Gemini

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A Visit with David L.

Jackie LaVaque

I hope that some of you that are reading this edition of Gemini were able to attend at least some of the goings-on at the ASP Convention, which was held at the St. Paul Radisson from July 13-18. If so, then you know that it was both interesting and a lot of fun. I offered to volunteer for a couple of convention events. It was my first-ever astronomy-related convention, so I was eager to volunteer for just about anything at that point since it would mean that I could get in for free. :)

On Sunday the 15th, I happened to be posted at the door of the Minnesota Ballroom on the lower level of the Radisson, checking to make sure entering participants had their ASP badges on. Easy work. I got to listen to a number of lectures, all of which were quite interesting, much more so than most of my college courses were, anyway. This was my kind of stuff.... extrasolar planets! Astrophysics research! The future exploration of Mars! Gigantic new Earth-orbiting telescopes!

But I spent most of my time at the convention browsing through the multitudinous displays in the exhibitor's hall, alternately drooling at and secretly coveting some of the more incredible wares that were on display. Rest assured, if I had an extra $3,000 to spend, it would've been gone in like 2 minutes flat. I settled for a couple of astronomy-related books that I didn't have in my collection.

On July 13, I was on the Onan Team for the star party that we were giving to participants of the Astronomical Society of the Pacific. Tom Youngblood and I were the semi-official "tour guides" on the bus going from the Radisson out to Onan. Our primary function was to keep the bus driver from getting lost, but our driver said he knew the way out there, so Tom brought out a small tablet of paper, full of speaker's notes on the Twin Cities Area and Minnesota in general and he gave an engaging and amusing talk on all things Minnesota to our guests.

David Levy, amateur astronomer, prolific author and discoverer or co-discoverer of numerous comets, including Shoemaker-Levy 9, which met a fiery death in 1994 by breaking into pieces and slamming into Jupiter.

One of our honored guests at the star party was none other than David Levy, amateur astronomer, prolific author and discoverer or co-discoverer of numerous comets, including Shoemaker-Levy 9, which met a fiery death in 1994 by breaking into pieces and slamming into Jupiter. I had the privilege of meeting Mr. Levy at the star party. I was covering the controls of the Larson scope while Mike Kibat was on break, when I happened to catch a glimpse of Mr. Levy, standing near the edge of the east wall of Papa Bear, setting up his Questar.I immediately walked over and offered him my hand. "You must be David Levy," I think I said. "It's an honor to meet you." And it was. He's a tall guy, taller than I'd pictured him. I noted that he was sporting an Onan team badge with his name on it, which some thinking person had the foresight to have made up for him.

The star party was excellent, with mild weather, clear skies and lots of MAS members there with their scopes. David was still sporting the Onan team badge on Sunday, when I ran into him again at the Meade booth in the exhibitor's hall. He mentioned to me that

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GEMINI

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Now Showing — Compiled by Ron Schmit

Fall Programs
WILD & WACKY UNIVERSE
September 6 - November 18, 2001
Saturdays & Sundays at 1:00 p.m.
Thursdays at 7:00 p.m.

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Saturdays & Sundays at 2:15 p.m.

STARLIGHT STARBRIGHT
Playing at 11:00 a.m. on the following Saturdays: September 22, October 13 & 27, November 10

SPOOKY SKIES - October Only!
Fridays at 7:00 p.m.
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November 23 - January 10, 2002

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Saturdays & Sundays at 1:00 & 3:30 p.m.
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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:

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the star party was a great time and that he was very honored to have been presented with an Onan team badge.

After some brief chatting about the MAS, observing in Arizona (where he, and much of my own family live) and the possibility of my traveling to Arizona this fall to do some observing at Kitt Peak, we were joined by a couple of members of the RASC. They included me in their conversation, which consisted of mainly small talk about the various amenities and goings-on around the Twin Cities Metro Area. Then, David asked me if I wanted to join them for lunch. I said, sure, and told them I'd meet them up at Le Carrousel on the top floor of the hotel. Unfortunately, I could not stay for long, since my next stint at the doors of the lecture hall was due to start in 45 minutes. I did meet David and several members of the RASC for coffee, but I had to beg off on the food part, since I didn't have enough time to eat.

