THE Eyepiece

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What's up:

NPMAS Club Loaner Telescopes

NPMAS members may use, free of charge, for a one month, one of the two club telescopes available. For more details, please contact Gerry Kocken, *Properties Chair,* at 920-336-8594.

Space History/Events

by Anthony J. Kroes

This month I thought we would add another feature to the newsletter. As time and space (pardon the pun) permit, we will be paying homage to the history of astronomy and space exploration. Each article will have a 'this month in history' timeline of event anniversaries, and we may also include a write-up of a topic with detailed information about a specific event or idea (first telescopes, Venus exploration, animals in space, Brazil's space program, etc). If you have any favorites or requests, please let us know! Our first installment includes the timeline below and some interesting facts about the Gemini 6 & 7 rendezvous in 1965. Keep a lookout in future months for other events!

December is the 40th anniversary of the Gemini 6 and Gemini 7 rendezvous mission. Yes, the calendar is correct, the two missions launched less than two weeks apart from the same launch pad! A far cry from the years between launches that we have had lately, but we must remember that this was during the 'Space Race', just 4 years before we landed on the moon.

The entire Gemini rendezvous was really just a thrown together plan that came about as the result of an accident. Originally, Gemini 6 was to have launched and practiced orbital maneuvers and 'stationkeeping' with an unmanned Agena Target Vehicle (launched earlier). When Agena was destroyed in an explosion during launch, the mission was adjusted to use the upcoming Gemini 7 mission (primary objective: to see if humans could survive for two weeks in orbit) as the rendezvous vehicle.

So Gemini 7 launched first, then the renamed Gemini 6a mission launched 12 days later. The two matched orbits and moved around and near each other as tests for future missions that would require docking. They maneuvered from 300 feet to within 1 foot of each other during the mission, but never actually touched. Both crews returned to Earth safely.

Trivia: The Gemini missions were so named because each mission carried two men.

1 1960 Sputnik 6 (USSR) launch (orbiter with dogs Pchelka & Mushka)
2 1995 SOHO (ESA) satellite launched
3 2000 Mars Meteorite found in Antarctica
4 1965 Gemini 7 (US) launch (orbiter with Astronauts Borman & Lovell)
7 1995 Gallileo (US) probe arrives at Jupiter
10 1950 Meteor hits moving car in St. Louis
11 Opportunity Rover (US) 1st Mars Anniversary
15 1965 Gemini 6 (US) launch (orbiter with astronauts Schirra & Staford) and rendezvous with Gemini 7, 1970 Venera 7 (USSR) lands on Venus,
16 1965 Pioneer 6 (US) launch (interplanetary solar orbiter) - oldest surviving spacecraft!
19 1960 Mercury 1 (US) launch (unmanned)
24 1965 Meteor hits car & buildings in Barwell, England
30 2000 Cassini (US) probe flyby of Jupiter on way to Saturn.

Meetings, Events & Star Parties

December 13
Geminid Meteor Shower Peak

December 21
Winter Solstice 18:35 UT

December 22
Ursid Meteor Shower Peak

Looking Ahead:

January 11
Holiday Party/Club Meeting
@ The Out of Town Club

January 27-29
Camp U-Nah-Li-Ya
Winter Weekend

November Meeting Minutes

by Amy Hannon-Drew

This month's meeting marks the beginning of new leadership within the club. While Gerry remains club president, we had a new face at the table with our new V.P. Ed Smith helping out. We had several guests and new members in attendance. It was great to see new faces in our midst! Business for the evening included a recap of the Mars events that were held. Unfortunately clouds spoiled our event at the Museum. Our speaker, Steve Dutch from UWGB hung in there and gave his Mars talk three times to very small groups. He did a great job! We had a few scopes set up and there were even some moments of excellent viewing. Tony gave us a recap of the Mars viewing held at the Cedar Drive Observatory during KOW. We had some great views of Mars, Neptune, and Uranus, thank you, Tony and Tara!

The telescope making class continues at Gerry's on Tuesday evenings. Even if you are not building one yourself, come out and join us! Gerry is asking for pictures for next month's presentation regarding star parties. Please forward any you may have as soon as possible. In NASA news, Gary gave us a recap of some of NASA's newest press releases. There are some great pictures of moons around Pluto on the web. We had a viewing of the some of the speakers that will be at the 2006 NCRAL, hosted by NEWSTAR. It will be a great event that we should all consider attending. I already signed up!!! We adjourned to Happy Joe's a little early this month – yeah! more time to eat! See you all at the next meeting!

