



PICTURE OF THE MONTH

Taken by our very own Rod Gallagher. Rod has been assembling and sharpening his astrophotography skills for many years now. If you would like to see more of Rod's work please visit <http://web.olg.net/vgallagher-olg/> on the internet. Rod has planets, asteroids, comets, our moon and many deep sky objects you can view. Keep up the great work Rod.



M-1 THE CRAB NEBULA

Place	Bixhoma Observatory (H33)
Exposure Data	LRGB 30:30:30:30 mins @ -5C Lum 3x10, R 3x10, G 3x10, B 3x10
Notes	R, G, B filters binned 2x2

Type	Super Nova Remnant
Constellation	Taurus
Distance	6300 light years
Magnitude	8.4
Size	6x4 arc-min

Please submit your pictures for consideration for picture of the month to Astro.newsletter@pantherenergy.us with pic of the month in the subject line.



The Astronomy Club of Tulsa is a member of the Astronomical League.

Inside this issue:

President's Message	1
Notes From the Master	2
Secretaries Corner	3
Schedule of Events	4
Taurus Poniatovii	5
David's Astro Corner	7
Lands Tidbits	10

MONTHLY MEETING INFO

- *No meeting this month.*

OBSERVER



PRESIDENTS MESSAGE

BY: Tamara Green

Summer is just about here, and that means STAR PARTIES!!!

Our summer star parties are extra special, not only because of the warm, pleasant weather for observing and the many wonderful objects to aim our telescopes at, but also because many of you come and enjoy them! We are looking forward to big crowds this summer and hope you can all make it to them!

We have a brand-spanking-new Air Conditioning and Heating unit installed in our observatory now. This means you all can look forward to a nice comfy observatory YEAR ROUND!!! For our Oklahoma summers, this means a cool classroom to take refuge from the heat in until the sun goes down and be refreshed and ready to go observing! There are many objects to see, including the Milky Way, the Summer Triangle and the treasures to be found therein, the planet Jupiter, and if you are willing to stay up a little later, all the beautiful Messier objects in Scorpius and Sagittarius! Plus, you have more time to socialize before dark and for you new members, this is a good opportunity to get to know us and make some friends! We are a friendly bunch and would like very much to enjoy astronomy with you all!

Speaking of the extra daylight before observing begins, if you can, try to get there a little early and meet up with all of us and enjoy some camaraderie. We might just try to have a little picnic before dark. If you are interested, why not bring a pot-luck dish to share!

Our May star party was very surprising. I was personally very pleased to see the large crowd of new faces at our observatory! I hope that all of you will return for our Summer star parties and have a good time with us.

Our June star party is on Friday, June 15, our July star party will be on Friday, July 13, and our August star party will be on Friday, August 10. And as always in case of rain, we have those Saturdays as back-up nights. Those will be June 16, July 14, and August 11, respectively.

I would like to recommend that you bring with you some bug repellent, especially if you wear shorts, and some warmer clothing, like sweats, to put on after dark in the event the wind picks up on the hill. It can and does sometimes get a little chilly up there, even in August. Also, because of the heat, don't forget your drinking water and/or Gatorade! And most importantly, don't forget to bring YOU and your smiling faces and your readiness to enjoy good friends, good times, and some wonderful Summer astronomy!

We hope to see you all there!

Clear Skies to All,

Tamara Green

NOTES FROM THE MASTER

BY: KC LOBRECHT

Several people have asked me to mentor new club members. I told John Land, that it starts at the eyepiece (theirs) and the passion grows for the quest to know ... what that object is?... It has remained so for me... After thirteen Observing Programs, three of which I never submitted. When Jerry M. asked me to write for the Newsletter, I thought okay...

I can not teach you the sky... John said that it is an internal learning process... I am not sure I will ever know the sky... (But I paint landscapes with excellent clouds....) I have memorized any deep sky objects, and know exactly where they are. We all have our favorites.

Each observing session starts out me asking real loud...What star is that? and I'm always told by someone... in the know...And corrected when I am on a big giant round star that's not Mars...

