

# Gemini

a publication of the Minnesota Astronomical Society



<http://www.mnastro.org>

December  
2001

Volume  
**26**

Number  
**6**

## CVAS STAR FEST

Jackie LaVaque

The Chippewa Valley Astronomical Society's "Star Fest" of August 17-19 was my very first time in attending a get-together of its sort. It was a great time. I had so much fun that I now look forward to attending other big star parties around the country! It was a great intro to a great aspect of a great hobby.

The drive to Fall Creek was a pleasant one. I brought my 12 year old son, Dan, along with me (can you say "budding sky jockey?"). At least a half dozen times, he asked me not only the ubiquitous kid-on-a-car-trip question, "when are we gonna be there?", but he also asked me about how many people were going to be there, what kind of telescopes they would be bringing, etc. I said, I'm not sure, but I am sure we're going to find plenty of great telescopes to look through. He seemed excited at the prospect of having many eyes on the sky around him.

When we arrived at Hobbs Observatory, I was impressed to see quite a few folks setting up telescopes of all shapes and sizes; large truss Dobs, big and small refractors, sonotube Dobs and Schmidt-Cassegrains. I was happy to note that Dave Olmstead brought along his "Lunar Lander", which received much well-deserved attention for its impressive modifications.

Friday night started out promising, with stars competing with the increasing clouds, but the night ended up cloudy and rainy, with storms passing through the area.

Nevertheless, we listened to music, chit-chatted amongst our pals and some of us went to hear a presentation on impact craters in Western Wisconsin, delivered by Dr. William Cordua, a geology professor at UW River Falls. It was interesting hearing what Professor Cordua had to say about the evidence for ancient asteroid impacts in the region of the Chippewa Valley. He had a very engaging style, presenting his ideas with a lot of humor. I wish I had professors like him teaching some of the science classes I had to sit through in college.

Saturday was much better; the skies on Saturday night were the darkest I'd seen in a long time. I missed the the lecture that evening, but Dan and I were having lots of fun taking nature hikes and finding walking-sticks (nature's coolest bugs) as well as playing around with a homemade radio telescope. Daniel would have sat there for hours, listening to various radio noise from the Sun and outer space, had I not told him to let others look at it, too. I had so much fun looking through an 18" truss-Dob owned by a guy from Illinois (can't recall his name, unfortunately) who was delighted to let me play around with the telescope and point it at some of my favorites. If you have not seen M13 in an 18" telescope with superb optics, I highly recommend it, unless you don't want to catch aperture fever in a big way, because that usually involves parting with large quantities of money in order to cure it. In that case, don't go there. But hoooo boy, am I seriously thinking that one of those would be a nice addition to my own set of telescopes someday.



Photo by Ben Huser

MAS was here!

**Editors**

Thor Olson  
Brian Litecky

**Circulation**

John Treadwell

Gemini is published six times annually in February, April, June, August, October, and December by the Minnesota Astronomical Society. Electronic submissions for Gemini may be sent to:

blitecky@yahoo.com  
thor.olson@efi.com

Hardcopy items should be sent to:

MAS Gemini  
P.O. Box 583011  
Minneapolis, MN 55458-3011

Send all MAS membership dues, change of address cards, subscriptions, and renewals to the current MAS treasurer. Subscriptions alone cost \$4.50 annually for members of astronomy clubs or \$9.00 for other persons. Materials for Gemini are due on the 10th of the month preceding the month of publication.

**Winter Program****Holiday Programs**

November 23 - January 10, 2002

**'TIS THE SEASON**

Saturdays & Sundays at 2:15 p.m.  
Thursdays at 7:15 p.m.

**WINTER WONDERS**

Saturdays & Sundays at 1:00 & 3:30 p.m.  
Special Holidazzle Parade Show Times  
November 23 - December 22  
Fridays & Saturdays  
at 5:30 p.m.

**Eisenhower Observatory:**

Come view the night sky through a powerful telescope on top of the Eisenhower Community Center in Hopkins, MN. Viewing time varies throughout the month and is open to the general public. There is no charge, although a \$2.00 donation is requested. Space is limited, so call Diane for reservations: 612-988-4077.

**University of Minnesota:**

Observing from the telescope on top of the Physics building, East Bank. Open to the general public. Fridays during the school year: 612-626-0034 for more info.

**MAS Star Parties:**

The Minnesota Astronomical Society hosts star parties, open to the general public. Come on out, get a look through a telescope, enjoy the view. Call 651-649-4861 for more info or log-on to the web at <http://www.mnastro.org>.

