

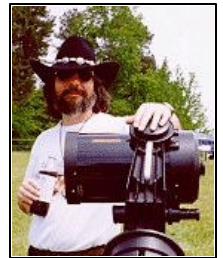
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Skywatch
1207 Selma Street
Mobile, AL 36604
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Rod Mollise's

Skywatch



In Memorium:

Marvin Uphaus 1940 - 2003



On Wednesday, August 27, Marvin Uphaus was laid to rest in the company of his family and many, many friends.

I know that local amateurs from Florida, Alabama, Mississippi and Louisiana were well-acquainted with Marv. He was an outstanding amateur astronomer, a real gentleman, and a regular fixture at local/regional events like the Deep South Regional Star Gaze and the Peach State Star Gaze. But he was also well known to amateur astronomers throughout the country and the world due to his involvement with astronomy-oriented Internet newsgroups and mailing lists.

It was truly an inspiration to observe with Marv, as he always had some new idea or gadget or project that he was intensely excited about. I feel lucky to have been able to call him “friend,” and am still trying to find a way to accept his loss.

I was privileged to say a few words about Marv at his funeral, and chose to read a little poem by that greatest of all astronomer-poets, Robert Frost:

Canis Major

*The great Overdog,
That heavenly beast
With a star in one eye,
Gives a leap to the east.*

*He dances upright
All the way to the west
And never once drops
On his forefeet to rest.*

*I'm a poor underdog,
But tonight I will bark
With the Great Overdog
That romps through the dark.*

I know—KNOW—that if you go outside in the wee hours and greet the Winter stars, you'll see Marvin and that Great Overdog galloping across the sky. Even if you can't quite make-out Marv, I can tell you *he is there!*

Marv's death was very sudden and unexpected, so many of his astronomy friends may not have had the opportunity to send flowers or make other remembrances. The family encourages those of you who'd like to memorialize him to make a donation in his name to the Mobile Public Schools' Environmental Studies Center. If you need information on how to do

this, please email me at RMOLLISE@aol.com

“The Most Fun You Can Have Without a Telescope”

ALCON 2003 Nashville

Rod Mollise

When I'm asked how I liked the 2003 Astronomical League Convention in Nashville, my answer is simple: "Most fun I've ever had without a telescope." As a long-time AL member and supporter, I'd always wanted to attend one of the

Telescope's Amateur Astronomers column, I dreamed about just *going* to an ALCON. Pass up *speaking* at one? No way!

While Nashville is a relatively easy drive from Mobile, Alabama, the fact that Dorothy and I couldn't leave until early afternoon made the trip a two-day affair. But the convention didn't get underway until Wednesday, July 9, anyway, and our hotel reservations began on that day as well, so we did not feel pushed to drive too hard on Tuesday. We stopped for the night in the little town of Enterprise, Alabama, not far from Huntsville, and stayed in a clean if not elaborate Best Western. There was an Applebee's restaurant in the parking lot whose food was fine, but imagine my dismay when I ordered

hotel, the Airport Embassy Suites, without trouble. Our first stop was the convention registration desk, which was staffed with the friendly folk of the sponsoring club, Nashville's Bernard Seyfert Astronomical Society. Let me say right here and now that the reason for ALCON 2003's success was the tireless hard work by this club. If every club had members this dedicated and industrious, amateur astronomy would *really* be in great shape!

The Nashville Embassy Suites is slightly smaller and older than some of the chain's hotels I've stayed in in the past, but is very nice nevertheless, with a decent free breakfast buffet and FREE DRINKS for a couple of hours in the evening. You can bet that I took full advantage of that little perk! Dorothy and I were very pleased with our suite, which offered a splendid view of the lights of Nashville in the distance.

Wandering around, checking-out the vendors' room after we arrived, I was pleased to see some familiar faces including the Bernard-Seyfert's Mike Benson and *Sky and Telescope's* Kelly Beatty. I also found fellow MASer Judy Anderson in the considerable crowd in and around the main hall and vendor area. I made some new friends, too, in the relaxed ALCON atmosphere. Bill Burgess and wife Tammy were there showing and selling an impressive array of merchandise. And I had the opportunity to talk over planetary observing, a big current interest of mine, with new ALPO Director Richard Schmude. Oh, I finally met sci.astro.amateur's famous (or is that infamous?) troll/clown, the Knoxville Observers' Shawn Grant. Shawn definitely injected some levity into what would otherwise have been some slightly serious proceedings! And despite his current persona on s.a.a., he seemed a knowledgeable and committed observer.



League's yearly conventions, but, somehow, just never got around to it. This year, however, things were different. ALCON 2003 was being held within fairly easy driving range, Nashville, Tennessee. And, most of all, I'd been invited to give a presentation. As an 11 year-old back in the 1960s reading about AL conventions in the *Sky and*

a beer and the waitress informed me, "Sorry sir, this is a DRY COUNTY."

Nashville is a genuinely big city, and there is currently a lot of congestion on the Interstates in the area due to road-work on all the major routes through town. Nevertheless, Dorothy and I found the convention

There were some excellent presentations Wednesday afternoon, but in the course of getting checked in, unpacked and settled in the hotel, I'm afraid I missed most of them. The highlight of the day was the Star-be-Que, held at Vanderbilt's historic Dyer Observatory. We were bussed out to this beautiful little facility, which features a classic-looking dome housing a 24" telescope. The dinner was held in the observatory's lovely library. This area holds the prototype of what will be the operations center for the ISS AT—the International Space Station Amateur Telescope. Since the skies did not look at all promising, Dorothy and I departed on a bus after consuming plenty of the excellent catered barbeque. A few folks stuck it out, and Kelly Beatty told me that they had a look at Mars but that the seeing just wasn't good enough for the 24 to strut its stuff. Arriving back at the hotel, Dorothy and I called it a night. I was scheduled to give my presentation, "The Past, Present and Future of the SCT" at 10:30am the next morning, and I wanted to be at least semi-rested.

I was happy to be giving my talk on Thursday morning, since it meant I'd have all day Friday and Saturday to play without worrying about PowerPoint disks or memorizing my notes. My session was very well attended and I received a kind and warm response that was very gratifying. If you'd like to see my PowerPoint slides, just go to <http://members.aol.com/RMOLLISE/index.html> and choose "Rod's Presentations" from the menu of choices you'll find.

Do you want to talk about information overload? There were so many excellent presentations that my head was spinning by the end of the week. I mean, we had Richard Berry talking CCDs, Ron Wodaski talking CCDs, and Don Parker talking CCDs! And that just scratches the surface. I found myself spending 8 hours a day or

more in sessions—something unusual for me at a conference of any kind. One talk that interested me in particular was Lonnie Puterbaugh on video imaging. He simply amazed me with his real time video of deep sky objects. Folks, it's amazing what can be done with this medium these days. Video is *not* just for the Moon and planets anymore.

