

Gemini

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Stories Wanted: Gemini needs your story of how you first became interested in astronomy, what you have done over the years, what equipment you have used, what star parties you have attended in other states, and how you have encouraged others, especially young people, to get involved in this fascinating hobby. Submit your story to: eugene.brown@bhshealth.org

CVAS Northwoods Starfest 2008

Aug. 1-3, Beaver Creek Reserve, Fall Creek WI

By Deane Clark

Each year around the new Moon in early August, the Chippewa Valley Astronomical Society (CVAS) holds its Northwoods Starfest star party at Beaver Creek Reserve, north of Fall Creek, Wisconsin, which is about 12 miles east of Eau Claire on U.S. 12.



Entrance to Beaver Creek Reserve

The CVAS has its Hobbs Observatory there, as well as a large observing field screened from the adjacent parking lot by a strategically placed earthen berm. The observatory has two optical telescopes (24" and 14") as well as a couple of radio dishes and a large classroom which would be the envy of anyone who's ever given or heard a presentation on a buggy night at Onan.



Observing field from top of berm

The reserve itself has an aging but serviceable set of buildings like many Boy Scout camps—dining hall, sleeping lodges, bathroom building with hot water—as well as a nice, modern nature center with its own lecture hall. I have been to each Starfest since 2002.

This year I got on the road Friday afternoon around 2:30 and arrived around 4:30. I staked out my usual spot in the southeast corner of the observing field and pitched my tent and shade canopy so that the tent would be shaded for an extra precious hour or so in the morning. Each year there seems to be a sort of "MAS-ville" in this corner, so there are usually a couple of familiar faces nearby. This year I was expecting Russ Durkee and his family to show up, which they did, but before Russ got there I had already met a family who are

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friends of theirs and who came all the way from Maryland. I guess they had been warned about me beforehand, as I was greeted by name before I knew who they were. They had their three adorable kids along, and together with Russ and Brenda's one-year-old daughter, it was quite the fun group.

One nice thing about Starfest is that it is a kid-friendly event. There were kids ranging in age from a few months to teenagers in attendance. Overall attendance seemed a bit lower than average this year, about 90-100, but that is probably because of competition from the Nebraska Star Party, the "Starry Night, Prairie Night" at Jeffers Petroglyphs, and MAS's own "Campout with the Stars" event at Onan, all of which happened at the same time this year.



Dr. Jennifer L.B. Anderson answering questions about craters

After picking up my name tag, checking in with some familiar faces from past years, and checking out some of the equipment being set up on the field, it was time for the evening talk. On Friday night it was "Going Ballistic: Making Impact Craters in the Laboratory." by Dr. Jennifer L.B. Anderson from Winona State University. They use high-speed guns that can fire small BB-like projectiles at velocities of up to 7 km/sec. It was fascinating and sounded like a lot of fun as well.

After the talk we all headed out to prepare for the night's observing. It had been a warm, clear day, and it turned into a clear, mild night. Predictions of sweltering heat for the weekend proved inaccurate, and it was actually cool enough after midnight to need a light jacket or sweatshirt. This year I brought my newest scope, a 250mm f/12 Takahashi Mewlon Dall-Kirkham Cassegrain. I had taken delivery only about six weeks earlier and had set it up only once before.



A cool scope and some dude who hung around it all weekend

Once the tents were set up, it was time to grab a reasonably-priced bratwurst and hot dog from the grill by the observatory and relax a bit before the evening presentations. The Starfest registration fee includes breakfast both Saturday and Sunday, Saturday dinner, and midnight snacks on Friday and Saturday nights, but everyone's encouraged to bring something to share for the midnight snacks. Also, if you're not the tenting type, they have lodges with bunk beds (BYO sleeping bag and pillow) and room for some RVs.

Thus I spent most of my time revisiting old friends in the sky with my new acquisition. I spent quite a bit of time on Jupiter. It looked fabulous, bright and detailed even in "wide field" long focal-length eyepieces, due to the Mewlon's 3000mm focal length. I traded views with Russ and his 105mm Apo refractor, another awesome planetary scope. There was some dew as the night wore on, but one advantage of an open-tube Cassegrain is that it doesn't dew-up easily. At midnight I joined most of the other observers for a snack in the dining hall, where the fare tends toward the chips and pretzels end of the spectrum, but some apples and grapes were provided as well.

After chatting a little about what we were all observing, we headed back outside. I got several visitors through the night wanting a peek through my scope, and I tried to do the same on occasion. A medium-to-large star party like this is a nice chance to get a look through equipment you might not see at local star parties. (Of course, I like to tell people about last year, when I brought a borrowed Vixen 8" VISAC cata-

dioptric because I'd never seen or used one in the field before, only to find that two other people brought one as well.) Finally, by about 3:30 a.m., I had to concede to sleep and climbed into my tent, leaving at least a dozen folks still observing, including Michael Kauper, who always seems to be going strong and trying to image something each year when I am going to bed.

