tuning, but not *this* much. How much time I was prepared to invest in making this scope truly functional hinged on one thing: how good the optics were.

Finding *that* out took a couple of weeks; there was an intermission before First Light. No, it warn't the new scope curse. It may have been cloudy down in Possum Swamp those first two weeks of September 1994,

but I didn't know it. The day after the StarFinder arrived, Miss D. and I were married in Chaos Manor South's living room (I manhandled the 12.5 upstairs...I was younger and stronger then), and were off on a two week honeymoon. That's right, brand new scope and I didn't get take First Light for two weeks. Was I anxious and impatient? Naw. Well, maybe a *little* bit.

As soon as we returned and the skies cleared, it was Moment of Truth Time. Out into the backyard went the StarFinder. What to look at? Well, hows about Jupiter? I was doubtful this great big cheap thing would do pea-turkey on a planet. I expected about what a Coulter Odyssey I could deliver, which was "big," "bright," and "not too sharp." I let the scope cool off (or, actually, warm up) for a bit, stuck a 25-mm Orthoscopic in the focuser, and aimed at ol' Jupe. Hmmm...hard to tell at 60x, but looked promisin'. In went my beloved Vixen 7-mm Ortho. Mercy Sakes Alive! Jupiter was a welter of detail. Belts, loops, festoons, whorls, color, you-name-it! Suddenly, spending some time and a little money improvin' the

SF seemed well worth it. Optically the scope was flat-out amazing. The included 25, 12, and 6-mm Meade Modified Achromat oculars? Not So Much. In fact, these were, I thought, some of the worst eyepieces I had ever used. Sure, they probably would perform better at something slower than the StarFinder's f/5, but even my cheap-o Orion Kellners presented a better field edge. Into the back of a drawer they went (they are probably still there to this day).

While I intended to do something about the StarFinder's bearing problems "soon," in the course of starting a new life with Miss Dorothy I just didn't get around to that before my first opportunity to use the new scope under dark skies came 'round. On a fine October morning I loaded SF, me, Miss D. and various and sundry ancilliary items into the Hyundai (somehow) and off we went to the 1994 Deep South Regional Star Gaze. Dorothy remembers DSRSG '94 very fondly. It was her first star party, after all, and it was all new and interesting (if not downright *peculiar*, I'd guess). Me? That fine

weather did not last and I remember lots of rain and some of the fiercest thunderstorms I've seen at a star party. According to DSRSG legend, a tornado actually touched down on the field Saturday afternoon. I did get in some observin' on the two previous nights, but it was limited and conditions were really not good enough to allow the 12.5 to strut her stuff. I did assure myself that, despite my fears, the thing held collimation very well despite a three hour drive over so-so Mississippi roads.

Never say die, of course. Surprisingly given my usual track record, the skies cleared to an amazing extent Saturday night and Sunday morning. What do I remember best about those few hours? How M74 looked, how M33 looked, and how the telescope embarrassed me. M74, The Phantom, is that maddening Messier in Pisces. Oh, a 10 - 12-inch will show it up fairly easily, but even under dark skies it is usually just a round, if large, *blob*. On this evenin' with the 12.5? *It was a spiral*. Was it the dark and clean sky brought by a front passage? Or the good StarFinder optics? Maybe a combination of the two. What-ev! I know I have rarely seen the arms of this Sc spiral stand out more

starkly in any scope I have used. This was especially impressive given the simple eyepieces I owned at the time: Orthoscopics, Kellners, and a single Konig. M33 was likewise a marvel. It wasn't just the starkly visible spiral pattern, neither. What really tickled me was pickin' out one HII region after another, no filter required.

The embarrassment? Every time I slewed in altitude, the scope emitted disturbing POPS and CREAKS. The sides of the rocker box would bend outward slightly and then snap back into place as the side bearings stuck to the too-sticky plastic pads and then let go. In addition, the backlash caused when the side bearings moved independently of the tube, which I'd noticed during assembly, was as annoying as I'd feared it would be. I'd applied Pledge furniture polish to the altitude bearing surfaces, but that obviously wasn't going to be enough to keep the scope from backfirin' like a gull-derned Honda 90.

Back home, I undertook fixin' the bearing problem. First snag I ran into was findin' a source of Teflon and Ebony Star. Crazy Ed, that pioneer in the

offbeat/small astro-accessories game was in bidness by this time, but I hadn't yet discovered him. I coulda called Randy Cunningham at AstroSystems, but, bein' cheap, I first hunted around locally, finally finding something that would serve in the K-Mart, furniture slides, "Magic Sliders," little pads designed to allow you to scoot mama's couch across the wood floor without scratchin' it. Package said "Teflon," so I bought a bunch. I intended to replace all the Nylon pieces with Teflon, and I did remove all three azimuth pads and put Sliders in their place. Even without no Ebony Star, movement was now nice and, well, "buttery." I did the same thing with the altitude bearings. Which didn't work as well. Despite the addition of a Velcro-beanbag-filled-with-lead-shot counterweight system I bought from Orion, the combination of the Teflon and the small side bearings made balance impossible. I compromised, replacing one Teflon pad on each side with an original Nylon jobber-do, which worked purty well.

Other mods? Oh, I intended to do somethin' about the focuser, change out the spider, and maybe add some ventilation holes to speed cooldown, but I never got around to any of that during the nearly four years the scope was in her original form. With the bearing problem licked, she just *worked*. The focuser was not elegant, but did an OK job, even bearing up without complaint under the weight of a 12-mm Nagler Type 2 Dorothy gave me on our first Christmas together. Despite usin' the scope on many nights everywhere from Possum Swamp to Prude Ranch, all else I did was add a Telrad. What's with the "original form"? By 1998 my Hyundai had long since given up the ghost. My new grownup car, a Toyota Camry sedan, simply wouldn't accommodate my mini-water heater. Not that I'd been usin' the scope as much as I had in the beginning anyway. Despite my love for the Meade, an Ultima 8 had come to live with me and D in 1995, and that CAT was soon getting' the lion's share of the starlight. I did believe that if I could again take the 12.5 to dark sites I might use her a bit more often, and, with the assistance (well, to be honest, I was mostly an assistant) of Pat, the StarFinder was converted

into a beautiful truss tube scope in spring of 1998.

Where does she stand now? I am usin' the StarFinder frequently these days. After several upgrades, though, the only component now left from the original scope is the primary mirror. When we initially rebuilt her, we did reuse the secondary and finder, but everything else went to live in the garage (and eventually the landfill; though I tried to give the leftovers to somebody, I got no takers). Last to go was the oversized secondary, which I didn't miss. Surprisingly, the original coating on the primary must have been done well, as it was still OK despite several TSP dust baths when I had the mirror recoated by Spectrum last year.

What's the takeaway? What, if anything, does my love affair with my big, friendly, and somewhat goofy scope say about the Meade so many of us loved and bought from for years? That, as was the case with a lot of the telescopes they sold, they made a lot of folks happy with the StarFinders. Hell, *anybody* could suddenly afford a decent lookin', decent workin' scope; in some cases the scope of a

lifetime—I still frequently see StarFinders in their original form on star party fields. The flip side, though, was that, as was also sometimes the case with Meade’s other and more expensive scopes too, you wondered why they couldn’t or wouldn’t take the little extra step that would’ve made their products not just good, but *great*. The addition of a few Teflon pads and larger altitude bearings would have cost insanely little, but would have made the StarFinders, the big ones, anyhow, oh so much better. But that last small step never would come, and, as the years rolled on, this became an ever more common complaint even with the company’s most advanced CATs. Way back when, I wrote a letter to Meade concerning the StarFinder and the few cheap improvements that would make it a whole nudder scope. Did they agree? Hell, they didn’t even see fit to answer me with a form letter. The only thing they ever did to change the StarFinders was to switch out the 1.25-inch focuser with an even cheaper (and worse) 2-inch job.

Do I sound bitter? I’m not. I got more than my

money’s worth out of the StarFinder, and most of the folks who’ve bought Meade’s amateur level scopes over the years feel the same, be that a 2080 or an RCX. I hope Meade *does* survive, has learned a few lessons, and goes on to bigger and better. But if an inscription is finally needed for the company’s headstone, let it be, “They helped a lot of folks discover the wonders of the universe around them.” Cain’t do much better than that, now can you?

## Why We Do What We Do

### Dawn Grove

Just a few weeks into my presidency of our astronomy organization I was called by a journalist who wanted to find out more about the International Year of Astronomy. I was a bit nervous talking to her, afraid of saying something stupid and I spoke haltingly, unsure of myself. It all changed when, after I explained our free outreach programs, she asked me, “Why do you do this?” As I answered her question my jaw seemed to unlock and my words flowed without hesitation.

I admitted to her that when it came to technical knowledge of astronomy I was far from an expert. What drew me to astronomy was not the fascination of facts but the amazing lift of spirit I feel every time I look at the Universe through a telescope. The first time I looked through a telescope I felt awe and wonder and magic and suddenly all the bad things in my life and in the world in general didn’t seem as frightening or daunting when compared to the beauty and peace of the night sky. I have my own telescope and I can look out on any clear night and get my fix, but that did not explain my passion for outreach. “There is more to the story”, I explained to her.

I went to high school in one of the toughest neighborhoods in the valley. Walking from the bus stop to school my nostrils burned from the acrid smell of crack being smoked in the houses nearby. I saw despair and so many kids my age never had a thought of leaving that neighborhood, only of how to continue to survive in it. In fact, to want to excel in school was a speed train ticket to getting beaten up. To want to educate yourself was to

become “teacher’s pet”, to sell-out to the man or to be unfaithful to where you came from. Unless you were a sports star you were never allowed to aspire to leaving the neighborhood behind, who did you think you were anyway?

I escaped high school and went on with my life. When it was time for my first-born to start school I was told she was being bussed miles away to a school in the same neighborhood that I went to high school in. I volunteered as a helper the first day and not half an hour into the class a little boy suddenly ran out of the room. Overwhelmed with other matters, the teacher asked me to bring him back. When I caught sight of him I saw him lying on the pavement, curled up with his school-issued backpack covering his head. I saw in his posture the despair and hopelessness that permeated my high school experience and my heart broke. The next morning I transferred my daughter back into a school in our own neighborhood but I never forgot the children we left behind.