The facilities and a/v equipment were top-notch, and all the talks I attended were very professionally presented. There was one slight hiccup Thursday night. That evening's program had to be held in the cramped vendors' area, as the main hall couldn't be booked for that night. It was occupied instead by a plus-size models' convention. No, I am not making that up!

While I did not take a telescope to ALCON, that does not mean I didn't do any observing. We had an impromptu star party in the hotel parking lot Friday night after the last session ended at 10pm. This was largely a demo of the fantastic Stellacam deep sky video imagers that Lonnie Puterbaugh had talked about on Thursday evening, but some of the vendors brought dobs into the parking lot, and I took along a pair of 15x70 binoculars that I had purchased from Bill Burgess.

The Stellacam was *truly* amazing. Imagine, if you will, the Omega Nebula in its full glory in *real time* video on a large-screen monitor. Nebulosity and dark lanes everywhere. And all this with a near full Moon in the sky and with all the lights of Nashville around us. The hotel had switched off the parking lot lights, but there were plenty of other hotels around us, and the skies over Nashville tend to a sodium-streetlight-pink color. In addition to Omega, we also had fantastic (black and white) views of M13, M22, M51 (lots of spiral structure) and M81/82. I was mightily impressed. The Stellacam video camera, in addition to being

able to show deep sky objects in real time, can also send video to a computer or VCR for later study or for the production of still images.

Saturday offered many more interesting programs, including Kelly Beatty's thought-provoking "Where Have All the Young Astronomers Gone?" It was also, unfortunately, the last day of ALCON 2003. But it ended on a high note. Following happy-hour cocktails, Dorothy and I attended the annual AL banquet. The food was surprisingly good, the speaker, Dr. Martin Weisskopf of the Chandra X-Ray Observatory was very interesting, and the annual awards—including the Young Astronomer Award—were inspiring.

It had been a very intense week, but I was genuinely sorry to have it end. Next year's ALCON will be held on the west coast, and, much as I'd like to go again, I'll probably give it a miss. Probably. But I can tell you this, if you get the chance to attend an Astronomical League Convention, just DO IT. You will, like me, find it's the most fun you can have in amateur astronomy without a telescope!

Copernicus

Chuck Taylor

When Orbiter 2 was launched on November 6, 1966, photos from a spacecraft meant real film on large rollers, sliding past a developer. It was then scanned in strips, and transmitted like a fax. But because the film was on a complicated system of rollers, it needed to be advanced every eight hours, or it would either deform on the rollers, or stick to the developer strip. The only problem was that at such times, there might not be anything worthy of a picture. Nevertheless, pictures would have to be taken so the film could be advanced.

On November 18, the first photos were taken. After a couple of days, the Ranger 8 site was photographed, along with what was then known only as A-3, a potential future landing site located in the Sea of Tranquility. Several orbits later, the film needed to be advanced to keep it from warping or sticking. There was a discussion as to what they should shoot. Doug Lloyd came up with the idea of a north-looking shot at Copernicus. It was not the best angle for seeing detail, but the film needed to be advanced anyway, so the photo was taken. Not long afterwards, the photo was on the front-page of newspapers around the world, billed as the "Photo of the Century." I remember sitting at the breakfast table, looking at the photo and being disappointed. I couldn't see the crater. True, I was only ten years old and had never looked through a telescope. But I'd already been interested in astronomy for several years and knew what craters were supposed to look like. And so I stared at this picture and tried to figure it out.

<http://www.nasm.si.edu/galleries/attm/atmimages/66-H-1470.f.jpg>

For me, it was like one of those optical illusions where you see nothing until you stare at it just right and it suddenly all leaps out at you. I stared and stared, and suddenly it was there in front of me. I simply wasn't used to seeing it from that angle. There was the far wall of the crater near the horizon. That stuff in the middle was the central peaks. I felt like a low-flying joy-rider, skimming above the surface of the moon with Copernicus racing by beneath me. It really was the photo of the century! Now, how many on the list will admit their age and that they can remember seeing that photo in the newspaper? The astronauts would have a better oblique shot:

http://www.astronet.ru:8105/db/msg/1165183/%20/copernicus_apollo17_big.gif

Later, the Apollo 12 mission landed south of Copernicus. Trench samples revealed a light colored layer up to 4" thick. (taken from Manned Spaceflight Transcript Project - 2 CD set). If this is in fact the ray from Copernicus, as seems most likely, Copernicus was formed 810 million years ago. This is recent for the moon but puts it in the Pre-Cambrian period on earth, which means it formed at the same time as the lower layers found in the Grand Canyon (USA) and before life appeared on earth. The possibility of getting the ray samples had been one of the deciding factors in selecting the Apollo 12 site. However, once the ray had been dated, it made it less likely Copernicus would be selected as a future landing site for Apollo (and we never did go there). Still, Copernicus was considered, especially in conjunction with proposed "Lunar Flying Unit" or

was likely to have gone to Copernicus, right after an Apollo 18 mission to Gassendi. (The Lunar Flying Unit is mentioned at

<http://www.hq.nasa.gov/office/pao/History/SP-4214/app3c.html>

along with various mission proposals) The interest in landing in Copernicus came from a number of different features. The date was critical because other features are dated relative to the formation of Copernicus.

Other key dates are:

- Nectarian Basin formed: 3.92 billion years ago (eons)
- Imbrium Basin formed: 3.85 eons
- Eratosthenes formed: 3.2 eons
- Copernicus formed: 0.81 eons

Each of these marks the start of the period named after them. So the Nectarian period was from 3.92 to 3.85 billion years ago. This is when



"LFM." This was a return to Buck Rogers and the Rocket Man! With the rover and the LFM, astronauts would be able to sample the central peaks as well as the crater floor. Still, Don Wilhelms notes ("To a Rocky Moon") that if the Apollo missions had continued, Apollo 19

most of the still visible impact basins were formed. This was also the time of heaviest bombardment. The Imbrium period (3.83-3.2 aeons) marks the slowdown in the bombardment. IIRC, the Orientale was the only major basin to be formed after the Imbrium impact.

And few significant craters are younger than Copernicus. But along with dating Copernicus, there were a couple of other targets scientists wanted to look at. The Orbiter "Photo of the Century" showed possible layers in the central peaks. Since crater formation theory indicates that the central peak is formed as a rebound from the initial shock, these peaks have been forced up from a greater depth than the crater floor, giving them the potential of being among the oldest rocks we could have recovered. It was hoped this would give us another glimpse into the early formation of the moon.

Additionally, there appear to be smooth surfaces that look like pools of lava flow. There was still considerable debate about a possible hybrid creation of craters. The idea was that the basic structure was formed by impact, but that the impact would also fracture the underlying rock, providing channels for later lava flows. It was thought these flat spots might have been formed in this manner. However, the present consensus is that this is rock melted by the heat of impact, and then pooled and solidified as we see it today.

