

Gemini

a publication of the Minnesota Astronomical Society



JUNE
2000

volume
25

number
3

Month at a Glance; June, 2000.

All times listed are CDT, 2400 hour format.

- 1 The Moon passes 4 deg S of Jupiter; 0010.
Pluto is at opposition; 1300.
- 9 Mercury is at Greatest Western Elongation, 24 deg from the Sun; evening sky.
- 11 Venus is at Superior Conjunction, behind the Sun; 0600.
- 15 Lyrid Meteor Shower peaks. Spoiled by full moon.
- 20 The Moon passes 1.3 deg S of Neptune; 0200
Summer Solstice; the First Day of Summer; 2100.
- 21 The Moon passes 1.6 deg S of Uranus; 0700,
morning sky.
- 28 The moon passes 3 deg S of Saturn; 1500, morning sky.
The Moon passes 4 deg S of Jupiter; 2000, morning sky.

Check out the conjunction of the Moon, Jupiter, Saturn, Aldebaran and the Pleiades in the pre-dawn sky of June 28th and 29th. Look to the East before sunrise.

Moon

New: 2nd First Quarter: 8th Full: 16th Last Quarter: 24th

Planets

- Mercury: Gemini. Far from the Sun early in the month, coming around towards the Earth.
- Venus: Taurus/Gemini. Lost in the glare, behind the Sun. Inferior Conjunction.
- Mars: Taurus/Gemini. Lost in the glare, behind the Sun.
- Jupiter: Taurus. Moving higher into the morning sky, away from the Sun.
- Saturn: Taurus. Climbing higher into the morning sky with Jupiter. Not as bright.
- Uranus: Capricornus. Rises in the East, before midnight.
- Neptune: Capricornus. Rises before midnight just before Uranus.
- Pluto: Ophiuchus. Due South around midnight. At opposition.

Sidewalk Astronomy

Doug Brown

Everyone is welcome to attend these "sidewalk astronomy" events. Bring out a 'scope if you wish and interact with the public. Although there are no planets to look at this summer, the events will be held on days when the moon is visible, something that everyone enjoys seeing. So come out to these venues and "show and tell" with the folks strolling down the sidewalk!

June 10...Lowell Park, Stillwater, MN 8pm-10pm

July 15...Sunsets on Wayzata, Wayzata, MN 8pm-11pm

August 12...Sunsets on Wayzata, Wayzata, MN 8pm-11pm

Month at a Glance; July, 2000.

- 1 Mars is at Conjunction, behind the Sun; 1100.
Partial solar eclipse, visible in southern South America and south Pacific; 1400.
- 6 Mercury is at Inferior Conjunction, in front of the Sun; 0700.
- 16 Total lunar eclipse, seen in the Pacific.
Vesta is at opposition, due South around midnight; 1300.
- 26 The Moon passes 2.0 deg S of Saturn; 0400.
Morning sky.
The Moon passes 3.0 deg S of Jupiter; 1500.
Morning sky.
- 27 Mercury is at Greatest Western Elongation, 20 deg; 0400. Morning sky.
Neptune is at Opposition; 1800 Due south around midnight.
- 28 The Moon passes 0.8 deg N of Mercury; 1200.
Morning sky.
- 30 Partial solar eclipse visible in Siberia, Alaska, and Canada's Northern Territories.

Check out the brightest asteroid in the sky, Vesta. On the 27th, it will later pass between two bright stars 51 and 52 Sagittarii. Also, see a beautiful morning conjunction of the moon, Jupiter, Saturn, and Aldebaran on the 26th and 27th.

Gemini

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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 during 1999:

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Onan Observatory at Baylor Monthly Status Report For April 2000, by Mike Kibat

April was a busy month at the observatory, and the project reached several major milestones.

On the construction front, volunteer work crews made substantial progress closing in the transition area between mama and baby bear. The inside half of the translucent panels are in place, lending a finished look to the northern end of the observatory. Installation is now underway for the outside half of the panels. Lighting is also now installed in mama bear.

The news regarding the roll-off roof is less positive. Analysis of the problems with the roll-off roof resulted in two key findings.

First, the wheels upon which the



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roof rolls do not meet the original specifications given the supplier. They are only rated to carry 1/2 the weight of those originally specified. As a result, the weight of the roof deforms the wheels, creating a flat spot which prevents the roof from rolling. Replacement wheels were ordered, and have been received.

The second finding is that the brackets on the east side of the building seem to have deformed—possibly as a result of the “brute force” efforts used in the past to force the roof to move, or due to the loading effect of prevailing winds at the site. New brackets were designed, and are being fabricated. The new brackets combined with the improved wheels should dramatically improve the roof’s ability to roll.