**Patron Members**

MAS offers a patron membership to anyone who wants to help support our activities by paying a slightly higher annual membership fee (\$40 instead of the regular \$16). We would like to thank the following patron members who helped support MAS this year:

Gregory J. Baril  
Robert R. Benson  
James A. Bowditch  
Herman A. Bradley  
Richard A. Brown  
Albert and Dona Champlain  
Michael C. Conley  
Bud Clawson  
Chris Cowen  
Daniel DesLauriers  
W. Michael Garner  
Jon A. Geiss  
William H. Glass  
Victor H. Heiner  
Dennis R. Johnson  
Chelen Johnson  
Sally Jorgensen  
Michael T. Kauper  
Aris Kokedjian  
Michael E. Kibat  
David Kleinendorst  
Charles E. Latterell

Michael W. Lavelly  
John R. LeVasseur  
Joseph P. Luhman  
Gerald L. McDougal, Jr.  
Beverly D. Miller  
Mark A. Petersen  
Jim Russell  
Warren Sampson  
Robert J. Seabold  
James L. Schenz  
Robert H. Schmidt  
Paul A. Schroeder  
Timothy A. Sinks  
David E. Siskind  
George Skinner  
Charles R. Smith  
Gary Smith  
Kathy Thompson  
Daniel M. Werkema  
William V. White  
Glenn Wirth

**MAS Officers****President: Ben Huset**

651-628-9275  
benhuset@skypoint.com

**Vice President: Dave Olmstead**

763-559-5940  
david@davidolmstead.com

**Secretary: Jackie LaVaque**

651-484-0742  
buzzygirl@isd.net

**Treasurer: Chuck Jorgensen**

612-332-1140  
jorg0140@tc.umn.edu

**Board Member: John Treadwell**

651-645-7581(H) 612-624-4007 (W)  
j-trea@maroon.tc.umn.edu

**Board Member: John Connery**

612-544-5786  
jmcon@mninter.net

Another visual treat for me was the ten minutes I spent looking through a pair of Canon image stabilized binoculars. I was simply floored by the wonderful the view of M31 and its two satellites, and the Double Cluster in Perseus was simply magnificent. I was able to sit in a lawn chair and scan big swaths of sky, all without craning my neck or getting tired arms while trying to hold the binoculars steady. I was getting visuals of going out and buying a pair the very next week until their owner told me how much they cost—I think I'll wait until they've been out for awhile. Yikes.

Daniel was content to sit in a lawn chair, wrapping himself in a blanket as the night got older and chillier, searching for satellites and meteors. He did take a look through a number of telescopes, but decided that he really liked sighting roving satellites before anyone else. He was the field's "satel-

lite sentinel" until he zonked out in the lawn chair sometime around 12:30 in the morning.

Another highlight of my time at Star Fest was in winning a Sky Map Pro software package. I hadn't owned anything like this before, so I was excited to get it home, install it on my computer and see what it could do. When I actually have time to get around to doing that, I'll let you know. Maybe I will write a review on it.

It was hard to pack up and say goodbye on Sunday. Being with friends and doing what we love to do—look at the stars and the sundry visual treats that our little corner of the universe has to offer—was simply satisfying to the soul. I highly recommend that you attend next year's Star Fest. I know I will be!



What I want to do when I retire!



Jackie catches illness being around these!



Dave Olmstead brought along his "Lunar Lander"

*Continued from the October Gemini.*

### Dinner and a moonset

The next day was a repeat of the previous regarding the weather: partly cloudy, occasionally overcast, a threat of rain, but then open periods of bright sun. In addition to coffee vendors, there were other canopies setup for astronomy-related businesses and causes. Artists, photographers, telescope and accessory retailers, social and political organizations, all had the equivalent of a wilderness storefront along "vendor row".

There was also a huge semi-cylindrical meeting tent where presentations were made by various guest speakers, and in which a swap meet occurred during the pre-noon hours. This was Saturday and, not having to go to town for any urgent repairs, I wandered through the swap meet, visited the vendors, and planned which presentations I would attend.

Something that surprised me on arriving at Table Mountain was the large number of families present. Not only spouses, whose tolerance of their partner's nighttime passions extended to accompanying them to a remote location with no amenities (bring your own water), but also children. Many of them. Their play lent a musical high note to the overall sound mix.

This seemed to be an important part of the star party, anticipated and planned-for. There were organized activities for children that kept them busy most of the day, and those that could stay up and participate in the evening viewing were always welcomed.

Among the daytime activities planned for the adult stargazers, was a showing of craftsmanship. I've often felt that there are two kinds of astronomers: those that have a fascination with telescopes and optics, and those that have a fascination with what can be seen with them. Amateur astronomy accommodates both types, and I got to see the beautiful workmanship and clever design work of the former at the amateur telescope making competition. Some remarkable features were shown: a rotating secondary cage, a 12-inch Dobsonian that collapsed to an-under-airline-seat package, delicate custom designed wooden inlays that gave

a unique style to these beautiful instruments. They were all on display in the morning as the judges reviewed them.