As a sidelight, Dinsmore Alter's Lunar Atlas ((c) 1964) describes the rim as appearing like two ovals with minor craters between them. The idea was that these were formed subsequent to the formation of the crater and were "blowholes" for later volcanic activity. Of course, this same atlas also states that while the crust had solidified at the time of the Copernicus impact, the underlying rock may have still been molten. There are three different areas he points out as possible "imprints of large splashes of molten rock" which were thrown as far as Eratosthenes. We now know this was not the case, but it is interesting to see how much uncertainty there was before the lunar landings. As you may have noticed, I am writing more of the history and less observing tips with

this LFM. Copernicus is one of the most observed craters on the moon and there are many others who have written descriptions of it. I don't know who first coined the term for Copernicus, but it is a fitting name to call it the "Monarch of the Moon." Consider this an open invitation for others to fill in with their own past observations of Copernicus.

As to the formation of Copernicus, Gerald North ("Observing the Moon") writes that the impact generated an explosion equal to 20 trillion tons of TNT. If this is accurate, it was a billion times more powerful than the bomb at Hiroshima. Put another way, the explosion at Copernicus is to the explosion at Hiroshima, as the Hiroshima explosion is to four hundredths of a pound of TNT!

For those interested, there is a little more on crater formation and a sample cross section at:

<http://www.lpi.usra.edu/expmoon/science/craterstructure.html>

And with that long-winded intro, lets get on to what we can actually see:

Copernicus is 93 km wide and 3760 m deep. The walls rise 900 m above the surrounding area, and the peaks top out at 1200 m. As you look, you will notice it is not round, but polygon in shape. Many of the straight lengths of the rim are echoed in the terraces. The terraces are beautiful and show up well in photos, but have so much detail, they are difficult to draw. Beginning artists like myself may want to try drawing it at early sunrise or sunset, when shadows hide much of the terraces.

A little over 50 km to the south we find Fauth, a delightful keyhole (double) crater with diameters of 12.1 and 9.6 km. This is a good landmark to use to orient yourself when you are comparing photos taken at different times and with

different (north-south, east-west) orientations.

If Copernicus is taken as the center of a clock and Fauth is at 6:00, Copernicus H can be found at the 5:00 position, slightly closer to Copernicus than Fauth is. Copernicus H is a dark-halo crater. It has a normal crater appearance, but is surrounded by a dark halo. For quite some time it was thought this showed the crater (and others like it) had a volcanic origin. But Orbiter pictures showed it to be a typical impact crater and it is now understood that it excavated a underlying dark layer of rock and deposited that around it as the dark halo. Copernicus H is 4.6 km in diameter and 870 m deep. You can find it marked on a series of photos at

<http://www.mondatlas.de/cgi-bin/createrequestanswerpage.pl>

The photo at the bottom of the page seems to have the best view. Click on the bottom photo for a closeup with Copernicus H marked. For those who have never visited www.mondatlas.de it is a growing collection of very good photos. And photos have the advantage of not needing a translator.

The ghostly outline of Stadius (Rukl 32) can be seen nearby with what was once called Rima Stadius. As some of the photos below show, this is not a true Rima, but merely a coincidental line of secondary (ejecta) craters. These photos also show Rima Guy Lussac.

Craig Zerbe has an outstanding shot at:

<http://www.astroimaging.com/images/Copernicus102000.jpg>

Another good shot of the ejecta can be found at:

<http://cass.jsc.nasa.gov/pub/expmoon/orbiter/4lo121h2.gif>

This particular shot also shows Stadius near the bottom right and Rima Stadius just to the right of center.

<http://www.mikebrown.free-online.co.uk/index-page29.html>

(Mike Brown) shows Stadius and Rima Stadius

To the west is Hortensius with several domes nearby. These are visible only as the terminator passes them. Rukl describes them as having summit craters, but I have not seen the summit craters yet. This is mostly a matter of timing. The surrounding area is a good one for observing relative dating techniques. Features formed in the Imbrium impact are surrounded by Mare flows, showing these occurred later. Copernicus has a great ray system, while Eratosthenes' rays have been covered. Archimedes came after Imbrium (or the Imbrium impact would have destroyed it), yet it is filled with the Mare flows, showing there was a gap between the impact and the flows (which means the mare flows were not melted by the heat of impact). What else can you date as earlier or later than other features?

BITS & PIECES:

Early Apollo landing site selections avoided the rays, especially near the crater that formed them. This photo of Copernicus' rays from Apollo 17 shows the increase in craters along the path of the rays that led to their being avoided:

<http://www.lpi.usra.edu/expmoon/Apollo17/A17metric2444.gif>

And Hubble took a close-up of the terraces at:

<http://imgsrc.stsci.edu/op/pubinfo/pr/1999/14/content/9914w.gif>

<http://imgsrc.stsci.edu/op/pubinfo/pr/1999/14/content/9914z.jpg> (Forrest Egan)

Orbiter shot from overhead:

<http://cass.jsc.nasa.gov/expmoon/orbiter/5lo151m.gif>

http://photos.groups.yahoo.com/group/lunarobserving/vwp?.dir=/&dnm=Erathothenes_14nov02_204847.jpg&.src=gr&.view=t&.hires=

Below are a series of photos, roughly in order of increasing sun angle, from sunrise to noon. I didn't find any sunset pictures. Perhaps one or more of our photographers could work together to create a series of shots at the same scale and cropped to show the same area. The ideal would be a sequence from sunrise to high noon and on to sunset. It would make a great demonstration on how a feature can change under different lighting conditions. Are there some who would take this on?

Incidentally, I found the best way to view the sequence below is to make the email window into a small strip on the side of the monitor with the browser open beneath it. Then, as you click, the photos come up in order and you can rapidly flip through them to see the advance of the terminator and how the view changes.

Sunrise:

http://www.pk3.org/Astro/Images/Moon/Copernicus_020421_40x_X2_um4_240_100pc.jpg (Peter Katreniak)

<http://homepage.ntlworld.com/ptcurtis/cody/images/coper2.jpg> (early morning drawing by Gordon Lloyd of Cody Astronomical Society)

<http://www.toc.suite.dk/moon/m0205ex.jpg> (wide angle view) (Torben Tastrup)

[http://www.digitalastro.com/images/20020421_Copernicus\(0460\).jpg](http://www.digitalastro.com/images/20020421_Copernicus(0460).jpg)

http://www.digitalastro.com/images/20020817_Copernicus_IP_30aRL.jpg (Forrest Egan)

<http://www.fh-friedberg.de/users/jomo/pictures/copswt1j.jpg> (Dr Johannes Ohlert)

http://www.ironmountainobservatory.com/photos/singles/large_image_pages/moon_copernicus.html (Tom W. Harrison)

<http://home.cfl.rr.com/aarp/Moon2.html> (Kevin "Skyview6")

http://www.digitalastro.com/images/20020422_Eratosthenes_Copernicus.jpg (Forrest Egan)

<http://users3.ev1.net/~glennray/Astro/Luna-20010205c.jpg> (Glen Ray - wide angle view of rays)

NOTES:

The discussion of the Orbiter Mission and the "Photo of the Century" was taken from "To a Rocky Moon" by Don Wilhelms. Other sources are noted in the text.