Saturday morning, after an earplug-assisted restful night, I managed to get up and make myself presentable enough for breakfast at 10:00. Each year, NWSF veterans look forward to the apple brown betty, scrambled eggs and sausage for breakfast on Sat-

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urday. (Sunday features enormous flapjacks and, if you're lucky, some of the brown betty might be left over too.) I use the time after breakfast to make sure my equipment dried out from the night before, take a shower, and consider which of the paper sessions to attend in the afternoon. I like to take it easy and just hang out on the observing field otherwise, chat with old friends and make some new ones, and quiz others about their equipment. I always come home with a few pictures of stuff I've never seen before and really ingenious ATM inventions. There is also a swap meet on Saturday afternoon, although the pickings always seem a bit slim to me. If you feel like being more active, there are hiking trails in the reserve, you can tour the nature center, and there is a nice lakeside county park not far away.

Dinnertime on Saturday is always a highlight, not least of all for the door-prize giveaway. This year was a little slim, what



Swap meet

with the economy being down and all, but there were still plenty of prizes to go around. No telescopes or fancy eyepieces this year, but then I never win anyway (boo hoo). Actually, I did get a prize last year. Dinner was spaghetti with huge baked chicken fillets, topped off with ice cream sundaes for desert.

After dinner, everyone gathers out in front of the observatory for a group picture before the evening presentations are given at the nature center.



Group photo – 2008 NWSF attendees

The main speaker Saturday night was Jim Elbert on “The Designing and Operation of Space Vehicles” or “Some Spacecraft I Have Known.” Jim spent a lot of years helping build vehicles for the space program, mostly with TRW, and gave a great insider's view.

Coming out of the talk, we were met with a mostly cloudy sky, and I was prepared to console myself with the usual mantra: “Well, at least we had one good night.” But luckily the

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July and August Board Report

By Bill Kocken, secretary

Treasurer's Report

Bob Benson presented the treasurer's report at our July meeting. There is \$6,182 in the general fund, \$11,231 in the special projects fund, and the Onan fund has \$6,274. On the revenue and expense side: Dues are \$443 below budget, donations are below by \$89, money-market dividends are \$136 below and miscellaneous income is up about \$160. The shortfall in dues is possibly due to timing of membership renewals, which tend to occur later in the year. The switch to a new printer for Gemini is working well. We're about \$26 under budget for that expense, but more importantly the issues are being printed and delivered on a more timely basis.

Cherry Grove

Vic Heiner reports that much progress is being made at Cherry Grove this year. The front side of the observatory has been repaired with some new boards and new siding and the doorway has been rebuilt. The old 16" Newtonian has been removed and a pier is installed for the Meade 14" that Father Brown donated. The pier's foundation has been braced to remove vibrations. The goal is to have the scope ready by September. A new storage shed has also been assembled to replace the old one. Vic reports that the neighbors who are mowing the lawn are doing a great job. It costs a little more than previously, but it has helped the appearance and usefulness of the site a lot.

Onan

Dave Olmstead reports that a work party was held in preparation for the REA “Campout with the Stars” weekend to clean and seal some concrete blocks. Additionally, there is a gap be-

tween the walls of Papa Bear and Baby Bear that needs a permanent solution. The gap is currently covered with steel. Bob Benson will have his father-in-law look at it and possibly fill the gap with masonry.

20" Obsession

The 20" Obsession that Father Brown donated to MAS made its debut at the July membership meeting. (Thanks, Father Brown. It's a wonderful addition to the Onan lineup!) The scope came with the ServoCat and Argo Navis kit, but it needs installation. Rather than send the scope back to Obsession for the installation, Steve Emert volunteered to lead the effort, and by the time you read this the 20" Obsession at Onan will be operational in full automated GoTo and track mode.

Long Lake Conservation Center

The check for garage construction was sent in early July. Construction was expected to occur in September but will likely take place in October. Once the construction is complete and the telescope moved into the garage, the 6x10 Wells Cargo trailer can be sold. If you're interested in buying a first-class trailer, please contact John Marchetti, the DSS committee chairman.

Metcalf/Belwin

A draft MOU between MAS and Belwin is in the works. The committee is targeting a 16x20 roll-off roof observatory at a cost of about \$10,000. They will investigate possible sources of grant money for the project.

August and September Membership Meetings

The focus of these meetings is to discuss committee makeup and needs, the SIGs, outreach needs, and direction for the club in building and maintaining four observing sites.

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Outreach and “Campout with the Stars” Recap

As of the July meeting, plans were firming up nicely for the event. Meade sent four MySKY units and we also have Astronomy magazine subscriptions and Science Museum memberships to give away. Merle will order about \$200 of MAS merchandise from Café Press to give away. Bob Young, Jon Hickman and Mike Kibat are doing a great job of organizing the event. Camping registrations are below expected, but we’re hoping for more in the next two weeks that remain before the event.