I would ask him how it feels when you know that you are the very first person to look at a new comet

The RASC members and David Levy were all very congenial and friendly, making small talk about their society and about a number of other things. I did not forget that I was in the presence of Canadians all, every time I heard an "oot" and "aboot" along with the ubiquitous, sentence-ending Canadian verbal peculiarity, "eh". I really wish that I could report that I had an in-depth conversation with David Levy about any of his numerous books, comet discoveries or about his duties as science editor and/or contributor to numerous science publications, which is what I would have liked to do, but time was short and many others were vying for his attention as well. I think that if I could go back to that day at the convention and ask him one question, any question, I would ask him how it feels when you know that you are the very first person to look at a new comet.

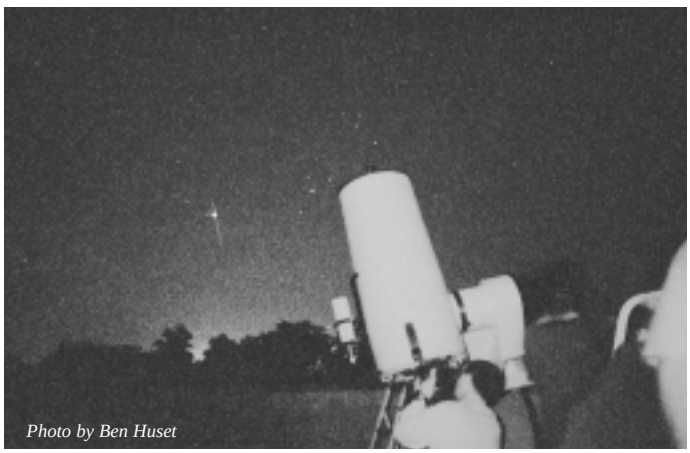

Photo by Ben Huset

Photo by Ben Huset

Table Mountain Star Party — Thor Olson

The Approach

I had embarked on an "astrophoto-odyssey" to search out dark sky locations in the western U.S. and to hone my astrophoto skills. And although the Table Mountain Star Party (TMSP) in Washington's Cascade Mountains is a long way from Minnesota, I had selected it as a fitting launch point for my ambitious summer plan.

The Table Mountain Star Party had the same core principles as any star party, but it was on an enormously grander scale. The setting deserves it. Most people think of the state of Washington as a lush rainforest region in the Pacific Northwest. In reality, only the western edge of the state deserves that description; most of the state is an arid, sparsely populated desert. Arid, but irrigated. And fertile. The famous fruit orchards of Washington are here, and the towns are oriented to the business of agriculture. Ellensburg is such a town, and is nearly at the geographic center of the state. It's the closest civilization to TMSP, but does not generate significant light pollution.

I got to Ellensburg by late afternoon on the first day of the event. Table Mountain was some uncertain distance from the town (I had a not-to-scale map), but I was sure I could figure it out before dark. I took the prescribed forest road and headed up.

The telescope field at night. The cumulative light from red flashlights builds up during this one-hour exposure.

The prescribed road was one serious road. In different weather I might use the adjective *treacherous.* It was a mountain road like I had not been on before: a single lane, hairpin turns, no guardrails, no recommended speed signs (or rather, just, no signs), and steep! These forest roads are no-nonsense pathways to the top.

Somehow the single lane works. When traffic meets, there are enough wide spots to eke past, maybe someone has to back up a little, but it seems to work. Or at least mostly work. I noticed occasional skid marks, punctuated at one location by shards of glass. As extreme as it seemed to me, the route was actually luxurious by forest road standards: it was paved!

Eventually however, the asphalt ran out. A few more miles of gravel reached a last curve whose expansive view was of a sea of vehicles: cars, trucks, vans, RVs and tents covered the hilltop. It was the first indicator that this was no small-scale star party.

Although I had arrived on the first official day (Thursday, July 19), it seemed that everyone else had arrived the day before. I registered at the entrance and was ushered by a group of highly organized parking directors. I was offered the choice of parking in the mosh pit of campers (the field had been marked off into rows and columns of parking territory and a few cells remained), or to find my way to the overflow area. I opted for the overflow, a fraction of a mile further. It was out of the thick of the action, but still had a great view, and some room to pitch my tent and spread out a bit.

But even the overflow area was rather full. I eased my minivan off the road into a vacancy. It was vacant for a reason, the sudden ditch and the large rocks had discouraged prior vehicles, but I was becoming desperate. The minivan lurched into position. I wondered whether and how I would get it out again, but felt I could put that problem off for a few days. I was here! I wanted to setup camp, and setup my equipment before dark. After all, that was my whole purpose for being there!

