

Gemini

a publication of the Minnesota Astronomical Society



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Upcoming Events

From <http://mnastro.org/outreach/calendar>

October

- 1 Baylor Star Party
- 2 Baylor Star Party
- 5 MAS General Meeting: 7:30 At the Minneapolis Planetarium at the Minneapolis Public Library on Nicollet Ave in downtown Minneapolis. The program will be a presentation by the staff of the Planetarium relating their trip to the recent total Solar eclipse.
- 8 Cherry Grove Star Party
- 9 Cherry Grove Star Party
- 15 Metcalf Star Party
- 16 Metcalf Star Party
- 22 Orionid Meteor Shower
- 29 Baylor Star Party
- 30 Baylor Star Party
- 31 Halloween, return to Standard Time.

November

- 2 MAS General Meeting
- 3 Taurid meteor shower
- 5 Cherry Grove Star Party
- 6 Cherry Grove Star Party
- 12 Metcalf Star Party
- 13 Metcalf Star Party
- 18 Leonid Meteor Shower/Storm
- 21 Saturn 2.4 degree N of moon

Happenings at Cherry Grove

Robert H. Schmidt, Secretary

About two or three months ago a team of MAS members visited Cherry Grove to look at the Dr. Sherman Schultz Telescope and the Observatory building to look at making the Observatory useful to the membership. A number of problems were noted. The Schultz telescope mirror was badly blemished by corrosion spots, probably caused by road salt dust settling on the mirror and then being activated by humidity. Water deposits inside of the building was found, probably the result of a very strong driving rain which had fallen in the recent past and which had found a few holes in the roof and in the seal between the roof and main building. The rollback roof seemed to bind a little, as there is a slight offset in the rails that the roof moves on, also the bolts holding the rails in place were round head rather than flat head which interfered with free movement of the roof. The mirror of the telescope was not centered in the tube of the scope, which was caused by sagging of the paper sonotube of which the scope tube is made.

About a month or two ago a team again visited the Observatory and removed the mirror, the tube, diagonal support and eyepiece focus device from the telescope. The mirror was removed to the Twin Cities where it was tested and found to be somewhat under corrected. The mirror is now being refigured by member Lauren Nelson and when that is finished the mirror will be recoated and restored to Cherry Grove. At that time the round head bolts were replaced with flat head bolts allowing the roof to move freely except for the binding caused by the track offset.

A month ago another work party made some adjustments to the chain drive of the roof, allowing more direct pull on the chain. The track was checked for being level and found to be very good within the building but that the track outside the building is about one inch high at the Northeast track end and almost two inches high at the Northwest track end. Also the two tracks are about 1 inch East of the desired position which causes the bind in the track.

On June 28, 1999 a team again visited the site to plan more corrections, and have determined the following, the track

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posts at the North ends of the tracks will be cut off the amounts noted above, the cross bracing will be modified to bring the track straight. The track will be extended by three feet to allow greater view of the North sky. A new movable weather seal will be applied to the South end of the Observatory. A new chain support will be added to the South end of the roof and will incorporate a rain cover to protect the chain from rain. Also at that time the telescope tube and all accessories of the telescope and also the trunion box of the telescope were removed to the Twin Cities, and are now in the possession of John Connery.

Thanks to the generosity of an Anonymous Donor there are funds to accomplish many corrections and improvements to the Dr. Sherman Schultz Telescope. Among these is a replacement for the sonotube, which suffers deformation due to water absorption, for this a metal tube will be obtained, the recoating of the mirror. Also we will be obtaining a set of tight covers for the new tube to reduce the corrosion damage that might occur to the mirror over time. There will be additional items gotten for the telescope from this generous gift which, will be determined at a later date.

We do have an ongoing problem for which only sweat equity is the answer, namely the need for ongoing labor to keep the grass mowed. I am asking for volunteers who will cut the grass on a one time per summer per person basis.

We will need about twenty people per year, and they should be from those who find that Cherry Grove is a good place to look at dark skies. I want to thank all of you who have been helping out at Cherry Grove in the effort to make our Observatory all that it can and should be.