At the August board meeting, Bob Young presented a report on the “Campout with the Stars” event which was held the weekend of August 1. We had 23 sites and 80-90 guests. We made \$685 on camping fees plus \$425 on wrist bands and raffle tickets. Expenses were \$143 to the park and \$176 miscellaneous. Our profit was \$791. Most importantly, we had a great event, thanks to the efforts of Bob Young and John Hickman and the Onan committee and other volunteers. Fantastic skies on Friday, August 1, helped a lot, too!

Planning for next year’s event has already begun. We’re thinking of possibly a first-quarter Moon weekend for next year so as not to interfere with other new-Moon star parties. The event would not necessarily be an outreach activity, but we discussed that it would make the most sense to set up a separate task force, like we do for Astronomy Day.

We also discussed forming an outreach committee with Bob. He would like to get volunteers to coordinate things like Scout events, Onan events and coordinating activities with local parks.

MAS Board Elections

Every December the Minnesota Astronomical Society has elections to fill the three board positions whose terms are up. This year the positions up for election are president, secretary and one of the two board member at large positions. Currently Ben Huset, Bill Kocken and Ron Bubany hold these positions respectively.

Anyone who would like to run for any of these seats can submit his or her name to the nominations chair in writing (including email) on or before the November 6 general meeting. We will also be accepting nominations at the November meeting. Nominations will close at the end of that meeting. Please submit your name to Merle Hiltner by mail (MAS P.O. Box), email (mhiltner@charter.net) or personal message on the MAS forum.

Elections will be held at the December 4 MAS general meeting at the Fairview Community Center in Roseville. If you are unable to attend you can obtain an absentee ballot from Merle Hiltner. Ballot requests must be received by November 15 and the completed ballots returned by November 30.

Board members’ terms begin on the January 1 general meeting and run for two years. At the January 20 board meeting the outgoing and newly elected board members will be present in order to transition duties. Board members are expected to attend the monthly board meeting held the third Tuesday of each month.

Space Foundation Event

Ben Huset is gathering help to bring telescopes to a Space Foundation reception to be held on September 1 at the Minnesota History Center in conjunction with the Republican National Convention. The Space Foundation is trying to encourage politicians to invest in space exploration. [The event took place as planned with five MAS members helping out. Approximately 135 people attended the event, and MAS received high praise for the effort. Thanks to Ben and the other helpers.]

Elections

We need to hold elections for three board positions: president (currently held by Ben Huset); board member at large (currently held by Ron Bubany); and secretary (currently held by Bill Kocken). Merle Hiltner agreed to be the election coordinator. The schedule is as follows: Post a call for candidates in October Gemini and at the September and October monthly meetings; have stump speeches in November and the election in December. We will also post a notice in the forums and on the home page.

MAS Merchandise

MAS-labeled merchandise, produced by Café Press, has been sold at the last couple of monthly meetings. We will order additional inventory. This cuts down on shipping costs, but if you want to order your own, please visit www.cafepress.com/masmerchandise. We’d like to thank Merle Hiltner for spearheading this project. ■

Duties

The president’s duties include presiding over the monthly general meetings and monthly board meetings. Generally the president will make the announcements and conduct any necessary business. The president may also “appoint chairpersons as he/she sees fit to operate committees necessary to ensure a smooth-running operation.”

The secretary’s duties include taking minutes during the board meetings and submitting them to the board. The secretary gets email inquiries from the info@mnaastro.org mailbox and replies, handles or forwards them appropriately. The secretary also updates MAS answering service messages and responds to any inquiries on the answering service. (The observing chair, Bill Kocken, will continue to make the go/ no go message for star parties.)

Board member at large duties include working with the other MAS board members to execute the MAS mission statement and constitution preamble. This can include almost any support role that the board member may decide to take on or help to facilitate.

Please consider running for one of the open board positions. It is a great way to contribute to MAS, to help in making decisions to shape the society for the coming years and to get to know more about MAS and its members.

Merle Hiltner 2008 nominations chair ■

Scenes from the "Campout with the Stars" August 1-3



How Big Is the Universe?

By Dick Jacobson

I first got interested in astronomy when I was in the first grade. In school we were starting to learn about arithmetic, working with numbers like 7, 15, 42, etc. About that time my parents gave me a book, *Fun with Astronomy*, that told about the planets and stars. I was amazed to read statements like “Jupiter is 484,000,000 miles from the Sun.” I had no idea that such huge numbers existed. This was in the 1950s before the phrase “blow your mind” was invented, but these numbers totally blew my mind! I was hooked on astronomy for life. For the first time I became aware of something so far beyond my cozy daily life that I could scarcely imagine it. Like many young kids, I was fascinated by anything big, but the things I read about in astronomy books went far beyond elephants, dinosaurs, ocean liners and all the other giant things in the world.