The Sixth Annual Imerman Park Public Star Party

**Text by Tom Trusock
Photography by Dale Penkala**

NELM: Varied, from 2 to 5
Seeing: Poor, improving a bit over the course of the evening.
Conditions: Partly cloudy with moderate to heavy haze
Temp: 65 F
Last Year's Attendance: 200+
Date: Aug 2, 2003

The Imerman Park Star Party is the Sunset Area Astronomers yearly public outreach party. Held just out side of Saginaw Michigan, you won't

Skywatch

find the darkest skies in the state, but you will find some of the nicest amateur astronomers around.

As I piled equipment into the back of the Durango, my wife just couldn't resist: "So, do you want to tell me why you are driving from our nice

suspect it's not all that different for many of you.

There was a large array of equipment spread across the field; mostly small to medium aperture dobsonians. Setting up the TeleVue 102, I joked to Joe that it looked like



dark skies into the city to go to this star party?"

"Sometimes", I explained, "there is more to astronomy than equipment, dark sites and transparent skies."

A few minutes later, Keith arrived and we set out. The drive was uneventful. After 90 minutes we arrived, pulled up to the observing field and began to unload. You know, it's absolutely amazing how much stuff you can bring and still manage to forget things (note to self: buy another lenspen or two).

Friends quickly found us. For some, this was the first time we had met face to face. For someone stranded in a remote corner of Michigan, the internet can be a real lifesaver when it comes to fellowship. If you are reading this online, then you probably have some understanding of that. How many of you have good friends scattered throughout the country that you have never met? I know I have many, and I

I had brought a knife to a gunfight - extra credit if you recognize the quote. Folks quickly clustered around the rather different looking mount that I unpacked. Tom Peters (www.discmounts.com) had shipped me a DM-6 for review and evaluation just the day before, and it got a baptism by fire this evening. Everyone who took the time to look was extremely impressed with the fit, finish, and operation. Personally, I thought the mount performed extremely well, and can hardly wait to get it out for some solo runs so I can see just how good it really is.

I can't describe all the attendees that were there, nor even begin to list the scopes - so I'll keep it simple and just list a few - to let you know which of your friends were there, insert the appropriate names to fit the members of your club, I'd imagine your gatherings are just as much fun. Anyway, Ed was present, with his nice little Orion Mak, while Roland showed with his Nexstar 8i and Denkmeier binoviewer. Kevin had his gorgeous homemade 13.1

inch dob with Coulter optics and Pat had his 12.5 Discovery. Mike brought his dob as well and some interesting eyepieces that I hope to take a closer look at later. Dale didn't bring a scope, but he compensated for it by bringing some Zeiss-Jenna orthos for us to drool over (and even look through! <g>). There were various other scopes and amateurs setup over the field, and while the usual gathering of autostar equipped scopes was present, one of the most interesting scopes on the field was a homemade 6" f10 dob. This amazing little scope had a 3/4inch secondary for a 12 percent central obstruction, and despite extremely poor sky conditions gave very nice images of the moon and planets. Joe, meanwhile, had done what I'd contemplated and didn't bring a thing, preferring to rove around and spend the evening talking with folks.

But you know, the focus wasn't really on the equipment.

The Sunset Astronomical Society had made sure they had a good set of presentations and speakers for the evening. Their topics ranged from "How I got started in Astronomy" to "The Apollo Landing Sites", but undoubtedly the peak for many of the adults and children was when Kevin did his demonstration with liquid nitrogen. Kevin was in his element as he held (educational) court all evening even leading a "Tour of the Night Sky" under nature's planetarium. With his green laser waving here and there we could hear him clearly as he pointed out the constellations for interested members of the public. The SAS did a very good job of keeping the public entertained and educated for hours.

I have to admit that I've never been good at sitting through lectures - no matter how good there are (maybe that's why I went into education?) and wound up skipping most of the presentations for a chance to stare at scopes and talk.

But as you have probably already guessed, the talks weren't really spotlight of the evening either – at least for me.

We visited the usual targets over the evening, Luna, M13, M27, Mars and all the others you find at any summer star party. Sub-par atmospheric weather conditions had pretty much guaranteed that this would not be a spectacular evening, and we weren't disappointed. Dale, our new Discovery dealer, and I joked that maybe this was the time to bring that cloud filter to market. Mars and Luna threw up decent images, but nearly everything else was washed out by atmospheric smoooge. (Nice technical term there, eh?) Even so, everyone was impressed by the two Denkmeier binoviewers on the field. And both Joe and Dale commented on how far binoviewers have come in the last five years, now giving images both brighter and sharper. You could almost hear the wallets shrink as my fellow amateurs looked through the dual naglers.

Even though this wasn't the night to do detailed comparisons, Ed brought his Widescan III (Japan, \$199) and we did a direct comparison to the BW Optik (China, \$95) knock off. Although conditions were very poor, no one saw much difference between the two. We hope to do a more in-depth comparison at some point in the future. General consensus was that for \$95 the BW is a heck of a deal.

We tried to compare Dale's 12.5mm Zeiss-Jenna to my 13mm Nagler t6, but the seeing was just too poor to come to any valid conclusions. As an aside (and a joke), I'm tempted to post to SAA just to say that the vaunted Zeiss was just too fuzzy for my tastes.

M13 was a fuzzy smudge in the 102, just about the worst I've ever seen it. When the seeing steadied, you could resolve about the outer

1/3 with the aid of averted vision, but even that wasn't sharp. In various other (larger) scopes across the field, it was a brighter smudge but still just a smudge.

Late in the evening Mars threw up a nice image with a fair amount of detail, and many of the public were quite happy with that, for this of course, was what many of them came to see.

The public tended to crowd around the larger scopes on the field, leaving Kevin to put on his show (and a great job he did of it). Feeling more than a little lazy this evening, I was glad to leave him to it. My refractor did occasionally generate a line, but for the most part it was mainly interested amateurs who wanted to take a gander through entirely too much money. It was (as Joe was fond of pointing out), between the scope, binoviewer, dual Naglers and the mount; the \$6000 view. Personally, I didn't think the \$6000 view was all that much better than some of the \$1000 views on the field, but I'll have to say that at least I'm not burdened by a heavy wallet. In all honesty though, I'd also have to say that the TeleVue did throw up some very fine Mars images, often with the low contrast features visible in it while invisible in other scopes. Even Joe Public commented on this several times during the evening.

But really, the observing wasn't even the point of the evening – and this was a good thing given the sky conditions.

The point of the Imerman Park Star Party, is not so much to bask in the wonder of the night sky and enjoy the beauty of creation, but rather an experience in outreach and fellowship. Outreach to the members of the Bay Area communities, and fellowship amongst a core of mid-Michigan amateur astronomers.