The meeting tent was apparently new to the TMSP, purchased from registration fees of earlier years. The audience brought collapsible camping chairs and assembled on the grassy floor of the big room. The presenters could show slides and video because the tent was opaque and kept the space dark when the door was closed. Unfortunately, it kept the room dark at the expense of heating it up, at least when the sun was at full strength.

I learned this while attending one of the presentations, a description of how the initial problems with the Hubble Telescope inspired a wave of software development that could correct the optical aberrations in its images. The soft-

ware methods could also fix images from other telescopes, like amateur telescopes looking through the full thickness of the atmosphere. Imagine that -- getting images from your personal telescope that looked as good as the Hubble! To me, a guy trying to get presentable pictures from his telescope, this was fascinating stuff. I recognize that this is not everyday fare for most people, but the people at this star



*Photo by Thor Olson*

Trifold Nebula

party were a rather skewed sample of interests, and I was not alone in finding this captivating.

Later in the afternoon on Saturday, there was a gathering of the entire population of the mountaintop. The high attendance was generated by a must-be-present-to-win raffle of astronomy-related prizes ranging from books and calendars to eyepieces to entire telescopes. Before the winners were announced, other items were covered. We found out that over 1300 people had attended this year, an enormous number speculated to have been even higher if the weather had been solidly clear.

We also learned about the close-call in having the star party at all. Earlier in the week, a forest fire had started, by lightning perhaps. The smoke had been seen by some eagle-eyed residents of Ellensburg, and a group of volunteers rushed up the mountain and somehow were able to contain

it and extinguish it!

The winners of the telescope-making contest were announced. There were a number of categories, but not enough to award all of the talent that was evident in the work.

Acknowledgements were made to the organizers of the star party. As the committee members were identified and applauded, the Port-O-Let tank truck rumbled through, having emptied and replenished the portable toilets that were installed at critical sites throughout the grounds. A thunderous cheering let loose. There are a million details to making a star party of this scale successful, this was one that was not overlooked.

An appreciated feature was the meal service. I was pleased to be able to register for these meals, freeing me from finding and preparing my own campground class food. A couple hundred other attendees felt the same way. Not every star party detail was without problem however, and one of them was the unanticipated properties of propane when burned at high elevations. The throughput of the grills and stoves was significantly reduced, and this created some bottlenecks in the delivery of fully cooked food to the hungry masses. The Saturday dinner menu of chicken and backed potatoes was a nice finale to the meals served on the mountain, but the serving line extended for well over an hour as the energy-soaking potatoes starved by the low-energy fuel, became the rate-determining step.

The line did not become unruly, we spent the time comparing notes on what we had experienced at this star party and how it compared to previous years. This did however detain me from an activity I had planned: climbing the trail to Lion Rock to watch the sunset and photograph the young moon. Trapped in the food line, I didn't dare leave and lose my long-held position in it, but the sun wasn't going to be rescheduled.

Lion Rock is the name of the spectacular overlook at the end of the road. From here one can see Mount Ranier, Mount Stuart, and the Stuart Range. I found it to be a popular place: couples, kids, and sunset photographers all lingered here after what must have been a beautiful sunset. They were a bit quizzical when I started to setup my gear, but the bands of clouds were brilliantly lit in red and purple shades, still a legitimate scene for an after-sunset shot. But when I started asking if anyone had seen the moon set yet,

there were blank stares.

I scanned the openings between the cloud banks hoping to find it. The sky continued to change color, but with no obvious crescent visible. I recruited the others to look, but they were unconvinced that there was anything to look for. Eventually, after another 10 or 15 minutes of scrutiny, I found it! A hairline crescent, gently breaking the smooth blue-green sky in the west. Averted vision, an astronomer's trick to find faint objects in the dark by looking just slightly to the side of it, also works in the day and helped reveal its location. I pointed it out and eventually convinced a few others that there really was something there. They showed it to more onlookers and soon we were all gazing at this faint feature of the sky.

Among the folks at Lion Rock were a couple of astronomers with big Dobsonian telescopes. While I was scrutinizing the western sky for the moon, they were trained on Mars, to the south. Mars had recently been at its closest and brightest in many years and was keeping these astronomers busy and preoccupied with their early evening view of it. When my own telescope failed, my small group of moon viewing followers turned to these unsuspecting observers, assaulting them with questions about whether they could see the moon.

"The Moon!?"

"The Moon!?"

Completely surprised that the moon might even be visible, the two astronomers swiveled their "light canons" on their turrets to the west and focused on the setting moon. We all took turns looking and marveling at the razor edge of this beautiful crescent. After losing the chance to capture it on film, it was a consoling view.

