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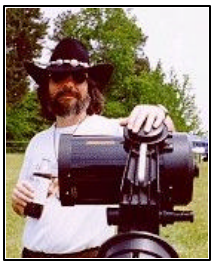


The Coming of the Chinese SCT. Is THAT What's Really "Next?"

Rod Mollise

A lot of folks have been put off their feed by the latest chapter in the Meade/Celestron "wars." As most of you know, Celestron has again run into problems with adequate capitalization—possibly exacerbated by their legal battles with Meade—and was recently near bankruptcy again. Their way out? How about selling the company to Chinese telescope giant, Synta, who's been supplying many of the Celestron telescopes (except SCTs) for years, anyway? That's exactly what the Celestron management team did. Apparently there was no other way to keep Celestron alive. Meade? Just as Celestron's desperate straits became public knowledge, it was also revealed that Meade's sales; especially of their top-of-the-line amateur scopes, are not exactly setting the world on fire. Meade attempted to reassure their work force by saying they would try to keep scope production in the U.S. "Try."

Believe it or not, I'd been thinking about these sorts of issues for months before the Chinese buyout of the Big C and the revelation of Meade's difficulties. I won't say the article I wrote was prophetic, but I think you may find my observations interesting in light of subsequent events…

Why am I troubled by the time-honored Meade-Celestron competition now? After all, it's been a fact of life in the astro-world for 25 years. Only the oldest of us old-timers remember a time when novices weren't asking that famous/infamous question, "Which is better, Celestron or Meade?" What bothers me is my doubts about the prospects of either of these companies surviving in their current forms for much longer. What you've got, you see, is two smallish outfits selling near-identical products to a fairly small (if perhaps slowly growing) customer base. That results in a constant battle to maintain prices at present levels and increase features. And that means there's an ever-increasing need to cut costs. Somehow.

What do I mean by "somehow?" Well, not pulling any punches, I mean Chinese-made Meade and Celestron Schmidt Cassegrain Telescopes.

In my oft-misguided opinion, Celestron and Meade will soon

be forced to move SCT production, including optical production, to China. Heck, every accessory that can possibly be outsourced to China has already been outsourced to China. Diagonals, eyepieces, finders. Everything. The only place left to go is the scopes and their mounts. Actually, that's already been happening mount-wise when it comes to German Equatorial Mounts, GEMs. Celestron does make its own German Equatorial Mounts for the CGE scopes, but the GEMs used for the popular AS series are, you guessed it, made by Taiwan's Synta. Meade, not to be left out, uses mainland-produced GEMs for its LXD75 series.

Is Chinese out-sourcing a bad thing? That depends. For the U.S. employees who will be thrown out of work, you're darn tootin' it's a bad thing. How about for Joe and Jane Amateur? The Taiwanese and Mainland Chinese optical factories are getting better all the time. They are quite capable of turning out impressive Newtonian optics (optics, albeit, which are a tad rough-surfaced). Mechanically, Chinese products are also far better now than they were in the mid-90s when the first Chinese scopes aimed at amateur astronomers rather than the department store audience appeared.

Since the Chinese have devoted themselves to machine-made (ground/polished/figured) optics, you'd think that a largely machine-produced scope like a CAT would be right up their alley. And, indeed, it seems to be. While Mainland and Taiwanese firms have not, to my knowledge, produced any SCTs, they've done plenty of small Maksutov Cassegrains. How good are the Chinese MCTs? While the small Synta MCTs *are* pretty good, above average at least, their optical quality does not compare to that of U.S. made Maks, including the inexpensive ETX. Of course, if Meade and Celestron ride herd on "their" Chinese factories, all will be well. Right? Not necessarily. If domestic optical production shuts down, the Chinese will be the only practical game in town. While Meade and Celestron may try to ensure the Chinese deliver optics of quality similar to that of the former U.S. production, when they are desperate to get scopes out the door, as they often are, they're gonna accept whatever the Chinese can deliver. Increasing Chinese optical quality substantially above where it is now will likely be a fairly long-term project. I mean, dadgummit, it's taken M&C a quarter of a century and MORE to get their optics to the level of consistency we enjoy today.

Let me say right up front that I am not one of those anti-China/anti-Chinese-optics cats you see posting on s.a.a. I like Chinese equipment, which is (surprisingly) terrific much of the time, and regularly use a Short Tube 80, a StarBlast, one of the Synta/Celestron goto AS mounts, and an 8 inch f/5 Synta Newtonian. Chinese optics, in my opinion, are about where the Japanese were in the mid 50s – early 60s maybe better than that, even. Ready to break-out in a big way. But they are not "there" yet as compared to U.S./European/Japanese optics.

I'm afraid there will be a bumpy road ahead when (not "if") Meade and Celestron do transition to Chinese SCT optics. I do NOT doubt that the Chinese factories will eventually get it right. But, as above, it will be a little while, I suspect. So, perhaps we should prepare to live through a time similar to the Halley years (1985-1990). There will be good scopes and lousy ones. *Caveat Emptor*, again.

Frankly, I've become a little misty-eyed of late, as I'm of the opinion that we've just lived through the Golden Age of the American SCT. Over the last decade, Meade and Celestron's optics have better than they've ever been; especially when it comes to consistency. If there's one thing I do know, though, it's that golden ages do not last.

So is it time to PANIC? Not necessarily. I would guess the changes I'm talking about will occur gradually. One or the other of the companies will test the water first, and I'd expect the initial move to be one like Meade has made regarding its Schmidt Newtonians: U.S. optics, but everything else Chinese. Also, amateurs tend to lose sight of the fact that Meade and Celestron's profit is not really in the SCTs. They--and especially Meade--make most of their money off cheaper scopes. In Meade's case, the small refractors and Newtonians they sell in Wal-Mart and similar venues. So, the cheap scopes may be able to continue to subsidize the flagship instruments to some extent

(Meade is now a publicly held company, so there's only so much of that that can be justified).

Are there *any* bright spots on the horizon? Meade's decision to increase the prices for its new premium line of aplantic SCTs, the RCXes (err...I mean "Richey Chretiens"). Making SCT prices at least a wee bit more realistic might stave off Chinese Schmidts for a little while.

And what about the SCT price structure as it is now? Completely whacked-out. Look at the LX90 and the Nexstar 8i. Look how pretty they are and how much they can do. All those computer features and great optics besides. Yet, they cost LESS in real dollars than an Orange Tube C8 did in 1970. Unfortunately, I don't see amateurs moving away from their ideas about what an SCT "should" cost: 1000 U.S.$ for a basic 8 inch; 3000 US.$ for a 10/11 with EVERYTHING on it. This probably makes Chinese Schmidt Cassegrains inevitable unless the RCX scopes, which cost roughly twice what Meade's other SCTs do, sell like hotcakes.

So, what can we do about this, brothers and sisters? Not a blessed thing. The Meade/Celestron business plan was pretty much writ in stone 25 years ago when we, the American Amateur, made clear what we'd buy, what we wouldn't, and exactly how much we would pay. So, hang onto your current OTA...it may be destined to be a sought after "classic" when U.S. made scopes are gone from the face of the earth.