That's what make being an amateur so great... People are there to help at the observatory... Let's not be intimidated by the lack of knowledge in astronomy, or the one
(C o n t i n u e d o n p a g e 3)



(Notes From the Master Continued)

that's the 'know it all' or has a big ego. Being correct is something that the teachers have to be good at. As an artist, I have

abstract concepts of perfection.... Perfect is not achieving observing programs... It is in the doing that makes life so fulfilling... Many people now work on programs... after they had seen me fumble around with loose papers and maps on the back of my pickup truck - for a decade.... This is not a legacy... this is to log what you will eventually forget. I have looked the Universe over

and know that that light is shining brightly back... And to review the work is marvelous... and to be reminded in the eyepiece.... After landscape artists have painted for thirty years, they begin

to be able to paint by their mindseye... In astronomy... it's not quite as good to remember; you must feel the night air on your face and see the object for yourself... Let's be reminded here of Saturn...

She never disappoints... for real.

Passion is not always instilled... Time is.

KC



Above is picture of one of KC's paintings. This is of our dark sky site up at Tall Grass. KC says John Land took the photo, which I copied from for my painting. He said it was just as you pull out of Adam's Ranch...looking NW... I believe he said... He said the wind was doing about 35mph... That's one reason I wasn't there... another was due to the clouds.

SECRETARIES CORNER

BY: TERESA KINCANNON

Last month we had the last meeting for our club at the University of Tulsa. On Friday, May 11, 2007 approximately thirty members and guests gathered for our club business and to hear the guest speaker: Zach Garrett give an informative talk on choosing and using a good pair of binoculars.

Our president, Tamara Green, began the meeting at 7pm by introducing herself and welcoming guests. She made announcements about upcoming events in the club and explained that this is our last club meeting at T.U. as we planned. She then introduced Teresa Kincannon to give directions and pass out a map for our meetings at Tulsa Community College's Metro Campus. We will be using the auditorium in the Phillips building. <http://www.tulsacc.edu/archive/maps/metromap.pdf>

We had special guests visit with us. Ron and Maura Wood from the TUSA observatory came to present awards to our astronomers who participated in the Messier marathon this year. Ron and Maura host this annual event at their observatory in TUSA. To obtain a T.O.E. (TUSA Observer Extraordinaire) award the observer must show extraordinary observing. This year the Little T.O.E. award went to the following 7 people: Tamara Green for recording 91 messier objects, Denny Mishler for using only binoculars for 98 objects, John Land found 99, Bob Boston recorded 32 and his wife Marsha Boston as a new observer found 4 on her own that she could find again. Ann Bruan found 102, and David Stine found 103.

The Big T.O.E. award, also known as the David Stine award, went to two people this year. Steve Chapman and Tony White tied with 105 objects so they both received the award.

After a very informative talk by Zach Garrett the board brought to the attention of the members the need for a small heat and air unit at the observatory to make our evenings more tolerable both in the winter and the summer. We presented this item to the members asking for a vote to purchase and have the unit installed for \$1,500. The decision was unanimous to make the purchase. (*CONTINUED ON PAGE 9*)

NEW MEMBERS

Dewey Smith

Stephanie Diedrich

Chris Birdwell

Elodie Birdwell

WELCOME



JUNE 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					5 RAIN	2 RAIN
3 RAIN	4 RAIN	5 RAIN	6 RAIN	7 RAIN	8 RAIN	9 RAIN
10 RAIN	11 RAIN	12 RAIN	13 RAIN	14 RAIN	15 STAR PARTY	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Schedule of Events

- 6-12 thru 6-17 Heart of America sponsored by the K.C club
- 6-15-2007 Club Star Party All invited



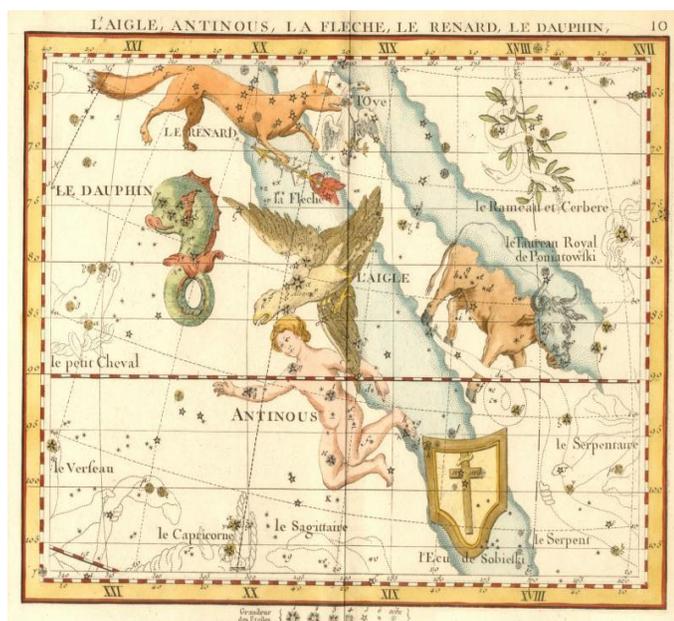
TAURUS PONIATOVII

RESEARCH BY: D.J. KARCHER ACT MEMBER

Taurus Poniatovii (Poniatowski's Bull)