In other developments, the computer system which will eventually control the telescope is up and running.

And, probably the most substantial milestone of the month: the refiguring of the telescope optics is complete, and the Larson telescope now rests upon its mount and pier at the observatory—its first permanent home in almost 20 years! The optics, recently collimated, are performing well, though further evaluation is required before a final judgment is made.

And finally, on April 28th, the first public event at the observatory occurred. Over one hundred attendees, including dozens of MAS members, enjoyed a beautiful, clear night under the stars. The 1987 vision of a public observatory located at Baylor Regional Park this month became reality.

Much work remains, and the problems with the rolling roof present new challenges. But, as with all the challenges of the past, the determination, hard work and creativity of those Society members involved will certainly overcome them!

The Second Annual MAS Messier Marathon, March 31, 2000, Cherry Grove.

I took both Friday afternoons off work during the two "window openings" for the Messier Marathon. Friday, March 31, was the second. True to Minnesota weather, all four days possible for holding the Messier Marathon were marginal weather. None would be clear all night, providing the best chance for viewing the most Messier objects possible for our latitude (109 total Messier Objects). But last Friday afternoon, March 31, I was persistently viewing the infrared satellite images for the mid-west. The forecast said "partly cloudy", and a clearing was due to arrive from the west. The forecast for tomorrow was rain in the afternoon. The clearing approaching from the west, with the rising barometer were all the encouragement I needed. The Messier Marathon was on!

I quickly warmed up two gallons of apple cider, grabbed the cookies, and log-sheets for the participants, and loaded up the DOBs, charts, etc. and was off! I relayed a message to Bob S. to update the MAS phone message to indicate the Marathon was on, and updated my answering machine just in case. The anticipation mounted as the clouds began to break up and blue sky and sunshine began to take over on the 85 mile trip down to Cherry Grove. I was the first to arrive at 6:30 PM just as the sun was setting. I hoped that others had gotten the message in time. Tim Parson and his 7-1/2 year old daughter Tina were the next to arrive. Tim and I began to set up our scopes, tables, charts, chairs, etc. I unlocked the warming house turned on the electric heat and flipped on the breakers. I laid

out the Messier Marathon sign-in sheet and the personal Marathon logging forms. The warm apple cider and cookies were handy too. I was surprised to find out that Tina had previously found several Messier objects with her Dad's scope over the last few months. She was a definite contender for the 13 year old and under category! I was impressed.

As the sun had set, the sky was basically "clear", but some very high thin cirrus clouds hung over the sky only being obvious near the horizon. M77 and M74 would be very low and tough with these clouds. Suddenly, as the twilight deepened, Tina announced that the first star was visible in the southern skies. It was good old Sirius, the dog star pointing the way to astronomical twilight. It soon became evident that M77 and M74, dim galaxies in Cetus and Pisces, would be behind the pine trees to the west. I had brought my 10" and 16" DOBs, with the intent of moving the 10" if necessary. I hauled it over to the ditch on the south side of the dirt road. Here M77 and M74 should be line-of-sight visible.

Now other fellow MAS Messier Marathoners started arriving in droves. The race was on! Ideally the race is run against one's own observing skills and equipment. However in practice, weather, clouds and dew are other natural uncontrollable obstacles. Tonight, our observing skills would have everything to deal with. About fifteen MAS members were involved in the Messier Marathon. Utilizing a variety of scopes ranging from 16", 12.5" and 10" DOBs; 14.5" equatorials; a 12" "Portaball"; a Schmidt-Cassegrain, and several other scopes, were all searching the sky for Messier Objects.

As twilight moved into the astronomical, the stars of Cetus appeared to be obscured to the west. The thin veil of cirrus clouds accumulated to an obstructive haze at the western horizon. M77 and M74 were a lost cause. No time to dwell on this, M31, 32 and 33 were also setting! A few people were able to get M31 before they too also were "enveloped" in the horizon "grunge" clouds. After that, things got quite a bit easier, quite a few of the next Messier Objects were more favorably placed relative to the western horizon.

Marathoner's began to loosen up and the log sheets were rustling. Several Marathon participants, such as Gail P. and Doug, who had not brought scopes watched as other Marathoner's found the objects and let them look. A great way to take a Tour de Force of the night sky. And of course, time limit or no, we HAD to take time out for a peek at Saturn and Jupiter as they were sinking to the western horizon. Anything above 20 degrees above the horizon was fine (but somewhat extinguished). As a matter of fact, M1, the Crab Nebula, looked as good as I've seen it in quite awhile! Marathoner's observers logs were turning over, really racking up the Messier count. We hit our strides as we swept up higher away from the horizon and ascended out of the horizon grunge.