Astronomy Photo of the Month

NGC 6781
Planetary Nebula in Aquila

Photo by Tom Jorgenson, Tom Eby and Terry Becker

C11(f/7)/G11, True Tech Color Filter Wheel, Starlite Express MX916 CCD Camera.

Exposures:
L 120sL/R 60s/G 60s/B 60s

Planet Watch For December

by Wayne E. Kuhn

Mercury will have it's best morning apparition of the year as it reaches greatest elongation west (21 degrees) on December 12. It will shine at magnitude -0.4 and be 6.9" in apparent size.

Venus sets more than 2.5 hours after the Sun and reaches it's greatest brilliancy on December 9. It stands about 10 degrees in the southwest just before evening twilight, shines at magnitude –4.5 and is 42.1" in apparent size.

Earth's Moon: New Moon is at 9:01 AM CDT on the 1st. Moon reaches perigee (228,270 miles from Earth), on the 4th at 11:00 PM CDT. First Quarter Moon is on the 8th at 3:36 AM CDT. Full Moon (the Hunter's Moon) is on the 15th at 10:15 AM CDT. Moon reaches apogee (251,664 miles from Earth) on the 20th at 9:00 PM CDT. Last Quarter Moon is on the 23rd at 1:36 PM CDT. The second New Moon of the month occurs on the 30th at 9: 12 PM CDT.

Mars remains in Aries and is stationary on December 10. When it transits just before 9:00 PM it will stand about 60 degrees high in the east-southeast. It will shine at magnitude -1.3 and be 15.2" in apparent size.

Jupiter is in Virgo and improves it's visibility as it rises nearly 4 hours before morning twilight in the east-southeast. It shines at magnitude –1.7 and is 31.9" in apparent size.

Saturn is in Cancer and rises in the east-northeast around 8:00 PM. It stands about 50 degrees high as morning twilight begins, shining at magnitude 0.1 and is 19.5" in apparent size.

Uranus is in the constellation Aquarius all year. It shines at magnitude 5.9 and is 3.5" in apparent size.

Neptune is in the constellation Capricorn. It dimly shines at magnitude 7.9 and is 2.2" in apparent size.

Pluto is in the constellation Serpens Cauda and was at opposition on June 14. It shines at magnitude 13.8 and is 0.1" in size.

Light pollution

by Gary Baier

Light pollution is similar to other forms of pollution in that it can destroy and cover-up the natural world, preventing us from experiencing all that the universe has to offer. A simple definition of light pollution would be: Any form of light illuminating the sky making it difficult to observe celestial objects. This is what happens during the day when the sunlight is scattered off the particles in the atmosphere. It is also apparent when the moon is in the night sky. The scattered light reduces the contrast between the object you are looking at and the background sky making it difficult to observe the object. Air pollution, large amounts of water vapor in the air, and bright city lights all add up to make astronomy very difficult.

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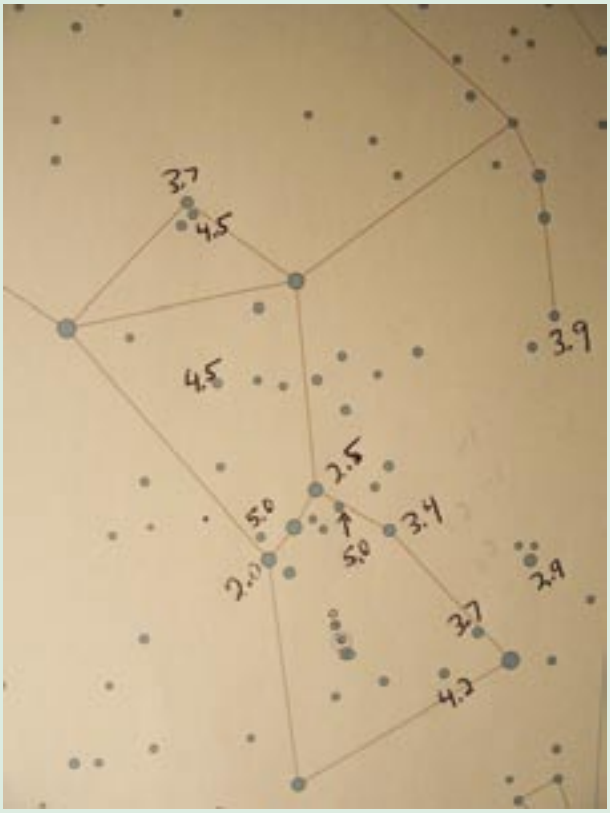
Photo by Peg Zenko