The 2005 SCT-User Imaging Contest

Kevin Dixon

Do you have a killer CCD image of the Orion Nebula? Is that astrophoto of the Andromeda Galaxy that you took, one that you are really proud of? Were you able to capture some wonderful detail on Saturn with your webcam? If you answered yes to any of these questions, then Rod Mollise and the Judging Team would like to invite you to enter the 2005 SCT-Users Imaging Contest. Now in its fourth year, the contest runs from April 1 through June 30, 2005.

One of 2004's Winners: M63 by Roth Ritter

I n order to be eligible to enter the contest, you must be a member of the SCT-Users mailing list and your images must be taken with a Schmidt Cassegrain, Maksutov Cassegrain, Maksutov Newtonian or Schmidt Newtonian Telescope or a Schmidt Camera.

The contest features 9 different categories including: Best Astrophoto of a Solar System Object; Best Prime Focus Astrophoto of a Deep Sky Object; Best CCD Image of a Solar System Object; Best Beginning CCD Image by an imager with one year or less of experience; Best Prime Focus CCD Image, including use of the Fastar and Hyperstar lenses and the Meade Deep Sky Imager; Best Digital Camera Image of a Solar System Object; Best Digital Camera Image of a Deep Sky Object; Best Webcam Image or Video Capture and Stack of a Solar System Object; and, Best Webcam Image or Video Capture and Stack of a Deep Sky Object.

This year's entries will be judged by a very experienced panel consisting of Michael Cunningham, Jason Lane, Roth Ritter and Kevin Dixon. Jason and Roth submitted winning entries in last year's contest and Michael and Kevin have been judging the entries since the contest began.

In addition, Roth Ritter is serving as the contest Webmaster and has designed an AWESOME website for the contest. The website features information about the contest including contest rules, the entry form and the contest sponsors. Each of the entries will be posted on the site as well. I invite you to visit our contest website at: http://www.rothritter.com/contest/2005/

Speaking of sponsors, we are privileged to have several of the leading companies and individuals in the amateur astronomy field as prize donors this year. The illustrious list, as of the time of the writing of this article, includes Anacortes Telescope and Wild Bird, ASTRO Accessories by Robin Casady, Astrotec, BuyAstroStuff, Oceanside Photo and Telescope, ScopeTronix and Ron Wodaski, the author of The New CCD Astronomy and Image Processing: The Zone System for Astro Imaging. The list of sponsors continues to grow and winning entrants are guaranteed to capture a great prize. New to the contest this year – We'll be offering a grand prize for the best overall image.

Does the contest sound like something you'd be interested in? If so, please send your entry to Kevin Dixon at ksbtk@comcast.net. I look forward to receiving your images.

Old Iron

Harry Aiello

An article? You want an article for Skywatch? OK, here's my story and I'm stickin to it.

If you didn't notice there is a C-90 in the picture and that is what led me to the C-8. About 30 years ago I was trying to decide between a C-90 and an Astroscan. I got the C-90. Mostly used it as a spotter but now and then for stargazing. I like that scope. Last years Mars event got me interested again but I knew that I wanted a clock drive and I didn't know anything about current telescopes so I bought my dream scope from 30 years ago, the C-8. The way I remembered it, with holes in the forks like they are supposed to have. Ha, ha. It had no tripod so I drug this 150 lb table out and drilled elongated holes for the azimuth setting and mounted it like you see it after learning about polar alignment and all. I rigged up the homemade cord, got on Mars at 200x and it stayed in the eyepiece for 2 hours. I called everyone and told them about it. Most of my friends wanted to know if I was keeping up on my medicine.

The C-8 was advertised as having pristine optics and indeed it all looks brand new. I keep it in a humidity controlled room, have tweaked the collimation and added a different finder. I still didn't take the old orange finder off though, it's like part of the scope, it's pedigree.

I now have six smaller scopes to allow for viewing in less than good conditions but if things look good the old iron comes out. It seems like everyone has gone to APO's but I still like the fork mounted SCT. Someday I will have a C-11. If they only made them in Orange!

Me and the C-8: It didn't take long to figure out there was going to be a dew problem. I live just outside St. Louis, Mo. and humidity usually runs in the 90% range here after the sun goes down in the fall. Temperatures also fall about 20 degrees pretty quickly. Ok, I found out about cool down of optics too. Snow, sleet, freezing rain, the yard was a skating rink and I didn't dare take my new toy out to view for fear of damage to scope and body. I needed a grab and go scope.

I bought an 80mm Celestron refractror from a fellow who said he could see the Cassini division with it. I couldn't. Then after a

few nights I could. I developed respect for the little refractor. This little scope got me most of the way through the winter and a couple of times I brought it to ridiculous powers. Still, I needed more portable aperture. Doesn't everyone.

I bought a 5" Orion mak. I was impressed with this right quick. I even thought it might be better than the "old iron". In the mean time I read about making one of these artificial stars and I did, so I tweaked the collimation on the C-8 and checked the 5 incher while I was at it. The mak. was perfect. Time for a showdown on Jupiter since Saturn was leaving. I feel like a traitor for putting my money on the Mak. but I did. I lost my money. Old orange is the hands down winner for detail but if they weren't side by side the contrast of the Mak. could easily fool you. Time for me to learn about DSO,s. Planet smorgasboard is leaving.

I bought an old Astroscan. With the kind of wide field views this thing offers I should be able to find it all and get some training in for pushing around a DOB in the future. I can't find anything with it. I put a red dot finder on it and now it is fun. It needs darker skies for what it does best. Doesn't everyone.

Another refractor: I bought a homemade 60mm short refractor because it looked neat and it was silver and I thought I could use it to guide an SLR camera. This thing is so clear it hurts your eyes. It shows me things at low power that I couldn't see before at twice the power.

The C-8 again: Last week brought one good viewing night so I set up the "old iron", the five inch mak with a new filter that I just bought and a 10x30 image stabilized binocular. I borrowed my son with a quick phone call for an objective opinion on the equipment. He is not into any of this but he will always humor me. We looked at Saturn, Orion, the new comet and M31. The C-8 was the star of the show. "Something old, something new, something borrowed and something…orange?"

Did anyone else start this way?

Astronomy on Your iPod

Michael Portuesi

Just walk down the street, or ride the bus, and you can't miss them – those little white cables and earbuds everyone seems to be wearing. The iPod digital music player has become enormously popular. Imagine 20 CDs of music on a player the size of a pack of gum, or thousands of songs on a player the size of a deck of cards! No wonder everybody has one.

iPods are great for music, but did you know you can use your iPod for astronomy as well? Over the past year, a new phenomenon called "podcasting" has developed on the Internet. Podcasts are radio shows you download to your iPod, and listen to on the go. Once you subscribe to a particular podcast, new episodes of that show are automatically downloaded to your iPod as they appear on the Internet.

The big advantage of podcasting is that you don't have to listen to a podcast at a particular time, like you would with conventional radio or even an Internet radio station. You can listen to the show whenever its convenient for you, plus pause and rewind – try that with your radio!

Podcasting is (right now at least) mostly an amateur activity. Anyone can make a podcast, and thousands of people produce them, on all manner of subjects, all for free. New podcasts appear daily, and there are sites devoted to keeping track of them.