I wanted to help those kids and their families so I volunteered my time to go out with community outreach officers to bring food and donated clothes to families living in those cement-floored houses. We fed their bellies and warmed their bodies but the despair came right back. The cycle kept on; their faces remained vacant, they never looked up. We fed their bodies but it seemed to shame their spirits. I wanted more than this: I wanted to help them break this cycle they were caught in, even if only for a single child! There had to be something more I could do!

When I became involved in a local astronomy club, I had the chance to work with John Dobson on the corner of Haight and Ashbury. Standing on a corner with John’s beat-up van and his home-made telescopes we passed out fliers and called to passers-by to see Saturn for the first time. I was surprised to see petite John bully a frightening looking biker into looking through the eye-piece. The bearded man was all hardness and swagger and attitude. I was amazed that he bothered to take a look but when he did I watched his body melt and his hardness fade away. Then there came a voice so soft and child-like that it I

could not believe its source. “Oh, wow!” the biker said in the voice of a small boy. When the man looked up at me the hard lines were gone, he smiled and was excited and chattered about what he saw. The transformation of his face from poisonous glare to wide-eyed wonder was stunning to witness. That was the first inkling of what my mission would be and a couple years later I had another light-bulb moment that secured my resolve.

Several of my friends and I had set up our telescopes on the patio of a local family-owned pizza parlor. The owner loved having us there but had warned me that some tough characters had been hanging around. Sure enough a large gang showed up, the parlor was swarmed by low-riding pants and street bling, transporting me back to my high-school days. Here again were the hard faces and the sly sideways looks that I knew meant trouble was brewing. I wondered if we should pack up and leave but then remembered the bikers that John had pulled in and I knew that I had to do the same.

Gathering my courage, I entered the parlor and walked right up the throng of the gang members. I asked them if they had ever looked through a telescope before and they looked at me like I was insane. It was an awkward and frightening moment but my nervousness made me break out into a goofy smile as I asked them if they wanted to see Saturn. All it took was two young men to shrug and say "sure" and we soon had the entire gang lining up to our scopes. Again the miracle happened; hard lines softened, street-smart voices turned into the wonder-filled whispers of young boys who asked me about astronauts and other planets. We talked about space travel and I told them that it was quite possible that one of them could one day invent the technology to take us to other worlds. It was a night of possibilities, when boys from the 'hood spoke of how cool it would be to travel in space. I hope that maybe, just maybe one or two of them could see themselves doing it, could imagine themselves going to college and leaving behind the cages of despair they had grown up in. They looked up at me, directly into my eyes

and I saw stars in their eyes. It was that night when it all came into focus for me. If in all of my years of outreach, only a single child lifts his or her head and puts their sites on the stars then it was all worth it. It felt good to bring a warm meal to a hungry child but it means so much more to bring them hope for their future. That is why I do what I do.

When I finished telling the journalist my story she responded simply with a soft-spoken. "Wow."

rave so about it? "CTEY" is nearly 1800 pages of mostly never-before-seen info on the history, construction, and evolution of the commercial SCT, starting in a back corner of Tom Johnson's electronics company, and becoming one of the amateur's most popular telescopes.

Part encyclopedia, part technical manual, part storybook, part library, it details the construction and design of everything Celestron began designing in the mid 60s and how they evolved throughout the 70s, 80s, and beyond. Jam-packed with photos, drawings, repair and service procedures, reprints of never-before-seen factory documents, and extensive technical interviews with nearly 20 of Celestron's opticians and engineers, it contains info you won't find anywhere else.

## Bob's Books

Robert Piekieł



Exactly what is *Celestron The Early Years* and why do the people who buy it

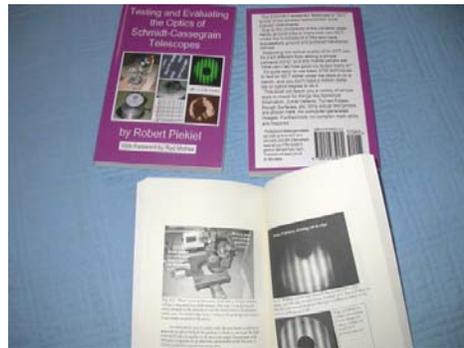
Many newcomers to the hobby think that a Schmidt Cassegrain Telescope is just a short, stubby OTA

strapped to a GEM mount with a CCD attached to the back, but they're more. In actuality MUCH more. If you want to learn such things as:

- How Celestron produced a moving-mirror focus system that COMPLETELY eliminated image shift.
- The famous Celestron Schmidt cameras, INCLUDING the rarely seen 14-inch SC.
- Celestron's incredible line of blue-white SCTs, such as the observatory C12 or the blue-white C8, which was manufactured in both f/12 and f/17 versions!
- Need obscure info, such as a wiring schematic of an orange-tube C14, or tricks to set up and align a NexStar 11 in broad daylight for accurate go-to operation? How about disassembly procedures for a C8 or a vintage C10?

- Want to precisely check the collimation of your SCT including checking and or adjusting the alignment of the PRIMARY mirror? How about procedures for adjusting the gear train on an early C11 or tracking down an obscure Celestron accessory?

Those are the kinds of things you'll find in "CTEY," plus a whole lot more. This 1800-page text is available as an eBook that is a CD-ROM written in PDF for use in any computer. You can print it if you want, and you'll end up with a book over a half-a-foot thick!. The cost is \$39.95 shipped.



**Testing and Evaluating the Optics of Schmidt-Cassegrain Telescopes** takes up where "CTEY" leaves off. This is a 252-page soft cover book that will teach ANYONE how to assess the optical performance of their SCT

with inexpensive yet precision methods, right at their own home, without the need of an optics degree or million-dollar lab.

While there are a great number of excellent publications available today on optics design and telescope making, some are beyond the scope of the average astronomer. I've seen publications that describe telescope optics with a staggering array of math, explaining every aspect of the optics involved, and I salute the brilliant engineers who write them, must many of these works do not show you how to DO anything.

*Testing and Evaluating* is different. It is totally hands-on and how-to. It shows in non-technical terms how SCT optics work and what must be done to test them, then gives specific instructions on how to perform detailed optics tests using inexpensive and easy-to-use equipment. Methods are shown for testing the complete scope, either with a real star or an artificial star, as well as more advanced methods for testing the individual optical elements by themselves on a bench.

You will learn how to quickly test for things such as spherical aberration, turned edges, zonal problems, rough optical surfaces, etc. You will then be shown how to determine where the problem is coming from and if it will be a serious problem. There are even sections for more ambitious ATMs that show how secondary mirrors are hand-matched into the systems and instructions for doing this yourself, if you choose.

The many examples of test images shown throughout the book are REAL photos of actual optics under test, not computer-generated patterns found in so many other texts. This is a great help for anyone who wants to see what things look like in the real world. Unlike Newtonians or refractors, which have been documented for decades, there is very little written on SCT optics. The methods and skills to produce them are usually just passed from worker to worker in the factories, but now everyone can have a look into their workings with *Testing and Evaluating the Optics of Schmidt-Cassegrain Telescopes*

(Price is \$29.95 plus shipping).

For ordering info, plus a discount if you buy both together, write me at [piekielr1@yahoo.com](mailto:piekielr1@yahoo.com). They will keep you busy for a LONG, long time.

## Obsessions and Confessions of a Virgin Stargazer

**Gabe Hudson**

"I think you're obsessed with this telescope thing," my lovely wife said to me one night as I was, again, reading the Orion telescope catalog. She was right; I couldn't stop fantasizing about the awesome, ethereal wonders that could be mine through the eyepiece of a new telescope. These precision instruments, more sculpted works of art than tools of science, had been beckoning to me for a long time.

Like all obsessions, this one started innocently enough. One crisp fall evening

our family was returning home from a dinner out. As we got out of the car, I can remember us all being stuck at how beautiful this very bright star looked. It was very near the crescent moon and shimmered like a diamond in the crisp night sky. The sight really grabbed our attention because, like many people, we lived in the light polluted 'burbs and stars were often nearly invisible to us.

It had been a long time since I had looked up to the sky in wonder. When I was about 10 years old, I can remember being fascinated with anything that had to do with space (I blame *Star Wars*). I was



fortunate enough that my parents indulged my interest and bought me a telescope for Christmas one year. It was a beautiful 60mm Jason refractor, extremely similar to what you can find from the big vendors today. In fact, with the exception of the tripod (which was wooden), I remember it being identical to the Orion Observer 60mm refractor (at least superficially). My telescope just began that day. While most would consider this a small scope, I can remember that it seemed huge when I was a kid. I can fondly recall the glorious shades of purple of the primary lens and the sparkle of the chrome micro-motion controls. I liked looking at the scope as much as looking through it.

I spent many a night looking at the moon and planets through this scope. At one point in my youth, I could identify most of the constellations just by looking up. Of course, life marches on. By the time I was in high school the scope was simply a dust covered rack to hang my clothes on. My interest in Astronomy waned in inverse proportion to my interest in cars and girls. I

eventually gave the Jason away to a good home, as it was to "big" to move in to my apartment with me and my soon to be wife. Looking back, I regret this decision (no honey, not the moving in with *you*). I know many of you can relate; I wish I still had my first scope. As luck would have it, though, this turned out to be a good thing. If I had still had my Jason, I would have no need for a new scope, and this story would be over.

Fast forward to that autumn night: my son, who is now 10, asks me what that bright star is. Somewhere filed deep in my brain was a dusty old folder that contained my mostly forgotten astronomy knowledge. "I think that is actually a planet; I'm pretty sure it's Venus," I said. I could see the eyes of both my son and daughter (8) light up. The gears were turning and the wheels were in motion. I imagined them thinking, "this is no star, it is actually a planet, and we can see with our own eyes!" Of course, all I got was "Cool!" (but I could tell it was excited and heartfelt). "How do you know it's a planet," my son asks? I explain that I think it's too bright to be a star and that if we had a telescope; we could actually look at and confirm that it wasn't just a

point of star light, but a round planet. To my surprise, my son looked at me and said, "I wish we had a telescope."

