



The Meridian

The newsletter of the
Quad Cities Astronomical Society

July 2008

REMINDER: No meeting in July or August.

June Meeting Minutes

Joe Bannon, Secretary

The May meeting was called to order at approximately 7:35 and began with a treasurer's report that stressed we are currently operating near the limits of the club's finances, mostly due to the payment for the new worm gear. Steve also noted that once all pledges come in for the worm gear, the financial picture will be better but he also noted that there are members who haven't yet paid their dues for this year. Though this represents a small group, every bit helps ensure we have funds to cover expenses and anyone who is behind with their dues should send a check as soon as possible.

The new worm gear was on display and several people commented on the high-quality workmanship that was evident. Steve pointed out that a similar unit, but without a Starmaster drive, was available on EBay for \$1,800 so our purchase price of \$850 represents a good deal. Steve had much communication with the seller and also the maker of the drive, Ed Beyers, to ensure it will work for us. One of the 359 teeth on the gear is damaged, but Ed was confident this wouldn't affect performance. The clock motor sent with the worm gear was damaged but Steve was able to get a new one for \$100, as well as an adapter sleeve for the axle.

The current plan is to replace the existing gear but doing this will mean taking the scope out of commission for an unknown period. The base will be taken apart and worked on at an off-site location so all tools and equipment are readily available, and the unit can be tested prior to installing it completely. Several members have volunteered their expertise and Karl mentioned a friend who offered to do some metal work for the club. Steve has already fabricated a laser pointer mount for the scope which will make it easier to show where the scope is pointing.

Steve also mentioned a visit to Menke with Robert and the need to do some repairs on their scopes.

Approximately 12 people attended the public star party and members were reminded that the next one is scheduled for July 26. There also is a star party at Menke on July 12.

Wayne reviewed the start of the club, from a November 17, 1980, notice in the paper to lugging the scope up a hill at Malone Park in Clinton County to observe Halley's Comet. Jim mentioned that Malone Park has lost some of its luster for astronomers due to campground improvements, a pop-machine with a 24-hour a day light and increased traffic on the road.

The meeting adjourned at approximately 9:10.

Presidential Ramblings

Karl L. Adlon

Can't believe it's the last part of June. Can we have some clear, moonless nights, please?

Did you get the latest Sky and Telescope (S&T)? One of the articles on deep sky observing talks about a handful of objects near the galactic center. If you were at the June QCAS Meeting you'll remember I talked about looking at The Lagoon Nebula (Messier 8). The day after I looked at it I wrote:

Friday we got home about 8:30 pm and had to watch the end of the White Sox game (a "W").

Then I waited until 11 pm to watch Battlestar Galactica. I started watching BSG when it first started on the SciFi Channel, then didn't watch much in the middle of the series when there wasn't much going on in space and there was too much "politics" and now I figure I might as well watch the final season.

After BSG I stepped outside and it was clear! I could see the brightening of the sky along the Milky Way, so I went inside and got my 17x70 binoculars. I started with the Lagoon Nebula (very nice), then swept up north to and through Cygnus. I looked for the Veil, trying this and that, making sure I was in the right area, but no luck. So I went back to the Lagoon. As I looked longer I was more impressed, even stunned. Through the binocs the area around the nebula was pretty dark and the nebula was pretty bright, a little like looking at a transparency that was backlit. The brightness of the stars and the brightness of the nebula compared to the dark area around them is something never impressed me before. At telescopic powers, where the nebula fills the field of view (not to mention at our observatory or Menke when the QC's light pollution is in the worst location) I haven't seen the light-to-dark contrast and I haven't been so impressed. So now I want to try looking through a telescope but at a lower power, like 30X or 40X with a wide field eyepiece.

Remember an article in the Meridian a while ago that recommended pushing the power up? Sometimes you might also want to consider using binoculars, a smaller telescope or lower power (even lower than usually recommended).

What I've read about telescope powers:

First, my understanding of telescope optics: Aperture is the size of the primary mirror or lens. Focal length is the distance from the primary mirror or lens where light from a distance source comes to a focus. F-ratio is the focal length divided by the aperture (for our 20", it is $100'' / 20'' = 5$). The corollary is that the aperture times the f-ratio is the focal length ($20'' * 5 = 100''$). Note that to convert inches to millimeters, multiply by 25.4. To get the power of a telescope-eyepiece combination, divide the telescope focal length by the eyepiece focal length (found on the eyepiece). Say you have an 18 mm eyepiece. On the 20" the power would be $(100 * 25.4) / 18 = 141.1$. The "exit pupil" is the shaft of light coming out of the telescope. To determine it, divide

the aperture by the power $[(20'' * 25.4) / 141.1 = 3.6 \text{ mm}]$. In this case, a 3.6 mm shaft of light is what enters your eye when you look in the eyepiece.

Perhaps you've noticed from these equations or from using the telescope that the higher the power the smaller the shaft of light (and the dimmer the object appears). What's the highest power you can use? Well, first, it often depends on "seeing"; that is the steadiness of the atmosphere you have to look through. But, let's say it's great; then what's the answer? One value that is used is an exit pupil of 0.5 mm (about the diameter of fine mechanical pencil lead). This gives $(20'' * 25.4 \text{ mm/inch}) / 0.5 \text{ mm} = 1016$ power. Wow! Let's get rid of the earth's atmosphere! Oh-oh. Let's hold off on that. Note that this is about 50 power per inch of telescope aperture.