You don't need to have an iPod to enjoy podcasts. If you own another brand of digital music player, podcasts work with them as well, since they're really just MP3 files. And even if you have no portable music player, you can still listen to podcasts using your desktop or notebook computer, using whatever music software you already have.

Here's how to get started:

1. Download the free iPodder software, from http://ipodder.sourceforge.net/. iPodder is available for Windows, Mac OS X, and Linux. Follow the instructions on the iPodder website to install the software.

2. Subscribe to some podcasts that interest you. One website that lists podcasts is http://www.podcast.net. To listen to one of the podcasts listed here, click on the "Add Feed" button in iPodder, enter the link listed here into the "URL" field, then click "Save".

3. Click the “Check for new podcasts” button. iPodder will search for new podcasts and download them.

4. iPodder will create a playlist in iTunes for each podcast “channel”, containing the podcasts you just downloaded. Dock your iPod, and synchronize these playlists along with the rest of your music. To listen with your computer or another brand of music player, just look for the MP3 files in a special folder on your desktop.

Here's some astronomy podcasts I've found on the internet:

Science @ NASA http://science.nasa.gov/podcast.xml Already one of the most popular podcasts on the internet, Science @ NASA carries news articles about science discoveries and other activities at NASA, such as Cassini and the Mars rovers. Each NASA podcast is about 5-10 minutes in length.

Slacker Astronomy http://www.slackerastronomy.org/slack-live.xml This weekly podcast is hosted by a professional astronomer at Harvard, and a broadcast journalist who works for the AAVSO. It offers a very silly take on astronomy, punctuated by jokes and other amusing stunts. The April Fool's edition served up a great rap song about astronomy and cosmology, delivered by a Stephen Hawking-esque “speak and spell” voice.

Berkeley Groks Science http://www.groks.net/groks.rss This is actually a radio show appearing on KALX 90.7 FM in the San Francisco Bay Area. Via podcasting, you can listen to the show whenever you want, plus listen to past episodes. This show is about science in general, but several shows are devoted to astronomy, cosmology, and other astronomically-related topics. Recent shows have featured physicist/cosmologist Sir Roger Penrose and astrobiologist Dr. David Grinspoon.

Southwest Astronomy Observers Group (SWAOG) http://astronomy.thebrownhouse.org/audio/rss.xml SWAOG is a group of amateur astronomers who are also ham radio enthusiasts, in the Chicago area. Each week they produce a two-hour podcast, essentially a recording of their ham radio discussion. The podcast I listened to covered shopping for binoculars, including a user review for Celestron 15x70 binoculars, plus the best magnification to use for viewing faint objects. There were also some trivia questions and astronomy news. But be prepared to wade through a lot of “ham radio” talk to get to the good stuff. On the podcast I sampled, the first 20 minutes was nothing but talk about ham radio itself, plus participants signing on and off with the moderator (called the “controller” in ham radio-speak).

Regulus! The Astronomy Newsletter http://www.regulusastro.com/regulus/whatsup/podcast.rss This monthly podcast covers things you can see in the night sky. Put this on your iPod, then go outside and follow along with the narration to learn the stars and constellations.

Tales of Stupidity, Tonight's Episode: Yet another thing NOT to do with an astronomical mirror. (1)

Tom Trusock

Footnotes are at the bottom

Hi, my name's Tom, and I'm an IOA (2)

I should have known better. I really should have known better. Heck, I DO know better. Or at least I assuage my shame by thinking so.

However, on the evening in question, I was evidently resolved NOT to let something as silly as knowledge, intelligence or good sense stop me.

What did I do?

Sigh…

It's January in the frozen north. Or not so frozen as the case may be. In a freak twist of weather, we've had two days of 50+ degree rain followed by an arctic cold front and temps are now well into their subzero plunge.

The wife came in from our unheated garage and asked if it was normal for there to be condensation running down the side of the garage freezer - with the temps and humidity we've had lately, I have to admit I wasn't all that surprised. I reassured her that it was because of the unseasonable temps and all the rain we've had lately, and didn't proceed to give it another thought - at least until 15 minutes before I decided to hit the hay.

I store my newts in the garage.

Condensation can be bad.

Mistake #1 - I think I should check the mirror.

Out to the garage I go. I pop the cover off the 8" first - nothing there, looks good. I've never really had a problem, and I'm not too worried.

Next up, my new baby, my 18". (3) Removing the cover, I glance at the 18" mirror.

What the heck is on there??

There are two spots - both under 1/4 " in diameter. One is a crusty white, the other has a brown tint. It looks like a bird has used my mirror as their own personal hygiene kit. Abet - a very small bird, and only once. Or perhaps a bat. Maybe a mouse.

If it were anyone else, I'd dispense typical cautionary wisdom – "Don't worry about it till you get a chance to clean the mirror properly." Either it will come off or it won't.

Mistake #2 - I'm not anyone else.

It's the second part that consumes my reason for the next small eternity. Or 5-10 minutes – it's hard to be sure when you're being irrational.

Trying to put those thoughts out of my head, I retreat to the office and sit down to check my e-mail. My eyes alight on my optics cleaning equipment. There, next to my desk, the bottle sits as if taunting me. I think - hmm - some optics cleaner applied very very gently, and I should at least know if those spots will come off.

The good news? The spots came right off! (4) The bad news? I now had these small (but slightly larger) spots of cleaning fluid clinging to the mirror.

Hmmm. You would have thought I'd have foreseen that.

Mistake #3 – My brilliance demanded I switch to surgical cotton. I could blot it - just a bit.

Five minutes pass.

Well, that worked. Kinda. Sorta. Mostly. Well, somewhat. Ok - I confess it worked in the same way that you can clean up quarts of spilled milk with a single paper towel. For those of you who can't guess, it simply spread the cleaning fluid around a bit.

It also spread out what looked to be like a thin film - either grease from my fingers, or a residue from the biodegradable liquid soap that makes up a tiny tiny part of the solution. My money's on oils from my skin.

The spot was now bigger. Not as concentrated, but bigger. And I noticed something else going on.

Mistake #4 - Do you recall where I said my garage is unheated?

Here's a basic lesson in thermodynamics and chemistry. Evidently cleaning fluid is a blend of alcohol, distilled water, and other materials. (Amazing what they put on bottles now days, eh?) The key ingredient however, seems to be distilled water. I'm going to repeat that for clarity – that's distilled water – W A T E R. Everybody got that? Now, water, if I'm not mistaken, is exothermic, and will freeze solid at temps under 32F. Mind you I'm not absolutely sure, so I'd appreciate it if someone can confirm this for me. I can tell you that it freezes when it's in cleaning fluid and you spread it on a mirror that's been sitting in a subzero garage. Solid. Yup. Did anyone (besides me) not see this coming?[5] ANYWAY -

In my lethargy, I decided I that I absolutely had to add some alcohol (Logic: alcohol will evaporate at much lower temps than distilled water, right?) and blot *ever so gently* again. My brain, evidently, was simply along for the ride, content to watch the train wreck in progress.

Mistake #5 - Alcohol will freeze if spread thinly enough.

Now I had a large(r) spot of frozen alcohol.

Oh goodie.