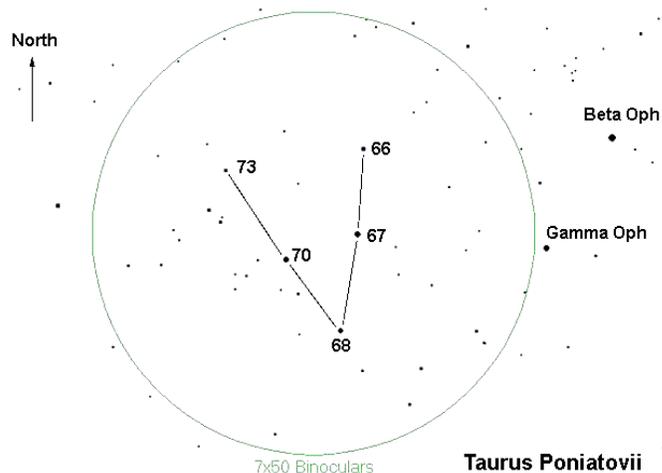
An 18th century constellation created in 1777 by the Abbot, Martin Odlanicky Poczobut, a Jesuit priest and director of the Polish Royal Observatory at Wilna (now Vilnius, Lithuania - at that time part of Poland). He created it in order to honor Stanislaus Poniatowski, last King of Poland from 1764 to 1795. Poczobut published a catalogue of 16 stars making up the constellation in "Cahiers des observations astronomiques faites à l'observatoire royal de Wilna" in 1773 (published 1777). The constellation was first depicted in 1778 as le Taureau Royal de Poniatowski in a revised reprint of Jean Fortin's Atlas Céleste. The name was later Latinized by Bode on his Uranographia of 1801. The now defunct constellation was originally made up of stars found in Ophiuchus, the serpent-bearer, and Aquila, the eagle but was abandoned when the IAU adopted the current 88 constellations in 1930. Like poor Pluto, Taurus Poniatovii failed to make the cut and has been demoted from constellation to asterism.

The stars that were taken from Ophiuchus (Flamesteed numbers – 66, 67, 68, 70 & 73) bear a striking resemblance to the



Source - Atlas Céleste de Flamsteed, Publiè en 1776, par J. Fortin, Ingénieur-Mécanicien pour les Globes ET Sphères. Troisième édition, Revue, corrigée ET Augmentée par les Citoyens Lalande ET Méchain. Paris 1795

V-shaped groups of stars (the Hyades) that make up the face of Taurus, the bull especially when seen in binoculars and are a striking asterism that once viewed, will not be forgotten. Had the constellation formally survived, its brightest (mag 3.97) member, Flamsteed's 67 Oph, would be Alpha Tauri Poniatovii ("α TaP" a totally unofficial abbreviation). But it didn't, so 67 Oph will have to do. And too bad, as this very luminous blue-white class B (B5) supergiant would have made a magnificent "alpha star." It is far enough (1420 light years, but with an associated 33 percent error), as well as close enough to the Milky Way, that interstellar dust dims its light by a third of a magnitude. Of much greater significance, 67 Ophiuchi seems to be at the peak of a young, very extended (by several degrees) open cluster with a curious history called Collinder 359 (from the astronomer Per Collinder, 1890-1974). Of the original brightest members, Gamma=62, 66, 67, 68, and 73 Oph, all but 67 Oph were later shown to be NON-members, while a large number of other much fainter stars were then included. An estimated age, however, of 60 million years is not fully consistent with that of 67 Oph. Collinder 359 may more be classed as a "moving group," one that is not gravitationally well-bound together. Poniatowski's Bull then takes on an even more interesting aspect rather similar to