Earlier in the day several of us were burning up the various lines of communication trying to figure out what everyone else was going to do. It was pretty unanimous. All were willing to go, even in the rain, as long as someone else was going to be there.

One of the highlights of my evening came when a young boy gasped as he looked through my scope around 1:00 am. His mother confided to me, "He's never looked through a telescope before, and he really wanted to see mars this year." He watched for a few minutes then turned around, elbowed his sister and stated, "You really gotta see this!"

Given the cloudy skies, I was amazed at just how many non-astronomers showed up. But you know, we all had something in common; Joe Public and Jim Amateur alike. All of us were hungry to learn, to experience the night sky and to share it with our peers.



StarDust Chair - Review

Tim Crawford
Arch Cape Observatory
Oregon

It's always a tough choice for even experienced observers as to what their pier height should be in the observatory. The same problem exists in the field for Refractor and SCT owners when setting their tripod in place. Invariably the height of the pier or the tripod is a compromise of tradeoffs as to when we grab a footstool or bend over.

I recently had to face this problem when installing a pier for my Clear Sky's Observatory. Several years back I purchased an 8" steel Pier from Le Sueur Manufacturing Company for my roll off roof observatory near Big Lake, AK. I brought this 63-inch high pier with me to our retirement home in Arch Cape, OR. (By the way, I really like the polar plate and it's adjustments that Le Sueur sells for their piers.)

After Ordering a Clear Sky's Observatory I had to make a choice as to floor height above ground for the existing pier. I finally settled on a pier height of 43 inches above the floor for my Meade 12 inch SCT. I arrived at this height by installing the pier on its foundation and then setting my ladders and boards at various heights while I moved the scope around on its polar mounting to try and arrive at, what for me, was a reasonable height compromise; then I built the decking to the determined height around the pier.

Whether doing drawings, guiding, centering, Variable Star observations, searching for dim objects, aligning or simply being a visual junkie all of us find that we end up with the eyepiece in uncomfortable positions from time to time. A small to medium kitchen or shop ladder (the one's that have the wide steps and a wide stable base) can help take care of the lower altitude targets but ones with higher altitudes and or Declinations can be very uncomfortable for the back.

I discovered an excellent solution at hands on Optics

(<http://www.handsonoptics.com/>) in the form of a product that they call the StarDust Chair that has now provided me with many hours of comfort and convenience.

This is a folding Chair, which is a handy feature for small observatories and traveling, that has a variety of adjustable positions for the seat. I find it to be easy to manage opening the chair, setting it up and changing the seat height by hooking onto the various horizontal bars in the darkened interior of my observatory. A plus for me is the spring-cushioned seat is very comfortable even when I move around on it. They included a supply of Dark Red side reflectors to allow you to see the chair in the dark with a red night light; while this feature has not been necessary for me I suspect it might be important in the field.

When the top of my eyepiece is 62 inches above the ground I have the seat in the highest position, which places the seat at about 34 inches off the floor; a handy feature for the higher positions is that the bottom of the chair has a very practical footrest. When the top of my eyepiece is 51 inches off the floor (at the zenith) then I find that the seat height for this position is at 23 inches above the floor.

While I do not use this position the seat will actually go down as low as 13 1/2 off of the floor.

I find the chair to be reasonably stable and have no problems with affecting stability by moving around quite a bit on the seat, regardless of height. Not only is this a practical tool for SCT and Refractor owners

but also a lot of the smaller Dobson owners could benefit as well as Newtonian owners, especially when viewing at lower elevations.

The StarDust chair is made of steel and the width is 16 inches; depth is 22 inches and the folded length/height is 43 inches.

I almost forgot. This product was also chosen by Sky and Telescope as one of the "Hot Products" for 2003. It certainly has been a hit with my back, legs and "seat."

Nebraska Star Party - #10

Wade A. Calvert



I am very much a newcomer to amateur astronomy - again. I built my first scope almost 40 years ago, an 8" reflector, and never did learn as much about the sky as I'd wanted. So I jumped back in a year ago with a new, "GOTO" model, but soon found that here in the Midwest, owning a telescope was a lot like owning an expensive shotgun (or three!), not many opportunities for use. I dreamed of clear, dark skies - then found out about the Nebraska Star Party held each year at the Merritt Reservoir near

Valentine, NE. I'd waited impatiently for many months for the big day to arrive, and I wasn't disappointed.

One of the many attractions of this event is the advertised 'fantastic' view of the Milky Way. Quoting from the NSP web site at: <http://www.nebraskastarparty.org/> "The NSP Milky Way truly looks like an edge-on spiral galaxy and the central bulge is clearly visible. Some observers have reported a limiting magnitude of 7.5 to 8 with the unaided eye!!"

I left Port Byron in northwest Illinois at 4AM Sunday morning in a Buick Park Avenue so full of astro-junk that I barely had room for my thermos. I made the 600 mile trip in just about 10 hours on Sunday, due to light traffic on Nebraskas' two-lane arteries. I arrived in time to register, which was only being offered between 2 and 4 PM each day, and traveled the 25 miles back up to Valentine to my Comfort Inn room for supper and a good nights sleep. I returned to Merritt



Reservoir bright and early on Monday morning, and had my camp site selected and my tent(s) set up in about 3 hours. I brought along my Kendrick Observatory tent, and a small Coleman tent for (theoretically) sleeping.

NSP officials were expecting somewhere around 350 participants,

I was told, but there was plenty of space. Things were well spread out - my closest neighbor was over 100 yards away.

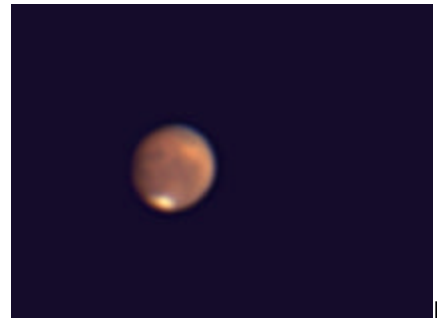
My first night of viewing was Monday night, and I had my 10" LX200GPS set up on its tripod and tricked out with dew stuff and counter-weights a little before dark. Incidentally, while Valentine, NE, is in the Central Time Zone, Merritt Reservoir is actually in the Mountain Time Zone, so 'dark' was a little later than what I was expecting. But DARK is exactly what it became! I'm here to tell you, I have never seen the Milky Way this clearly before, and was truly awe-struck. I spent most of the evening and into the wee hours of the morning examining the "faint fuzzies" but was really anticipating the arrival of Mars. Passing the time, I viewed the Dumbbell, M57, M13, Caldwell 14 (Double Cluster), and M51. I saw more detail in M51 than I had ever seen before. That first evening I was able to view Mars, but wasn't able to stay awake until it reached its highest point in the South, which would have been around 4 AM. Unfortunately, I ran out of steam around 3AM and headed for the sleeping bag.