Christmas time soon rolled around. By this time I had almost completely forgotten about that night. My wife and I were having a hard time coming up with what to get my son for Christmas. He was getting too old for toys and we really didn't want to get him more video games. When asked, he reminded me that he wanted a telescope. I could hear a voice in my head of a wise old man saying to me, "every kid should have a telescope." I had completely forgotten. I was happy that he was interested in astronomy and that a telescope would be the perfect gift for our family to share.

Knowing nothing about telescopes, I did what any sensible person would do...I went to Amazon.com and searched for "telescope". I did the typical filter by price, sort by rating routine until I had a reasonably digestible list of choices. Now I could spend some quality time reading over the user reviews and seeing what was out there (Retailer hint 1: Your web store should

have customer reviews). I noticed that I several people had commented favorably on the Orion SkyQuest XT 4.5 DOB reflector. Nice, I thought, I've always wanted to try a reflector (as it was somehow ingrained in my mind as child that they were somehow superior to refractors) and this one is in my price range. I added it to my cart and was ready to make the purchase when I noticed how much the shipping cost was. Let's just say it was a good percentage of the scope's price.

Fate had stepped in again. I decided to see if I could find a local dealer to purchase the scope from instead of having it shipped. This proved harder than I anticipated. From what I could find, there were only a handful of telescope dealers in metro Atlanta. Fortunately for me, there was a dealer near the Emory University campus that was only about a half hour from my work. I called the folks at Camera Bug and told them I was interested in an Orion 4.5 dob. They kindly explained to me that I didn't want that model because one, they don't carry it, and two, because it was too small. They informed me that

what I really wanted was an Orion XT6 DOB, and as luck would have it, they had one (and only one) in stock. For less than the price of the 4.5" and shipping, I decided to purchase the larger XT6. Besides, it was almost Christmas and there was a good chance that any scope I ordered would not arrive in time.

The first thing I noticed when walking in to the Camera Bug store was large display of floor model telescopes. Huge 12-inch Dobs, 6-inch refractors, and 11-inch SCTs on fork mounts. Ironically, I didn't notice any cameras at Camera Bug. I was impressed at the sheer size and variety of scopes. This is the first time I had seen a Dob in real life, and let me tell you, pictures on the net just don't do these large scopes justice. The owner had our 6-inch ready to go. He explained how it was a better scope than the 4.5-inch because of the aperture and the fact that it had a parabolic vs. a spherical mirror. At the time, I didn't really know why these things were better, but I took his word for it. He helped me load the box in to the back seat of Smurfette (my blue Civic), as it was too big to fit in the trunk. After arriving back home, I hid the scope in the garage,

where it waited until Christmas.

Counting each day until Christmas, I felt like a kid again. I was excited to unveil my son's new scope and I knew he would love it. Christmas Eve finally arrived and while the kids were envisioning sugar plums and what-not, I was busy un-boxing the 6-inch Dob. As my wife was busy wrapping all the other gifts, I was proudly assembling the base. Once finished, I hoisted the 4 foot tube on to the mount and admired my handy work with the screwdriver. There she was, Christmas tree lights sparkling off her polished black metallic finish. I now knew how the dad in *A Christmas Story* (which was playing in the background) felt about his sexy leg lamp. This scope was a thing a true simplicity and beauty. My wife sad it looked like a cannon, and she was right. The name stuck and our XT6 will be forever known as the cannon.

Anyone with children reading this can understand one of the great joys in life is watching them grow up and experience the same joys and frustrations as you did when you were young. It's the whole circle

of life thing. When my son came down and saw the new scope, it was one of those moments. I could see how excited he was. I was reliving that Christmas morning when I was kid from the other side. Fortunately, he was still just as excited when we told him it was a telescope, and not a mounted gun for firing heavy projectiles, which he understandably thought it was. Naturally, we were all excited to take the scope out and see what she could do. In Georgia, however, we rarely have a white Christmas; we usually have gray, wet Christmases. The new scope curse had us clouded out for a good two weeks. On the plus side, we got the upside-down squirrel watching bug out of our systems. The red dot finder was nice and aligned and the scope was perfectly collimated (several times by dad) by the time we got it under the stars.

Using a Dobsonian telescope is an exercise in simplicity. You want to see something, simply yank on the tube until the finder is pointing in the general direction of what you want to see. Then all you have to do is get on

your knees and crane your neck in to an impossible position until you can see the red dot through the finder. Pretend you are an assassin and place the red dot on the object you want to "take out". If you have ever used a laser guided cannon, it is pretty much the same thing. We had the "aiming" down and were able to look at the Moon and Venus in breathtaking new detail. Anything we could see with our naked eye was target, and we spent a lot of time just looking at stars. Soon, however, we needed to understand what we were looking at and how to find new, interesting objects.

With a little experience under our belts and the astronomy spark now lit, I started to hit the net to research the night sky. Early on I found *Stellarium*, a great freeware planetarium program for PCs. Once installed, *Stellarium* rendered an almost photo-realistic version of the night sky right on my screen. I would now know when and where the moon, planets, and constellations would be at any given time. I would use the mouse wheel to zoom in to objects that looked interesting. Once found, I would draw simple star charts by hand so we could locate these objects in the sky. While this method

was crude; I was able to use my own version of star hoping to find some bright deep sky objects. I distinctly remember the sense of accomplishment I felt when I used the large triangle in Cassiopeia as a pointer to the Andromeda galaxy and was actually able (after a few minutes of trial and error) to find it. Looking across the expanses of interstellar space, I was able to see a glowing orb of light from another galaxy from my own back yard. This was it, I was hooked.

I wanted to learn everything I could about telescopes and astronomy. I hit Amazon again looking for reference material. One book stood out as the must have beginners bible, *NightWatch* by Terence Dickinson. This book probably had the highest rating I've seen for an item on Amazon. After receiving the book, I read it from cover to cover in a weekend. Its reputation was well deserved, covering almost all of the topics that are required knowledge for beginning stargazers. I was happy to read that the author recommended a 6-8-inch Dobsonian as the best beginner's scope. At least our family's first scope wasn't a "junk" scope. I

learned a lot from *NightWatch* and thoroughly enjoyed it while doing so. I soon bought the companion book, *The Backyard Astronomers Guide* by Terence Dickinson and Alan Dyer. You can think of this book as a more advanced version of *NightWatch*. Even though it is a much larger book, covering all topics in greater detail, it is still extremely accessible. I highly recommend each of these books to anyone interested in amateur astronomy. Feeling like I now had a much better basic understanding of the hobby, I was much more confident and excited about our treks through the night sky. I was no longer "shooting in the dark" and could actually plan what we wanted to observe. I felt like I now had enough know-how to make the most out of our new scope. Of course, like Adam, partaking in fruit from the tree of knowledge, I soon wanted more.

Besides the scope, finder, eyepiece, and instruction manual, Orion packed one more thing in the box that fueled my Obsession, the telescope catalogue. This small booklet of shiny new telescopes, mounts, and

eyepieces did almost as much to fuel my interest as gazing at the Orion nebula. The ability to view related equipment on the same pages just seems to work better than any website could hope to (Retailer hint 2: If you have one, include a catalogue with every order/product; if you don't have one, why not?). I dreamt of larger apertures and deep sky wonders. I thought of looking at the rings of Saturn and the bands of Jupiter without having to nudge the scope every few seconds. I lusted after a go-to mount that would instantly point to any object I desire without having to hunt for it. Heck, even finding a planet at high magnification in the DOB was difficult. Sure you could center it your eyepiece at low magnification pretty easily, but once you swap out the eyepiece, add a Barlow, and refocus, it's gone from your view. I was now thumbing through the telescope catalogue and browsing the web daily in search of my perfect scope.

It was time for Dad to get a "real" scope. The one he had been dreaming of since he was a kid.

Now I just had to find out what who makes the perfect scope and how much it will cost me. Money is always an

object, so I decided early on that \$2k was the most I could afford to spend (at least at any one time) on this hobby. I started browsing the net for information and reviews on the various scopes I saw for sale from the Big 3 (Celestron, Meade, Orion). I must have sent over 20 emails to various retailers with a multitude of questions, all of which now seem silly. Are the views through your 4" refractor the same as the views through your 8" newt? Why is this scope half the price of this other, completely different scope? Which is worse, chromatic aberration or coma? While the vendors were all trying to be helpful, their responses were all variations of "all of our scopes are good, you be happy with anyone you purchase." There didn't seem to be one scope that was the de-facto "best bang for the buck." All scopes had various tradeoffs depending on what you wanted to use them for. My problem was I wanted one scope that could do everything well (planets, deep sky, and someday astrophotography). I only have enough disposable cash for one scope; better make it the right one.

One site that came up constantly in my quest for opinions was the popular Cloudy Nights. Typing in "telescope x review" in Google usually returned a Cloudy Nights page of some kind. Browsing the various discussions soon became a daily habit for me. In fact, I had been reading the forums for months before I even registered and made my first post. I had done months of reading and research, but I was still was a complete noob with very little real world experience in astronomy. I was worried I would ask a pretty obvious and stupid question and would incur the wrath of the forum trolls. I should have known from reading the forums over these months, however, that I had nothing to worry about. I may have indeed asked stupid and obvious questions, but everyone was welcoming, friendly and helpful.

Reading Cloudy Nights reminded me of my days spent on the AVS forum (a web site forum for audio / visual / home theater geeks). Buying a new telescope was very similar to buying a nice home theater setup. The one thing I learned from buying a home theater

was there is no best system for everyone. You had to learn as much as you can about the pros and cons of the equipment you can realistically afford. The best you can hope for is that the "collective" has had enough experience with the gear your interested in to have compiled a list of show stopping problems and, conversely, of incredible values, so you can narrow down your options. The quest for the perfect gear is never ending and there is always something better just around the corner or just out of reach of your budget. At some point you just have to bite the bullet and go with something that seems to have the least amount of compromises.