**Fire in the Hole**

The last night on the mountain had perhaps the best viewing conditions with regard to clouds, but the dew conditions were severe. The temperature dropped to the thirties, but the dewpoint was in the forties. I had dew heaters on nearly all my optics, but the unheated secondary mirror in my telescope eventually succumbed, and my imaging came to a halt.

With my own telescope shut down, I sought the company and optical performance of those seasoned astronomers in

---

**I woke up a few hours later to the excited report that a telescope had caught fire! Someone had left their telescope aimed low to the horizon, on the ecliptic (the path that the sun makes through the sky).**

---

## Table Mountain Star Party

the telescope field. The gentle cacophony of sounds in the field was comforting, and I again enjoyed views of the sky through larger, and dew-free instruments, finally returning to my tent at 5:00 A.M.

I woke up a few hours later to the excited report that a telescope had caught fire! Someone had left their telescope aimed low to the horizon, on the ecliptic (the path that the sun makes through the sky). When the sun had risen, it was focused on the eyepiece holder of the telescope. There are not many materials that can withstand a one-foot diameter magnifying glass aiming the sun on it, and the result was smoke pouring out of the big tube as it started burning!

Someone noticed the smoke and turned the telescope away, and the owner will never make that mistake again. Neither will those of us that heard about it.

I made many acquaintances at this event. I found that most of the attendees were from the nearby population centers of Seattle and Portland and were quite outgoing and friendly. The Pacific Northwest style seems to be one of appreciation for the wilderness and outdoor activities combined with an easy manner quite compatible with my Midwest upbringing. It had been a very pleasant experience.

## VOLCANIC ASH

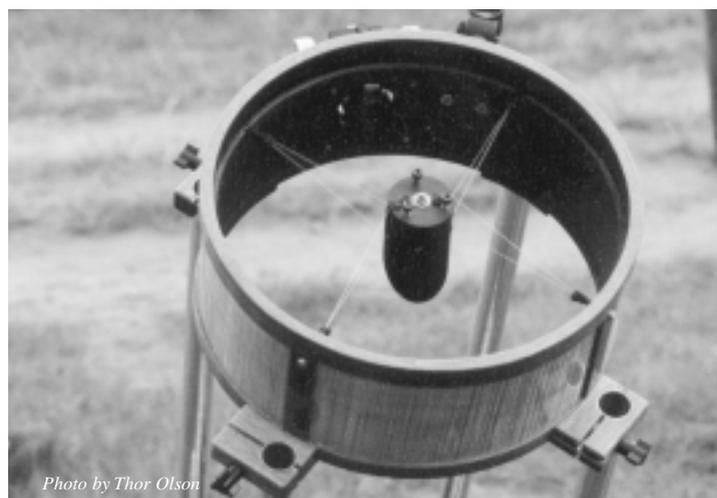
## DAVE OLMSTEAD

On September 29, my family and I attended Michael Koppelman's 2nd annual starparty and bon fire extravaganza. The MAS attendees were in short supply so I thought I would say a few words about the party with the hopes that a few more MAS people will show up for the 3rd annual next year

The party at Michael's observatory was a gas or perhaps I should say a blast. The much anticipated "lighting of the bon fire" was an event to behold. We all set up our lawn chairs at what we thought was a reasonably safe distance from the fire pit...thirty feet, yeah that's about right. The "igniter guy" spares no fuel as he primes the twenty five foot diameter pile of logs and brush. The match is struck and WE HAVE IGNITION!

It is clear that Michael has a thing about fire. This pile of brush (plus a couch visible through the inferno) shot flames thirty feet into the air. The ash rained from the sky, as if generated from a volcanic eruption. The attending crowd were felled like trees at Mt. St. Helens. The large farm trailer that was used as a food serving platform was covered with ash due to the prevailing winds. Thankfully the old porcelain bathtub, which held the beer kegs, was unscathed! Whew, pour me another, will ya?

As I packed up and headed down the now-familiar forest road, I was in "traffic", meaning that a number of cars were going down with me. Gratefully, I wasn't in the lead. The sky is clear and there's an impressive view of Mount Ranier, off on the horizon as I come down this road; in fact it's so spectacular that everybody in my caravan of cars slows down to take a look. It's a nice visual memory to finish this chapter of my astrophoto odyssey.



Beautifully crafted telescopes also included superb engineering, such as this secondary mirror suspended by a nearly invisible wire spider.

Michael's observatory was fun to visit again also. Of course he has another telescope that we had a chance to look through...sigh. Yeah, gosh darn, those Tak refractors have crisp views! We also tested the maximum capacity of people that could cram themselves into his observatory. Ten or twelve of us were in there at one time, shoulder to shoulder we looked like college kids stuffed into a large phone booth, and we had beer breath!