Gemini

The newsletter of the MAS

To all members, subscribers, and friends of MAS:

Gemini is your newsletter. It contains announcements, event calendars, stories, photos, opinions, technical information and plenty of other stuff. Your stuff. Think of it as a way to publish and distribute your valuable ideas to over 400 of your astronomy friends.

This is an invitation, a solicitation, to submit your material to the Gemini newsletter.

It's easy to do. Send items to the MAS mailing address, or send email to the editor (gemini@mnaastro.org). A submission page is set up on the MAS web site (www.mnaastro.org) to make it even easier.

Here are some ideas that would make excellent contributions:

Stories. Amateur astronomers encounter some unusual situations, and solve many interesting problems. Tell us about yours. Writing excellence is NOT a requirement, and the editor will help with the mechanics of getting it printed (including spell-checking), so don't be shy.

Photos. Astrophotography: film and CCD. Seeing work by members of our own club is inspirational to all us. Techniques and tips for this challenging area are extremely valuable. Pass them along.

Opinions Send a letter to the editor. Let him (and everyone) know what your thoughts are. Topics can range from local MAS issues to opinions on the Big Bang.

Want Ads Want to buy? Looking to sell? Write it up and broadcast it to our circulation base.

Announcements Any MAS or astronomy-related announcements.

Columns Got an idea for a topical newsletter column? Here's an easy way to gain local fame for your essays, writing, or tutorial skills. It's a wonderful way to contribute to the MAS from the convenience of your keyboard.

Chapter 8

Total eclipses of the sun are one of the most spectacular astronomical events. For centuries, they have both awed and terrified people who have observed them. For most people, a total eclipse is a once in a lifetime event. But once you've been bitten by the eclipse bug, a single event just isn't enough. In August, I found myself headed to Turkey in pursuit of my eighth eclipse.

This was a bittersweet trip for me. Although I was excited about the prospect of seeing another eclipse, there was also a sadness to the event. Three times in the past five years, I had gone on eclipse trips that were organized by Ken Willcox who was a former president of the Astronomical League. I had traveled to Bolivia, Mongolia, and Aruba with Ken and had always had a great time. Ken had also done the initial planning for the Turkey trip and I was looking forward to meeting him again. But last February, Ken lost his decade long battle with cancer and passed away at the age of 55. For me and many others on the trip, it just wasn't the same without Ken. He was sorely missed but will always live in our memories.

Ken's shoes were ably filled by NASA's Fred Espenack. Fred has been to almost every solar eclipse since March 1970 and is the co-author of the NASA Eclipse Bulletins that provide all of the scientific and mathematical details about each eclipse. Fred is also a co-author of "Totality - Eclipses of the Sun" and runs the MrEclipse.com web page.

Our tour group consisted of almost one hundred people - mostly from the US, but with a few from various European countries. Although I was the only person from Minnesota, many of the members were old friends from previous trips. When Fred did a survey of the group, he found that about one third had never seen an eclipse before (we call them "eclipse virgins"). Many had seen two or three and a small handful had seen 15 or more.

Our first stop was Istanbul where we stayed for three days. This gave us a chance to recover from jet lag and also to be normal tourists and see the sights

of the city. We saw many of the old mosques and cathedrals as well as taking a cruise on the Bosphoros. Then, it was time to head off to the eclipse viewing site.

The path of this eclipse started over the northern Atlantic ocean and as it swept eastward, it crossed the southern tip of England before entering France, Germany, and the heart of Europe. Those areas were all easily accessible for tourists, but in August, the weather is frequently cloudy, so our group had rejected them. Further east, in Hungary and over the Black Sea, the weather prospects were much better, but in Turkey, the chances of clear skies improved to over 80%. The best chance of clear weather was probably in eastern Turkey near the border with Iraq and Iran, but this obviously wasn't a good location for American tourists. Ken and Fred had compromised by choosing a location in central Turkey near the town of Elazig.

The day before the eclipse, we flew from Istanbul to Malatya which had an airport large enough for passenger jets. The airport is also a military base and is surrounded by anti-aircraft guns. Our discomfort level was increased even more when we were given a police escort for the two hour bus ride to Elazig. Our tour guide explained that the local officials had provided the escort because of the recent activities of some Kurdish terrorists. But the trip was uneventful and we soon found ourselves in "the best hotel in town" which was to be our home for the next two nights. Soon, our only concern was the thin overcast and the worries about the weather for the following day.