Flat Tires, Cloudy Skies

I started lugging stuff out of my car. I was struggling with my oversized tent when I met my neighbor to the east, Barry, a bearded friendly fellow that reminded me of a mild mannered graduate student. In reality he was a programmer, but his interests fell strongly in the areas of ham radio and astronomy. He was modest about his beginner status in astronomy, but he had attended prior years of TMSP and enjoyed them immensely, hence his return this year.

Barry felt responsible for letting me know that the rear tire on my car was flat. I was surprised at this news, since I had just arrived and not experienced any sort of tire-problems on my way up the mountain, but there it was. It wasn't just low on air, it was dead flat! Had I been driving on a rubber covered rim all the way up that road? Barry inspected more closely and found a nail embedded in the tire. More mystery, but what to do for now? We made a plan. Prop the car up on big rocks to avoid further damage to the tire, and then

see about getting to town tomorrow. I'm fine with putting this problem off. I had more important things to do.
Like find something to eat. I had pre-registered for the star party, and one of the options was to sign up for several meals that were offered during the event. It was no difficult decision that if someone else would take on the overhead of preparing food, I would be happy to consume it. I had the meal tickets in my pocket, but on arriving at the food tent, I found that I was moments too late. The operation had shut down, the kitchen was being cleaned up, but somehow, recognizing my haggard state, the cooks found some remaining foodstuff to satisfy my immediate calorie demand. So it wasn't a real emergency, but it was nice that the food guys were so accommodating.

After meeting this priority, I assembled my mount, telescope and camera adapters. The light was fading, and I was able to do a "drift alignment" (a lengthy but precise method of aligning the telescope mount to the polar axis of the Earth's rotation). I took a look at Mars, the brightest thing in the sky, and then located my first photographic target, the Trifid nebula. The next step is to find the proper focus. With my f/4 scope, I had to find the location to place the film to within 50 microns. I had never reliably succeeded at this, so I wanted to figure out a method to achieve it. As I struggled with finding the "knife-edge focus" on a nearby bright star, I noticed that the nearby bright star wasn't very bright anymore. In fact, it would periodically disappear. Then it disappeared altogether. Looking up, I saw that the sky had been overtaken by clouds. There were occasional openings, but completely opaque otherwise.

I abandoned my scope and decided to catch up on my note-taking and general metabolism recovery. The temperature had cooled rapidly after sunset and I was almost too late in putting on my various additional layers. Eventually, not seeing any change in the cloud cover, I proceeded to disassemble everything and pack it up. I considered going to bed and making up for the days of sleep shortage while traveling.

My neighbors to the west appeared. Scott and Matt, members of the Portland "Rose City Astronomy Club", returned from their sessions in the telescope field. Remember, I was in the overflow area; most of the participants had set up in an enormous alpine meadow, the "telescope field" on the other side of the RV mosh pit. Scott and Matt both had large (personally hand-designed and crafted) Dobsonian telescopes out in the middle of the field and had been there observing all evening up to the moment of full cloud cover, and then returned to their base camp next to me.

After enough story-telling with the neighbors, we looked up to discover that the skies had cleared! It was a bit too late for me to go through the full setup procedure again (it would be dawn), but the Dobsonian boys could instantly reinsert their eyepieces and be cruising the skies in a moment. And so I was invited to the telescope field to look through two award-winning telescopes. I was in the middle of a desert, at an elevation of over 6000 feet with no large cities within hundreds of miles, and looking through large aperture telescopes at the treasures of the night sky. It was a peek at Heaven.

Rainy Days, Espresso Nights
Most attendees had given up and gone to bed with the cloud cover at midnight. A few of us accidently enjoyed the clearing after 2:00. We took in views of galaxies, nebulas and star clusters until the near-dawn when Saturn, then Jupiter and Venus appeared. This was the intoxicating finale of the evening and with the brightening sky, I staggered to my tent sometime after 4:00.

It is logical to think that one would then sleep until eight hours later, about noon, but in my experience, this never happens. By 8:00 I was up again, now faced with the problem of the flat tire. I had several options. In such a large gathering, helpful resources abound, and I knew that I should take advantage of them before the end of the star party, when I expected everyone to evacuate in an urgent return to their jobs and real life. I received an offer from Bruce (Harpo) Berghoff, the other Minnesota Astronomical Society member who was attending (a coincidence, this really is rather remote for us), to drive me back to Ellensburg with my tire to get it repaired. This was a generous offer, knowing how far the town was and the nature of the road to get there. Harpo has a unique combination of interests that almost meshes in this environment. In the day, he likes to take on challenging trails on his mountain bike; at night he slows down to marvel at the sky with the rest of us. On this day, he had a mission to find a replacement part for his bike.