As the fire calmed down to an approachable size, fellow MAS member Thor Olson and I chatted with Michael about imaging related topics, world news, and club stuff, solving not one problem in the process, but having a good time of it, crossed eyes and all! As I was walking to the car in preparation to leave, I ran into Steve Leikind with his Tak refractor on a camera tripod. Steve is another one of those "multiple scope guys"...sigh...nice scope Steve...sigh. One last stop at the Star House on my way out to drool over Michael's private "clubhouse" observatory...sigh...

So, another successful party at the Star House Observatory. Thanks Michael for the open invitation and I hope that next year we have some more MAS types roll in for the bash!

Burp! Excuse me!  
Dave O.

I was out at Baylor Friday night as well; one other sight noticed but not mentioned in the other reports was a very bright meteor in the northern skies. I was located a 100 feet from the main building. (which was the length of the extension cord) .I knew the observatory's would be, so I set up there). At around midnight (and I could be off on the time by quite a bit) I noticed a very bright light behind me by how easy it was to see my scope in front of me, as well as hearing a lot of commotion down the hill where several scopes were set up. For a split second, I figured there'd be no point in turning around, but I did so anyway expecting to just miss it. Instead I saw it still blazing brightly for about another second before fading away. It left behind a trail that was easily visible. Considering Venus at -4.5 and the Moon at -13, I'd say it was about -8 in magnitude.

Near the top of the hill where I was at, guiding was very challenging due to the wind (not really strong, but consistent despite being in the "shadow" of the dome). I spent most of the evening glued to the eyepiece for the many

manual drive corrections. I was able to get 12 five minutes exposures (one attached of the Orion region) using a 210 mm F4 lensed SLR piggybacked on my C8.



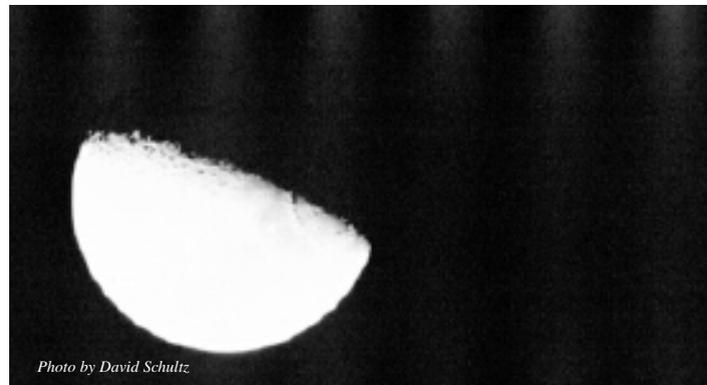
*Photo by Mike Conley*

Astrophotography with your telescope is easier than one may think. With patience and persistence, one can produce nice photographs that can be displayed on the Web, used as a screen saver, or printed and framed.

Over the last year I have been using my Celestron G-5 and the Onan Observatory 16 inch telescope to take pictures of the moon and the planets, often with promising results. To get started, I purchased Michael Covington's *Astrophotography for the Amateur*. This is an excellent step-by-step book that guides the novice and advanced amateur through the various techniques used to take pictures of the sky. The techniques range from simply attaching a camera to a tripod and shooting the sky, to prime focus photography-taking the lenses off the camera and attaching the camera directly to the telescope-to positive projection-taking the lenses off the camera and using an adaptor to connect the camera to the telescope that has an eyepiece in it. Covington's book is also excellent in providing tables that tell one how long to set the exposure, depending on the object being photographed, the film speed, and the f ratio of the telescope being used.

I began my astrophotography experiments with a Celestron G-5 that has an equatorial mount. I needed a 35 mm single lens reflex lens (SLR) camera. SLRs are the older 35 mm cameras that were sold before the advent of digital photography. The reason these SLRs are employed is that one can take the lens off the camera and control the exposure time for the film. One can buy these SLRs new or hunt down

used ones in a camera store. I found a used Olympus OM-1 with a broken light meter at a local camera chainstore. Since one does not need a light meter for astrophotography the store sold it to me for \$50. New it would have cost several hundred dollars. I also needed a T ring and adaptor to connect the telescope to the camera. Both can be purchased at a camera store for about \$25.



*Photo by David Schultz*

Moon, Celestron G5

The initial experimentation was with taking pictures of the moon as it moved through its various phases. Mostly I have experimented with prime focus and positive projection. In June and July, 2001 I used Fuji film ISO 200 to take several pictures, including this one of the moon using prime focus at a very low level of magnification. The exposure was about 1/40th of a second.

Eventually using Fuji ISO 400 film, other pictures were taken using positive projection. For example, one shot of the moon at 50X magnification for about one second produced a nice picture.