Most of us live in cities with plenty of nighttime lighting, and we sit at the bottom of our ocean of air, where nights are often very humid. Other than moving to the mountains where there is less atmosphere, or to the desert where it is drier, our efforts must be concentrated on limiting the amount of artificial light that shines into the night sky.

The International Dark Sky Association (IDA) was created with the goal of preserving the dark night sky where light pollution is not yet a serious problem and reversing the damage where light pollution is extensive. The IDA offers many suggestions to minimize light pollution. The simplest solution is to only use lighting when needed. A porch light or parking lot light is not very useful a 3 A.M. when most people are sleeping.

If lighting is required, use only the minimum amount of light that is necessary. A 75-watt porch light can be replaced with a lower wattage bulb. An even better approach is to install a motion sensor that turns the light on only when someone is enters the area. Another solution is to use shielding that prevents light from shining into the sky. The image to the right of the 'GlareBuster' light fixture I have installed on my garage. A general guideline is that a light fixture that transmits any light in an upward direction contributes to light pollution. After all, the light should be directed towards the ground where it can illuminate our path and not towards the sky where there is nothing to trip on.

The IDA offers a method of measuring the light pollution at your favorite observing site. This involves counting the stars that can be seen in the Pleiades. Another method is to determine which stars are visible in the Big Dipper. I have chosen a different method that has worked with my 9th grade students in the past. The constellation Orion is larger than the Pleiades and higher in the winter sky than the Big Dipper.



Star brightness is given in terms of magnitude. This method was first written down in ancient Greece and is still useful today. The brightest stars in the sky are 1st magnitude. The dimmest stars typically seen from Wisconsin are 5th magnitude. The difference between each gain of 1 magnitude is 2.5 times brighter. Some examples of 1st magnitude stars include the two brightest stars in Orion. The dimmest star of Orion's belt is magnitude 2.5, in Orion's head - magnitude 4.5. Finally, the dimmest stars commonly seen in Orion are just above and below the belt stars, with a magnitude of 5.0 each. Use the accompanying star chart and try this from wherever you observe.

When seen from far away, the light pollution dome over Green Bay looks very uniform. When performing light pollution experiments with my students some very unexpected results emerged. The extent of the light pollution varied greatly across the city. Some areas downtown were very dark while places two blocks away were as much as two magnitudes brighter. Our results showed that parts of the city were very dark with a few zones of intense light pollution. This implies that a few locations of intense light pollution may contribute to much of the overall problem. I plan on conducting this experiment again in late January or early February to compare how the light pollution has changed over the last 5 years.

Review of the Chiefland Star Party

by Dick Francini

In late summer I got this crazy idea that our family should take a fall trip that would include a trip to Disney, a visit with my mom in Orlando, and attendance to a star party I have been curious about checking out.

The star party is at an unusual and unique location, the Chiefland Astronomy Village (CAV) in northwestern Florida. This is a community of people interested in astronomy who have initiated very strict light restrictions including: no headlights after dark (only parking lights), no outside lighting, and no streetlights. They found a surprising dark place for the CAV in the country's fourth most populous state. We (well actually it was my idea, but Janice was okay with it) decided to check out this area by attending the Chiefland Star Party from Sunday October 30 through Saturday November 5.

My first surprise was the fact that there was any location in Florida that was this dark! Chiefland is located about 40 miles southwest of Gainesville, Florida. If you are familiar with the light pollution map, this CAV's location is in blue, indicating a very dark sky location. For comparison purposes, my cottage in Langlade county and Dave Jorgensen's site in Crivitz are also blue, it is darker then Ron's and Tony's observatories, the WOW site, and Northwoods Starfest. Once we were there we did some exploring and quickly found out why this is such a great dark sky location. The area surrounding Chiefland is very sparsely populated, with large tracts of land tied up in National and State wildlife reserves and parks, especially to the south and west. There are clearly far more gators per square mile then people in this part of Florida. The only drawback which keeps this from being an extremely dark sky site is a surprising sizable light dome to the north from the small town of Chiefland (the CAV site is about 5 or 6 mile south of the town of Chiefland). From talking to people at the star party, I get the impression that the light pollution from Chiefland has increased over the last few years.