Hmmm - about this time I somehow decided it might be best to sit back and take stock. I was, and rightly so, quite disgusted with myself. At this point my brain kicked in and reluctantly decided it had to rescue the poor sot attached to it otherwise neither of us would get any sleep. Something in my snooze deprived neurons (2 month old baby in the house - nuff said?) shouted "HEAT" – You'd think that would be enough. In a normal, intelligent, adult male, yes, it probably would. In my case - Nope. I didn't get it. I sat back, scratched my head and continued to stare.[6] Again the neurons cried "HEAT" – louder this time. I glanced over at my observing table where I had a pack of those Michigan necessities - Hot Hands.[7] Feeling like I was about to sucker punch myself, I slowly decided, amazingly enough, that no, I'd been stupid enough for one evening. I settled back to see if I could get the brain to come to terms. My terms.

Embarrassed to be seen with me, but still somewhat game, it tried again "Heat!"

This actually began to percolate through and I started to think about bringing in the mirror to let it warm to clean it properly. Have you ever tried to remove a 3 deg, 18" hunk of glass covered in frozen water, cleaning fluid and alcohol from a truss assembly? Suffice it to say that this was not looking to be a quick or easy task. Also recall that I had planned on going to sleep about 40 minutes ago.

Sighing, I began to reach into the scope.

Just then, Jove (the patron god of idiot astronomers) decided I'd had enough and decided to rescue me from my own diminished mental capacity. Dimly, in the background, I heard my wife's hair dryer kick on. One hair dryer, two extension cords and 15 minutes later I found that a hair dryer does a wonderful job of warming up a first surface mirror, and removes evidence of personal stupidity quite nicely, thank you. (However, I also found that wives typically don't like to be left standing in the bathroom with wet hair. They also tend to ask embarrassing questions like: "Hey – where are you going with my hair dryer?" and "Are you bringing it back?" Then they also get frustrated and confused with the obvious logical answers "Out to the garage, where else?" and "Probably…" – but I digress…)

There are now a few faint "smear" marks from the oil on my fingers, but I'm going to wait a bit to properly clean the mirror. Really. Please don't tell me different. I don't think I could take it.

Amazingly, there are no sleeks or scratches, the coatings seem to be in good shape and no permanent harm seems to have been done. So everything came out alright in the end.

There's only so much ones sanity can stand. Yes, oh yes, I've learned my lesson…

I swear I'll NEVER do that aga…….

Hmmm - you know, as I sit here and type this, I can see the objective on my TV102 is a bit dirty - Now where did I put that bottle of cleaner...

(1) Names have not been changed to protect the stupid

(2) Idiot Obsessive Astronomer

(3) To give you a context of the stupidity involved here, the 18" sits next to a car that it surpasses in current value.

(4) Yay me!

(5) No - don't put your hands up. We'd both have to be embarrassed...

(6) When I do something stupid, I find staring at it helps. I think it shames the brain into working.

(7) For those of you in warm environments who may not be familiar, Hot Hands are chemical heat packs.

(8) While the story bears an embarrassing resemblance to reality, some license has been taken.

Ham Radio and the goto Wars

Rod Mollise, AC4WY

Non-hams (especially those folks who think I'm talking about a cut of pork) might want to skip the following. But many amateur astronomers are also amateur radio operators, and I think the example of the Morse Code Wars that, together with Incentive Licensing, nearly ripped ham radio apart are an instructive and cautionary tale in these days of the intense goto/anti-goto debate in astronomy.

Ah, yes, the never-ending goto versus star hopping wars. This battle isn't a first in the realm of "scientific hobbies." A similarly bloody battle went on in our sister-hobby, amateur radio concerning the requirement that new hams be forced to learn the Morse code.

Let me tell you a story…look on this as the "director's cut" of my column on the same subject at http://www.buytelescopes.com…

My father, a real old timer of a ham radio operator, an "OT" in their parlance, W4SLJ (now a Silent Key) was ADAMANTLY in favor of the code. He made sure that I was a good CW op, too, pushing me to go for the gold of the Extra in the days when it took quite a bit of effort and study to attain that ticket. When I got my Extra Class ham license you still had to be able to copy 20 words per minute, a not inconsequential speed at which to "read the mail," especially if you had to do it with a pencil and paper under the steely gaze of the FCC Radio Examiner. I had no problem with this hurdle, since I apparently had a built-in affinity for the code. But I never could understand why my dad and other hams—many of the most prominent in the hobby, especially--were so fixated on Morse code, a.k.a., "CW." As an important communications mode, it was dying by the late 1960s. I

I finally figured out that, for many hams, CW represented a "gate keeper" for the hobby. That is, it kept the riff-raff out or kept 'em confined to the ranks (and minimal band space) of the Technician Class license (which only required 5 words per minute of code proficiency). The sad thing about this was that many Tech-class hams were incredibly proficient technically and would have been really good additions to the general amateur ranks. Unfortunately, most of them could never get past the 13 wpm requirement that was the entry to "real" ham radio with the General Class License. Large numbers of these outstanding folks eventually tired of the restrictions imposed by the Technician license and dropped out of the hobby. Ham radio is a troubled hobby now, one with an even older membership than amateur astronomy. In my opinion amateur radio never really recovered from this loss of many hams (especially young ones) in the CW/Incentive Licensing wars.

Ham radio was mainly something I tended to do with my father rather than something I was passionate about on my own—though I do have some nice hamming memories of MARS field days and other outings—and when my interests switched more strongly to astronomy in the early 1970s, I felt lucky that we'd never see the "code/no code" controversy in our avocation! HA! Here it is in the form of the goto wars!

I still teach my (university) astronomy students about sidereal time, how to use analog setting circles, and how to star hop. I still think these tools are still fairly useful for anyone interested in the sky in a serious way. But I'm not sure how much longer I will continue to teach all these things. As a practical matter, the scopes we use with undergraduates, manual, fork

mount SCTs, are no longer available new. When I use these up, there will be no more. There's also no denying that the students who go on to become amateur astronomers will increasingly find analog circles and manually pointed scopes as rare as hen's teeth. Those who enter the professional ranks will likely never even get close to a scope. It will depend on which university they are affiliated with, but, for many, the telescope will be something on the other end of an Internet connection. Personally? I still use a non-goto scope, an Orion StarBlast, for casual observing. But for serious work, I'll probably never go back to non-goto scopes.

But that's just me. If that person next to me wants to Telrad her way to happiness with a simple dobsonian telescope, I think that's great. And you won't hear me say a word to the contrary. I hope she will feel the same. We need to "get over it" and avoid silly debates like those that ruined ham radio, debates about whether modern technology (which is here to stay) is good or bad. We've got more important things to worry about. While amateur astronomy is in fairly good health, we've got a LONG way to go in the area of attracting more young people, women, and minorities to our ranks.

That's where we need to expend our energy, not in worrying about whether some new amateur with a goto scope isn't paying enough dues or is missing out on the "fun" of star hopping. If you like hunting, by all means hunt. But let's stay focused on product, the enjoyment of the sky, rather than the process, the type of tool we use to reach night sky nirvana.