Celestron G 5 positive projection

I also tried to take several pictures of the planets including Mars, Jupiter, Saturn, and Venus. However, my camera was too heavy for my telescope and even with a clock drive the pictures never came out very good. Sometimes the problems were mine-the camera or telescope shook or vibrated too much-sometimes the problem was with the film developer. In addition, I tried some shots of the Sun using a solar filter I never did get the exposure correct.

On August 11, 2001 during one of the public viewing nights at Onan I used positive projection techniques to take pictures of the moon and Mars using the observatory's 16 inch telescope. From what I have been told, these pictures were the first from Onan. These pictures involved using a 25 mm eyepiece, magnified Mars and the moon by 179X. The results, using ISO 400 film with an exposure of about one second, were terrific!

Overall, for those who wish to preserve their celestial observations but cannot afford the CCD equipment, astrophotography offers a relatively inexpensive challenge and reward.



August 11 2000



August 11 2000

**JMI Tour**     **WILLIAM WHITE**

I happened to be in Denver for a conference two weeks ago and my family was joining me the second week for Thanksgiving in Winter Park, so I had a day or so to kill.

I decided to check out JMI, the telescope accessories builder. So I just showed up and asked if they could take me round the factory. A very well dressed man in a smart sports jacket and tie showed me where they make the focusers and then on to see the cases for optical tube assemblies including the prototype for the LX200. These cases seem extremely rugged - they had a photo of a truck's wheels on a plank on the case with no distortion. There's some nice well engineered double wheels and handles to help transportation. The foam is a closed cell

type and they're providing cut-outs for eyepieces, hand controller, and the power unit. A nice characteristic is that the cases are not fully square and so are physically smaller than the box the Meade came in. I was very impressed and ordered one (for about \$350). They also showed me their 25" modified newtonian and a 40" they were building for a client in Australia. Also saw some work they're doing to make their motorized focusers work fully with Software Bisque's The Sky/CCDSOFT imaging software. Finally Orthodox Communion Trays represent somewhat a diversification! The nice man turned out to be Jim. A very interesting and worthwhile visit if you're in Denver with some spare time.

Headed out to Baylor after dinner to drop off some equipment, touch up the Larson collimation in preparation for our last few scheduled events and maybe, just maybe, catch a glimpse of the aurora should it kick up. “Kick up” can’t even begin to describe it. Take all of the other email reports, toss them into a blender and you’ll have a taste of my experience tonight. I first noticed the display as a general glow along the northern horizon. Very bright! “Here it comes!” I said to myself with a little glee.

Then, bright rays started climbing in the sky as the glow continued spreading. Soon after the reds appeared. And at the zenith, as if leading the advancing curtains of green and red, individual cumulus cloud-like auroral glows appeared and dissipated.

At one point, I just lay on the ground, and watched excitedly as the patches of crimson glowed in different parts of the sky while green rivers of light twisted and entwined directly overhead.

As the activity increased, shadows were easily seen. I had to remind myself several times that it wasn’t even 9:00 yet, though my mind kept thinking it had to be close to dawn. In fact, at the height of the display before the Moon came up, cattle at the farm across the lake must have been expecting their early morning milking, what with all the ruckus they were making!

At one point, only the brightest stars were visible and the aurora even washed out the Twin Cities’ light dome. As the Moon rose, it tried to push back the curtains of light, but the aurora was too strong and too persistent. Even with the Moon well up in the sky, red glows continued to the north,

and the undulations of light continued overhead and the overall aurora reached well down into the southern skies.

Even here in Bloomington, at 00:30 when I got home, the zenith was crossed with east-west ribbons of faint white, shifting and changing with each passing second. Just checked at 01:00 and it’s even more active, with hints of red showing again.

WOW!

Other cool things tonight:

Looking at the Moon and Jupiter in the same field of view with the observatory’s ShortTube 80 (16x). It was mind-boggling to see our Moon at a quarter-million miles away and immediately adjacent, the giant planet Jupiter and its four Galilean moons at more than one-third of a billion million miles away. Very much a “3-D” experience! Viewing Saturn and 6 of its moons. Two VERY nice meteors.

A quick survey of the lunar terminator at 220x (after spending weeks intensely studying it at 60x with my ShortTube 80 refractor). What a sight!

Hanging out with Dave O. for a bit, fitting new “Cosmic Storm Bags” on the observatory telescopes. Visiting with a young couple who stopped by while seeking a dark site to “look at the aurora” (yeah, RIGHT, I tried that line a couple of times myself when I was that age!).

All in all, a truly memorable evening!