There were about 320 people signed up to attend, but people came and went over the period of a week, so it never seemed that we had quite that many people. The largest attendance came in the second half of the star party, from Thursday to Sunday. CAV allows people to be members without actually living there, you can pay very reasonable yearly dues and then have the right to visit and set up a tent, use the facilities, and observe. This is their largest event of the year, and I'm guessing maybe 60 to 65% of the people attending were CAV members. Having a private dark sky location to visit is a great deal for people living in an otherwise heavily populated and light polluted state.

The highlight of the week was definitely the unbelievably great weather we had, with five of six nights clear with good observing conditions. The last night was also clear, but I was too tired to do another late night session and wanted to get to my mom's house where Janice was staying. She made it through two nights of camping, but got a better offer. My mom was flying back from being out of town on Tuesday night, so Janice volunteered to pick her up at the Orlando airport Tuesday night and stayed with her until the star party was over. You can probably guess that she is not much of a camper.

I was a bit concerned that I would have some difficulty finding someone to hangout with the last few days after Janice left; I've never gone to a star party without our "group". Much to my surprise and relief, everyone was great! I had no problem finding a great group of people to hang out with during the day and observe with at night. It did not hurt that the official daytime hangout

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spot for our portion on the camp site was under the big Oak tree just behind my tent. Most of the people camping around me were from the Tampa/St. Pete area. This is a good place to give special thanks to Terry from Sarasota, who took all the pictures that accompany this article.

I spent a considerable amount of time working on the AL (Astronomical League) Arp galaxy program, showing off the views through my scope to others who wanted to take a look, and making the rounds of the amazing assortment of huge scopes at the star party. I had the unique opportunity to look at the same object, the Veil Nebula, through my 16" scope, then through a 20", followed by a 24". I'm not done yet - next came a 28", and finally through the giant 42" scope (nicknamed "The Beast"). Every step up in size allows you to see much more of the intricate detail in this beautiful object, but in progressively smaller fields.

Although I was very impressed with the views through these monsters, I'm still happy with the view through my "little" 16" scope; no aperture envy here. I did notice that the larger scopes not only capture much more light from the object you are looking at, but also seem to catch more stray or background light, making the background less black. It's almost like you lose some portion of the benefit you gain by having such a large scope. Of all the objects I observed through these large scopes, the views of the Crescent Nebula (NGC 6888) through "The Beast" and the edge on galaxy NGC 891 through the 28" were especially impressive.

The mirror on the 42" is only 2" thick at the edge, and much thinner in the center as it has a very fast focal ratio of f 3.9. How would you NPMAS mirror grinders like to tackle something like this? "The Beast" was built and is owned by Tom Clark, who once built large high quality dobs for the commercial market under the name Tectron Telescopes. He now spends some of his time putting out the quarterly magazine, "Amateur Astronomy". He had an article about a year or so ago on the observatories of Wisconsin in which both Ron's and Gerry's were featured. I subscribe, and find it to be a nice change from Astronomy and Sky and Telescope. It deals with subjects like star parties, telescope building including innovative ideas, and observing. It is far less formal with fewer ads. It's billed as, "News for, by, and about Amateur Astronomers around the world!"

The other instrument I was especially impressed with was a binoscope with twin 16" mirrors. It is an amazing piece of engineering, easy to use and very effective. You simply grab two handles near the top and pull or push to very accurately adjust the two eyepieces to fit the distance between your eyes (or until the two separate views merge into one), and then adjust separate focusers for each eye. A scope with great 3D views coupled with extreme light gathering ability (the equivalent of a regular 22" scope), it does not get any better then this!! Some binoscopes can be very difficult to work with, but this one was so simple to adjust from one person to another that it was a real pleasure to use. So much so that I must have spent 90 minutes looking at all the objects we could think of that might look really cool in 3D. The last picture is of a large "gathering" of dobsonian telescopes of varying sizes.