Fifty Dollars at Wal-Mart: The Meade Telestar

John Isaacs

Department Store Telescopes, DSTs, are most often described with words like, junk, trash, and ripoff. Non functional finders, shaky tripods, plastic eyepieces, these are a few of things most of us associate with the typical 60mm DST. And yet the contradiction is that many of us got our first real inspiration from one of these. I certainly did, that morning in the Arizona desert when I stumbled across the Orion Nebula for the first time while searching the sky with a $5 garage sale 60 mm refractor. That was the spark that kindled a long term passion. So after reading the December 2004 Sky and Telescope Editor's page concerning "Holiday Trash-scopes" I was inspired to revisit the past. I handed over my fifty bucks for Wal-Mart's best $50 scope, the Meade Telestar 60AZ-A

Before getting started, I need address a few issues. First, I really do enjoy observing with this scope; its pretty amazing… A significant part of this review is the discussion of what I observed with an emphasis on what I could see because the thrust of this review is: **What this scope can do in the hands of a (moderately) experienced observer.** In evaluating this scope, I used it as I received it with a couple of minor modifications, Mostly, as above, I wanted to see what the scope as delivered could do. I

So, what did I get for my hard earned fifty bucks? A 60mm F11.7 refractor with a 1.25 inch focuser; a 5x24 finder; an aluminum alt-az mount with eyepiece tray and an altitude slow motion control; a 1.25 inch mirror diagonal (plastic); and two eyepieces, a MA 25mm and an MH-9mm, plus a 2X barlow (plastic.)

What was the Hype on the box? No images of galaxies in full color, no claims of 675X, only a reasonable picture of the moon with the following claims: "The Craters of the moon are just the beginning… See Rings of Saturn, Moons of Jupiter, Great Orion Nebula, Andromeda Galaxy, Land Objects." All quite reasonable expectations.

Assembling the scope took less than half and hour and the only tool needed was a Phillips screwdriver. The instructions are simple and clearly written and illustrated, and the scope is nicely packed. Meade had done a good job here.

First light with a new scope is always an exciting night and the first light of the Meade 60AZ-A was no exception. The light polluted magnitude 3-4 skies of my urban San Diego backyard provide a challenge for any scope, and a small scope in particular. My first target was the Pleiades rising is the east in evening sky. A low power object, the view using the 25mm MA eyepiece (28X) was pleasing. The field of view is a bit narrow, but nearly all the cluster fit in the eyepiece. Focusing was smooth despite the wobbly shaft, but the flimsy mount was an obvious problem. Settling time is probably on the order of 5 seconds. Still, with a steady hand and some patience, the stars could be brought to focus.

The next stop was the famous double cluster in Perseus, while not bright, the star clusters were sharp and use of averted version lit up the cluster, including many faint pin points at the edge of detection, I enjoy this sort of view. To find the double cluster, I decided to test the 5x24 finder. I truly expected it to be like every other 5x24 finder I have owned, an imposter stopped down and unusable. But to my surprise, this finder is decent, I could see the necessary stars to guide me to the double cluster.

With neither planets nor the moon to view, I set off in search of some double stars. First stop was Almach, γ Andromadae, an unequal binary with a separation of 9 arc seconds. This was nicely split at 78x using the MH 9mm eyepiece. I then moved to Sheratan, β Aries, a nice equal pair. Again the MH 9mm eyepiece handled this nicely.

Next it was time for some real Deep Sky targets. The Andromeda Galaxy was first up and it looked as it always does from my light polluted backyard--only the core is visible. Later stops included M103, the ET cluster (NGC-457) and the Wild Duck Cluster. The views of these were beyond my expectations, so I decided to try the Ring and the Dumbbell, both of which turned out to be visible, though averted vision was a help. Seeing these was a definite thrill.

Later sessions from my backyard showed that this scope does everything claimed and more, the rings of Saturn are apparent, the moons of Jupiter and the equatorial cloud bands are there to behold, the moon is nice at all magnifications. This scope is able to split Castor (~4 arc seconds) quite nicely at 78X. The list of DSO I was able to see with this scope from my back yard was surprising and extensive.

Despite my positive experience with the little Meade, I do not recommend anyone buy this scope. It has some limitations--most seriously, a shaky mount. I think that for somewhat more money one can find scopes that are far more competent. Nevertheless, the Meade 60 performed amazingly well considering its humble nature and price, and is definitely not a "Trash Scope."

Stardust Up Close

Patrick L. Barry and Dr. Tony Phillips

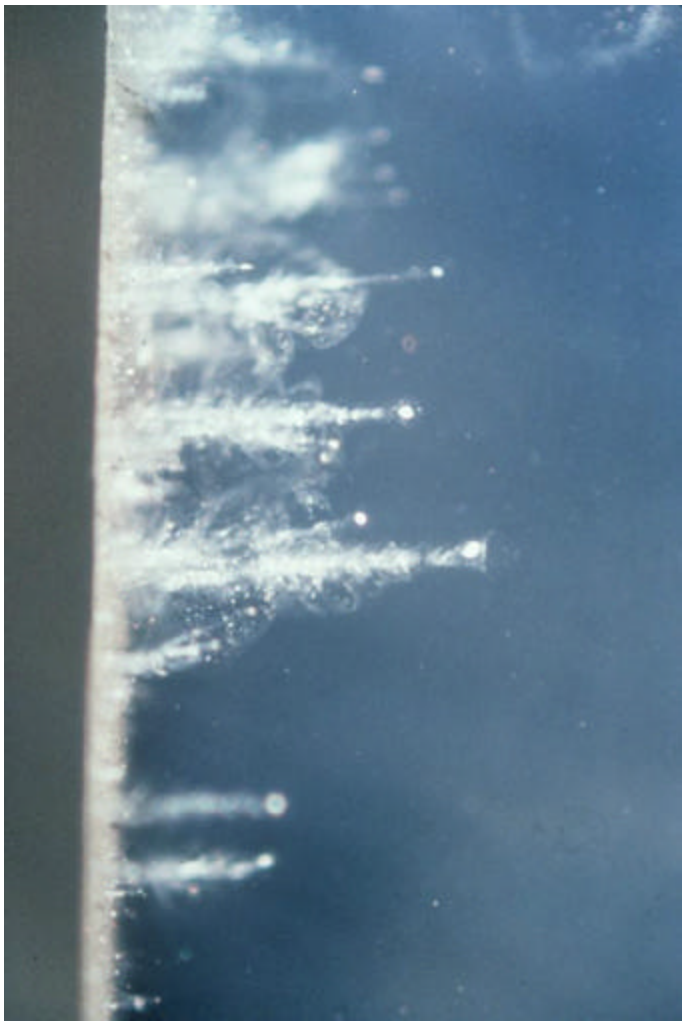
Like discarded lumber and broken bricks around a construction site, comets scattered at the edge of our solar system are left-over bits from the "construction" of our solar system.

Studying comets, then, can help scientists understand how our solar system formed, and how it gave rise to a life-bearing planet like Earth.

But comets have long been frustratingly out of reach -- until recently. In January 2004 NASA's Stardust probe made a fly-by of the comet Wild 2 (pronounced "vilt"). This fly-by captured some of the best images and data on comets yet ... and the most surprising.