*Photo by DavidSchulz*

Jupiter and 3 of its moons through the Larson 16 inch scope on November 16, 2001. I was using a 25 MMN eyepiece, giving us a magnification of around 200X or so. Jupiter was so bright that I could not pick up the bands on planet that were visible to the eye through the scope.



*Photo by Michael Koppelman*

Comet LINEAR C/2000 WM1  
Takahashi FS-102 f/8 refractor on Kodak PJ400  
15-minute exposure. 2001-11-20 03:18-03:33 UT

The overall for the evening. After my meeting I went north, This was about 11:20ish. I saw some spots that looked like they may be auroras, and a brighter swath across the sky. I didn't have my camera gear so I headed back into town thinking I'd not worry about it, oh well. It did have good brightness to be seen through all that moon glow. I'd seen them at least 20 times before during this year. Then I looked up as I was going to enter my apartment and saw them directly above.

WOW! was all I thought. I'm getting the camera gear and going back out. I headed up highway 65 past Anoka to one of my favorite dark sky sites. For the first time I managed to get some poor aurora shots with my digital camera. At an 8 second exposure at that, I also took some 16 second shots. I'd tried before to get them with as long as 60 second exposures but failed All I got was tons of dark current spots. These images are very dark, and as such when enhancement is done they start looking quite bad. Many color effects start showing up, as well as some dirt on my lens:). I really wish I could cool the CCD chip in my Nikon 990.

Shots one and two are from a side road in Elaine.

Shot three is from the dark sky site way north.

Shot 4 is from the same spot, but looking due south at the Light dome from the businesses along highway 65. Looks like a sunrise...

The 4 images below are the uncorrected originals. The only one you can see much in is the 4th. The others you only see red smudges and no greens.

Many sightings were rather pathetic. 5-15 minutes of a weak display. Few sightings of 20-90 minutes with brighter displays. A couple of sightings where the display went on for hours like this one, but not as bright. Like tonight the brighter displays managed to involve most of the sky at one point or another. I did manage to see them last Wednesday as I was returning from Ames IA. I was around mile marker 135 in I-35 in IA. I continued to see them till about mile marker 150. One thing I'm wondering is how much of that moon glow was really moon glow and how much was aurora. I'm asking this as it was uneven, but seemed to involve the hole sky for a while around midnight and a bit latter. I should have just photographed it with the digital.

The enhancement I did was via GIMP. I just did simple automatic stretching of the color balance, then despeckle. I didn't do any smoothing.

It was at this point I sent my first email effectively saying it isn't over yet, and called a few friends.



One Uncorrected



One Corrected



Two Uncorrected



Two Corrected



Three Uncorrected



Three Corrected



Four Uncorrected



Four Corrected

### MAS For Sale

For Sale: Orion Skywatcher(now known as Astroview) 120mm refractor. Like new condition. Only 11 months old. Selling because I am upgrading. Included are a 25mm and 10 mm Plossl eyepieces,6X30 finder, reflex L.E.D.finder, moon filter and piggyback camera mount. Asking 425.00. Contact Mark at [mhank1@fairview.org](mailto:mhank1@fairview.org)  
Mark Hank

## 2001 Star Parties

*Star parties are held on Friday if weather permits, otherwise on Saturday. Call (651) 649-4861 after 6:00 p.m. on a star party date to hear whether it will be held.*

### Metcalf

Metcalf is the grassy parking lot of Metcalf Nature Center, about 20 miles east of St. Paul along highway 94. About 6 miles E of the 694/494 crossing is county road 15 (Manning Ave.). Turn right, then left onto the frontage road and continue east, crossing over county road 71. Turn right (south) onto Indian Trail; follow it 1.1 miles to an chicken-wire gate on the right, (marked by three blue reflectors), opening onto a dirt driveway, which is the entrance to Metcalf.

### Baylor Regional Park

Baylor Regional Park is roughly 25 miles W of the SW corner of 494. Head west on highway 5, through x, to Young America. Turn right onto county road 33 and follow it about 2 miles to the park, a right turn. The observing site is through the gate and roughly 100 yards beyond. Card-carrying MAS members may observe at Baylor at any time; call the park keepers in advance at 448-6082.

When visiting Baylor Regional Park, MAS members are requested to NOT park on the grassy areas next to the observatory (or any other grassy areas for that matter). This is a matter of being considerate to the park, its caretakers, and other visitors, so PLEASE PARK in the PARKING AREA.