The clouds had taken away the opportunity to view about 10 Messier Objects so far, the time was about 11 PM and Tim was tackling the Virgo Cluster. Rich, who had earlier managed to pick out M52 out of the grunge, chatted with Tim and me prior to tackling the infamous Virgo Cluster of Galaxies. Tough, but numerous, these 17 or so galaxies are all located within a 20 degree circle of sky split between Virgo and Coma Berenices. It's not hard to see

them, it's just tough to tell which is which! A good chart is not only helpful for this, it's necessary. It gets much easier after you've been through it a few times with your favorite chart.

There was one nebula that everyone became very familiar with that night. It's the closest nebula to Earth. It can sometimes act like a "dust cloud" and in other cases a "reflection nebula" (no it's not Hubble's Variable Nebula). In fact this is the only nebula I know about that astronomers have come to loath: "The infamous Earth-Bound Water-Vapor/Dust cloud". This nebula was to make it's presence known and keenly felt after midnight in southern Minnesota. It was to strip most Marathoners of their long awaited chance at the Virgo Cluster of Galaxies! As far as I know, Tim, was the only one to beat the clouds to Virgo.

A few participants had mentioned that they had to leave early anyway, so this was good timing for them, but to half the crew, the true Marathoners out for the distance, this was a blow. We sat and chatted in the warming house and sipped hot apple cider and ate cookies, waiting for the clouds to break up. We talked of the subtleties of scope equipment and observing challenges. Star Parties visited in other states, etc. We had fun. After an hour or so, the clouds were still closed in tight around us. It looked like the MAS Marathon was done for this season. So one by one we packed up and signed out, logging in our total Messier Count and observing category as we did.

People had commented that it had been worth it. Emma, a 15 year old high school student, with her new 3.5" scope, had logged four new Messier objects toward her

Messier Marathon II, continued page 5

Stops Mosquitos

The summer observing season is upon us. As Minnesota natives, we must deal with the natural wildlife of our state. Here is a recipe (contributed by Scott McLaughlin) for surviving mosquitos:

1/2 oz. citronella oil
1/4 oz. oil of cedarwood
1 oz. vaseline or olive oil
1/4 oz. camphor spirits

Ingredients are available at the local merchants *Wyndmere Naturals*.

Reviewer's reports on the efficacy of this formula are invited...

MAS Library

The MAS Library is open for business every Monday from 2:00pm until 7:00pm (CT).

Members wishing to borrow books should contact Patte Rehak (MAS Librarian) by phone at (612) 399-4268 or by e-mail: patte@uswest.net

Members are advised to call or write in advance to check on the availability of the desired book(s). A maximum of two (2) books may be borrowed at a time. Books can be picked up and/or returned during regular Library hours each week, or arrangements can be made to have them delivered and/or picked up at the monthly MAS meeting.

Books may be borrowed from the Library for a period of one month, with no renewal period. Prospective borrowers must show proof of MAS membership.

At the present time, the MAS Library includes over 90 titles and covers a wide range of subjects from black holes to quasars, mathematics, physics, weather, and more. There are multiple copies of several titles, bringing the number of available books to over 100. All titles are shown on the list posted at the MAS website:

<http://www.mnastro.org/library>



Patte Rehak, the MAS Librarian, stands in front of some of the shelf space she contributes to the library's holdings.

Editor's note: In a response to a topic on the astrophotography mailing list (APML), MAS member Michael Koppelman contributed these observations, many of which have been confirmed and supplemented by the Gemini editorial staff...

This is just for fun...

Here's some more complications about astrophotography.

1) The moon.

The moon bleaches out the night sky roughly half the time. The brighter the moon the more likely it is to be clear.

2) Light pollution.

If you are one of the majority of people who live in an urban area, you have to drive at least an hour if not two to get to appropriately dark skies.

3) Early morning activities.

Some of us have to do real-life things like work and school. The earlier you need to get up, the more likely it is to be crystal clear and moonless the night before.

4) Evening activities.

Another Murphy's law of astrophotography is that you always have something unavoidable to do on those clear, moonless nights.

5) Clouds.

Who could forget this one. If you live in a moist place like Minnesota, clouds are determined to move in quickly when you

decide to pack up and head to the observing site. They also clear up quickly as soon as you've packed up your stuff for the night and headed home.

6) Dew.

Luckily, this one is beatable. Dew drove me mad until I spent \$20 on homemade dew heaters.