I'll spare the details of spending the day repairing my tire. I got back to the top of the mountain just in time for the afternoon rain.

The clouds continued intermittently dropping moisture throughout the afternoon, ceasing by evening, occasionally thinning, creating great optimism, then closing in again. Eventually they cleared, mostly, and the persevering among us had several long periods of clear dark skies. I managed to make several deep sky exposures, and then visit my friends in the telescope field.

The open sky is not pitch black. It is actually a large diffuse light source, which illuminates the world at the very limit of human perception. It's enough light to keep from

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stumbling (over even ground) and enough to find familiar shapes and people in a sea of telescopes and equipment.

Navigating the sea brings you past islands of nocturnal activity. It is an interesting experience. As you move around, there is a buzz of conversation in the dark. The tone is one of a controlled but urgent enthusiasm, overlapping verbal notes of the visual experience at the eyepiece, comparisons between telescopes, recollections of past views, advice and suggestions, and a large collection of expressions of awe. It's odd, walking in the dark and hearing chatter all around; people not seeing each other but nevertheless communicating their love for the night sky.

Some areas of the sea are augmented by music. Somehow rock-and-roll, new-age, and classical all share the field without aural conflict. One fades to the next as you roam the sea.

The sea is red, illuminated by the dim LED flashlights used to read star charts and find focus knobs. The red light preserves your visual sensitivity while inspecting the faint fuzzies in the eyepiece. This is common knowledge among amateur astronomers, but must seem strange to other visitors. Preserving night vision becomes an issue of courtesy, and finally of enforcement. Those who did not make it up the mountain by twilight were held at the gates further down the road. Vehicle headlights were a serious offense.

The red lights are everywhere, including the vendor tents that supply coffee to this army of insomniacs. Yes, there were two entrepreneurial businesses that saw a market for their product and brought it (somehow) to their consumers. For me, an avid caffeine ingestor, this was what every star party needs, an all-night espresso shop. There is a bit of java culture that goes with it that I'm not fully familiar with however, and on the advice of other consumers, accepted the "natural additives" to enhance the already potent properties of espresso. I couldn't really tell. It was a night to stay up for regardless.

To be continued in the December Gemini.

A panorama of the "telescope field".

Hundreds of astronomers set up their equipment here and protected it with shrouds against the rain and excessively curious bystanders

Minnesota Planetarium | **A Vision**

A Vision for the New Minnesota Planetarium
A cosmic feature of the Minneapolis Public Library for 50 years!

The wow factor will kick-in like a supernova at the new Planetarium theater.

All visitors—from families to school groups to tourists—will be awe-struck in the planetarium new state-of-the-art theater. A new fiber-optic projector will simulate a glorious night sky filled with over 9,000 stars, reminding stargazers how simply magnificent the heavens are once they're transported far from city lights. The sky will be so realistic that audiences can actually bring their binoculars to spot faint nebulas, star clusters and even galaxies!

After being enthralled under the Planetarium's stunning night sky, audiences will journey throughout the universe (no rockets required) in new electrifying star shows. Utilizing stunning 3-D digital images from the latest astronomical research, a full-dome immersive video projection system will dramatically create the sensation of space travel. A limitless number of cosmic voyages will be possible as audiences, via interactive seats, can vote for their favorite far-away destination making each Planetarium experience different from the last while increasing their sense of discovery.

Outside the Planetarium theatre, an astronomical lobby will feature striking ceiling and wall exhibits. This cosmic space will be an attractive venue for meetings and events for businesses and private groups. A cosmic gift shop will offer a stellar array of educational and novelty items.

MAS Note

A man from Red Wing, MN recently contacted the MAS requesting assistance. During the next twelve months, he and a small group expect to raise $60,000 to purchase and house a telescope for area schools and students. They seek technical expertise to assist them with the effort. Some travel to Red Wing is likely required to assist with site selection and other activities. If you are interested in helping with this project, please contact Mike Kibat ASAP either by phone (952.948.1218) or via e-mail (kibatme@visi.com).

September 11, 2001 **Emma Schmidga**

This is from "The Pale Blue Dot" by Carl Sagen, presented by Craig Tupper at the NASA Office of Space Science Email list. Perhaps it's relevant considering what just happened Sept. 11, 2001.

"We succeeded in taking that picture [from deep space], and, if you look at it, you see a dot. That's here. That's home.