Like most people in our group, I was awake well before sun-up on eclipse day. It wasn't because I was excited about the eclipse, but because it turned out that our hotel was just a block from a large mosque and the call for the morning prayer began about 4:30AM. But it was reassuring to get a chance to check the weather and we discovered that the thin overcast had disappeared.

A few people stayed in Elazig to observe the eclipse from the roof-top of the hotel, but most of us took a short bus ride to Lake Hazar which was just east of town. The site had been chosen by Fred on a previous trip and it was wonderful. Most of us setup our equipment on the beach so that we had an unobstructed view and could see the

approaching shadow as well as the eclipse itself.

As usual, the excitement started to build after first contact. It's always a wonderful feeling to watch the moon take an ever increasing bite out of the sun and know that you're in the right place to see totality. At first, the pace seems slow, but as you get closer to 100%, it always seems that things switch into high gear. All too quickly, we were suddenly trying to watch the approaching shadow, look for shadow bands, look for Bailey's beads, and take the solar filters off our cameras - all at the same time. Second contact came and there was the dark circle of the moon surrounded by the sun's corona.

This was the seventh time that I've seen a total eclipse (I was clouded out in Mongolia) and I thought that I was getting used to them - but I felt as if my mind just stopped for this one. In the past, I have always looked for solar prominences - the bright red flares that erupt from the surface of the sun. During an eclipse, they appear as red spots at the edge of the moon's disk. In the past, I've considered myself lucky if I saw two or three prominences and sometimes I didn't see any. But this time, they seemed to be everywhere - I didn't even make an attempt to count them. For several seconds, I even forgot about my camera and the pictures that I wanted to take. Finally, my brain began to function again, and I attempted to take a few pictures. But soon, our two minutes of totality came to an end and the main event was over.

For the next hour and a half, we

watched a reverse replay of the eclipse as the moon slowly uncovered the sun. Shortly after fourth contact, a few clouds came in to cover the sun. Our luck had been perfect. When we returned to Elazig, we found out that there had been more clouds in town, but the people there had seen most of the eclipse.

The following day, we returned to Istanbul and visited some more of the tourist sites in town. Most of the group then returned to the US, but a dozen of us went on to Izmir to visit the ruins of some old Roman cities. I was still in Izmir on August 17th when I woke up just after 3AM with a funny feeling that something was wrong.

Chasing the Shadow continues on
page 6

Privacy and MAS

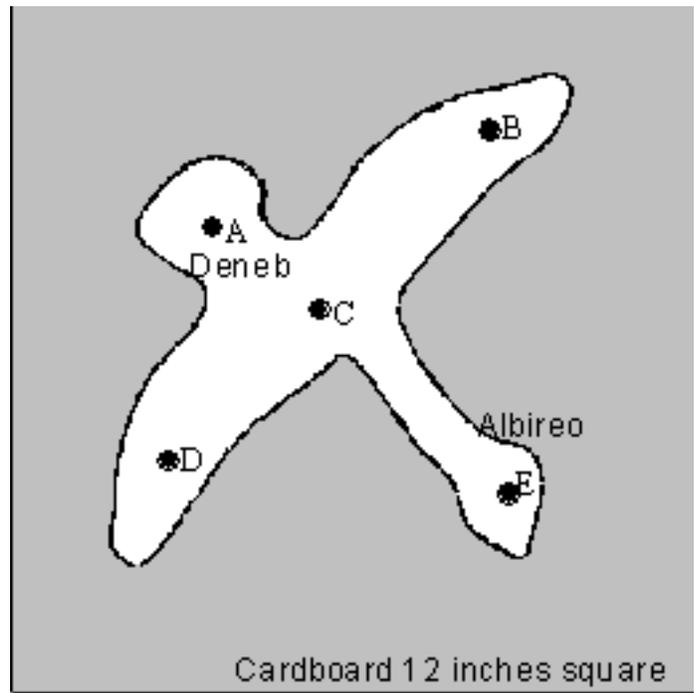
For several years, MAS has always published an annual membership roster in Gemini that included the names, addresses, and phone numbers of all MAS members. Recently, the board has become aware that some members may not want to be included in this directory and that there may be concerns about other ways in which names and addresses are used. As a result of these concerns, the board has adopted the following guidelines:

- 1) The MAS membership application now contains a "Do not publish" option to allow new members to indicate that they do not wish to have their address/phone-number published in Gemini.
- 2) Current members should contact the club treasurer if they wish to be excluded from future membership rosters.
- 3) The membership roster and "New members" sections of Gemini will NOT be included in the electronic version of Gemini available on the MAS web site.
- 4) Members should be aware that some copies of Gemini (and therefore the membership roster) are mailed to individuals who are not members of MAS. Typically, these individuals are members of other area astronomy clubs, teachers, and members of the press who are interested in science.
- 5) MAS does not sell its mailing list to other groups. However, we do occasionally allow the Minneapolis Planetarium to mail announcements to our members.
- 6) All MAS members are automatically members of the Astronomical League, and the AL does sell its mailing list to other organizations. If a MAS member wishes to have his/her name excluded from the list that the AL sells, it is necessary for the individual to contact the AL. Instructions on how to do this are provided in most issues of the AL newsletter, The Reflector.

For Kids of All Ages: Make a 3D Constellation of Cygnus

Adapted from "The Young Astronomer" by Harry Ford, 1998.

- 1) Draw the image of a Swan in flight as shown, labeling spots at positions A, B, C, D and E.
- 2) Cut thread into five lengths about 12 inches long.
- 3) Tie buttons or beads to one end of each thread. You may want to use a larger button for Deneb, medium size for C and D, and smaller size for B and Albireo.
- 4) Punch small holes through the five points on your cardboard and pull the loose end of the threads through the corresponding hole.
- 5) With a ruler, position bead A a distance of 2 inches away from the cardboard surface, pull tight excess thread through the hole, tape the thread down on the backside to secure the thread. Then you can cut the remaining thread from the back side.
- 6) Repeat Step 5 for threads in hole B (5 ½ inches), hole C (4 ½ inches), hole D (7 inches), and hole E (6 inches).
- 7) Hang the cardboard such that the beads hand down from the Swan. Look from directly from below to see the constellation Cygnus.



Activities with your model:

- Look at the stars from other angles. Draw other shapes do you see. Can you make other constellation names?
- Albireo is actually two stars, one red and one blue. Change your buttons on E to reflect this color and binary star system.
- The light from Deneb is 1600 years old. What year did the light you see today leave the star surface? In what year will light that leaves today finally reach the earth?
- The light from C is only 75 years old. Who do you know was alive when that star gave off the light you see today?
- Why do you think that Deneb is among the brightest stars in the sky (Magnitude 1.3) but it is so far away compared to others stars that are less bright?

Astronomy Fun Facts

Nicholas Copernicus was the first person in the Middle Ages to have the earth revolve around the sun instead of the other way around. He was a contemporary of Columbus.

The Book of Fixed Stars written by Persian astronomer Al Sufi in the 10th century listed the positions of over 1000 stars.

The Soviet probe Luna 9 sent pictures from the moon in 1966.

The planets in the solar system have over 60 moons.

Stars have colors ranging from red (3500 C) to blue (50,000 C). The surface of the sun is only 6,000 C, but in the center it is over 10,000,000 C.

Chasing the Shadow, continued

In my half awake state, I felt that I was falling to the left - then falling to the right. Soon, I noticed that some of the objects in the room were swaying and I realized that I was experiencing an earthquake. The shaking continued for over 30 seconds before finally stopping. Several hours later, I was finally able to catch a CNN broadcast in English and found out that a major earthquake had hit about 150 miles from where I was. Fortunately, there didn't seem to be any damage in Izmir and I departed Turkey later that day. At the time that I left, the government still didn't seem to realize how severe the damage was and how many people were killed and injured. During my short visit, I had started to appreciate how hard life is in Turkey and how the people are trying to catch up with the more developed countries. This earthquake will certainly be a major setback for them.

Now that I'm safely back home, I find myself reviewing the great memories of this eclipse trip and looking forward to the next one. On June 21, 2001 there will be an eclipse in Africa that's almost 5 minutes long. I'm sure that I'll be there.