After all the months of research and obsession, I had ruled out refractors because of their cost / per aperture (at least for this "jack of all trades" scope). I already had experience with the DOB, so narrowed my search down to the various Newtonian scopes. In fact, I had already added the Meade SN-10 on the LXD-75 mount to my cart at Astronomics.com. I, however, didn't pull the trigger so to speak. While optically this was an excellent scope (from what I had read), I had some reservations about the

mount and the scope's weight (especially for astrophotography) and knew that 10-inch was not truly very portable (although my aperture fever kept telling me not to worry about this). I also figured that at this focal ratio (f/4), collimation was extremely crucial and that coma may be an issue. All things considered, this may be too much for me to handle as a beginner.

People (like me) are constantly posting questions on Cloudy Nights on which scope they should buy (x or y)? Fortunately for me, just before I was about to buy the Meade, I read a post (I cannot find it again, so I apologize for not being able to give credit to the original posters) with someone trying to decide on what model telescope they should buy. This poster was basically in the same situation as I was; he was even asking about which Newt he should buy. The responses came in from the veterans, and their opinions were pretty unanimous. You don't want a Newt, not because of any technical limitations, but real life practical limitations. Large Newts are not portable, are fairly heavy, and put a lot of stress on smaller mounts.

What you really want is a medium sized SCT. They are relatively maintenance free, more portable, and offer planetary views that are almost as good as refractors and deep sky views similar to Newts of similar aperture. The one argument that convinced me, however, was a good point about eye position. On a GEM mount, the scope and its eyepiece can find themselves itself in some pretty awkward positions. While the same can be said of SCTs, the rear star diagonal can be rotated easily. It's actually quite possible, they said, to spend hours viewing from a stool or chair. In the end, these practicalities seemed to register, even though I could get "more" scope for the money in a Newt. I deferred to their experience and realized they were right. If the scope was not portable and comfortable to use, I would likely not use it.

Now that I decided on a SCT, I would have to begin my research all over again. I had posted a long, multi-part question about which brand and accessories to buy on Cloudy Nights. Like usual, the answers to my questions quickly came pouring in. Fortunately for

me, Terry Cabell had a wonderful suggestion...

*"I started to write an answer and realized that there's a great option for you. Rod Mollise just published his latest edition of Choosing and Using a New Cat. I picked up a copy last month, and found it to be an informative read with a lot of info that's spot on to your questions. With your proposed expenditure potentially running into the \$1,000s, I think this is the best first investment you can make in your SCT project."*

I took Terry's advice and promptly ordered Uncle Rod's new book from Amazon. *Choosing and Using a New Cat* contains all of Rod's many years of experience and compiles it in to one, easy to read book. Everything you want to know about CATs, including their history, is contained within. Everyone who owns a CAT should have this book. After reading *Choosing and Using a New Cat* cover to cover in a weekend, I was now determined to buy my very own CAT.

When you think of consumer level SCTs, you of course think of Meade and Celestron. I knew I wanted a GEM mount because I could

remove the OTA and possibly use it with other OTAs in the future. They are also better suited for Astrophotography, which I may find myself crazy enough to indulge in one day. Most of the Meade line uses fork mounts; only the LXD75 series are available with a GEM mount. Celestron offers several lines on GEM mounts of various ability. It basically all came down to the mount. From what I had read, the Meade LXD75 was just an OK mount; most people seemed to prefer other mounts in its price range. Celestron had just released its nice CGEM series mount, but it was not very portable and would be more than I wanted to spend (I needed some money left over for accessories). After even more research, I ended up selecting a Celestron GT series. People seemed to be very happy with CG-5 GT mount from Celestron. It is a proven small mount, generally capable of carrying loads beyond what people would expect from its size. The 2" diameter tripod legs and auto guider port (something not found on the LXD75) sealed the deal for me. As for the OTA, I debated getting the 9.25", but ended up getting the

standard 8" because of weight (the 9.25" weighs almost twice as much as the 8"), cool down time, and cost.

As luck would have it, someone from Cloudy Nights was kind enough to post a 15% off coupon code for a large online retailer. This was the sign I was waiting for; I could now use the "but it was on sale!" excuse my wife had often used with me. I drove down to the virtual store, added the scope to my virtual shopping cart, gave them the virtual coupon, paid with virtual money (credit card), and in virtually no time, my scope was on its way. Now that the stress of buying my perfect scope had subsided, it occurred to me I needed some accessories. While I was waiting on delivery, it was time to use all the money I saved on the scope and buy some accessories. Like usual, I got a lot of good tips from Cloudy Nights and *Choosing and Using a New Cat*. I ended up buying lots of accessories, including a William Optics diagonal, Celestron focal reducer, a Baader Planetarium Hyperion 17mm eyepiece, and a GSO 32mm "finder" Super Plössl. I feel like I bought something from

almost all of the major vendors. I had no problems and all the items shipped on time from each vendor, but a couple retailers stood out:

- **Adorama** felt like the "Best Buy" of online retailers. They feel huge and have just about everything, but don't seem to be particularly optimized for Astronomy. That said, they often had the lowest prices.
- **Astronomics** stood out because of the community they have created and supported. The owner sponsors the Cloudy Nights forum and is also the owner of Astro-Tech, a low cost, high quality brand of unique scopes and accessories. Many of the items in their store have very detailed descriptions and recommendations that I found very educational. They also have several, plain English, articles that describe various aspects of amateur astronomy geared toward understanding what you're buying (for example, what is apparent field of view). User reviews were the only thing I

missed when shopping on their site.

- **Agena Astro** products has to be my favorite vendor. They carry a cornucopia of (somewhat) unique brands (like Baader Planetarium, GSO, Antares, Agena, etc.). Many of these brands are rebadged and resold under different names for more money elsewhere. I really felt like I got a lot for my money from Agena; you know the "generics are just as good as the brand names" feeling. I have made several purchases here, and all my orders shipped within hours of my purchase. They are also very knowledgeable and responsive when contacted directly. My only gripe would be that they ship everything USPS. Be sure to add postal insurance on those large purchases!

The phone rings at work..."Hey honey, the UPS guy just dropped off a bunch of huge boxes; must be your new telescope.

Can you pick up some milk on your way home?" The kids would just have to eat toast for breakfast, I thought, as I drove right past the Grocery store on my way home. I walked in the door to two excited kids yelling, "Dad come look! Your telescope is here!" Lying before me were several large boxes begging to be opened and a couple of kids circling like hungry vultures. I heard Uncle Rod's advice echoing in my head, "If you have young children in the house, wait until they are in bed before beginning." Sage advice to be sure, but I'm pretty sure I couldn't wait and they would likely hate me if I did.

The first half of Chapter 5 (Making Friends with a CAT) in *Choosing and Using a new CAT* is all about careful and thoughtful un-boxing and examination of your scope. I told myself, as I opened the first box, that I would make a mental note of how everything was packed so I could re-box everything and return if necessary. As I started removing smaller boxes from the main box, I realized this would simply be an exercise in frustration. The boxes were layered like Russian

Dolls and organized like some sick game of Tetris. There were even a handful of boxes of various shapes and sizes that were completely empty. Their only purpose seemed to be to hold other boxes in place. I soon realized re-packaging would be near impossible so I just gave up and tore in. I did, however, save the larger boxes and foam from the OTA and mount for storage.

While waiting for the scope I had downloaded and read the instructions from the Celestron web site and felt like I had them memorized. Setting up the mount was actually pretty simple. It was much faster than assembling the DOB base (no screwdriver needed). Thanks to chapter 5, I had no trouble in mounting the scope and balancing the weights. The only thing that gave me problems was getting the finder scope mounted correctly. What should have been a 1 minute routine turned in to an hour of struggling to get the o-ring to snugly hold the finder scope in the bracket without bulging out. In the end I gave up and figured it would have to do for the first night. I proudly stood back from the assembled mount and scope and thought to myself, "She's even more beautiful

in person." The combined size of the "small" C8 and CG-5 mount was actually quite substantial. Much larger than you imagine it to be when looking at photos (Retailer hint 3: Always have models (preferably the bikini-clad kind) stand next to a scope for size reference). Of course, it was only then that I realized that I would have to take everything apart again to take her outside for first light.

The hour or so I spent fighting with the finder scope had really paid off because it was now dark outside. I made several trips to the back patio to re-assemble the scope. Thanks to Chapter 5, I made sure the mount was level, the altitude was set to my latitude, and that the mount's right ascension axis was pointing north. The Celestron manual tells you do these things, but in different places throughout the manual. In fact, it's never really clear that you need to do any of them before you can align the scope and use the go-to functions. I can just imagine the support calls they must receive from people who just plop the scope down and turn it on, I thought smugly. After all, having read several books

and spending countless hours on the net researching, I thought using a GEM go-to mount would be a piece of cake. Boy was I wrong.

All that was left to do was to power up the mount and hand controller. I was aware that the only power cord my Celestron comes with is car cigarette lighter style DC. Fortunately I had ordered a battery pack along with the scope for power. Unfortunately the battery pack needed 14+ hours for its initial charge. Considering my house was not equipped with cigarette lighter outlets, the only thing left to do was drive Smurfette into the backyard for some power. (I was just going to "try it out" after all). Luckily the power cord is literally like 10' long and with a crank of the engine, I had power.

With the flick of the switch, the hand controller lights up and I'm in business. I enter the required information (location, date, and time) and with roar of the motors, it begins slewing towards the first star. Hmm, what is the Mirfak of which it speaks and why is it pointing at a line of trees and not sky? My

heart rate starts to rise, but I keep my cool. I've read the manual; I can just mash UNDO and pick another star. Here's one, "Navi", that sounds promising. Wrrrrr, the C(offee)G(rinder) motors fire up again and it slews towards an empty patch of sky. The controller is telling me to use the finder scope and move it towards a bright star, but which one? Reality is setting in; it is painfully obvious I only know a handful of star names, none of which are appearing on the controller. I take a guess and try to center a star that's at least 10+ degrees away in the finder. Did I mention I forgot to calibrate the finder?