Scientists had thought that comets were basically "rubble piles" of ice and dust -- leftover "construction materials" held together by the comet's feeble gravity. But that's not what Stardust found. Photos of Wild 2 reveal a bizarre landscape of odd-shaped craters, tall cliffs, and overhangs. The comet looks like an alien world in miniature, not construction debris. To support these shapes against the pull of gravity, the comet must have a different consistency than scientists thought:

"Now we think the comet's surface might have a texture like freeze-dried ice cream, so-called 'astronaut ice cream': It's solid and can assume odd, gravity-defying shapes, but it's basically soft and crumbles easily," says Donald Brownlee of the University of Washington, principal investigator for Stardust.



Scientists are currently assembling a 3-D computer model of this surface from the photos that Stardust took. Those photos show the sunlit side of the comet from many angles, so its 3-dimensional shape can be inferred by analyzing the images. The result will be a "virtual comet" that scientists can examine from any angle. They can even perform a virtual fly-by. Using this 3-D model to study the comet's shape in detail, the scientists will learn a lot about the material from which the comet is made: how strong or dense or brittle it is, for example.

Soon, the Stardust team will get their hands on some of that material. In January 2006, a capsule from Stardust will parachute down to Earth carrying samples of comet dust captured during the flyby. Once scientists get these tiny grains under their microscopes, they'll get their first glimpse at the primordial makings of the solar system.

It's heading our way: ancient, hard-won, possibly surprising and definitely precious dust from the construction zone.

Find out more about the Stardust mission at stardust.jpl.nasa.gov. Kids can read about comets, play the “Tails of Wonder” game about comets, and hear a rhyming story about aerogel at http://spaceplace.nasa.gov/en/kids/stardust/.

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Determining Whether Dew May Form on Telescope Optics During an Observing Session

Matthias Bopp

There have been much discussion about the use of a dew-shield and an anti-dew heater at the telescope. While a dew-shield is always recommended to block stray light, an electrical heater takes power and may also degrade the performance of the optics if excess heat is provided. Especially in a portable set-up, electrical power provided from rechargeable batteries may be a problem, and its availability may limit your observing time.

Inspired by an article from Dave Cole on his valuable website "The unofficial support site for the Celestron NexStar GPS series telescope" (www.nexstar11.com), the following approach was developed.

I bought a device from Conrad Electronics here in Germany that includes a clock, a sensor for relative humidity and two temperature sensors. One of the temperature sensors is built in the device and the other is connected by a cable to the device. Typically, the first sensor is used to sense the indoor temperature and the second one to sense the outdoor temperature. Similar devices are probably available almost everywhere. Please make sure while selecting the device that the sensors provide a resolution of 0.1°C (just resolution, not the absolute accuracy).

The device has a 3-line display and can either show both temperatures and relative humidity simultaneously or time, temperature of the external sensor, and relative humidity. So when not using the device to determine the dew point temperature you have a continuous display of the time available at your telescope

I routed the cable of the external sensor from the device to the corrector lens at the front of the optical tube assembly (OTA). The brackets I use from Baader Planetarium are hollow so I could simply route the sensor and its cable through it. The sensor is then attached by adhesive tape to the metal ring that holds the corrector. The cable is thin enough that the dust cover of the telescope can still used with having the sensor attached.

The device featured a green backlight display. I changed the green backlight by removing the green rubber cover from the internal light bulb and painting the bulb using red fingernail polish from my wife. Now, the backlight is red which helps preserve the dark adaptation of my eyes.

Now a bit of theory on how to calculate the dew-point from the data provided by the sensors. The formula calculates the dew-point from relative humidity RH and ambient temperature, Tamb. All temperatures are in Celsius.

The saturation vapour pressure over water is:

EW = 10^ (0.66077+7.5*Tamb/ (237.3+Tamb))

The saturation vapour pressure multiplied with the relative humidity in percent is:

EW_RH = EW * RH / 100

The dew-point is:

Dp = ((0.66077-log10(EW_RH))*237.3) / (log10(EW_RH)-8.16077)

The formula can be simplified using the log of EW:

LogEW = (0.66077+7.5*Tamb/ (237.3+Tamb)+(log10(RH)-2)

And thus the dew-point formula is:

Dp = ((0.66077-logEW)*237.3) / (logEW-8.16077)

(this formula deviates from the exact formula by less than 1°C over the temperature range from -40°C to +100°C)

Figure 1 shows the results of the formula over a common temperature range. On the vertical axis you select the ambient temperature. On the horizontal axis you select the relative humidity. In the table you find the temperature where dew can build up. If the temperature of the external sensor mounted at the corrector plate approaches this temperature you should switch your heater on.