That's us. On it, everyone you ever heard of, every human being who ever lived, lived out their lives. The aggregate of all our joys and sufferings, thousands of confident religions, ideologies and economic doctrines, every hunter and forager, every hero and coward, every creator and destroyer of civilizations, every king and peasant, every young couple in love, every hopeful child, every mother and father, every inventor and explorer, every teacher of morals, every corrupt politician, every superstar, every supreme leader, every saint and sinner in the history of our species, lived there on a mote of dust, suspended in a sunbeam.

"The earth is a very small stage in a vast cosmic arena. Think of the rivers of blood spilled by all those generals and emperors so that in glory and in triumph they could become the momentary masters of a fraction of a dot. Think of the endless cruelties visited by the inhabitants of one corner of the dot on scarcely distinguishable inhabitants of some other corner of the dot. How frequent their misunderstandings, how eager they are to kill one another, how fervent their hatreds. Our posturings, our imagined self-importance, the delusion that we have some privileged position in the universe, are challenged by this point of pale light.

Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity - in all this vastness - there is no hint that help will come from elsewhere to save us from ourselves.

"Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity -- in all this vastness -- there is no hint that help will come from elsewhere to save us from ourselves. It is up to us. It's been said that astronomy is a humbling, and I might add, a character-building experience. To my mind, there is perhaps no better demonstration of the folly of human conceits than this distant image of our tiny world. To me, it underscores our responsibility to deal more kindly and compassionately with one another and to preserve and cherish that pale blue dot, the only home we've ever known."

Onan Fall Update — Dave Olmstead

It has been a couple of months since my last report, as it relates to our Onan Observatory. The following is an effort to bring the club up to date with current and future projects at the old "Club House".

The candles have burned down and the guttural music has quieted at the Nelson Voodoo Fabricating Shop. The tremendous push to have cabinets installed in the Baby Bear section of the observatory left many of us in need of some well deserved R & R. However, the recent board approval of a bench system to encircle the terrace has Ralph and company eager to begin "phase two" of the metal shop mayhem.

The "Sidereal Bench" as it has been named, will provide initial seating for visitors and double as a deterrent to people wandering off the retaining wall during star party nights. Ralph, our architect, has designed a unique, stylish bench and rail system that, when complete, will enable members and guests to recline and view the night sky. Initially concrete footings will be placed incrementally around the radius that is now the retaining wall. Attached to the footings will be vertical steel structures that will support the curved steel channels that will form both railings and bench supports. A highly stable decking wood will be used for the bench surfaces and the eventual back-rests. This project will require a good measure of volunteer effort both in the Voodoo Metal Shop and on site so stay tuned for reports on that in the near future.

The issue of creating a group of individuals to aid in organizing and overseeing work parties is also being addressed. Club member Kevin Saunders has stepped up to the plate to help with construction tasks. Presently we are working on refining a new punch list of necessary construction tasks that will give us a renewed guideline for achieving our goals. Future reports will outline specific projects, the plans or drawings necessary to complete them, how many people will be needed to carry out those plans, and which lead person can be contacted for those who wish to help.

The observatory has enjoyed a successful season of events this year. It is evident that the members and the public are taking more notice. Join us for the fun by volunteering some time and talent to make our observatory grow and be a source of wonder for our membership and community.

Stay tuned for future "Voodoo" construction reports and notices.

Dave O.
Who hears the gravel voice of Tom Waits calling to him from Ralph's shop.

MAS For Sale

For Sale
Meade German Equatorial Mount, 12 and 1/2 inch (inside) diameter rings, designed for Meade 10 inch reflector. Very solid, heavy. Base approx. 42 inches in diameter. Call Steve, (952) 431-5821

For Sale
FOR SALE! Meade LX200 10" telescope. Seldom used; in like-new condition. (Paid $4k brand new, about 3 years ago). Contact Bob via e-mail at bjtaz@qwest.net for details.

For Sale
I have a 8" Lx200 for sale. Unfortunately not the new one. I'm going to move up to larger DOB. Asking $1,700 obo. I also have many accessories for photo, dew, etc. if interested e-mail me for details or call. Denny Johnson
djohnson@ meshbesher.com
312-339-9121 w

For Sale
I have a very good condition Celestron CG-5 equatorial mount for sale. This includes the mount head, standard tripod, accessory tray, dual axis drives and one counterweight.

Normal new price (at Anacortes) is approx $565. I'd prefer to sell this locally (vs. over the web), so I'll offer this for $300. Looking through the archives at Astromart this would seem to be a reasonable price.