Like any kid who loves astronomy, I wanted a telescope more than anything else in the world. I finally was able to purchase my first scope from Criterion for \$18.95. It was a truly wretched telescope, even compared to the worst of today’s discount-store scopes. The objective was a little over an inch in diameter. It didn’t have eyepieces, just some loose lenses that you could mount in the cardboard drawtube. It had a tall, shaky tripod-essentially three broom handles. It also had a little finder scope until the dog ate it. But I was able to see craters on the Moon and was thrilled with that. Several years later I upgraded to a very nice 4" Newtonian which I still have today. The day that scope arrived was one of the greatest days of my life. I still remember it vividly.



A photo of Dick's trusty old 4"Newtonian, purchased from Criterion around 1960 and still in great condition.

My interest in astronomy persisted through high school and college. Despite this, I never considered majoring in astronomy because I felt (correctly, I think) that the career opportunities were poor. Eventually I got a degree in mathematics, which as it turned out wasn't such a great field either. The Apollo program had been cancelled and engineers were being laid off by

the thousands just when I graduated. I made my career as a computer programmer, not exactly a distinguished field for someone with a B.A. in math from Harvard, but it was something I enjoyed doing.

I've always liked reading about astronomy, but for many years I did no observing. It seemed pointless. I was no longer very impressed with what I could see in that 4" Newtonian. At one stage I started grinding an 8" mirror, but it went slower than expected and I got bored with the project. Perversely, that mirror prevented me from becoming active in amateur astronomy. Many times I thought of buying a better scope now that I could afford it, but I always told myself, “No, I've got to finish that mirror first.” I didn't become actively involved in astronomy until many years later, when I purchased a 10" Dobsonian and built an equatorial mount for it. Seeing the Orion Nebula in that 10" and watching a globular cluster resolved into stars for the first time made me gasp and say “Wow!” That hadn't happened in years.

A few months ago my niece volunteered me to give a talk about astronomy to her seventh-grade science class. I chose the topic “How big is the universe?” I tried to give the students a grasp of the scale of the universe, using a series of ten exact-scale drawings on the whiteboard. These started with the Solar System, then Alpha Centauri, the Orion Nebula, the Milky Way, the Andromeda Galaxy, the Virgo Cluster, 3C273 (nearest quasar) and finally the cosmic microwave background. I got a lot of blank stares, but they had some very good questions too. I had also planned to speculate on whether the universe is infinite. If this is true, and the laws of physics are uniform, then there must be infinitely many identical copies of you, me, the entire Earth, etc. It is possible to estimate how far away these identical twins would be. These numbers go far beyond “astronomical.” We're talking double exponents here, folks, numbers only a mathematician could love. I ran out of time and didn't get to this part of the talk. Maybe it would have been too mind-blowing anyway.

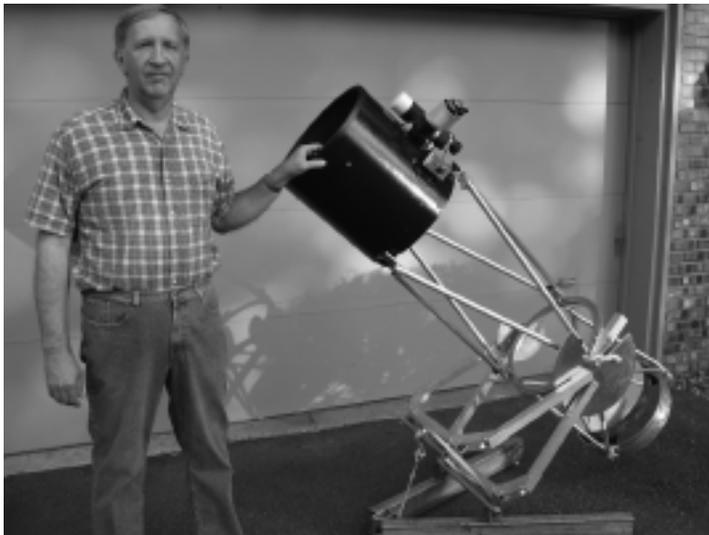
My Latest Projects

Last year in Gemini (see October and December 2007) I described, in excruciating detail, the construction of my 20" equatorial Newtonian. I promise I won't say much more about it in this article. I just want to mention that, based on some discussions in the Cloudy Nights forum, this scope is apparently one of the world's largest portable equatorials. I thought it might be the largest, but I've learned of a 24" that was built around 1983. I don't know of any others larger than mine, although it is likely that there are a few others around.