Source – Starry Night Backyard / notes by D.J. Karcher 2007

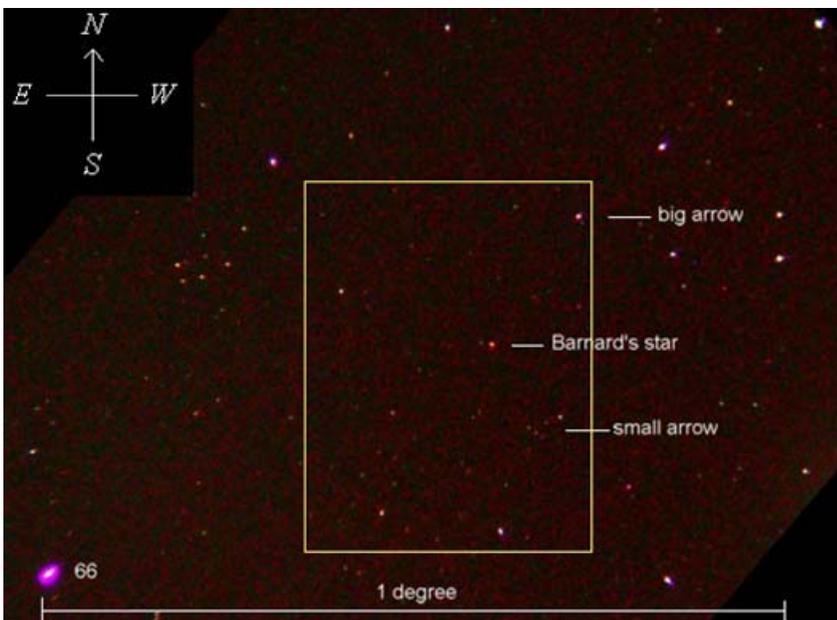
Vulpecula's "Coathanger" (Collinder 399), which was also once thought to be a cluster, but isn't.

70 Oph is an interesting multiple star - Sir William Herschel discovered this star system in 1779; a wonderful double star that begs for close examination, only 16.6 light years away (the 51st closest star system). 70 Oph is so nearby that its stars are easily separable with a small telescope, which allows one to see nearly a full orbit over a human lifetime, the pair swinging from two to seven seconds of arc apart and back over a period of 88.4 years. The binary is also unusual in that



it consists of two low mass cool yellow-orange class K dwarfs, a rarity, since most naked eye stars are hotter and more luminous than the Sun.

Contrast effects make the two quite the colorful pair. Nineteenth-century Admiral Smythe called them "pale topaz and violet". The primary (70 Oph A) is a class K0 star with a magnitude of 4.22, (a temperature of 5290 Kelvin, a luminosity 0.51 that of the Sun, and a radius of 0.85 solar). The respective parameters for the



fainter secondary star (70 Oph B) are magnitude 6.01, 4250 Kelvin, 0.16 solar luminosities, and 0.70 solar radii. (A more typical temperature of 4650 K drops the luminosity a bit as it admits less infrared radiation). The beauty of binaries lies not so much in their aesthetic aspects, but in their use in determining stellar masses through Kepler's Laws. The average separation between the stars (the semimajor axis of the elliptical orbit of B about A) is just 23.3 Astronomical Units. A fair degree of orbital eccentricity makes them as close as 11.6 AU and as distant as 34.8 AU. The last close approach was in 1984, the next greatest separation will be in 2028. From separation and period, we find a combined mass of 1.60 solar masses. From the way that each star affects the other (the location of the center of mass), we find a mass for 70 Oph A of 0.89 solar and for 70 Oph B a mass of 0.71 solar. Data such as these allow the construction of a "mass-luminosity relation" for hydrogen-fusing dwarfs that is a prime test of the theory of stellar structure. 70 Oph A is, like the Sun, magnetically active, and has a surrounding hot corona. Active regions rotating in and out of view allow the determination of a rotation period of 19.7 days. This remarkable double star is near its closest approach to the Sun, the distance shortening to 15 light years 75,000 years from now.

Fast-moving Barnard's Star, (visible in binoculars – but difficult to pick out at magnitude 9.5), lies approximately $\frac{3}{4}^\circ$ northwest of 66 Oph. If Taurus Poniatovii were still recognized as a constellation, it would have the distinction of containing the star with the largest known apparent motion ("proper motion") in our sky. Barnard's Star is a 9.5-magnitude red dwarf that is

named after Edward Emerson Barnard (1857-1923), one of those legendary telescopic observers of an era long gone. It was Barnard, who in 1916 spotted its rapid motion during a comparison of photographic plates of the Milky Way made in 1894 and 1916. Now called Barnard's "Runaway Star," it has a mass computed to be just 16 percent that of the Sun and a luminosity only 1/2500 that of the Sun. It's the next closest star to us after the Alpha Centauri system, at 5.9 light years; its actual velocity is about 103 miles per second and its proximity plus high space velocity combine to give it a proper motion of 10.31 seconds of arc each year. Put into layman's terms, from our Earthly vantagepoint, this carries it across the sky at roughly the apparent width of the full Moon in less than 180 years.