Coming from our 6" DOB, I was used to the simple ALT/AZ approach to finding something. I quickly learned the arrow buttons on the mount have no real bearing to the simple ALT/AZ approach to finding. They seemed to simply move/rotate the scope in random directions. It took me quite a while to get used to RA/DEC navigation (still haven't really got used to it). After some time I was able to get a bright star in my finder. Let's see how it looks in the eyepiece (using the included 25mm Plössl). As you may have guessed, all I could see was black (gray) sky. I tried in vain to

get something in the eyepiece, but all I seemed to be able to find was random arrangements of dim stars. Close enough I decided, and slowly hit the align button (I think I heard the sound of distant thunder as an ominous warning).

Now for the second star...oh, look...Betelgeuse! I know that one! I can even see it! ENTER, Wrrrr, the scope starts to slew in its general direction. Suddenly a loud crack startles my son and I! What was that, dad? I didn't know what it was, but I knew it wasn't good. I fumbled in the dark to try and see what had happened. Oh, the diagonal and eyepiece have fallen out of the scope and onto the hard concrete. I guess the retaining screws were not in tight enough. Luckily it was the included diagonal (and not my expensive William's Optics) and there is only a hairline crack in the diagonal housing. After firmly placing the diagonal back in to the visual back and confirming the eyepiece wasn't damaged, I try to get my bearings. The scope is a mile off. I try again for several minutes to point the scope at the star. I find it fairly difficult to even tell what direction the scope is

moving using the hand controller.

It is at this point that frustration (all user created), depression, and a hint of buyer's remorse creep up. I'm smart...I thought I would be able to figure this out, but I was feeling defeated. It is also (of course) at this time that my neighbor (probably startled by my "daytime running lights" shining in his window and the grinding noises coming from back yard) wandered over. "What you got there? It looks like you're about to launch some missiles", he said. Now that he had mentioned it, with the dew shield in place, it really did look like some kind of missile launcher. When I explained it was a telescope, I could see his face light up. I guess he figured a car powered missile launcher sized telescope that roared like a lion when it moved must be good. "Show me how this thing works," he said.

With my kids waiting with anxious anticipation and the peer pressure firmly applied, I now spent the better half of an hour trying to find something, anything in the scope. I finally had to stick my tail between my legs and give

up. Embarrassed, I explained that it was brand new and I was still trying to work out the "kinks." I think he got the point and decided to leave me alone with my shame. "Give me a shout when you have something to look at," he said.

After that, I decided to call it quits for the night. My kids were very sweet (as always) and said, "don't worry dad, you'll figure it out." I packed up the scope, hauled everything inside, and parked Smurfette back in the driveway where she belonged. I knew all the mistakes were mine and that practice makes perfect. I picked up Uncle Rods book and re-read the "First Light with a CAT" chapter again. I apparently grazed over the few sentences that basically described my entire night's experience the first time I read it...

*"The motors will hum (or grind), and the tube will slew to the place where it thinks the first alignment star ought to be. This is when novices often freak out. Usually, the telescope will stop at a spot considerably distant from the specified star. Even with the tripod precisely leveled, the scope accurately placed in the home position, and all the data entered correctly, it is almost certain that the*

*chosen star will not be visible in the telescope's eyepiece. It may not even be visible in the finder scope. What happens now? Is it time to give up and start over? Is it time to call the dealer?"*

Well it was too late in the evening to call the dealer. I read on; this was "normal" and I would just need to start over and try again another night. In desperation, I picked up the Celestron manual and re-read everything. Nothing new here, I thought. Just before I was going to put it back in the box, I noticed the star charts at the end. I had dismissed these earlier because I had much "better" charts in several books. However, these few charts turned out to be the most important part of the manual. What I had failed to notice was that the maps of the night sky had every alignment star circled with its name! Eureka! This is what I needed! It was the decoder ring I had been waiting for.

I learned many valuable lessons that night that only experience can bring. I am happy to report that my second night out went much smother. I got out before dusk and calibrated the finder on a distant

tree. Once night fell, I was able to center Polaris in the finder and fully calibrate it. I was then able to center Polaris in the scope using only the ALT screw and the fine AZ screws on the mount. I fired up the scope with the fully charged battery. Now that I had the simple charts from the manual, it was relatively simple to know which star the computer was telling me to point at. The tube slewed towards the constellation of the first star. It still was not in the finder scope (but it was a lot closer than night before) and this time I knew which direction I needed to move the scope. I successfully aligned it to a few visible stars I could see from the limited sky line in my back yard. Once I had completed the basic alignment, I was pretty much able to go-to several objects successfully. Several were dead center in my eyepiece and most were at least visible in my finder. I am still getting used to the DEC/RA navigation, but each time I use the scope, it becomes more natural.

Now that I've used the scope a handful of times, I feel much more

comfortable with it. I am able to set it up and break it down in about 10 minutes. I am really enjoying the objects I can see from my back yard. As luck would have, my daughter had a school project to do on Saturn. This was in February of 2009 and Saturn would rise in the evening towards the east. Unfortunately, I have a line of trees in the east and we can only view objects that are about 35 degrees above the horizon. This meant the Saturn wasn't visible to us until after 11pm (far after my kids bed time). I had stayed up late before to look at Saturn through the 6" DOB and it was a sight to behold. Unfortunately, at the high magnifications required, it didn't stay in the scope long enough to wake the kids for a peak (once I lost it, it took me several eyepiece swaps and a few minutes to reacquire). I was determined to let my daughter actually see Saturn for the school project.

At about 10:45 I had the scope out and aligned. I slewed toward Saturn and there she was in my 32mm eyepiece. I centered the ringed wonder on the scope and I took out my Hyperion 17mm and added the fine tuning rings to make it a 9.2mm eyepiece. With my C8, this provided 221x

magnification with a .3 degree field of view. Once I brought the new eyepiece into focus, I couldn't believe my eyes. There was Saturn, larger than life. The night was very still and clear and I could easily make out the details of Saturn's bands. Once you put your eye "all the way in" to a wide field eyepiece, you really feel as if you poked your head through the porthole you had been looking through. You actually feel as if you're floating in the cosmos instead of looking through a window. I went in to the house and woke the kids to have a look through the scope.

After about 15 minutes of waking and dressing for the cold night air, we had made our way back down to the scope. Once I looked through the eyepiece, I immediately realized the value of a motorized mount. Saturn was right where we had left her. My kid's tired eyes popped right open once they saw Saturn through the C8. My neighbor even walked on over for a view. "You found something this time?" he asked as he peered through the eyepiece. "Wow, that doesn't even look real! I can't believe you can actually see a planet like that from here,"

he exclaimed. In those moments all my time and research were vindicated. I think everyone finally understood why I decided to indulge in this obsession.

# The International Year of Astronomy

Steve Tilford



Why do you like astronomy? What is it that brings you out on a subzero night to observe the heavens? Is it curiosity about this world and how we fit into the big picture? It could be that we love to step up to the eyepiece and experience and behold the beauty that is hidden in the sky above. Some may want to see god's handiwork. Whatever the

reason, we do it. We love it. It brings a quenching to our quest for knowledge. I know this is not everyone's cup of tea. There have been many times in the past where I have found something so extraordinary in my eyepiece I just had to call out "Hey Honey come look at this!!!" She will always come out (Cuz She loves me ) take a one second look and say that's nice and goes back inside. It always makes me chuckle.

We always seem to want to share the important things with the people we love. My teenage and older kids love to step up to the scope and be wowed. But there are millions of folks out there that have never (heavy on the never) turned an eye skyward to gaze upon the treasures the universe has for us all. This is the time my, friends, the moment to do it for them. This year will provide many opportunities for you to share your love of astronomy with the masses.

I hear, "But Steve I don't know diddlydo about astronomy, not like them galaxy gurus in our club." I get that, I really do, but you probably know more about it than you think. Public

outreach is about sharing I get asked all the time the simplest of questions about ol' Jupiter or Saturn or the moon or even better: "How did you get started in astronomy?" Tell them your story.

So many times I have heard "You mean that thing right there (pointing to a tiny dot of light in the sky) is what I am seeing in this scope? That's Saturn? Wow!!!" If they are at the event in the first place they have the spark. They need to know astronomy is doable for them, be it with just the old peepers or binoculars or an affordable scope. They need to know they will not be alone in the hobby and be overwhelmed by it. We as amateur astronomers know a huge support mechanism exists for us. They as pre-newbies to the



hobby do not. Every bit of this you can do, convey, or share. You will come away from the experience fulfilled. I have never had a bad experience at a public event. I have done hundreds of them. So go out and share. You will not be sorry for it. Just keep in mind the more folks interested in the night sky will get us one step closer to darker skies. We all could use more of that!

## Through The Looking Glass

**Joe Stoyack**

There are those times in a parent's life (well, one of many times), when a child's curiosity is piqued about something, and a fateful decision needs to be made. No, not if I will support it - that's s given. It's how many dollars will we spend to find out whether it is a genuine interest or a passing fancy. It seems almost every kid eventually gets that department store telescope from a well intentioned someone; mom and dad, family member, or friend. I was no different - my Tasco

refractor, 40 years ago. But that's not the story. This is...

A young boy, five or six, eats up every pop-up book, kid magazine article, and other information about space. Maybe it's because his father works in the space industry, or maybe it's because of something else - who knows? At a young age, 7, he knows the order of the planets, and is devastated when Pluto is demoted to a dwarf - no longer a planet. He knows that Olympus Mons is the tallest mountain in the solar system. Is it time?

Yes, it's time to hit the Internet and try to figure out what kind of telescope would be best. Hours and hours of research leads to a conclusion: it can get expensive really quick. Even for a good beginner set-up. One of the frustrations and disappointments of youth is actually trying to see anything cool. After the Moon, and some stars, then what? Star hopping gets old and frustrating really quick for 8-year-olds (and some older people too!). Computerized GOTO is a must - tack on dollars. Yahoogroups and websites: too much information. It really comes down to dollars. The result for this father and son: A 4" go-to Refractor. With a gulp, the

money is plunked down for the son's birthday present in Nov '07.