My most recent astronomy project is a rebuild of my 14" Newtonian. The most interesting and unusual feature is a Lazy Susan ball-bearing ring which is at the very center of the telescope. Many telescopes include pairs of rings for tube rotation, but as far as I know this one is unique in being built around a single ring. Intuitively, it may seem that the tube would wobble too much with this construction, but early results are promising. The scope isn't finished yet and I'm still working on reducing friction and vibration, but I hope to end up with an ultra-light equatorial telescope with great freedom of movement, sort of like a ball scope without the drawbacks.

Why mess around with a 14" scope when I already own a 20"? For one thing, a 14" Newtonian is much easier to use since

I don't need a ladder. I think an aperture of approximately 15" is a real "sweet spot" for Newtonians, a nice balance between usability and light-gathering power. It's big enough so the Messier objects look interesting and you can resolve many globular clusters into hundreds of stars, yet small enough to handle with relative ease. In other words, a geezer-scope for when I get too old to handle a ladder-scope. Plus, I wanted to try out several ideas in a low-risk project, and all my improvements to the original 14" Sonotube scope had made it pretty darn heavy.



This is the 14" Newtonian that Dick is currently rebuilding. The most unusual feature is the ball-bearing Lazy Susan ring at the very center of the scope; the entire scope rotates on this ring. There are trusses in both directions from the ring. Dick disassembles the upper truss for transportation, but the lower truss stays permanently assembled. The mirror is completely out in the open, which should result in better cooling and sharper images. The tube is supported by a very lightweight equatorial fork mount. An identical ring bearing is used for the polar axis in this photo, but it did not perform up to expectations, so he redesigned the polar axis employing additional bearings.

Two of the pictures with this article show the 14" scope overall and a close-up of the central ball-bearing ring. The third picture shows another recent astronomy project, an unusual observing ladder. Anyone who has used a large Newtonian that requires a ladder to get to the eyepiece has experienced the frustrations of the widely spaced steps on a standard stepladder. One step is too low and the next is too high for a comfortable position at the eyepiece. To solve this problem, I took a standard wooden stepladder, cut the steps in half, and put it back together as a staggered ladder. The spacing of the steps is one-half as wide as on the original ladder. This works fine at first, but after a few minutes you get tired of standing on uneven steps, so I also built a little half-step accessory for extended observing. A word of warning: If you decide to build something like this, you may experience a few brief moments of panic when you put your other foot down and find nothing but air! Tom Youngblood says I should call this "Jacob(son)'s Ladder." I've also experimented with a rung-less ladder that has a pair of footpads riding on a central beam and ratchet device. So far this isn't ready for prime time.

There's one other project or group of projects that I want to mention. I'm not including a photo because I've been thinking of applying for a patent. Over ten years ago I invented a binocular mount that provides complete three-dimensional

movement for heavy binoculars. I've never seen anything else like it. Recently I took the same idea and built two other devices, a computer monitor and a lamp, both of which float. For several years I've been an inventor wannabe. I haven't come up with anything important, but I think my floating computer monitor could be The Big One. Remember, you heard it here first.

The Telescope Obsession

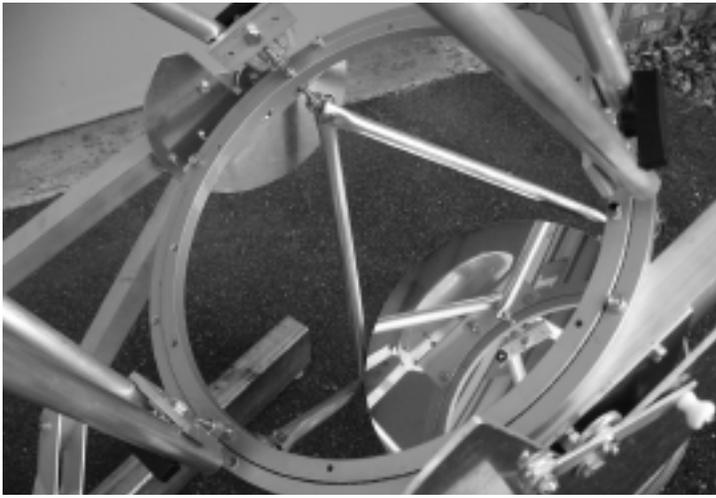
I admit it, I have a lifelong obsession with optical instruments, particularly telescopes. Normal people (especially guys) tend to get obsessed with things like cars, boats, planes, whatever. Somehow I got the idea firmly planted in my head that telescopes are the coolest devices ever invented by humankind. Maybe it started when, as a nearsighted 6-year-old, I got my first pair of glasses and was overwhelmed with how clear and beautiful the world looked through them. The idea of a couple of pieces of curved glass steering magnified images into your eyes just seems so elegant. Optical instruments turn your eyes into Superman eyes. I can't think of anything else that amplifies a person's senses in quite the same way.