And what's the lowest power we can use? Let's say you are young and your eye will open to a pupil of 7 mm. Then: $(20'' * 25.4 \text{ mm/inch}) / 7 \text{ mm} = 72.6$ power. Note that this is about 3.5 power per inch of telescope aperture. Also note that an older person's eye may only open to 5 mm, in which case the lower power limit is about 100 power.

Let's say you want to cheat and use higher power than the 0.5 mm exit pupil basis. What happens? The shaft of light is proportionally smaller and tiny imperfections in your eye, including the fluid of your eye, become magnified. Also diffraction effects in the telescope become an issue. And the object becomes dimmer. In short, you can't see any additional detail. Try it and you'll see what I mean.

And let's say you want to cheat and use lower power. The exit pupil becomes larger than your eye's pupil; which is that same as using a smaller telescope. Occasionally, for larger objects you may want to try this – I have on the Pleiades and it was OK.

So I'm hoping for clear skies and an opportunity to see the Lagoon and the S&T listed objects and use binoculars, a small telescope and larger telescopes on these objects. And if I have the time, maybe take an image or two – but don't hold me to that.

Wishing Us Clear Skies!

Karl

Observations

Joe Bannon

Just a reminder to not let the fact that there aren't meetings in July and August keep you from participating in club activities. We still have Public Star Parties during these months and we also support the St. Ambrose Public Star Parties at the Menke Observatory in return for being allowed to use it for our Eastern Iowa Star Party. Check out the dates below.

And remember, if you're planning on doing some observing, a simple e-mail to the group can lead to some great company. That's what happened on June 30 when Karl, Gary C., Gary P., John, Joyce, Steve and I took in a night of reasonably clear skies. Some concentrated on astrophotography through the 20'' while others worked with their own scopes or helped show some of the night sky to a co-worker of Karl's and his nephews. I followed through on my presentation on Hercules and took in M13, M92 and Ras Algethi, as well as the Whirlpool Galaxy, Antares and the Sombrero Galaxy. Nearby, others were looking at the Owl Nebula, Beehive Cluster and of course, Jupiter and Saturn.

If the dew hadn't inundated my scope and notes, I might have lasted as long as Gary C. and John who stayed until 4:00 am! Check out the fruits of their labor in the Astrophoto column later.

Again, don't let the meetings keep you from enjoying this great hobby with another club member. There's an awful lot of sky out there to see.

Upcoming Celestial and Club Events

July 8	Tuesday	Jupiter reaches opposition
July 10	Thursday	Mars is 0.7 degrees to the lower left of Saturn in the evening
July 17	Thursday	Moonrise 6 ⁰ -7 ⁰ to the right of Jupiter before sunset
NO JULY MEETING!		
July 23	Wednesday	Jupiter transits about 22:00
July 24-31	Thu.-Thu.	Delta Aquarid meteor shower (peak on July 28)
July 26	Saturday	Jens-Wendt Observatory – PUBLIC Star Party
Jul. 27–Aug 1	Sun – Sat	Nebraska Star Party
NO AUGUST MEETING!		
Sep. 5–7	Thurs – Sun	Astrofest
Sep. 25–28	Thurs – Sun	Prairie Skies Star Party
Oct. 3–5	Fri – Sun	Eastern Iowa Star Party

PUBLIC STAR PARTIES		
July 26		
August 30		
September 27		

PUBLIC STAR PARTY EXPECTATIONS

- ★ Each club member will sign up for at least one star party.
- ★ The first person should be a key holder; the second can be any member, key holder or not.
- ★ If it's your turn and something comes up, it's your responsibility to find a replacement.
- ★ You should get there about ½ hour after sunset and open up while there's some light.
- ★ Sign the log book.
- ★ You should be there if it's clear or if it's cloudy. No need if it's storming.
- ★ If it's cloudy, there are slides and a projector in the observatory. You can show slides, or talk about the observatory and telescope, describe opening the observatory, pointing the scope, what you can see through the scope, invite them back when it's clear. Tell them what you like to observe.
- ★ Recommend if it's cloudy you take a book, computer & DVD, etc. in case nobody else shows up.

Jens-Wendt Observatory – Quad Cities Astronomical Society – Located at Sherman Park in Dixon, Iowa

Monsignor Menke Observatory – St. Ambrose University – Located at Wapsi River Environmental Education Center in Dixon, Iowa

Member Astrophotos



M57 (left) and M20 (right) were taken by John through the club's telescope June 30. You can see these and others at http://www.johncbaker.com/QCAS%20Astrophotography/John%20Baker/2008_07_01%20pictures/index.html.

QCAS Contacts

Elected Officers			Volunteers and Committees		
President	Karl Adlon	kmja@mchsi.com	Facilities	Jim Rutenbeck	jim@qconline.com
Vice-president	Jim Rutenbeck	jim@qconline.com	Web Master	Open	
Secretary	Joe Bannon	mzbannon@aol.com	Outreach	Joe Bannon	qcas@mchsi.com
Treasurer	Steve VanHyfte	vanhyfte@mchsi.com	Programming	Jim Rutenbeck	jim@qconline.com
Director	Gary Charnoski	stargazer_44444@yahoo.com			

All other contacts can be sent to qcas@mchsi.com or mailed to the club at P.O. Box 3706, Davenport, IA, 52808.

Members are also reminded that anyone can submit articles for *The Meridian*. Submit articles to Joe Bannon at jbannon@midamerican.com and mzbannon@aol.com.