References:



urce - Urania's Mirror, Samuel Leigh - London 1825

Sky & Telescope, August 2001: Small Scope Sampler - The Clusters of Taurus Poniatovii, Sue French

Sky & Telescope, August 2006: Northern Binocular Highlight – Seeking Barnard's Star, Gary Seronik – p.52

Star Tales, Ian Ridpath – p.149

Star Names and Their Meanings, R. H. Allen – pp. 413-414



DAVIDS ASTRO CORNER

It has just been miserable this past month just trying to observe even bright objects because of the weather. June usually is one of the better months to have fair viewing skies, so let's hope this rainy and cloudy weather is out of here for awhile. If you were not able to get out and try your luck on the May object list, these same objects will be visible this month also, so go back to Mays newsletter for a copy of the objects. Below is June's list for you to observe:

In The Eyepiece In June

Interesting objects to observe this month!

Click on the object for more information, a chart, and a visual description.

Object(s)	Class	Con	RA	Dec	Mag
Mu Boo	Multiple Star System	Bootes	15h24m30.9s	+37°22'38"	4.3+7.2
M5	Globular Cluster	Ser	15h18m15.4s	+02°05'00"	5.7
NGC 5897	Globular Cluster	Libra	15h17m24.0s	-21°03'26"	8.4
NGC 6207	Galaxy	Hercules	16h43m03.9s	+36°49'58"	12.1
NGC 6144	Globular Cluster	Scorpius	16h27m14.0s	-26°01'18"	9
NGC 6210	Planetary Nebula	Hercules	16h44m29.5s	+23°47'59"	9.3
A 39	Planetary Nebula	Hercules	16h27m33.9s	+27°54'29"	13.7
The Ruffled Starfish (NGC 6240)	Interacting Galaxy	Ophiuchus	16h52m59.0s	+02°24'02"	13.8
Me 2-1	Planetary Nebula	Libra	15h22m18.6s	-23°37'35"	11.6

Coordinates are epoch 2000.0

The last three objects are going to be a challenge even for veteran observers, but the challenge will be self rewarding if you are able to locate them.

If you are new to observing and want to try something a little more easier but still a challenge try observing at least one of the below objects:



(CONTINUED ON PAGE 8)

(DAVIDS ASTRO CORNER CONTINUED FROM P-6)

M37

Beta Mon

M81 & M82

M5

The Double-Double -- Epsilon Lyr

Ring Nebula (M57)

The Wild Duck Cluster (M11)

The Swan Nebula (M17)

61 Cyg

Y Cvn

M65 and M66

We are getting ready to head back to the International Space Station and if all goes well the Shuttle will be launching June 8th. More solar panels will be added to the station which means possibly making the station even brighter as it passes over Tulsa. I haven't seen the ISS schedule for flyovers or the Shuttles as it is still a little early, but I will let you know through my Astro Alerts when I have that schedule. I hope everyone got to see the very bright pass Tuesday June 5th that I alerted everyone to.

For some reason we are getting ready for a nightly display of Iridium Flares starting this week and running through June 9th. Some of these will have happened by the time you read the newsletter but they are included also. For those not familiar with Iridium Flares, they are caused by satellites that pass over and when the sun and the satellite are at the right angle the sun's reflection hits the satellite and causes it to brighten almost instantaneously causing what looks like a bright flare. They are awesome to watch and many first timers come away awed. Here is the list of bright flares coming in June:

June 6 9:10pm. -2 mg. Alt: 64 degrees Location: 83 degrees East

June 7 10:48p.m. -1 mg. Alt: 36 degrees Location: 63 degrees ENE

June 8 10:42p.m. -6 mg. Alt. 36 degrees Location: 64 degrees ENE

June 9 10:36p.m. -0 mg. Alt. 36 degrees Location 65 degrees ENE

For new observers remember Polaris the North Star is at 0 degrees and 36 degrees in altitude, so if you look almost even with Polaris altitude and to the right about 6 clenched fists held out at arms length in front of you, you should be close to the location of the expected flare for June 7-9th flares. Good luck.