My personal interest has gone in the direction of building and tinkering with telescopes-and using them, of course. I haven't become a collector, but I can easily understand why some people collect them by the dozens. The purest example of a telescope fanatic, which I read about in *Sky & Telescope*, was a guy who bought three identical Celestrons: one to observe with, one to bring along as a backup in case something

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This is the staggered stepladder which Dick uses for observing with his 20" scope. He built it by taking a 6-foot wooden ladder apart, cutting the steps in half and re-assembling it. The resulting ladder is 5-1/2 feet tall. He cut 6 inches off the bottom of the left rail and 6 inches off the top of the right rail and added a center rail. The ladder feels more solid than the original ladder and is much more convenient to use at a telescope because of the closer step spacing. In his left hand Dick is holding a half-step accessory. He built this because, when observing an object for more than a few minutes, having one's feet at different heights becomes fatiguing. The half-step can be inserted into the ladder so both feet are at the same height.



This is a closeup showing the ball-bearing ring at the heart of the 14" telescope that Dick is rebuilding. The six tube trusses extend up and down from the ring, and the mirror is at bottom right. The trusses are connected to the inner ring using full-thread bolts that pass through the ring. The bolts make it easy to make fine adjustments to tube length and balance. The outer part of the ring is attached to a pair of bronze bearings which form the declination axis, resting in the circular aluminum plates on either side of the fork.

went wrong with the first one, and one to just keep in mint condition.

For me, stargazing is as much an opportunity to play with telescopes as it is to study the heavens. I don't see anything wrong with this. I spend nearly as much time at the eyepiece thinking "How can I make this work better?" as I do thinking about what I'm looking at.

This year is the 400th anniversary of the invention of the telescope by Lippershey and other spectacle makers in Holland. Many people think of Galileo as the inventor of the telescope, but his main contributions, a year later, were to improve it and use it to look at things that you couldn't see clearly by simply walking up to them—the heavens, in other words. I think that Galileo would be immensely pleased to know that, 400 years later, a telescope is the only thing in space (well, aside from the International Space Station) that is valuable enough to

spend hundreds of millions of dollars and put lives at risk to repair. In my opinion, space telescopes outrank all other scientific space missions, manned or unmanned, in importance. They help us study the entire visible universe, not just our neighborhood.

The Future of Astronomy

In my lifetime, astronomy has exploded with discoveries. When I got started in astronomy in the 1950s, it was getting a little stagnant. We knew the overall architecture of the universe, the planets, stars and galaxies. Extrasolar planets were speculative. There were doubts that any telescope larger than the 200-inch at Palomar could ever be built. Space telescopes were a far-off dream. The Big Bang theory and the Steady State theory were equal competitors, with no data available to prefer one over the other. Then in rapid succession came quasars, pulsars, black holes, dark matter, extrasolar planets, gravitational lenses, gamma ray bursts, ultrahigh energy cosmic rays, evidence of floods on Mars, oceans on Europa, geysers on Enceladus, methane lakes and rivers on Titan, accretion disks and jets, supermassive black holes at the hearts of galaxies, the cosmic microwave background, and perhaps the most shocking of all, the accelerating expansion of the universe.

What next? Of course there's the discovery everybody's been waiting for: extraterrestrial intelligence. Will it take a completely unexpected form? Stars deep in thought, their thought processes revealed by intricate magnetic fields? What will a supernova look like close up? What is really happening at the centers of galaxies, just stars being swallowed up by the giant black hole or something more interesting? When we finally find out what dark matter is made of, will it be just a big amorphous blob or will it have as much structure as bright matter (dark matter planets, creatures, etc)? Will we discover additional dimensions of space or time?

Astronomy is not entertaining to very many people in the way that movies, sports, etc., are. It requires a strong personal commitment but, given that, it can be very rewarding. I'm grateful to all the MAS members who have done so much to promote public interest in astronomy, and I hope to continue doing my own small part for many years to come.

New Zealand Partial Solar Eclipse

By Glenn Lee

I was very fortunate this past winter to have the opportunity to travel to New Zealand as part of a folk-dance tour. The country is every bit as beautiful as it is purported to be, and much of the country on the South Island is rural and hence relatively free of light and air pollution. Unfortunately, I wasn't able to pack any larger optics than a pair of 10x42 bird-watching binoculars, so a lot of my sky-watching was done with the naked eye after my arms got tired from holding up the binoculars. Still, there was a lot to see, including the Magellanic Clouds and the Southern Cross (which is on New Zealand's flag!).

The high point of the trip, astronomically speaking, was a partial solar eclipse on the afternoon of February 7. Having re-

searched this in advance, I was able to bring along a double thickness of smoked-glass panes which are normally used in welder's masks. We were en route to our lodgings via rented bus just as the eclipse hit its maximum—nearly 50% coverage. As soon as we got off the bus, I made an announcement that an eclipse was under way and repeatedly told everyone not to look at it with unprotected eyes. Naturally, everyone then wanted a look through the smoked glass, so I handed it around and all were able to get a good view of the event. A couple of people also managed to get decent pictures of it with digital hand-held cameras.