A No-Cars-In-Or-Out/No-White-Lights policy was in effect each night between 9PM and 5AM. At around

5:30AM I left tents, telescope and all at the site, and went back to my motel and slept for a few more hours, preparing my old mans' body for an all-nighter on Tuesday night.

My plan for Tuesday night was different. Since my two main goals on this trip were viewing Mars (which I had never really seen very well in a telescope) and trying some

web-cam astrophotography of Mars, I made my preparations for those endeavors. On my way down from Valentine, I stopped at the Merritt Resort where two Astro Vendors were plying their wares, and purchased a Sirius Optics NIR-1 near-infrared blocking filter for my webcam. It was great fun to see all that astro stuff for sale in one place, since I rarely get to a store that has any astronomical toys. Camera Concepts, from Long Island, NY, was there with several tables of items, ranging from T.V. eyepieces and barlows, spotting scopes, charts and books, etc., that were selling quickly. There was also another vendor, I can't seem to remember the name, doing a brisk business as well. Arriving at the observing site at about 6PM, I had a tasty supper of a military MRE (hot chicken and noodles) and fresh coffee, made with my new 4-cup, 12VDC camp coffee pot. I then set to connecting the laptop to my scope and getting the ToUcam Pro 740K ready for action. After dark, as soon as I could see a few stars, I aligned the scope, looked at a few things in order to be sure it was tracking properly, and then put it in "sleep mode" with the lens cap in place. I hit the "bag" around 10:30PM. Mother Nature woke me around 3 AM, just in time. Interestingly, I was initially very concerned about the fact that I was about ¼ mile from the nearest "two-holer". At Merritt Reservoir, at 3 AM, it is so dark that this is not an issue at all!



It took about 30 or 40 minutes to get the telescope focused on Mars and an image on my laptop screen. I plugged the ToUcam directly into a

Skywatch

2X Big Barlow, and after more than a few choice words were uttered, was finally able to get the image to appear on the screen. I need to find a more accurate way to focus the image, as it was pretty tough to do on my laptop screen that I had covered with red Rubylith film in order to help preserve night vision and avoid bothering others. As it turned out, in this instance it would have been perfectly fine to remove the red film since everyone was spread out so far. But I wouldn't count on that happening every time.

I took five 1-minute AVI videos of Mars at 5 fps using K3CCD tools. This used up the remaining 1.5 GB of hard drive on my laptop, but I figured I could live with that for this trip. I'll be better prepared for this as well, next time. I took the last video at around 5:15 AM, after it had become light enough so that Mars was about the only thing visible to the naked eye. I made a fresh pot of coffee, sat in my bag-chair and watched the sunrise, and then looked at a few sunspots through my ETX 105EC and home made Baader filter.

Wednesday night was another beauty. After a splendid meal of Dinty Moore beef stew, I spent all my time in visual observations, not nearly as serious as I was the first two nights. I retired to the sleeping bag at around 3:30 AM. On Thursday morning, after about 4 hours rest, I broke camp, and packed up all my stuff. Thursday night I was able to get a good nights' sleep at the motel and left for home at 6AM on Friday morning.

This years' star party, which was NSP 10, was produced and presented jointly by The Prairie Astronomy Club of Lincoln, NE, and the Omaha Astronomical Society of Omaha, NE. It was blessed with at least three very clear nights for viewing. The site is in the "Sand Hills" area of Nebraska, which consists of large sand dunes

stabilized by grass. There is cactus and sage everywhere. The days are hot and dry, usually near 90, and the nights are very cool and in the 50's. It can be breezy at any time of the day or night, and it can cloud up and rain and be clear again in two or three hours' time. It is almost always pleasant in the shade, even with temperatures in the upper 80's or lower 90's. Missing was the oppressive humidity that I am so familiar with living in the upper Midwest.

I took way more stuff with me than I could ever use, but will know what works and what doesn't for next year. And right now, I am definitely planning on going back again next year. Some things worked well for me, but some things did not, such as focusing the video cam. Another item I was disappointed in was my new Moonlight Telrad heater. I ran a Dew-Buster on a dedicated 75AH deep-cycle battery, and by morning, the Telrad was the only item "dewed-up".

Valentine, with its population of about 2300, is a real working cowboy town, and caters to the rancher. It is the largest town for almost 100 miles in any direction. Cattle ranches are everywhere, but tourism is a close second in importance.

The huge motorcycle rally at Sturgis, SD, was set to start on Monday, August 4, and there was a steady stream of 'cycles passing through on their way to Sturgis. Gasoline and motel room prices were also increased in honor of the upcoming event, as well.

A 320-mile hiking/bicycling trail built on an abandoned railroad right-of-way passes through Valentine, part of which is paved. The old rail line was abandoned in the early 1990's and originally connected Norfolk, NE, with Chadron, NE. Ironically, the arrival of this railroad over a century ago heralded an economic

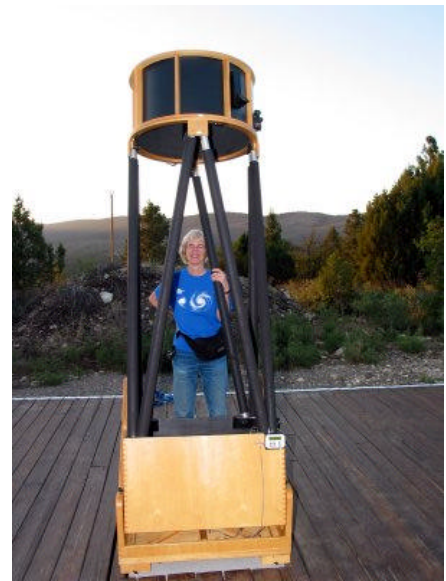
boom for this area, and its demise brought financial disaster.

Canoeing and "tube-ing" are very popular here, and the Niobrara River is just an excellent vehicle for this. It is relatively swift and shallow, and very scenic. There are a number of places in Valentine and the surrounding area devoted to renting canoes, and large, rubber inner tubes especially modified for this purpose.

The Rosebud Indian Reservation is just 10 miles north at the South Dakota border, with its grand Rosebud Casino. All-in-all, it is a pleasant place to visit as well as a wonderful place to observe the heavens. I can't wait to go back for NSP 11! Maybe I'll see you there?!

NEW MEXICO SKIES

Richard Darn



The long days of summer may be great for outdoor barbecues, but as all star-gazers know who live in high latitudes, they spell a barren observing period.

My home location in England has a five week spell either side of the solstice when there are no properly dark skies. So unable to alter the tilt of the Earth - what's the only solution for "bright sky" blues? That's right, open the wallet, and in my case, get out the passport!

In May I opted for a trip to the "guest observatory" New Mexico Skies, near the village of Cloudcroft, in the US South West. Located 7,300 feet up in the Sacramento mountains, it's 60 miles east of the famous White Sands Testing Ground (where captured V2s were tested) and for the past five years it's been run by astronomer couple Lynn and Mike Rice.