OK, so he gets it a little early, October, and waits for Dad to put it together and see some really cool stuff it. The night is chill, dark, and cloudy - new glass, no stars. And the next day, and next. Oh jeez. Is the frustration already starting? A clear night! And there is a bright comet out! Holmes, if you recall. How cool can that be! Now where is it? Star maps and planetarium programs, and binos - no luck. Where is it, Dad? Ah! Let the computerized scope find it! Well the \$%^\$ goll-dern star alignment ^%\$& keeps saying align failure. "Can we see it yet Dad?" Back to the Internet for help aligning the stupid thing. Luckily the clouds came out and a few more nights of clouds, so the time is spent studying how to make this thing work. "Is it clear enough out tonight, Dad? That comet thing would be cool. Doesn't the telescope work?"

Three weeks after opening the present - A dark night. Clear skies. Cold. Real cold. The telescope is carried out. A prayer is said. Power-up. Hit the Enter button, Up arrow, Right arrow, Align, repeat

for two more stars. Align Failure. Try again. "Dad, is the telescope working, yet?" Almost! Oh, Jeez. Where is that star map? OK, there is the constellation, and it should be between those two stars, and a little off to the side. Now is this map a correct view, or inverted, or flipped? Looking up at the constellation, into the heavens, another prayer.... Wait, what's that little smudge up there? Is it real? Yeah, it's about right where it should be on the map. To h\$%^# with the go-to computer. Right arrow, down arrow, left, up, up. Arrgh, this red dot finder! Wait, wait, Ohhh! Is that it? Focus, focus. Oh, my!

"C'mon out. Look! Look! Holmes! The comet! Get on your jackets and gloves!" Anxiously, at the telescope, making sure it is still there, and hasn't gone away. The boy steps up to the eyepiece and looks. Mom steps up. The boy looks again. Mom says "Neat". They turn and head back in. The boy turns, and says, "Dad, that was way cool. A comet! Awesome. Can we look at some more cool stuff tomorrow night?" "Sure, anytime" as Dad turns back to the

telescope and gazes up at the sky. The dew-turned-to-frost has melted on Dad's upturned face, and starlight now reflects off multitudinous and tiny drops.

## The Sicilian Galileo

Margo Schulter

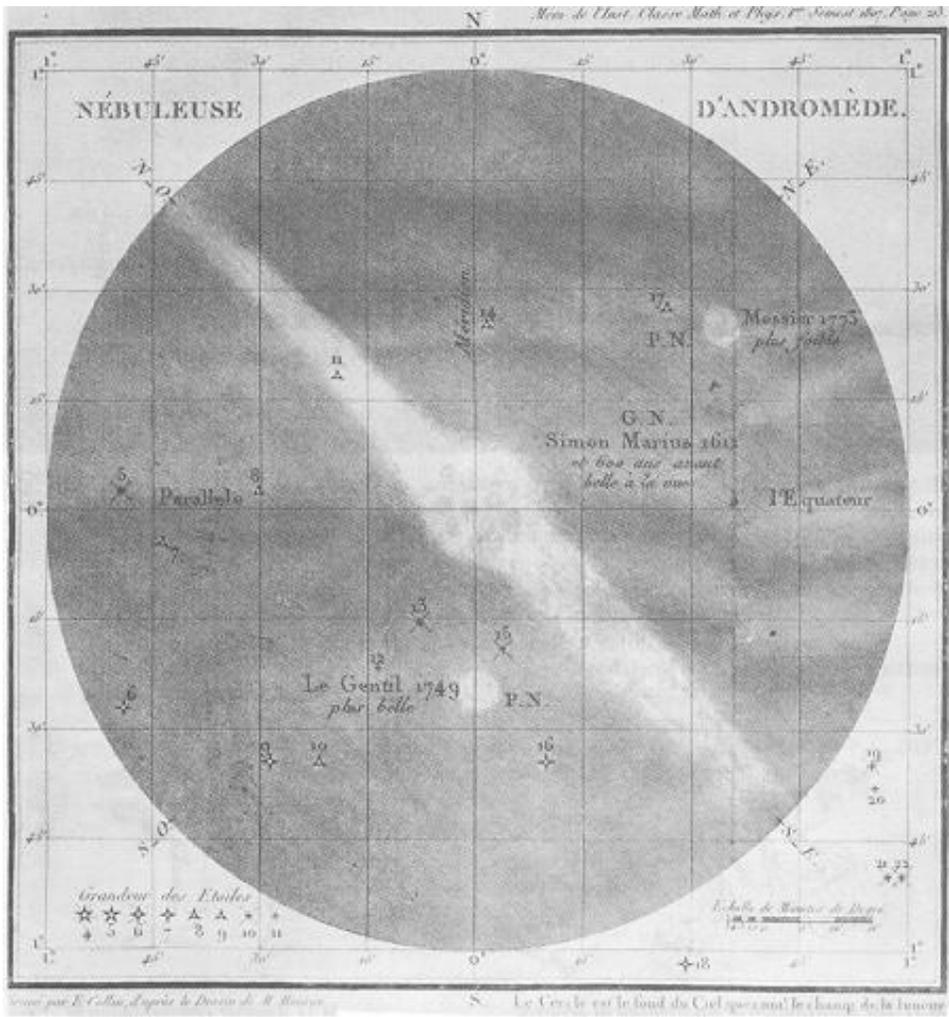


The International Year of Astronomy (IYA) 2009 is an opportunity for amateur astronomers to celebrate four centuries of telescopic observations of the heavens. For those of us devoted to deep sky observing of "faint fuzzies" beyond our Solar System, a figure of special interest is Giovanni Battista Hodierna (1597-1660), a younger contemporary of Galileo, who in 1654 published an extensive catalogue of nebulae. Some

other objects of interest also appear in star charts he prepared for his uncompleted star atlas project.

Observing from Palma di Montechiaro in Sicily, Hodierna was able, as he noted in a letter of 1657, to see "some stars of that are of southern declination" not seen in more northerly regions of Europe. Using a telescope with a magnification of about 20x and an unrecorded aperture, he surveyed the Orion-Canis Major-Puppis and Scorpio-Sagittarius portions of the Milky Way, recording many open clusters and the Orion Nebula (M42). Additionally, he took note of many northern objects, including such favorites for binoculars and amateur telescopes as the Andromeda Galaxy (M31); the Pleiades (M45); the Double Cluster in Perseus (NGC 884, 869); the Praesepe or Beehive Cluster (M44); and the Coma Berenices Cluster (Mel 111), among others.

If IYA 2009 is a fitting year to appreciate Hodierna's deep sky wonders, then late March is an especially attractive time to explore these wonders, here approached with an accent on the southern celestial



concept, of course, is borrowed from the more familiar Messier Marathon with its goal of viewing all 110 objects recorded by Charles Messier in the later 18th century.

While this article focuses on Hodierna's southern objects, there are some excellent sources available on the Web giving much invaluable background on this "Sicilian Galileo" and including the northern objects also. I especially recommend a germinal article by G. Fodera Serio, L. Indorato, and P. Nastasi originally published in 1985 in the *Journal for the History of Astronomy* and downloadable in a PDF version:

<<http://adsabs.harvard.edu/abs/1985JHA....16....1F>>

...and a fine summary of Hodierna's observations by Hartmut Frommert and Christine Kronberg of the SEDS project:

<<http://seds.org/Messier/xtra/similar/Hodierna.html>>

2. Object list and practical tips

Although we don't know the aperture of Hodierna's 20x telescope, we *do* know that around 1650 the state

hemisphere. As evening twilight deepens, seven of his southern objects come into view, ranging from M42 in Orion to the open clusters M41, NGC 2362, and Cr 140 in Canis Major; and Cr 135, M47, and NGC 2451 in Puppis. This is the portion of the Milky Way associated with winter in the Northern Hemisphere and summer in the Southern Hemisphere.

Then, after an "intermission" of several hours, as morning twilight

approaches, the Scorpius-Sagittarius Milky Way adorning summer in the Northern Hemisphere and winter in the Southern Hemisphere comes into view, and with it a promenade of four more open clusters of Hodierna: NGC 6231, M6, and M7 in Scorpius; and the Lagoon or M8 Open Cluster (NGC 6530) in Sagittarius.

The object of a Hodierna Southern Marathon is to see all 11 of these objects -- or as many as possible -- in a single night. The basic

of the art was about 60mm, with a more modest aperture comparable to the 38-mm given for one of Galileo's instruments also a likely possibility. Serio and his colleagues suggest that Hodierna's descriptions and charts may indicate a limiting magnitude of around 8.

Especially for modern observers using smaller instruments, or coping with bright urban or suburban skies, this can be good news: Hodierna's objects have a reasonably high surface brightness that can compete with today's light pollution in less than ideal settings. In my own experience of observing mostly from an improvised apartment observatory in the city of Sacramento, California, U.S.A. with 15x70 binoculars and a 200-mm (7.9") f/6 reflector on a Dobsonian mount, many of these southern objects are indeed among the first, easiest, and most rewarding that I have encountered in exploring the night sky.

My southern focus here is motivated by two factors: architectural necessity and a desire to put together a list with appeal for a large area of the

globe on both sides of the equator. Using 15x70 binoculars through the closed bedroom window of my third floor apartment, I can see up to near the celestial equator (e.g. M42) and down to around Gamma Velorum or Zeta Centauri, a declination of around -47 degrees or a tad lower. Since my latitude (38.5-o) differs by only about a degree from that of Hodierna's site at Palma di Montechiaro (37.2-o), it's not surprising that his catalogue has a special appeal for me.

As you might guess, my site encourages the sport of horizon hugging: one of my all-time favorite objects, NGC 6231, is from Hodierna's site or mine only about 10 degrees above the horizon at its transit -- and yet an easy and beautiful open cluster. In the Southern Hemisphere, of course, this and other Hodierna objects may culminate near the zenith for a much enhanced view.