In review, the star party was a great experience and the people were friendly and enjoyable to be with. Much it my amazement there were NO bugs to pester you and they had put down something to keep the fire ant population to a minimum. The only down side was the porta-potties (Janice had a bit of an issue with this) but they were emptied daily and were OK with me. They do have regular potties but close them down for this event as this number of people would overtax them (or should I say overflow them). Our overall impression was that this area was a bit remote as a permanent residence, but having a "members only" dark sky site for people around the state is a really great idea.

The great weather (clear with highs in low 80's) continued for another full week as we visited my mom and Mickey. Two weeks with only one cloudy day, clear blue skies and mild temperatures, you can't get any luckier then this. I guess that's why they hold their big star party in late October and early November.

New Astronomical League Observing Programs!

by Anthony J. Kroes

The Astronomical League is in the process of publishing three new observing programs, the Lunar II Club, the Planetary Nebula Club, and the Open Cluster Club! These are the newest programs out since the Constellation Hunter and Globular Cluster programs came out in 2004. As usual with the League observing clubs, the new programs each showcase another set of unique objects in the Universe and give us a great selection of items to view that we may not have found or thought to look at on our own.

The Open Cluster Club does not have any specifications published yet, but the League web site does say 'coming in December'. An email to the League secretary got me a 'should be out in a couple days' response, so keep an eye out for this one. The details should be available soon!

The Planetary Nebula Club is a program designed for visual observers or astrophotographers. The list is composed of 110 planetary nebula. For visual observers, all 110 objects must be viewed. As some of them are tough objects to catch, negative observations count for this program! If you can prove true diligence and give it your best shot at least twice to see an object, you will get credit for trying (as long as you can prove you were looking at the right field of view, etc). Members of the digital generation must image a minimum of 90 of the objects on the list. While the program and rules are listed on the League's web site, the actual list of nebulae is not. For this program, you must buy the book from the League for $12.00 (plus $1.95 shipping). I have one 'in the mail' and will review the selections as soon as it arrives.

Lunar II Observing Club - This club starts off where the first left off. It adds another 100 observations of various features and areas of importance on the moon. I have reviewed the list thoroughly, and while it looks a bit tougher than the first, it is not beyond the capability of anyone in the club willing to give it a go! About two-thirds of the observations are the standard look at it and write it down style. The rest emphasize drawing what you are seeing in the eyepiece. Don't worry though - as always with the League observing programs, you don't have to be an artist! They only ask that you try. Most of the locations are listed in the Rukl Atlas of the Moon (a great resource, even if you are not working on an observing program!) but a few will need additional research.

Like the first Lunar observing club, in addition to viewing or drawing the usual rilles, craters, mountains, and seas, the program incorporates some observing activities that require timing and coordination such as an close conjunction of a star or planet, Earthshine, craters very close to the Lunar poles, and libration effects. There are also additional 'optional targets' that can count for observations of items on the list that are not visible to you.

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Astronomy Day	Amy Hannon-Drew Lynn Ward
Club Picnic	Katrina DeWitt
October Field Trip	Katrina DeWitt Ty Westbrook

NPMAS Observing Sites

NPMAS members have access to three observing sites located on private land and belonging to members of our club.

Parmentier Observatory — largest private observatory in WI housing a 30" classical Cassegrain. Members may view through the 30" or bring their own scopes and set up in the field below.
Observatory Number: 920-845-5626
Ron Parmentier Home: 920-336-5878

Crivitz Observing — private residence of Dave & Carol Jorgenson. Located in the Northwoods of Wisconsin on 100 acres of land, this site offers some of the darkest skies around. The field is equipped with electricity and a cabin is available for use. Call ahead to make arrangements.
Dave & Carol Jorgenson Home: 715-757-3296

Cedar Drive Observatory — private residence of Tony Kroes and Tara Adsit. Located in Pulaski on 10 acres of land. Members welcome anytime, but please call ahead to make arrangements.
Tony Kroes Home: 920-822-4959

December

NPMAS Meeting

December 14, 2005

Star Parties

Gerry Kocken

NPMAS Year in Review

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December 2005

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2 KROES OBSERVING WEEKEND	3
4	5	6 DPAS Monthly Meeting	7	8 First Quarter Moon NPMAS Board Meeting	9	10
11	12	13 DPAS Board Meeting Geminid Meteor Shower Peak	14 Meeting	15 Full Moon	16	17
18	19	20	21 NEWSTAR Monthly Meeting	22 URSID Meteor Shower Peak	23 Last Quarter Moon	24
25	26	27	28	29	30 New Moon	31