They know a thing or two about long summer days having moved from Alaska about six years ago. The facility has a lot going for it. Light pollution is minimal, clear skies frequent and the desert air offers a dry and transparent atmosphere.

Suitably excited by NMS's excellent website (www.nmskies.com) I booked four nights over the internet and reserved an Astro Systems 25" Dobsonian for three nights and a 15" Dob for the final evening. Given that my chief aim was to scout around Sagittarius – and that I use a Celestron 9.25" at home - this was a bit of overkill. But hey, yer gotta live life to the full!

After flying from the UK to Los Angeles, I took a leisurely four day drive to New Mexico. El Paso and Albuquerque offer much closer airports, but Phoenix is the nearest hub with direct flights from Europe. Wherever you fly to – you'll need to rent a car.

At this point I learnt a valuable lesson – clouds look much the same in the American South West as they do in the UK. Overcast conditions and huge hailstones awaited by arrival – the Weather Gods were in playful mood with my emotions. But hey, I was here for a few nights, no worries.

So undeterred I settled in with a tour of the facilities - and they are absolutely top notch. My apartment comprised a beautiful kitchen, lounge, bedroom and bathroom. Red lights were thoughtfully fitted to preserve night vision when taking a break during long sessions. You can cook for yourself or eat out, but no in-house meals are provided. Whatever you decide, you must be back before nightfall. Needless to say allowing any stray white light such as car headlights to fall on the observing area is a lynching offence. Rooms are serviced once a week to avoid disturbing your beauty sleep during the day.

The focal point for guests staying at NMS is the "warm room", housing computer terminals with free internet access and an excellent library. You can robotically control many of the scopes outside from these PCs and process results on-screen. It's also the setting for nightly brews of coffee. Outside four new domes are enticingly lined up, housing scopes including a 14" Celestron on a Paramount GT-1100, a 7" Astro-Physics refractor mounted on a Paramount GT-100S and a Meade 16" LX200. All were set up for either film or CCD imaging. Hire costs depend on the rig. My 25" Dob ran to \$80 per night – and no I wasn't charged when the sky was totally cloudy. The Dobs are housed on "pads" and equipped with Sky Commander digital setting circles to snare those hard-to-see objects.



So everything was in place – except the weather. A bunch of gloomy astro-photographers from the US East Coast trudged in complaining they hadn't seen a clear night since they arrived three days before. And the forecast looked poor.

But although the first night was a write-off and the second hardly anything to write home about, the final two evenings provided the spectacular "wow" moments I'd banked my credit card on. First ever views abounded everywhere, with Omega Centauri setting the scene, peeking above the southern horizon. Initially, I was a bit concerned about having to scale a ladder to get to the eyepiece of the 25" Dob, but it soon became second nature. Dial in what you want to see on the Sky Commander, zero in on the co-ordinates by manually slewing the Dob and get climbing. No nose bleeds, no dizzy spells!

So what did I see? The two high moments came on familiar objects. The Swan Nebula (M17) in Sagittarius was absolutely stunning – and despite years of avid observing I'd never seen it before. Using my 22mm Lanthanum Superwide and OIII filter the effect was breathtaking. The view was full of fine detail and The Swan looked more like an Emu with bulging eyes. Moving over to a portion of the Veil Supernova Remnant in Cygnus my eyes were greeted with an ethereal, silky ribbon, looking almost spooky. This was one good looking looking corpse! Lesser known targets, but

intriguing nonetheless, included NGC6445, the Little Gem in Sagittarius, a nice planetary nebula with a figure of eight shape. Another planetary was NGC6369, the Little Ghost Nebula in Ophiuchus, a

smaller version of the ring nebula.

After collating all this in the cool light of day I awarded myself the Messier Certificate (about twenty years after starting it!) and whittled down my Herschel 400 list to just a dozen. All told I bagged over 60 new objects and had a terrific couple of nights observing.

Earlier this year I also spent a few nights at Skywatcher Inn at Benson, near Tucson, so I'm in a good position to compare the two. Although New Mexico Skies is a bit more expensive, the standard of the equipment is much higher and it's extremely well maintained. The observing location itself is also significantly darker, with minimal light pollution. Even so Skywatcher Inn does make a great break destination – it's more convenient to get to, probably has more clear nights and it too offers fantastic accommodation and wonderful staff.

So to sum up, whether you enjoy visual astronomy or imaging you are going to be in heaven at NMS - weather permitting.



Black Holes: Feeling the Ripples

Astronomers have finally confirmed something they had long suspected: there is a super-massive black hole in the center of our Milky Way galaxy. The evidence? A star near the galactic center orbits something unseen at a top speed of 5000 km/s. Only a black hole 2 million times more massive than our Sun could cause the star to move so fast. (See the Oct. 17, 2002, issue of Nature for more information.)

Still, a key mystery remains. Where did the black hole come from? For that matter, where do any super-

massive black holes come from? There is mounting evidence that such “monsters” lurk in the middles of most galaxies, yet their origin is unknown. Do they start out as tiny black holes that grow slowly, attracting material piecemeal from passing stars and clouds? Or are they born big, their mass increasing in large gulps when their host galaxy collides with another galaxy?

A new space telescope called LISA (short for “Laser Interferometer Space Antenna”) aims to find out.

Designed by scientists at NASA and the European Space Agency, LISA doesn't detect ordinary forms of electromagnetic radiation such as light or radio waves. It senses ripples in the fabric of space-time itself—gravitational waves.

Albert Einstein first realized in 1916 that gravitational waves might exist. His equations of general relativity, which describe gravity, had solutions that reminded him of ripples on a pond. These “gravity ripples” travel at the speed of light and, ironically, do not interact much with matter. As a result, they can cross the cosmos quickly and intact.

Gravitational waves are created any time big masses spin, collide or explode. Matter crashing into a black hole, for example, would do it. So would two black holes colliding. If astronomers could monitor gravitational waves coming from a super-massive black hole, they could learn how it grows and evolves.

Unfortunately, these waves are hard to measure. If a gravitational wave traveled from the black hole at the center of our galaxy and passed through your body, it would stretch and compress you by an amount far less than the width of an atom. LISA, however, will be able to detect such tiny compressions.

LISA consists of three spacecraft flying in formation—a giant triangle 5 million km on each side. One of the spacecraft will shoot laser beams at

the other two. Those two will echo the laser signal right back. By comparing the echoes to the original signal, onboard instruments can sense changes in the size of the triangle as small as 0.000000002 meters (20 picometers).

With such sensitivity, astronomers might detect gravitational waves from all kinds of cosmic sources. The first, however, will probably be the weightiest: super-massive black holes. Will “feeling” the ripples from such objects finally solve their mystery, or lead to more questions? Only time will tell. Scientists hope to launch the LISA mission in 2011.