It was the first solar eclipse that most of my traveling companions had ever witnessed, so I made the most of the opportunity to do some astronomic education and outreach. All in all, it was a successful trip.



*The partial solar eclipse from Auckland City.
Photo by Glenn Jeffrey*



*Total monetary outlay for solar observing apparatus: \$7.98.
Photo by Glenn Lee*



Everyone got a good look. Photo by Glenn Lee



*Our resident physicist confirms the observation.
Photo by Glenn Lee*

From the Skyline of Manhattan to an Eclipse over Martha's Vineyard

by Lee Wolfson

For my 13th birthday, 1963, my twin brother and I were given a 3" or 4" refractor. I remember the box it came in and the fact that the telescope was in many little pieces and required assembly. Not only were the instructions in dreadfully translated Japanese, but no one in my family was particularly mechanical, so a neighbor who lived behind us put it together in about four minutes, completely humiliating us all. I took the telescope out at every opportunity and was astounded by views of the Moon and Jupiter. I made drawings of the positions of the moons of Jupiter and tried to figure out which moon was which. Despite our living in a suburb of New York City, clear nights happened frequently enough to keep me interested for many years.

One of the most amazing views I ever saw through the telescope was terrestrial. On a hill near our house, the skyline of Manhattan, about 30 miles away, could be seen before the trees bloomed in the spring. I carried the scope up to the open field one night, and the image was a wildly out-of-proportion Empire State Building glowing on a tiny foreground horizon. Only the top third could be seen, which further added to the other-worldliness of the scene.

The time was the early 1970s, and I was going to school in Boston. I frantically disassembled my old white telescope and the three of us tumbled down Beacon Street to the old black Chevrolet Biscayne. We needed to get down to Cape Cod as fast as this beast could fly. A total solar eclipse! I pictured the lunar shadow somewhere out in space, heading toward us at a thousand miles an hour as we drove out of Boston, laughing over nothing but the constant banter between my brother and me,

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driving my girlfriend nuts, lurching through small coastal towns and seeking any beach facing Martha's Vineyard. The shadow was coming! The shadow was coming!

We reached the end of the road at an old breakwater, jumped out of the car and scrambled down stone steps to the beach, clutching the parts of the telescope as we ran. We were surprised by a Bacchanalia already in progress on the winter sand, big jugs of wine being passed around by shivering Greeks. I tried to get the tripod to accept the upper connector of the scope, but it just refused. The tyranny of the inanimate! I glanced up from my imploring and became aware of a hush that had begun to blanket everything. The light was diminishing ever so incrementally and profoundly. A piece of the sun had gone missing, but the real impact of the event was happening down here and deep within.

Bitterly cold winds picked up and the gulls became mute, coming to rest on the frigid water of the bay. The sky continued to darken as we huddled together for warmth; stars appeared and all color dropped away. I glanced up, and out of the corner of my eye I saw the great disk of the Sun covered in totality, long streaks of white light escaping over the mountains of the Moon. We sat stunned and mute. The light was now slowly slipping around the blackened Moon with late afternoon being handed back to us.

Who lives in a world so separate from natural phenomena as to think that we are not intimately related to the Sun and the Moon? Change day into night and back again, and the most primitive linkage is revealed. It begs the question of where the mind and the universe begin and end.

Directions to the Star Party Locations

For maps and further details about the sites, please go to our website at www.mnastro.org/facilities.

Baylor Regional Park

To reach Baylor Regional Park, head west on Minnesota Highway 5, through Chanhassen and Waconia, to the town of Norwood-Young America. Turn right onto Carver County Road 33 and continue approximately two miles north. Baylor Regional Park is on the right side of the road, marked with a prominent sign. When entering the park, stay to the right and follow the road approx 1/4 mile. When visiting the Baylor Regional Park, MAS members are requested not to park or drive on the grass. There is a drive up to the observatory which can be used for loading or unloading or handicapped parking only. For an alternate route from the southern suburbs, take U.S. Highway 212 west to Norwood-Young America. Turn right at the second traffic light onto Carver County Road 33. Continue two miles north to the park entrance.

Cherry Grove

Cherry Grove is located south of the Twin Cities, in Goodhue County, about 20 miles south of Cannon Falls. To reach Cherry Grove, head south on Highway 52. On 52 about six miles south of Cannon Falls, and just past the Edgewood Inn, is a large green highway sign for Goodhue County Rd. 1 west. Turn right, and follow County 1 straight south for about sixteen miles until you arrive at a "T" intersection with County A. The observatory is immediately at your right, nestled in the shoulder of the "T." Parking is permitted on the site, or along the road, preferably County A.