A Solar Flare alert recently went out early the first part of June. There was a huge Sunspot emerging from the limb and possible X or M class flares are expected as the Sunspot moves across the surface. I am sure many were able to view this Sunspot at the recent Eclipse Lecture at the Tulsa Air and Space Museum last Sunday. The Sunspot should remain visible for most of the week until it passes behind the limb of the sun. I will update you through Astro Alert if the Sunspot becomes active.

There are not any bright comets in the sky to view this month, even though there are several 10-17th Mg. comets visible. We are kind of comet dry now but in 2008 there won't be a night that there isn't a comet visible. There will be 24 expected returning comets in 2008 and several of these could become naked eye. We will just have to wait and see. Now these are just returning comets, so as we all know there will be new comets as well making their first return.

June Meteors are highlighted with the end of the month June Bootids. They will reach a peak on June 27th at 2p.m. CST so the night of June 27th after peak should be a good viewing time. The meteors can be seen starting June 22nd through July 2nd and will seem to come from a point just 8 degrees north of the star beta Bootes. These are slow meteors with a velocity of about 18km per second so you shouldn't have any trouble distinguishing them from other faster meteors. The meteors are the debris left by Comet 7P/Pons-Winnecke discovered in 1819. The meteor shower was first noted in 1916. The number at peak times can vary but expect 15-30 per hour on the evening of June 27th. There have been outbursts where as many as 500/hr were seen and in 2004 rates jumped up to almost one per minute during the outburst. Also in June watch for any meteors coming out of the Lyra constellation. These are June Lyrids and were just recently discovered and declared a minor shower. You might start looking for these between June 11th and 21st with peak night the 16th. This shower is so new that the International Meteor Organization would like any reports if you see any of these meteors. If you do any radio meteor observing the strongest daylight meteor shower of the year will also happen this month. The Arietids peak on June 7th at 5p.m.CST

I would like to apologize for the tardiness of this newsletter. Due to extenuating circumstances beyond my control at work I was left with little time to get this out last week. Hopefully this will be a rare event.

Jerry Mullennix

(SECRETARIES CORNER CONTINUED FROM P-3)

The meeting was adjourned after which we mingled, asked the speaker questions, and examine some of his gear.

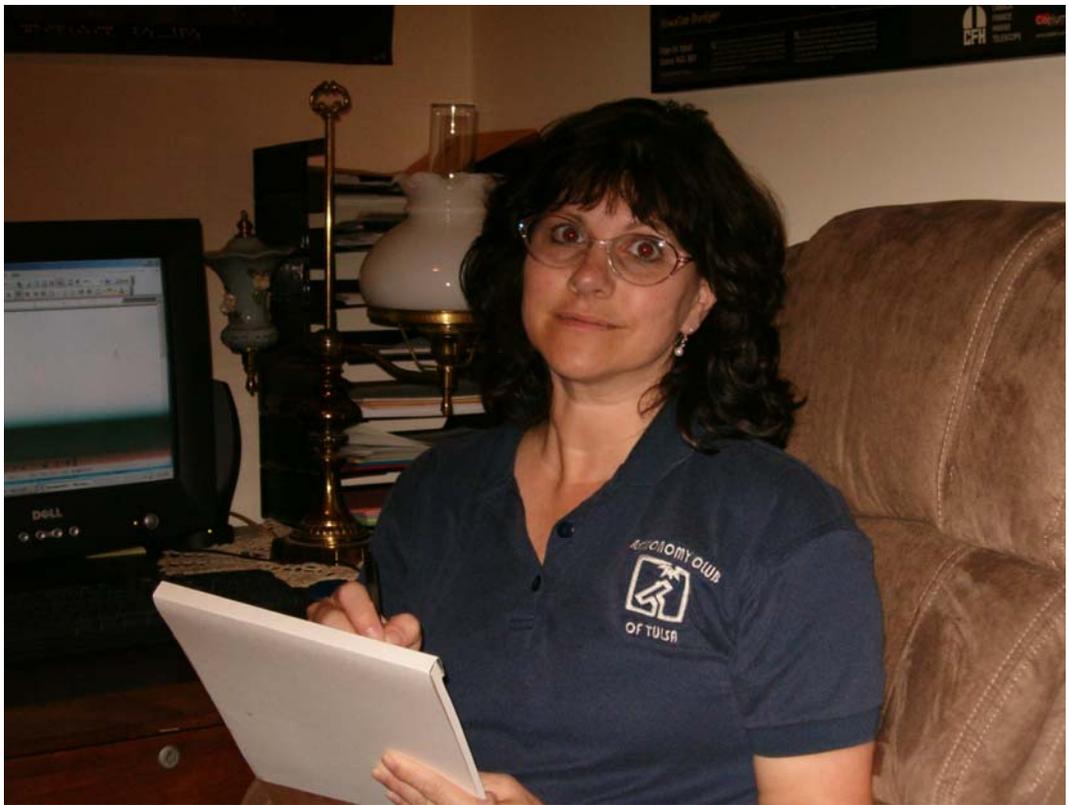
On May 20, 2007 an Officers' and Board Meeting was called to order. We had a few things on an agenda that needed our attention. The first business to attend to was a set of written procedures for our discussions at board meetings. We are all appreciative that we now have several board members in addition to the officers taking on leading roles with this club. These procedures will help organize the meetings and keep the meetings as productive as possible. They also include provisions for sharing notes from the meetings with the members as a whole. As a result we now have the "Secretaries Corner" in our newsletter. From now on if you read about projects that we are working on and you have a talent or resources that can help, please email one of the board members.