If interested please contact me at pschroeder@capella.edu

Nighttime Sky Means

Mike Kibat

Many seasoned amateur astronomers, accustomed to seeking out fuzzies faint and far-away, believe that a brightly lit moon in the nighttime sky means "no 'serious' astronomy tonight". Fortunately the team leading the Onan public event last night ignored conventional wisdom, and had a great time star partying with over 25 visitors.

There was a nice selection of telescopes at the observatory last night: an 8" Dobsonian reflector, a nice big TeleVue refractor, the Society's Meade 10" LX6 outreach SCT, the permanently-mounted 16" Larson cassegrain and several others.

Just before sunset, early visitors were treated to sunspot viewing with the LX6. Sunspot group AR9591, that in recent days generated a class-X5 solar flare, was spectacular. (The coronal mass ejection associated with this flare was directed away from earth, but there is still an chance for increased auroral activity late Sunday or Monday.)

As the sun set, event Team Leader, Jackie LaVaque, led several visitors on a "grand tour of the universe", beginning with the observatory's scale model of the solar system, and then continuing on to the edge of the observable universe using one of the many slide presentations used for public events.

While Jackie enthralled visitors with the power, immensity and beauty of the universe, telescopes were trained on the moon, treating viewers to an up-close encounter with a small, small part of that universe. The seeing was far from ideal, but through the Larson telescope, operating at 220x, craters as small as 4 miles across were easily visible. Some much smaller were noted as the seeing changed from moment to moment.

The large lava-filled graben, Vallis Alpes ("Alpine Valley") was spectacular. The overlapping craters Theophillus and Cyrillus were also a highlight. (One visitor remarked, when told the diameter of Theophillus, "That's the same as my driving distance from St. Paul" — a nice way to put a celestial size into earthly terms.) As the sky darkened and Mars brightened, visitors enjoyed views of our obviously gibbous, slightly orange planetary neighbor.

Once twilight passed, moonlight dominated the sky, but it didn't stop the observing. Using a satellite tracking program, participants identified, located and tracked well over a dozen orbiting satellites and spent rocket boosters. With the moon's light reducing the number of stars visible over the observatory, it was quite easy to pick out these quick-moving pinpoints of light. One interesting observation involved a Soviet remote sensing satellite, Okean O, whose defunct booster rocket was visible, following several minutes behind in a similar orbit.

As the moon slowly slid toward the horizon, telescopes were trained on many of the old favorites...

As the moon slowly slid toward the horizon, telescopes were trained on many of the old favorites — the Dumbbell, the Ring, M13, etc. As Capricorn rose higher in the south, several telescopes, the Larson included, were used to view Uranus and Neptune. And as the fall constellations steadily rose out of the Twin Cities light dome, the Larson and other telescopes were turned toward galaxies M31, M32 and M110.

Sky conditions steadily improved throughout the night, with the Milky Way bright and well-defined overhead, even with the moon still brightly shining in the sky. After moonset and well-after most visitors had departed, MAS'ers and a few diehard visitors enjoyed deep-sky observing until well after 1:00 a.m.

So, after a cloudy Friday event, the MAS and the Onan Observatory delivered another successful public event thanks to Jackie and all those who helped out. There are eight more public events scheduled for this year, in addition to the "Onan Volunteer Appreciation Night" slated for September 7th. Make plans to come out and join us for one, or all them!

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 Waconia, 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 care-takers, and other visitors, so PLEASE PARK in the PARKING AREA.

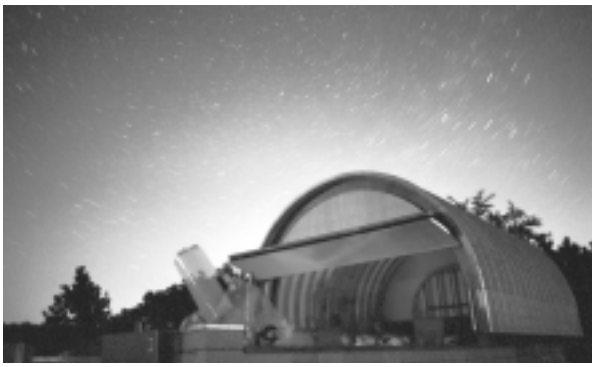
Annual Park Permits (optional, not required for observing) can be purchased by sending a check to Carver County Parks, 10775 County Road 33, Norwood Young America, MN 55397. The cost for the Annual Permit is $16. Permits are also available at the Park Office at Baylor Park, the Carver County Government 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



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:

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Subscription to Gemini for members of other astronomy clubs	$4.50
Subscription to Gemini for other persons	$9.00

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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.

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