Bill Glass

New Members

Chuck Barden	Chris Leroux	Emma Schmidgall
Robert Granvin	John R. LeVasseur	Paul Schroeder
Kyle Gunderson	Judah Lowell	Randy L. Skrove
Richard Haskins	Anthony R. Maistrovich	Gayl Staver
Ronald J. Hasty	Erik Meehl	Glen Traefald
Kurt Heimbuch	Gerald Miller	John E. Vylasek
John C. Houston	Jim Russell	
Elizabeth Janda	Michael Sanford	

Nominations for MAS Board of Directors

Gibson Batch, Nomination Chair

The time has come once again to submit your name for nomination to serve on the MAS Board of Directors. Elections are to be held at the December general meeting (December 7). We presently have three open positions. Besides attendance at Board meetings held the third Tuesday of each month, the duties for these positions are as follows:

Vice President: Acts for backup leader of meetings if the President cannot attend, maintains records of loaner scopes owned by the MAS.

Treasurer: Maintains membership roster, mailing labels, subscriptions to Astronomy magazine for club members, records all sources of income and expenditures for the MAS, submits budget reports annually, keeps Board advised on activity in CD's and other assets owned by the club.

Member at Large: Maintains an active interest in helping out wherever needed.

Why should you be a member of the MAS Board?

- 1) Because it is fun and good for the community.
- 2) Because it keeps you abreast of activities in the MAS and happenings in the night sky.
- 3) It is an excellent way to get to know other club members and the history of the MAS.
- 4) It gives you a sense of ownership in activities sponsored by the MAS.
- 5) It is a nice diversion that builds your capability to lead.

The standard term on the MAS Board is two years starting at the January General Meeting. We would like two people to run for each position.

To sign up, call Gibson Batch at (651)292-1886 or email him at gbatch@mmm.com.

Nominations will also be solicited at the November meeting. Thanks for your interest in supporting the MAS.

Metcalfe

Metcalfe is the grassy parking lot of Metcalfe 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 unmarked chicken-wire gate on the right, opening onto a dirt driveway, which is the entrance to Metcalfe.

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.

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.

1999 star parties

Date	Site	Moon	Sunset
8/06	Cherry Grove	Rises 02:06 CDT	20:33 CDT
8/11	Metcalfe, Perseids	Sets 20:46 CDT	20:27 CDT
8/13	Baylor	Sets 21:51 CDT	20:23 CDT
9/03	Baylor	Rises 00:52 CDT	19:47 CDT
9/10	Cherry Grove	Sets 20:18 CDT	19:34 CDT
9/17	Metcalfe	Sets 23:56 CDT	19:21 CDT
10/01	Baylor	Rises 23:43 CDT	18:54 CDT
10/08	Cherry Grove	Sets 18:46 CDT	18:41 CDT
10/15	Metcalfe	Sets 22:34 CDT	18:29 CDT
10/29	Baylor	Rises 22:35 CDT	18:05 CDT
11/05	Cherry Grove	Sets 16:16 CST	16:56 CST
12/10	Baylor	Sets 19:02 CST	16:32 CST

Star parties are held on Friday if weather permits, otherwise on Saturday. Call (612) 649-4861 after 6:00 PM on a star party date to hear whether it will be held.

lunar calendar

	New	FQ	Full	LQ
August	11	19	26	
September	9	17	25	2
October	9	17	24	2
November	7	15	23	30
December	7	14	22	29

WANTED: June 1997 issue of Astronomy magazine in good condition

Willing to pay \$5.00 plus postage.

Contact Randall Wehler
1105 S.W. 6th St.
Willmar, MN 56201

or call 320-235-1772

or e-mail me at
cwehler@midstate.tds.net

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 (Bill Glass) at 5721 York Ave. South, Edina, MN 55410. Make checks payable to MAS. The current annual membership dues and subscription fees are:

Regular membership	\$ 16.00
Student membership	\$ 10.00
Subscription to Gemini for members of other astronomy clubs	\$ 4.50
Subscription to Gemini for other persons	\$ 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 (William Glass). 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.

GEMINI

MN ASTRONOMICAL SOCIETY

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in the body (not subject) of the message.

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

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