FIGURE 1

	relative humidity %																			
Temp °C	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
-5	-53,4	-38,9	-32,0	-27,7	-24,5	-22,0	-19,9	-18,1	-16,5	-15,1	-13,8	-12,7	-11,6	-10,6	-9,6	-8,8	-7,9	-7,1	-6,4	-5,7
-4	-52,8	-38,2	-31,2	-26,9	-23,7	-21,2	-19,0	-17,2	-15,6	-14,2	-12,9	-11,7	-10,6	-9,6	-8,7	-7,8	-6,9	-6,2	-5,4	-4,7
-3	-52,2	-37,5	-30,4	-26,0	-22,8	-20,3	-18,2	-16,3	-14,7	-13,3	-12,0	-10,8	-9,7	-8,7	-7,7	-6,8	-6,0	-5,2	-4,4	-3,7
-2	-51,5	-36,7	-29,6	-25,2	-22,0	-19,4	-17,3	-15,4	-13,8	-12,4	-11,0	-9,8	-8,7	-7,7	-6,7	-5,8	-5,0	-4,2	-3,4	-2,7
-1	-50,9	-36,0	-28,8	-24,4	-21,2	-18,6	-16,4	-14,5	-12,9	-11,4	-10,1	-8,9	-7,8	-6,7	-5,8	-4,9	-4,0	-3,2	-2,4	-1,7
0	-50,3	-35,3	-28,0	-23,6	-20,3	-17,7	-15,5	-13,6	-12,0	-10,5	-9,2	-8,0	-6,8	-5,8	-4,8	-3,9	-3,0	-2,2	-1,4	-0,7
1	-49,6	-34,5	-27,3	-22,8	-19,5	-16,8	-14,6	-12,8	-11,1	-9,6	-8,3	-7,0	-5,9	-4,8	-3,9	-2,9	-2,1	-1,2	-0,5	0,3
2	-49,0	-33,8	-26,5	-22,0	-18,6	-16,0	-13,8	-11,9	-10,2	-8,7	-7,3	-6,1	-4,9	-3,9	-2,9	-2,0	-1,1	-0,3	0,5	1,3
3	-48,4	-33,1	-25,7	-21,1	-17,8	-15,1	-12,9	-11,0	-9,3	-7,8	-6,4	-5,2	-4,0	-2,9	-1,9	-1,0	-0,1	0,7	1,5	2,3
4	-47,8	-32,3	-24,9	-20,3	-17,0	-14,3	-12,0	-10,1	-8,4	-6,9	-5,5	-4,2	-3,1	-2,0	-1,0	0,0	0,9	1,7	2,5	3,3
5	-47,1	-31,6	-24,1	-19,5	-16,1	-13,4	-11,1	-9,2	-7,5	-5,9	-4,6	-3,3	-2,1	-1,0	0,0	0,9	1,8	2,7	3,5	4,3
6	-46,5	-30,9	-23,4	-18,7	-15,3	-12,5	-10,3	-8,3	-6,6	-5,0	-3,6	-2,3	-1,2	-0,1	1,0	1,9	2,8	3,7	4,5	5,3
7	-45,9	-30,2	-22,6	-17,9	-14,4	-11,7	-9,4	-7,4	-5,7	-4,1	-2,7	-1,4	-0,2	0,9	1,9	2,9	3,8	4,7	5,5	6,3
8	-45,3	-29,4	-21,8	-17,1	-13,6	-10,8	-8,5	-6,5	-4,8	-3,2	-1,8	-0,5	0,7	1,8	2,9	3,9	4,8	5,6	6,5	7,3
9	-44,6	-28,7	-21,0	-16,3	-12,8	-10,0	-7,6	-5,6	-3,9	-2,3	-0,9	0,5	1,7	2,8	3,8	4,8	5,8	6,6	7,5	8,3
10	-44,0	-28,0	-20,3	-15,5	-11,9	-9,1	-6,8	-4,7	-3,0	-1,4	0,1	1,4	2,6	3,7	4,8	5,8	6,7	7,6	8,5	9,3
11	-43,4	-27,3	-19,5	-14,7	-11,1	-8,3	-5,9	-3,9	-2,1	-0,5	1,0	2,3	3,6	4,7	5,8	6,8	7,7	8,6	9,4	10,2
12	-42,8	-26,5	-18,7	-13,8	-10,3	-7,4	-5,0	-3,0	-1,2	0,5	1,9	3,3	4,5	5,6	6,7	7,7	8,7	9,6	10,4	11,2
13	-42,2	-25,8	-17,9	-13,0	-9,4	-6,6	-4,2	-2,1	-0,3	1,4	2,8	4,2	5,4	6,6	7,7	8,7	9,7	10,6	11,4	12,2
14	-41,6	-25,1	-17,2	-12,2	-8,6	-5,7	-3,3	-1,2	0,6	2,3	3,8	5,1	6,4	7,5	8,6	9,7	10,6	11,5	12,4	13,2
15	-41,0	-24,4	-16,4	-11,4	-7,8	-4,9	-2,4	-0,3	1,5	3,2	4,7	6,1	7,3	8,5	9,6	10,6	11,6	12,5	13,4	14,2
16	-40,3	-23,7	-15,6	-10,6	-6,9	-4,0	-1,5	0,6	2,4	4,1	5,6	7,0	8,3	9,4	10,6	11,6	12,6	13,5	14,4	15,2
17	-39,7	-23,0	-14,8	-9,8	-6,1	-3,2	-0,7	1,5	3,3	5,0	6,5	7,9	9,2	10,4	11,5	12,6	13,5	14,5	15,4	16,2
18	-39,1	-22,2	-14,1	-9,0	-5,3	-2,3	0,2	2,3	4,2	5,9	7,4	8,9	10,1	11,3	12,5	13,5	14,5	15,5	16,4	17,2
19	-38,5	-21,5	-13,3	-8,2	-4,5	-1,5	1,1	3,2	5,1	6,8	8,4	9,8	11,1	12,3	13,4	14,5	15,5	16,4	17,3	18,2
20	-37,9	-20,8	-12,5	-7,4	-3,6	-0,6	1,9	4,1	6,0	7,7	9,3	10,7	12,0	13,2	14,4	15,5	16,5	17,4	18,3	19,2
21	-37,3	-20,1	-11,8	-6,6	-2,8	0,2	2,8	5,0	6,9	8,6	10,2	11,6	13,0	14,2	15,3	16,4	17,4	18,4	19,3	20,2
22	-36,7	-19,4	-11,0	-5,8	-2,0	1,1	3,7	5,9	7,8	9,5	11,1	12,6	13,9	15,1	16,3	17,4	18,4	19,4	20,3	21,2
23	-36,1	-18,7	-10,2	-5,0	-1,1	1,9	4,5	6,7	8,7	10,5	12,0	13,5	14,8	16,1	17,3	18,4	19,4	20,4	21,3	22,2
24	-35,5	-18,0	-9,5	-4,2	-0,3	2,8	5,4	7,6	9,6	11,4	13,0	14,4	15,8	17,0	18,2	19,3	20,4	21,3	22,3	23,2
25	-34,9	-17,3	-8,7	-3,4	0,5	3,6	6,2	8,5	10,5	12,3	13,9	15,4	16,7	18,0	19,2	20,3	21,3	22,3	23,3	24,2
26	-34,3	-16,6	-8,0	-2,6	1,3	4,5	7,1	9,4	11,4	13,2	14,8	16,3	17,7	18,9	20,1	21,2	22,3	23,3	24,3	25,2
27	-33,7	-15,9	-7,2	-1,8	2,2	5,3	8,0	10,3	12,3	14,1	15,7	17,2	18,6	19,9	21,1	22,2	23,3	24,3	25,2	26,1
28	-33,1	-15,1	-6,4	-1,0	3,0	6,2	8,8	11,1	13,2	15,0	16,6	18,1	19,5	20,8	22,0	23,2	24,2	25,3	26,2	27,1
29	-32,5	-14,4	-5,7	-0,2	3,8	7,0	9,7	12,0	14,1	15,9	17,5	19,1	20,5	21,8	23,0	24,1	25,2	26,2	27,2	28,1
30	-31,9	-13,7	-4,9	0,6	4,6	7,8	10,6	12,9	14,9	16,8	18,5	20,0	21,4	22,7	23,9	25,1	26,2	27,2	28,2	29,1