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



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."



"Heh-heh...yeah...yeah...*Metallica*, Butt-head." *METALLICA*. The concert will be cool."

"Beavis, you butt-munch, those dillweeds at MTV cancelled our show and we can't even get into a Britney concert these days."

"Good! She sucks."

"Shut-up Beavis or I'll smack you."

"Uhhhh...so what do we do?"

"Uhhhh...let's go over to Uncle Rod's house!"

"Heh-heh, yeah-yeah!"

"Hello Boys!"

<CLUNK>

"OW! What was that for?"

"It's a mayo jar kept on, uhhhh, Funk and Wagnal's porch, buttmunch! Uhhh...you know..."

Rumours

An apparently automated email has been sent to people who email Roger Tuthill Inc., saying: "Thank you for your inquiry, however, Roger W. Tuthill, Inc. is not doing business at this time." This made a lot of people who've done business with the late Roger's little company over the years quite sad, but, according to equipment merchant extraordinaire Gary Hand, "...it's not the end of Tuthill. I talked to Nancy Tuthill at Stellafane. They are doing a partnering with another company (and)...will be back

selling Tuthill stuff after that." Thanks, Gary! That's good news.

There is a rumor floatin' around that Meade has discontinued the LX10. However, the 10 still appears on Meade's web site, and is still carried by dealers, so I believe this is just a "rumor" without the "u." The humble LX10 is the last non-computer, basic, inexpensive fork mount SCT offered by either Meade or Celestron, so I hope it remains available for a long, long time to come. Rod says he said this very thing to Meade's Scott Roberts, who replied, "If the public continues to buy it we'll (Meade) continue to make it." So go buy your spouse or kids (or self) a nice LX10 right away!

We keep hearing those persistent rumors about a C18 or C22 from Celestron, and wouldn't that be a kick? I don't think the OTA would be much of a problem—Meade does 16s all the time, after all, and Celestron did do a C22 way back in the Celestron Pacific days. The question would be how to approach a mount for a monster of an SCT. Huge fork? Massive GEM? What? Remember, this is ONLY hearsay, folks!

Rod also says that Scott Roberts mentioned to him that Meade has discontinued its line of CCD cameras. Apparently the Meade guys and gals foresee huge changes/advances in this area in the next five years, and prefer to close down the camera part of their business rather than figure-out where to go. Which is a good question. Advanced webcam-like imagers? An astronomy-optimized digicam? Integrating cameras with even bigger chips? Advanced vidcams like the Stellacam? A combination of the above? You get the picture.

With the Nexstars and the LX200 GPSes being fairly evenly matched, Meade has kicked things up a notch with a couple of new packages. One is the "Autostar Suite," which includes a modified webcam capable of 15 second exposures (the "LPI Lunar Planetary Imager"), a new planetarium package—the Epoch programs Meade has marketed for *forever* are pretty well obsolete and weren't that good to begin with—with some advanced features and a new automatic Autostar updater program. This suite is included with new LX200s, can be ordered separately for a modest price, and works with any Autostar II or 497 equipped scope. Also new is what Meade is calling "Smart Mount." This is included with all new LX200s (now called "LX200-SMT telescopes), and is basically Meade's version of T-Point, a program to dramatically improve pointing accuracy. It is not clear to me if this is a firmware upgrade for the scopes or whether it's a software program used in conjunction with a PC ala' Bisque's T-Point. Like the Suite, this can be purchased separately to upgrade older LX200 GPSes. Interesting times we live it. Wonder if I need another SCT?

For those of you who saw Uncle Rod's ALCON 2003 presentation, "The Past, Present and Future of the SCT," Celestron chief Alan Hale reports that the C gang liked the *Beerstar* a whole lot!

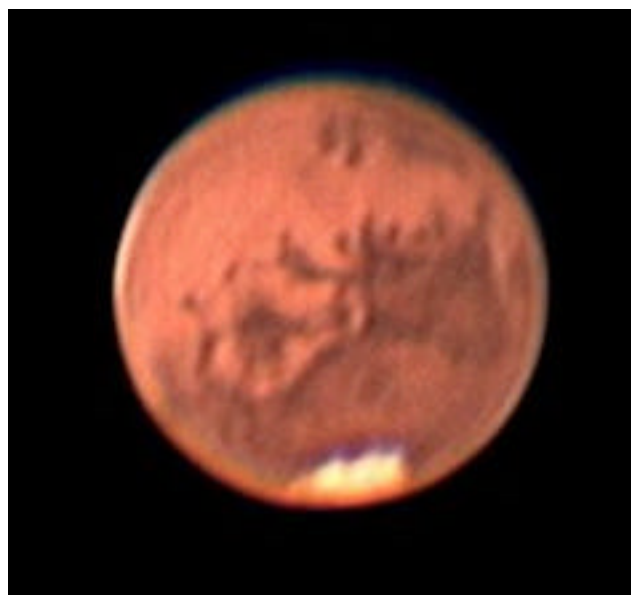
Not too much out of Celestron this time. Their new "Advanced Series" scopes have hit the market. It's way too soon to tell how well they'll do in both sales in performance, but it's an economical way for beginners to gain goto for a small price. The mount for these scopes is a good, old Synta EQ4 GEM equipped with a Nexstar hand paddle and drives, which Celestron is now calling the "CG6." These scopes are available with C8 or 9.25 SCT optics or with a variety of Synta-produced OTAs. The Synta GEM is not a Rolls Royce, but it may prove more reliable than Meade's similar but problematical LXD55.

Speaking of GEMs, all is not exactly rosy with the big Celestron CGE scopes. Oh, the mounts apparently are quite good. But the software seems to have more than its share of bugs. To the point where the good folks on the CGE Uncensored mailing list are in the process of putting together a group-letter asking the Celestron bunch to address some of their concerns and problems.

And in other news—what's that? Oh, OK. Yer ol' Uncle Rod is waving at the Anonymous One and making slashing motions across his throat. I don't think he wants to KILL ol' AA...he just means that this is one huge issue and that I've outstayed my welcome. Next time, then!

The Anonymous Astronomer.

The Wrap-up...



So how did you do? With Mars? Pretty cool, huh? The next issue will be our BIG, BIG MARS MEGA-OPPOSITION WRAP-UP! So ol' Rod needs your drawings, Mars-party reports, images, and Mars articles of ALL KINDS! Send 'em to RMOLLISE@aol.com by October 15th or before, please! *Image by Uncle Rod, C8 and SAC 7 webcam.*

Tom Wideman: Tom, Ol' Buddy. We had a real hard drive crash here (a reformat-that-puppy crash). We recovered most everything—except those cool pictures you sent. Can you send 'em again? I wanna print 'em for sure.

Thanks to all the contributors this time who made this issue of Skywatch into virtually a virtual magazine—and a pretty good one if ya ask me!

As always, special thanks to the inimitable Miss Dorothy for puttin' up with my foolishness!