Before getting to the list itself, I should confirm an important rule of Uncle Rod: while 15x70 binoculars are lots of fun for urban observing, more aperture definitely won't hurt in the city or anywhere else! My 200mm Dob with a 2" wide-angle eyepiece at 40x has

given me some great views of M42, M41, and M47 to complement the vaguer and "patchier" impression of the 15x70's; and I'm sure that an SCT would give spectacular results for something like NGC 6231, the "Northern Jewel Box" of southern observers, whose sparkling brilliance delights the binocular observer but warmly invites a closer look at greater magnification.

Now for the Southern Hodierna Marathon list of 11 objects, originally prepared for my local club, the Sacramento Valley Astronomical Society (SVAS) (**see page XX for the list: Uncle Editor**)

In my experience, all of these objects are readily observable under urban conditions with 15x70 binoculars -- with one qualification. The Tau Canis Majoris Cluster, NGC 2362, a rather subtle, compact "halo" of fainter stars around the bright Tau Canis Majoris, itself at magnitude 4.4; darker skies or Uncle Rod's SCT at a generous magnification to cut through urban light pollution might help. In a pinch, finding Tau Canis Majoris itself can count as locating NGC 2362; but, if possible, teasing out some

detail with averted vision can be highly rewarding.

In contrast, an open cluster like NGC 6231 or M7 is my textbook example of a "bright fuzzy," a sparkle or shower of stars even not too far from the horizon in an urban area. The latter, "Ptolemy's Cluster," was known in Hodierna's time as in ours for its mention by this ancient Greek worthy.

The two Hodierna open clusters on our list also appearing in the modern Collinder catalogue, Cr 140 in Canis Major at the border of Puppis and the more southerly Cr 135 in Puppis, look like asterisms in my binoculars: attractive groups of a few discrete stars rather than the "fuzziness" or "patchiness" of many other clusters with more of a feeling of nebulosity. Indeed, these two objects are sometimes called asterisms, although some recent studies regard them as true open clusters, with data from Hipparcos and other satellite missions shedding new light on the matter. In my 15x70's, Cr 140 appears as the head and forequarters of a "Southern Bear" asterism with hindquarters

extending into neighboring Puppis; Cr 135 evokes for me a kind of cosmic sail, highlighted by bright Pi Puppis (magnitude 2.7).

The easternmost object in this marathon, NGC 6530, is the Lagoon Nebula Cluster or M8 Cluster: it's an open question whether Hodierna, in observing this bright cluster, may also have seen the Lagoon Nebula itself. With my binoculars under urban conditions, the cluster itself is what I notice. This shouldn't discourage anyone from enjoying the nebula also, with darker skies and/or a telescope with a UHC or OIII filter providing some help.

Hodierna's avid explorations of interstellar space seem yet more adventurous when we remember all the developments still to come. Newton's brilliant synthesis of Kepler's Laws and Galileo's physics near the end of the 17th century, the 18th-century concept of our Milky Way as one of many "island universes" proposed by Kant and fleshed out by the catalogues of William and Caroline Herschel, the 19th-century demonstration by Bessel of stellar parallax, and the discoveries and controversies of 20th-century cosmology were all in the future.

Today, Hodierna's southern objects (and the northern ones too!) are as beautiful to observe as ever, and gain yet more charm from the understanding brought by our ongoing inquiry.

## William Optics SCT focuser – 2.5-inch Linear Power design

**Timm Bottoni**



The WO (William Optics) 2.5" Linear Power SCT focuser is the newest version of the focuser that WO brought out to improve the focusing on SCT telescopes. This replaces a previous 2" Crayford

design that initially had single-speed focus action and was later upgraded to two-speed operation. The same basic design is also being utilized for several of the current WO refractors, and incorporates a variety of new features, so this review might also apply to those models utilizing this design. The only real difference would be that the amount of travel in the SCT model is going to be less than in the refractors.

**Does the SCT really need a new focuser?**

When I first got an 8" SCT (Celestron C8), it took a bit of time to get used to the way an SCT focuses. The reason is that I was used to a WO 80-mm refractor with a Crayford-style 2-speed focuser, and was spoiled by the ease with which it can be adjusted and how smoothly it was able to achieve critical focus. The C8 focuses by moving the primary mirror forward and back to reach focus, which is typical of SCTs and other compound telescope designs, and while this allows for a very wide range of add-ons and accessories, it also presents an interesting set of problems.

The first problem is that the mirror slides along the mirror's baffle tube, and moving in-and-out of focus causes the image to shift because the mirror tilts slightly one way during inward focusing and the other way during the outward focusing. The second problem is that the focuser is a single speed design, and while mine was reasonably smooth, it was sometimes difficult to get perfect focus because it lacks a fine focus speed. These issues can be troublesome to users, and adding an external focuser helps solve them.

**What is a Linear Power Focuser and how does it work?**

In order to understand the answer to this question, it is necessary to look inside the focuser. I don't want anyone to open theirs up, so please just refer to the pictures and descriptions; they will hopefully provide the information needed to understand the mechanics of this product.



The focuser has an external body, made from a single piece of machined aluminum finished in a high gloss black anodized finish. The inner focuser draw tube uses brass and stainless steel plates screwed to the inside bottom of the aluminum focuser draw tube with teeth that are engaged by a high density nylon gear directed upward from the 2-speed focuser shaft. The shaft rides on precision machined grooves sandwiched precisely between two rows of steel ball bearings.

The overall focuser tension is adjusted by an Allen screw that puts pressure on the assembly in so as to distribute friction across the shaft without forcing displacement of the shaft relative to the bearings. To adjust the tension, the user inserts a 4mm Allen wrench and gradually loosens or tightens the black inset Tension Adjustment Screw. The focuser lock uses a silver thumbscrew that exerts pressure on a steel insert with nylon tabs to apply pressure directly to the shaft for locking it in place. The two-speed knobs allow for approximately an 8:1 turn ratio, giving the user very precise control over the focus. The result is

very smooth and solid focus movement with zero visible image shift, and the ability to hold heavy weights without slipping or needing frequent adjustments.



**How do you attach the product, rotate the focuser or rotate the front 2-inch nose piece?** The silver collar screws onto the threaded SCT rear port opening. It should thread on all the way, and should tighten in place—but leave a gap between the focuser and the SCT back, depending on how far the threads are cut on the SCT. Once in place, the focuser can be rotated easily by loosening the silver thumbscrew on top of the focuser right next to the SCT. The ease with which the entire focuser assembly rotates is controlled by the three small black nylon inset screws that can be tightened or loosened easily to your liking with a small flat blade screwdriver. Be careful not to over tighten them,

or over loosen them, and check to make sure that all three are inset and snug at about the same amount to make sure that the focuser is centered. By loosening the thumbscrew, and the three black tension screws it is possible to completely remove the focuser from the silver threaded collar.

The 2-inch collar piece is also rotatable and removable. There is a second set of three inset slot-screws like the ones at the silver collar, but these are right at the front of the focuser. Loosening these a little allows the 2-inch collar to rotate. Loosening them more allows the collar to be removed completely for the attachment of some other equipment. I don't know if anything is out yet that would attach, but the idea is clever. The 2-inch collar is

an improved design that includes two screws to tighten whatever is inserted using a brass compression ring. This allows for better positioning of the diagonal, over a single screw to the compression ring.

**Testing the smoothness, while adjusting the tension.** Because of the unique design, the focuser remained smooth under various tensions. Testing was done using a variety of tensions and weights, in both indoor conditions and outdoor conditions including warm and cold winter conditions. This focuser worked well in all environments I tried and needed minimal adjusting in cold weather. There was no image shift that I could detect visually, and there did not appear to be



any shift in the position of the draw tube with my heaviest equipment attached.

**Caveats.** This focuser is large and heavy. I would guess it might not be a viable option for some fork mounted SCT models, because it would certainly hit the base if it is being used without a wedge, and would add significant back-weight, which would need to be compensated for with a counterweight. For GEM mounted SCTs, or in my case, a WO EZTouch alt-az mounted C8, base clearance isn't an issue and balance is easy to adjust.

**Overall Conclusion.** This design works very well, is both easy to use and adjust and makes focusing with an SCT a pleasant experience, eliminating much of the image shift frustration that is common to the standard SCT focuser design. The weight and size of it may be a hindrance, but the design allows for 2-inch diagonals or other 2-inch accessories to be directly inserted, or for standard 1.25-inch diagonals or accessories to be inserted. The construction is solid and sturdy, and the overall functionality is outstanding. Since it uses

a rack and pinion style primary movement chassis, I was worried about there being some play in the design—"backlash" as it is sometimes called—but I could not detect any. I was unable to do any critical photographic analysis because I don't have a setup suitable to astrophotography, but I feel confident that the design would serve well for those with imaging in mind.



## APOLLO UPGRADE

The flight computer onboard the Lunar Excursion Module, which landed on the Moon during the Apollo program, had a whopping 4 kilobytes of RAM and a 74-kilobyte "hard drive." In places, the craft's outer skin was as thin as two sheets of aluminum foil.

It worked well enough for Apollo. Back then, astronauts needed to stay on the Moon for only a few days at a time. But when NASA once again sends people to the Moon starting around 2020, the plan will be much more ambitious—and the hardware is going to need a major upgrade.

"Doing all the things we want to do using systems from Apollo would be very risky and perhaps not even possible," says Frank Peri, director of NASA's Exploration Technology Development Program.

So the program is designing new, more capable hardware and software to meet the demands of NASA's plan to return humans to the moon. Instead of staying for just a few days, astronauts will be living on the Moon's surface for months on end. Protecting astronauts from harsh radiation at the Moon's surface for such a long time will require much better radiation shielding than just a few layers of foil. And rather than relying on food and water brought from Earth and jettisoning urine and other wastes, new life support systems will be needed that can recycle as much water as possible, scrub carbon dioxide from the air without depending on disposable filters, and perhaps grow a steady supply of food—far more than Apollo life-support systems could handle.

Next-generation lunar explorers will perform a much wider variety of

scientific research, so they'll need vehicles that can carry them farther across the lunar surface. ETPDP is building a new lunar rover that outclasses the Apollo-era moon buggy by carrying two astronauts in a pressurized cabin. "This vehicle is like our SUV for the Moon," Peri says.