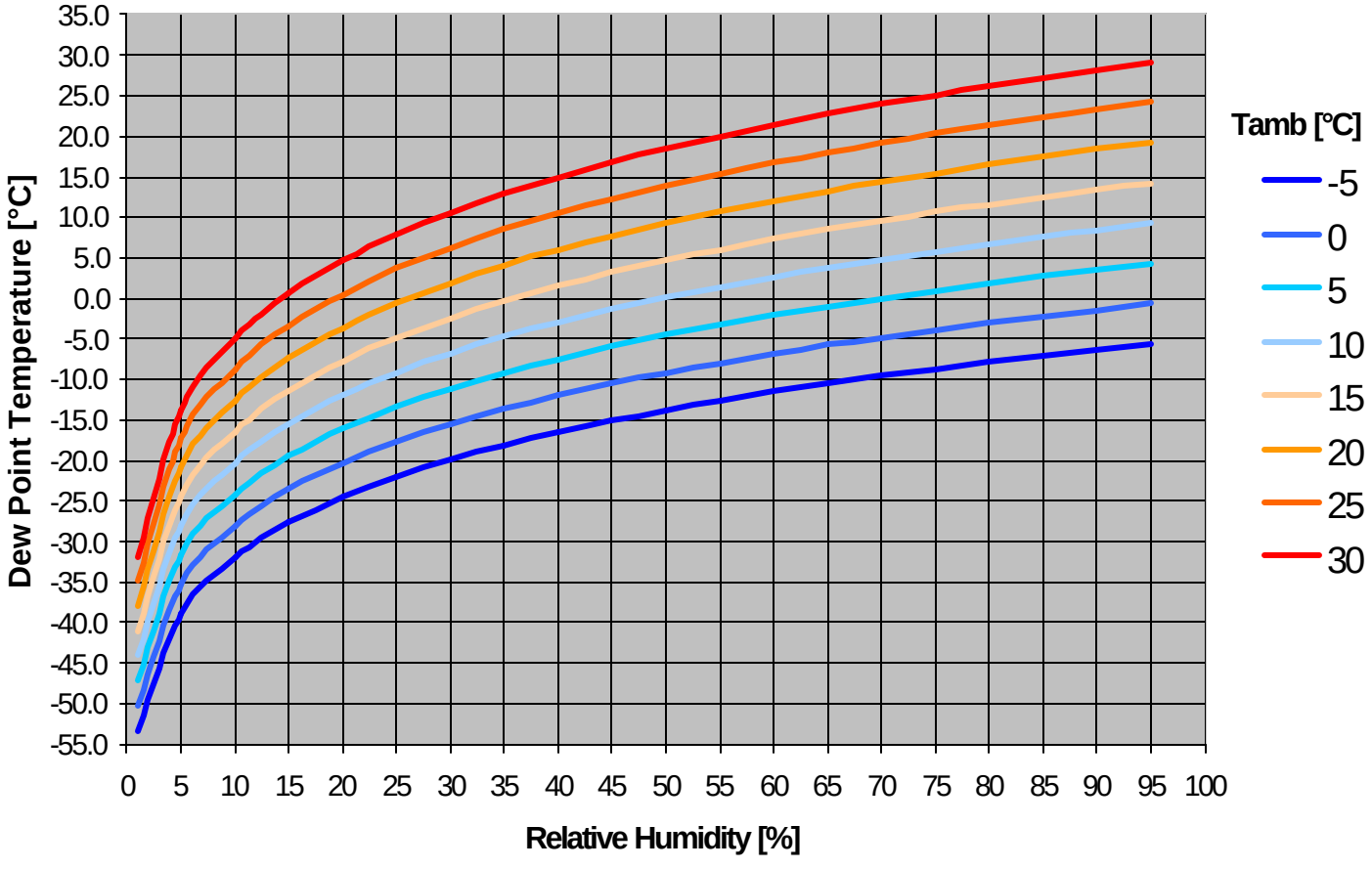
The next diagram shows the data of the table above in a graphical representation. It can be placed at your telescope and used to easily determine the dew-point temperature in °C by selecting the curve for the ambient temperature (tamb in the diagram are given in increments of 5°C from -5°C to +30°C), selecting the relative humidity in % on the x-axis and finally reading the dew point temperature on the y-axis.

Here are two examples:
RH=30%, Tamb=25C -> dew-point = 6.2°C (dew is very unlikely, only if corrector gets below 6.2°C)
RH=70%, Tamb=5C -> dew-point= 0°C (this may happen quickly, so monitor your corrector temp)

Summary:

The table and diagram should give you a good feel for the likelihood of whether dew may form on your telescope. By monitoring the ambient temperature, the corrector temperature and the relative humidity with a simple measurement device, you can determine when to use your heater and thus possibly save a lot of electrical power. You can also adjust the power of your heater such as the temperature of the corrector is just slightly above the dew-point temperature. Finally you can use the 2 temperature sensors to monitor how far the OTA has cooled down when moving it out from a warm house to lower ambient temperatures.

I appreciate comments and I am happy to answer any questions. You can also download the above tables as Excel spreadsheets from my website.



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.”

Ever seen two perverts dressed in crinoline gowns? I have. Beavis and Butthead, apparently thinking “Azalea Trail” was a new speed-metal band, slipped into pastel antebellum dresses in an attempt to infiltrate the “concert.” They were caught out, and appeared as a frightening visage at my front door, tear-stained hoop skirts and all. Leastways they did have that famous, ol’ mayo jar in hand. The one kept on Funk and Wagnall’s front porch for a fortnight. You, know, the hermetically sealed one. The one full of….

Rumours

Ready for more of the ongoing Meade-Celestron soap opera? Just when we thought it was safe to go back in the water—err, “observing field”—came the latest round. Rumors of Celestron’s economic ill health had been floating around on the Internet for weeks, rumors that were not denied by Celestron management. Then the story broke in the Orange County Register: Celestron really was on the ropes. Near bankruptcy again, and now planning to either merge with Meade or sell out to Chinese scope maker, Synta. We scratched our heads, trying to decide which would be the better fate for the Torrance Telescope Titan, and most of us decided Celestron had a better chance of continuing under Synta rather than under Meade. Apparently that’s what the Celestron folks thought as well. Celestron is now owned by Synta, and we’ll just have to wait and see what that brings.

One thing it’s apparently brought is the retirement of long-time Celestron helmsman, Alan Hale. Alan, who was one third of the team that bought the remains of Celestron from the ruins of Tasco, will be joining the legendary Tom Johnson in an advisory Emeritus-type role. The other two thirds of the Celestron top rank, Rick Hedrick and Joseph Lupica are to soldier on, I understand.

Wait and see? Heck! You know we like unbridled speculation around here. What does the ol’ AA think? There may be some good here. Over and above Celestron now having enough money to roll on, we may now see some of the

Synta products denied us by Celestron, the OLD Celestron, and Synta's other U.S. outlet, Orion. Foremost among these products is the new goto EQ-6 mount, the "Sky-Scan." This is a large mount with a high payload capacity, a gear set that fixes the PE problems of the earlier EQ-6es, and a very reasonable price. It would not surprise me to see the Celestron CGE mount go the way of the dino in favor of the Sky-Scan.

The bad? Despite their protestations, I foresee the production of SCT OTAs eventually moving offshore. Unless something changes dramatically, I think it's inevitable. See Uncle Rod's lead article in this issue for more on the subject.

How about Meade? Things are not so good for them, either. Sales, especially of amateur level scopes, are way down, I'm told. The above-mentioned Orange County Register article mentioned that Meade had assured its employees that it would attempt to keep telescope production in California. I think we all know what that usually means.

Want more changes? After a long presence in amateur astronomy, Tim Giesler has thrown in the towel—to retire, I suppose. The company he built, Orion Telescope and Binocular Center, has been sold to the Canadian firm that runs the Space.com website and produces the Starry Night software (the top level of which now incorporates the Desktop Universe program). What will this mean for Orion's customers? Little, I'd guess. Surely the Space.com guys know not to murder a golden goose. Orion has been successful because of two things: glossy catalogs and novice hand-holding. Yes, their prices were a little higher than the competition, but customers were always willing to pay the extra price of admission.

What next? With the current depressed state of the astronomy economy, I'd expect further sellouts and mergers are likely. Who's next? I wouldn't dare tell you. Well, maybe next time.

--The Anonymous Astronomer

The Wrap-up…

Dang, this one is late, late, late. I won't apologize too much, since, as you can see, we've made this a big, fat issue to make up for that. It's just been a busy time for Old Uncle Rod. Speaking engagements, star parties, magazine articles to write, and a book manuscript to complete. Am I asking for sympathy? You're danged right! I'll take all the sympathy I can get. ANYHOO…that is all until next time. Over and out!

If you have something for me, well, send it on to yer ol' Uncle Rod at RMOLLISE@aol.com

See you all in July. July 1. Maybe. ;-)

--Rod Mollise

A wonderful Saturn sketch by Sol Robbins