The next order of business: Sheldon Padawer's membership was suspended for one year.

We heard updates on our new heat/air unit. Craig Davis reported at that time we needed to plan a clean up after the installation. However, since then our very own Tom McDonough went on up and cleaned the observatory on his own.

Even though the meeting was adjourned on that Sunday afternoon, we continued to email each other with ideas and upcoming events. We prepared for an event at TASM and had a nice turn out from the public of about 100. Thank you to all that came with several telescopes set up for solar viewing. Everyone is excited about the new air unit we can use at the next star party on Friday, June 15.

---teresa kincannon, ACT Secretary/Group Director





Lands Tidbits

by John Land

New Subscription renewal procedure for Sky & Telescope

Sky & Telescope outsourced their subscriptions mailings and renewals to a company in Florida.

As a result of this change you may renew your Sky & Telescope subscription directly with out having to mail in the subscriptions to the club treasurer. You may have already notice the new address if you received a renewal notice. You will still receive the club discount rate of \$ 32.95 per year. Sky & Telescope will send out a list annually to verify club membership. You may also phone in your renewal at 1-800-253-0245. You will need to know your subscription number when you call. The new change should make renewing your subscription more convenient and allow you to use your credit card. The down side seems to be that it has added about an extra month to getting renewals and new subscriptions started. So send renewals in at least 2 months before they expire.

NEW SUBSCRIPTIONS must still be sent to the club treasurer. Forms are available on the website.

DON'T LET YOUR MEMBERSHIP or Subscriptions LAPSE !!

Check your MAILING LABEL for membership expiration date. Those receiving Email should get a reminder when your membership is up for renewal or you may contact John Land. You may also renew magazine subscriptions through the club for substantial discounts.

Magazine subscriptions Renewals: Several of you may be receiving renewal notices for you Astronomy or Sky & Telescope. Sky & Telescope may be renewed directly to the company. If you have an individual membership you may renew through the club you get a substantial discount. Go to the website and fill out the renewal form then print it off and mail it in with your notice and envelope from the magazine. Or you may fill out and mail in the form below.

GUEST SIGN IN SECTION on the Website is already bringing the club new contacts for potential new members.

Changing EMAIL - When you change your email or mailing address be sure to send me the new information so I can update the club records. You can use the Join feature on the club web page to make changes.

ON LINE Club Memberships and Renewals:

Adults - \$ 35 per year includes Astronomical League Membership

Sr. Adult discount \$25 per year for those over 65 includes Astronomical League Membership

Students \$ 15 without League membership.

Students \$ 20 with League membership.

We now have an automated on line registration form on the website for new AND renewal memberships plus magazine subscriptions. You simply type in your information and hit send to submit the information.

<http://www.astrotulsa.com/Club/join.asp>

You can then **print a copy of the form and mail in your check.**

Astronomy Club of Tulsa - 25209 E 62nd St - Broken Arrow, OK 74014

Magazine Subscriptions: If your magazines are coming up for renewal, try to **save the mailing label** or renewal form you get in the mail. Do NOT mail renewals back to the magazine!

To get the club discount you must go through the club group rate.