The Exploration Technology Development Program is also designing robots to help astronauts maintain their lunar outpost and perform science reconnaissance. Making the robots smart enough to take simple verbal orders from the astronauts and carry out their tasks semi-autonomously requires vastly more powerful computer brains than those on Apollo; four kilobytes of RAM just won't cut it.

The list goes on: New rockets to carry a larger lunar lander, spacesuits that can cope with abrasive moon dust, techniques for converting lunar soil into building materials or breathable oxygen. NASA's ambitions for the Moon have been upgraded. By tapping

into 21<sup>st</sup> century technology, this program will ensure that astronauts have the tools they need to turn those ambitions into reality.

Learn more about the Exploration Technology Development Program at [www.nasa.gov/directorates/esmd/aboutesmd/acd/technology\\_dev.html](http://www.nasa.gov/directorates/esmd/aboutesmd/acd/technology_dev.html). Kids can build their own Moon habitat at [spaceplace.nasa.gov/en/kids/exploration/habitat](http://spaceplace.nasa.gov/en/kids/exploration/habitat).

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

Image Caption:



*The Chariot Lunar Truck is one idea for a vehicle equal to the lunar terrain. Each of the six wheels pivot in any direction, and two turrets allow the astronauts to rotate 360°.*

# My Back Pages

“Crimson flames tied through my ears  
Rollin' high and mighty traps  
Pounced with fire on flaming roads  
Using ideas as my maps  
"We'll meet on edges, soon," said I  
Proud 'neath heated brow.  
Ah, but I was so much older then,  
I'm younger than that now.”



## Club Notes: News of the Mobile Astronomical Society

*What's happenin' down yonder at your friendly, neighborhood astro-club? Some newsbytes from the MAS:*

- The March Public Stargaze at the ESC was a huge success, with 600 kids and adults being treated to views by the MAS crew. Special thanks for all the members who made it out for this important event.
- Next up, which will probably be over by the time you read this, will be the Spring Messier Marathon to be held at our dark observing site to the west of the city. Last year, I made it through Coma and Virgo, and logged about 60 objects before turning astro-wimp before the summer sky made its appearance. This year, I plan to do better. Maybe.
- What else? Mark your calendars for Saturday, April 4<sup>th</sup>, International Sidewalk Astronomy night. As

last year, we will setup in the fountain area of the Eastern Shore Center.

- After that? Our grand Spring Picnic, which we hold at the ESC. This year's date is Saturday, April 11. Assuming there are no clouds, bring along a scope for some casual observing, but we have not had much luck with the cloud thing for several years' worth of picnics.
- Anything else? While our first allegiance is to the good, old Mobile Astronomical Society, many of us belong to a *second* club, the Chiefland Astronomy Village Club. There ain't no meetings, so what do your dues get you? The ability to use the fantastic CAV site for monthly dark of the Moon sessions. Initial membership is \$35.00, with yearly (on time) renewals being \$20.00, a modest sum for the opportunity to use such a wonderful site. Not only are the skies great, I find it makes for a wonderful getaway when job pressures and such just get to be "too much." For information see: <http://www.chiefland.org/>

*The miscreants were **back**. After this many years, I've learned to watch out for flying mayo jars, the kind kept on Funk and Wagnall's back porch for a fortnight. One of those hits you on the noggin' and it **smarts**. Imagine my surprise, then, when the jar lobbed at me by Beavis and Butthead turned out to be a **baby food** jar rather than the formerly good-sized container. No, there's not much news of any kind and even less good news of the*

astro-industry during these times of recession. While a couple of new product introductions are in the offing, amazingly, understandably we are not being flooded with new gear. And yet, and yet, and yet...there are still a few...

# RUMOURS

**With economic times the way they are, it shouldn't be any surprise that everybody is retrenching,** not just big guys like Meade. Still, I was distressed to hear that William Optics is closing its U.S. office at least temporarily. The much-loved maker of nicely priced and high quality refractors, eyepieces, and accessories announced that their U.S. facility will be offline for "reorganization." I hope that is all it is, and I hope WO goes strong for many a year. But you can't blame me for being skittish when I hear the word "reorganization" these days.

**Speaking of Meade,** what are they up to? The plus and minus. The new 6-inch (SCT) ETX, the LightSwitch, is still scheduled for late April delivery. Many folks—well a number of amateurs, anyhow—are eagerly awaiting this, wondering if Meade will be able to pull-off its new "plate solve" alignment routine, which frees users from the terrible burden of centering two go-to alignment stars. Minus? Apparently the problem-plagued Meade MySky has been discontinued (according to OPT's web page). Will Meade come up with a successor or leave the market to Celestron's SkyScout?

**Many folks continue to fear for the Astrozines...** *Sky and Telescope* and *Astronomy* are just about as thin as ever, and *Astronomy Technology Today* has gone bimonthly. Otherwise...*Astronomy* gets AA's award as "most improved;" despite the skinny issues and thin paper, the last couple of numbers have been outstanding. Other astro-rag news? David Levy is following Steve O'Meara in moving his column to *Astronomy*, and to make room, Phil Harrington's excellent and much-loved binocular observing column is going web-only. Not that that's a bad thing, though I don't like it; it's obviously the wave of future, even if the newsstand astronomy mags haven't realized that yet.

**Delivery's of Celestron's new CGE Pro mount began a couple of weeks ago.** How are they? Too early to say. Naturally, everybody who's received one has also received **clouds.** On the CGEM front? Celestron's other new GEM has encountered a few various hiccups in its initial release: some (fairly) minor problems, and a backlog of orders, too.

Slim pickings, I know. But with NEAF comin' up, maybe there'll be good news and lots of new **AstroJunque** to report on next time. Till then, then...

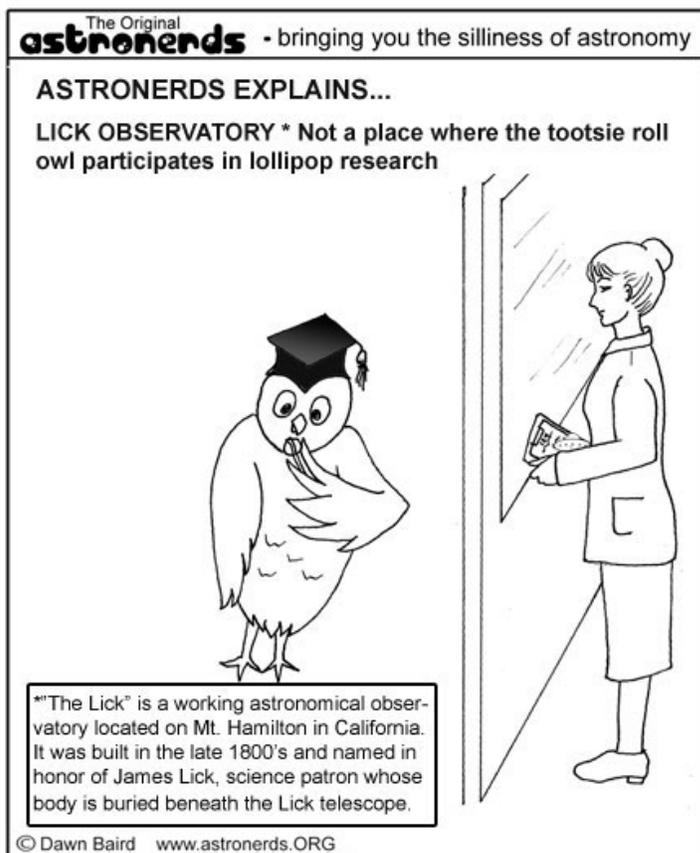
--The Anonymous Astronomer

# The Wrap-Up...

Whooooee! I thought this was gonna be a skinny issue, but it's fat, and it is fat with some of the best writin' from some of the best contributors in a long time. This one practically put itself together.

I hope you are all enjoying the multi-talented Dawn Grove's AstroNerds as much as I am; I'm proud to say her rib-ticklin' cartoons will be a regular feature. I hope we can convince her to keep writin' as well as drawin', as her article in this issue on public outreach is one of the best I have ever read on the subject.

--Unk



## Hodierna Southern Marathon Observing List for Urban, Suburban, or Dark Sky Locations

(Objects from Giovanni Battista Hodierna's treatise of 1654  
and from star maps from incomplete celestial atlas project.)

Object	RA	Dec	Const	VMag	Type	Dist	Comments
M42	05 35 17	-5 23 25	ORI	4	EN	1600	GREAT NEBULA IN ORION'S SWORD
M41	06 46 00	-20 45 15	CMA	4.5	OC	2300	NEAR SIRIUS AND NGS 2287
Cr 135	07 17 17	-39 49 00	PUP	2.1	OC	1030	INCLUDES PI PUPPIS
NGC 2362	07 18 41	-24 57 15	CMA	3.8	OC	5000	INCLUDES TAU CMA ("JUMPING SPIDER STAR"), REST OF CLUSTER VISIBLE IN SMALL TELESCOPE, OR, FROM DARK SITES, BINOCULARS.
Cr 140	07 23 12	-32 02 00	CMA	3.5	OC	1320	"TUFT OF THE TAIL" (STEVE COE) OF CMA.
M47	07 36 35	-14 28 47	PUP	4.4	OC	1600	M47 IS EASILY SEEN IN URBAN SKIES; NEARBY M46, JUST TO THE EAST MAY REQUIRE DARKER CONDITIONS.
NGC 2451	07 45 24	-37 58	PUP	2.8	OC	640	DATA SUGGESTS THIS IS TWO CLUSTERS.
NGC 6231	16 54 11	-41 49 27	SCO	2.6	OC	5870	NORTHERN JEWEL BOX OR "FALSE COMET."
M6	17 40 17	-32 16 00	SCO	4.2	OC	1600	THE BUTTERFLY CLUSTER, JUST NW OF M7.
M7	17 53 46	-34 47 00	SCO	3.3	OC	1600	PTOLEMY'S CLUSTER
NGC 6530	18 04 31	-24 20 54	SGR	4.6	OC	4075	CLUSTER IN LAGOON NEBULA.