7) Cars.

No matter how isolated a situation you concoct, someone will drive by and flip the high-beams on. If you are lucky they will even get out of the car and shine a flashlight in your eyes.

8) Farmers.

Someone please explain to me why every rural home has a 1000 watt light blasting in all 360 degrees.

9) Cops

There are two types: those that want to see your permit, and those that want to see Jupiter. [Ed.]

All told I am lucky to get my ass out in good imaging conditions more than a dozen times per year. Until I quit my job, quit school, move to New Mexico, and build an observatory, I don't see it getting any better. I shudder to figure out the cost of each decent frame I've acquired.

I must be mad. But I love it.

Michael

<http://www.lolife.com/>
astrophotos

Messier Marathon II, continued

Messier Certificate which she hoped to finish before graduating from high school. Wow! If only my teenage sons had this much drive and interest toward astronomy. I was impressed.

Tim Parson logged the max Messier Count of 47 winning the Year-Round Messier Marathon Book! Almost half a Marathon. His daughter Tina won the age 13 and under category with a Messier Count of five, winning the Messier Object Poster! Outstanding! Chris VanKrevelen won the random drawing of all Messier Marathon Participants, winning a Messier Objects Book. Thanks go out to Radio City (Dan Fish, owner) of Mounds View for delivering the prizes from their fine stock of Amateur Astronomy (and Amateur Radio) Equipment. Thanks Dan!

Considering the comments I received and the interest generated in the Messier Marathon, I plan on continuing this annual MAS event (until someone volunteers to take it over) in following years. Maybe someday I'll rack em all up in one night!

And don't forget what a kick it can be to get your Messier Certificate from the Astronomical League (through the MAS). A count of 70 logged Messier Objects gets you the Certificate, with all 110 Messier Objects getting you the Honorary Messier Certificate. I would highly recommend this as a great kick off to a lifetime of fun in Amateur Astronomy. Check with the Astronomical League's Web Page for details.

Clear Skies!,

Greg Haubrich for the Visual Observer's SIG.

Member of the Month

Comet Hunting with SOHO By Tim Harincar

[Ed: Tim made a very interesting presentation of his astronomical interests at the April MAS meeting. Here is a summary.]

Comet hunting is one aspect of amateur astronomy that has been a fascination of mine for a few years. I picked up a book on astronomy at a used bookstore that had a chapter on the subject and it just seemed to click for me. I was intrigued that amateurs using relatively modest equipment were discovering the bright comets.

To date, I've logged about 300 hours with an 8" dob that I've modified specifically for searching out the icy nomads. Not too long after beginning a program of sweeping, I really began to enjoy that method of observing – just scanning the sky and observing whatever I stumbled across. Some nights I only spotted a few objects, others a full laundry list. It's safe to say that I've seen many, many objects that I'd never think to actually target.

While observing like this has its positive side in and of itself, there was always the goal in mind – finding comets. In 1999, however, the rules changed. 1999 was the year the big surveys, especially LINEAR, really came up to speed and began taking a major bite out of the average amateur's ability to first spot comets. The surveys, set up for finding near-earth asteroids, are the celestial equivalent of a drag net. They sweep up anything that moves – main belt, NEOs, and comets,

and do so while they are way out of the range of the visual observer. Somewhat discouraged, I was less motivated to make the regular journey to darker skies and began hunting less and doing more recreational observing.

In early 2000, I heard about a discovery by a comet hunting friend in Germany, Maik Meyer. He was listed as a discoverer of a sun grazing comet that he spotted using public data from the SOHO spacecraft. Interested, I contacted him and asked for a bit of background on exactly what he was doing and how amateurs could contribute – in other words, I wanted to play, too. With some brief instructions, I was set.

The Solar And Heliospheric Observatory (SOHO) spacecraft was launched December 2, 1995 and is a joint NASA/ESA mission. The prime objective of the mission is to study the internal structure of the Sun, its extensive outer atmosphere and the origin of the solar wind. The spacecraft is stationed in solar orbit at Lagrange point L1 in halo orbit for an uninterrupted view of the sun.

The SOHO web site (<http://sohowww.nascom.nasa.gov/>) provides nearly real time data from its instruments. The main instrument I was interested in was the LASCO C3 telescope. This is a wide field imager designed to watch the corona and outer atmosphere of the sun. As a side benefit, it's pretty good at being able to pick up sun grazing comets as they approach perihelion. The trick to being able to identify comets from the myriad of streaks and spots of random

noise in the frames is to make multi-frame movies from the images and look for anything that moves like a comet. Like the photo astronomers of a previous era who "blinked" images looking for comets, asteroids and planets, this is a similar process. Though instead of two frames, you need to use about 6 in order to identify a non-artificial object. After downloading a set of frames from the SOHO site, I use a freeware tool for making animated GIF files and viewed the result in a standard web browser. Since the frames are pretty big, about 1MB apiece, a fast connection will go a long way to making searching easier.