Astronomy is \$ 34 for 1 year or \$ 60 for 2 years. www.astronomy.com

Sky & Telescope is \$33 / yr www.skyandtelescope.com

Sky and Telescope also offers a 10% discount on their products.

Address Corrections- Email changes - Questions:

You may forward questions to the club call our message line at **918-688-MARS (6277)**

Or go to the club website and Fill out an online form or just click on John Land and send an email.

Please leave a clear subject line and message with your name, phone number, your question - along with address or email

Astronomy Club of Tulsa
Membership Application/Renewal Info

----- PLEASE INCLUDE THIS SECTION -----

Astronomy Club of Tulsa
Membership Application/Renewal Form

PLEASE PRINT

Name: _____ Phone: (918) _____ - _____

Address: _____

City / State / Zip _____ / ___ OK ___ / _____

E-mail address - print clearly _____

Check Lines below : For faster economical delivery you are notified by email when the Club newsletter is posted on the web.

Email saves the club mailing expenses. Of course if you do not have email we can mail you a copy of the monthly newsletter.

___ New Membership ___ Renewal Membership

___ Adult Membership (\$35) includes Astronomical League membership. See <http://astroleague.org/> for benefits of being a League Member.

___ Student Member (\$20)* includes Astronomical League membership.

___ Student Member only(\$15)* – without League membership.

Check Lines below for YES

___ I would prefer to receive E-mail notification when club newsletter is posted to the web.

Notice of club events and newsletters are usually sent by email. This helps assure you will be informed of late breaking news.

I choose to receive my newsletter by E-mail ONLY instead of postal mail.

___ Check here if you also require a postal copy of the monthly newsletter.

Note: Using email newsletter saves the club about \$5 per year and gets to you more quickly.

Magazine subscriptions: *Magazine rates may change. Prices available with membership only.*

___ Sky & Telescope Subscription (\$33) / year _____ Renewal Include Subscription Number.

Also includes 10% discount on most Sky & Telescope products.

___ Astronomy Subscription (\$ 34) / year (\$ 60) / two years

_____ Renewal Include Subscription Number.

Astronomy Club of Tulsa - 25209 E. 62nd St - Broken Arrow, OK 74014

Or go to the club website and Fill out an online form or just click on John Land and send an email.

How did you hear of the Astronomy Club of Tulsa? _____

How long have you been interested or active in astronomy? _____

Do you have a telescope? _____ Type _____

What astronomy club activities would you like to participate in?

Have you been a member of other astronomy clubs? _____

Where / when _____



Night Sky Network

Astronomy Clubs bringing the wonders of the universe to the public



ASTRONOMY CLUB OF TULSA

P.O. BOX 470611
 TULSA, OKLAHOMA 74147-0611

For information, comments or suggestions about this newsletter please contact Jerry Mullennix (Editor) at the address above or by email at Astro.newsletter@pantherenergy.us

GRAVITY
ITS NOT JUST A GOOD IDEA, IT'S THE LAW

MEMBERSHIP INFORMATION

Astronomy Club of Tulsa membership (\$35/year) includes membership in the Astronomical League and subscription to ACT's "Observer" and AL's "Reflector". "Astronomy" (\$34/year) and "Sky and Telescope" (\$33/year) are also available through the club. For more information contact John Land at 918-357-1759. Permission is hereby granted to reprint from this publication provided credit is given to the original author and the Astronomy Club of Tulsa Observer is identified as the source.

Were on the web
www.astrotulsa.com

CLUB OFFICERS

POSITION	NAME	PHONE
President	Tamara Green	918-851-1213
Vice-President	Tom McDonough	918-665-1853
Treasure	John Land	918-357-1759
Secretary	Teresa Kincannon	918-637-1477

APPOINTED STAFF

POSITION	NAME	PHONE
RMCC Facility Manager	Craig Davis	918-252-1781
Membership Chairman	John Land	918-357-1759
Observing Chairman	David Stine	918-834-1310
New Members	Denny Mishler	918-274-4772
Observatory Director	Teresa Kincannon	918-637-1477
Webmaster	Tom McDonough	918-665-1853
Newsletter Editor	Jerry Mullennix	918-237-8220
Night Sky Network	Teresa Kincannon	918-637-1477

BOARD MEMBERS AT LARGE

Steve Chapman

Craig Davis

Rod Gallagher

Jerry Mullennix

Richard Alford

Owen Green

Jim Miller

Denny Mishler

Tony White