Metcalf

To reach Metcalf, head east from St. Paul along Hwy. 94. About four miles east of the I-694 / I-494 crossing is Minnesota State Highway 95, also known as Manning Avenue (exit 253). Turn south (right turn) and then almost immediately turn left onto the frontage road (Hudson Road S). Continue east on the frontage road for about one and one-half miles. Turn right onto Indian Trail, checking the odometer as you turn. Follow Indian Trail south for just about one and one-tenth miles, where you'll see an unmarked chain-link gate on the right, opening onto a dirt driveway with slight up-slope. This is the the entrance to Metcalf.

Long Lake Conservation Center

From Western Twin cities: Take I-94 west to Rogers/MN 101. Go north/right on MN 101 through Elk River, where MN 101 becomes 169. Continue north on US 169 approximately 90 miles to Aitkin. At stoplight in Aitkin, turn east/right onto US 169/MN 210 and go out of town eight miles. Then turn east/right, following MN 210 toward Duluth. Proceed seven miles. A large green highway sign marks the turn off 210 to Long Lake Conservation Center. Turn north/left on County Rd. 5. After three miles, turn east/right on gravel County Rd. 88. It is approximately one mile to the LLCC gate. Follow signs to parking and unloading areas.

From Eastern Twin cities: Go north on I-35 to Finlayson/Exit 195. Turn west/left and go one mile to County Rd. 61 and MN 18. At stop sign turn right/north and go two miles. Follow MN 18 west/left and continue 19 miles to MN 65. Turn north/right on MN 65 and proceed 30 miles to McGregor. Intersect with MN 210 and follow 210 west/left (through McGregor) for seven miles. A large green highway sign marks the turn off MN 210 to Long Lake Conservation Center. Turn north/right on County Rd. 5. After three miles, turn east/right on gravel County Rd. 88. It is approximately one mile to the LLCC gate. Follow signs to parking and unloading areas.

Minnesota Astronomical Society 2008 Star Party Schedule

Date	Star Party Location	Onan Public Night	Other	Astronomical			Moon % Illuminated	Moon Phase
				Twilight Begins	Moonrise	Moonset		
10/3/08	Baylor & LLCC	10/4/08		8:26 PM	12:05 PM	8:33 PM	15%	4 days after new
10/10/08				8:13 PM	4:39 PM	3:37 AM	77%	4 days before full
10/17/08		10/18/08		8:02 PM	7:54 PM	12:36 PM	92%	3 days after full
10/24/08	Baylor, Metcalf & LLCC			7:51 PM	3:04 AM	4:12 PM	22%	4 days before new
10/31/08	Cherry Grove & LLCC	11/1/08		7:41 PM	10:55 AM	7:12 PM	5%	3 days after full
11/7/08		11/8/08		6:33 PM	2:01 PM	1:26 AM	61%	2 days after 1st qtr.
11/14/08				6:27 PM	5:38 PM	10:24 AM	98%	1 day after full
11/21/08	Baylor & LLCC	11/22/08		6:22 PM	1:06 AM	1:36 PM	36%	2 days after 3rd qtr.
11/28/08	Cherry Grove & LLCC			6:19 PM	8:44 AM	4:56 PM	0%	1 day after new
12/5/08	Metcalf	12/6/08		6:18 PM	12:23 PM		44%	first quarter.
12/12/08				6:18 PM	4:20 PM	9:03 AM	100%	full
12/19/08	Baylor	12/20/08		6:21 PM	12:05 AM	12:00 PM	52%	third quarter.
12/26/08	Cherry Grove			6:24 PM	7:31 AM	3:43 PM	2%	new !

This schedule is subject to change. You can also check the MAS online calendar at www.mnastro.org for a complete schedule of all MAS events. Onan, Cherry Grove and Metcalf Star Parties are held on Friday nights, with Saturday reserved as the backup night if Friday is cloudy. LLCC Star parties are held on both Friday and Saturday night. Onan Public Nights are held on Saturday nights only. In 2008 Daylight Saving Time begins April 9 and ends on November 2.

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Cloud bank enforces midnight snack break

clouds broke up until about midnight, when another band moved through. Not bad timing really, so we headed in for the midnight snack.

After maybe 45 minutes, someone called “It’s clear!” and back out we went. The rest of the night was beautiful, and I stayed up almost as late as Friday night. Later, after getting home, I found we had apparently dodged the bad weather. I certainly felt grateful that we didn’t end up observing thunderstorms most of the evening, as happened last year. However, even that was kind of cool, with everyone lined up in front of the observatory watching the show put on by distant lightning.

I know it’s been said before (I just found Steve Emert’s NWSF article from last year and reread it) but NWSF is a great regional star party that strikes me as being just the right size. It’s a really friendly event, it’s close enough to not stress out about, far enough away to make a nice, short vacation, and as of this year, 20 years old. So if you haven’t been there, try it next year, and if you have, come again. Let’s see how big “MAS-ville” can get!



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