On the morning of March 4, I woke up at about 3:30 am because of insomnia. I got up and decided to pull a set of images and run a quick check. In the movie I created there was a possible comet in the last two frames, but since no additional frames were available yet, I could not confirm it. Since the weather was clear, I decided to go out with my Pronto for an hour or so and do some lunar observing while I waited for more images to be loaded.

When I returned, more frames were available and so I proceeded to make another movie. While my initial hunch turned out to be false, there was another object that fit the profile of a Kruetz sun grazer perfectly. I then loaded the individual frames into PhotoShop and took pixel coordinates of the suspect. I then emailed those values and the frame names to Doug Biesecker at Goddard for confirmation (see <http://sungrazer.nascom.nasa.gov/> for more information on reporting

SOHO discoveries). A few hours later I received word that I had indeed spotted a sun grazing comet, SOHO 107, along with 3 other amateurs (Maik Meyer also being one).

Throughout the day, through the eyes of SOHO, I watched “my” comet makes it’s death dive into the inferno of the near-solar environment. It was a bright ‘chip’, as these things go, actually sporting a thin tail for a while. Then, it faded rapidly, and finally disappeared before rounding the sun. A few days later, the discovery was listed on MPEC 2000-E27 and given the official designation of c/2000E1 (SOHO).

While perhaps not as rewarding as a visual discovery, it is still nonetheless an interesting way to continue the search for comets. Yes, the reward is less, but the effort is less, too. It does not require clear, dark skies, hundreds of hours, and an extreme sense of dedication. Rather, it requires a short bit of time over lunch and a net connection. It can be done whenever there is time and in any weather. No there are no astronomer names or Edgar Wilson award, but there is still the contribution, the amateur/ professional collaboration, and the sense of accomplishment. And who knows? Maybe one of these comets will make it around and grace the nighttime sky.

-Tim Harincar

2000 Star Parties

Star parties are held on Friday if weather permits, otherwise on Saturday. Call (651) 649-4861 after 6:00 PM 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.

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	Site	Sunset	Moon
25-Feb	ONAN/BAYLOR	17:33	rises 0:23
3-Mar	CHERRY GROVE	18:04	rises 5:40
10-Mar	METCALF	18:13	sets 23:25
25-Mar	ONAN/BAYLOR	18:33	rises 0:24
31-Mar	CHERRY GROVE	18:40	rises 4:13
7-Apr	METCALF	19:49	sets 23:26
8-Apr	ASTRONOMY DAY	19:50	sets 0:38
28-Apr	ONAN/BAYLOR	20:15	rises 3:45
5-May	CHERRY GROVE	20:24	sets 22:22
12-May	METCALF	20:32	sets 3:58
26-May	ONAN/BAYLOR	20:47	rises 2:16
2-Jun	CHERRY GROVE	20:53	rises 5:53
9-Jun	METCALF	20:58	sets 2:30
23-Jun	ONAN/BAYLOR	21:03	rises 0:48
30-Jun	CHERRY GROVE	21:03	rises 4:28
7-Jul	METCALF	21:01	sets 1:00
21-Jul	ONAN/BAYLOR	20:51	rises 23:44
28-Jul	CHERRY GROVE	20:44	rises 3:05
4-Aug	METCALF	20:35	sets 23:28
11-Aug	PERSEIDS	20:25	sets 3:35
18-Aug	ONAN/BAYLOR	20:14	rises 21:22
25-Aug	CHERRY GROVE	20:02	rises 1:49
1-Sep	METCALF	19:55	sets 19:54
22-Sep	ONAN/BAYLOR	19:10	rises 0:03
29-Sep	CHERRY GROVE	18:57	sets 20:20
6-Oct	METCALF	18:44	sets 1:06
20-Oct	ONAN/BAYLOR	18:19	rises 0:43
27-Oct	CHERRY GROVE	18:08	rises 7:51
3-Nov	METCALF	16:58	sets 22:51
17-Nov	ONAN/BAYLOR	16:42	rises 22:46
24-Nov	CHERRY GROVE	16:37	rises 5:45
1-Dec	METCALF	16:33	sets 21:38
15-Dec	ONAN/BAYLOR	16:33	rises 20:31

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 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). 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

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