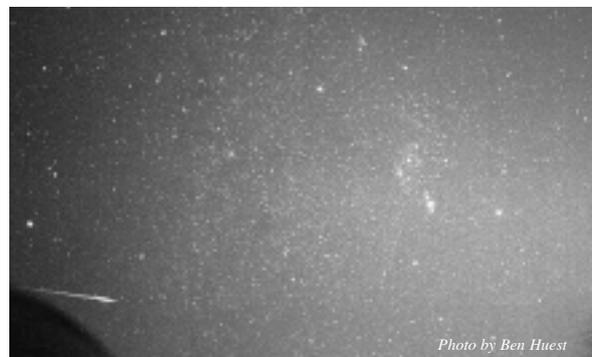
Annual Park Permits (optional, not required for observing) can be purchased by sending a check to Carver County Parks, 10775 County Road 33, Norwood Young America, MN 55397. The cost for the Annual Permit is \$16. Permits are also available at the Park Office at Baylor Park, the Carver County Government Center located at 600 4th St. in Chaska, through the honor box systems and gate houses when staffed at both Baylor and Lake Minnewashta Regional Parks. Lake Minnewashta Regional Park is located in Chanhassen off of Hwy. 41 between Hwy. 5 and Hwy 7 .

### Cherry Grove

Cherry Grove is about 20 miles south of Cannon Falls. Head south on Hwy 52. Around 6 miles south of Cannon Falls, take a right onto Goodhue County 1 and follow it around 16 miles, where it ends in a T with Dodge County A. The observatory and warming house are at your right, nestled in the corner of the T.

Date	Location	Sunset
March 2 or 3	Metcalf	6:02 p.m
March 16 or 17	Baylor/Onan	6:20 p.m
March 23 or 24	Cherry Grove	6:29 p.m
March 30 or 31	Metcalf	6:38 p.m
April 13 or 14	Baylor/Onan	7:56 p.m*
April 20 or 21	Cherry Grove	8:06 p.m*
April 27 or 28	Metcalf	8:14 p.m*
May 18 or 19	Baylor/Onan	8:39 p.m*
May 25 or 26	Cherry Grove	8:46 p.m*
June 1 or 2	Metcalf	8:53 p.m*
June 15 or 16	Baylor/Onan	9:02 p.m*
June 22 or 23	Cherry Grove	9:04 p.m*
June 29 or 30	Metcalf	9:04 p.m*
July 13 or 14th	Baylor/Onan	8:58p.m*
July 20 or 21	Cherry Grove	8:53 p.m*
July 27 or 28	Metcalf	8:45p.m*
August 10 or 11	Baylor/Onan	8:27p.m*
August 17 or 18	Cherry Grove	8:16p.m*
August 24 of 25	Metcalf	8:04p.m*
September 7 or 8	Baylor/Onan	7:39p.m*
September 14 or 15	Cherry Grove	7:26p.m*
September 28 or 29	Metcalf	6:59p.m*
October 12 or 13	Baylor/Onan	6:33p.m*
October 19 or 20	Cherry Grove	6:21p.m*
October 26 or 27	Metcalf	6:10p.m*
November 9 or 10	Baylor/Onan	4:50p.m
November 16 or 17	Cherry Grove	4:43p.m
November 23 or 24	Metcalf	4:37p.m
December 7 or 8	Baylor/Onan	4:32p.m
December 14 or 15	Cherry Grove	4:32p.m
December 21 or 22	Metcalf	4:34p.m

\* Central Daylight Time



Leriod Meteor0 going over Srus

Photo by Ben Huest

## How to pay your dues

Your MAS membership expires at the beginning of the month shown on your Gemini mailing label and your membership card. Send your payments to the MAS treasurer (Chuck Jorgensen) at 1615 E. River Rd. Minneapolis, MN 55414-3627. Make checks payable to MAS. The current annual membership dues and subscription fees are:

<i>Regular membership</i>	\$16.00
<i>Patron membership</i>	\$40.00
<i>Student membership</i>	\$10.00
<i>Subscription to Gemini for members of other astronomy clubs</i>	\$4.50
<i>Subscription to Gemini for other persons</i>	\$9.00

### To Renew Your Sky and Telescope Subscription

If you get *Sky and Telescope* at the club's discounted rate, you must renew your subscription through the club. When you get a renewal notice from S&T, send the notice along with a check for the amount indicated on the notice (currently \$29.95) to the MAS Treasurer (Chuck Jorgensen) at 1615 E. River Rd. Minneapolis, MN 55414-3627). Make checks payable to MAS. If desired, you may renew your MAS membership at the same time, and write one check to cover both payments.

To subscribe to the MAS e-mail list send e-mail to:  
mas-request@mnaastro.org  
with the single line  
subscribe  
in the body (not subject) of the message.

The list has about 40% of the membership on it.

**GEMINI**

MN ASTRONOMICAL SOCIETY  
P.O. Box 583011  
Minneapolis, MN 55458-3011

ADDRESS SERVICE REQUESTED

NON-PROFIT  
Minneapolis, MN  
U.S. POSTAGE  
**PAID**

PERMIT NO. 1407