Starscan

Johnson Space Center Astronomical Society

Volume 24, Number 7 July 2008

FORTY YEARS AND COUNTING!

TEXAS STAR PARTY
JUNE 1-8, 2008

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Message from the el Presidente

Holy Cow, June sure flew right by us. Only yesterday I thought Connie was working up the June issue and now it is July already. For the July 11th meeting we are in for a real treat as we have Cynthia Gustava speaking on "New Worlds: Exoplanets".

It looks as though TSP was fun for all and it was great seeing some pictures of old friends. Don's "dust devil" was an eye catcher as well. As far as star parties go, July and August are pretty lean months so lets keep those images coming.

On a personal note, Connie and I just got back from a quick jaunt to the western states and I had me a good half day at Meteor Crater and just loved it, heat not withstanding. I may be prepping something on that in the near future.

Clear skies and good imaging,
David Haviland

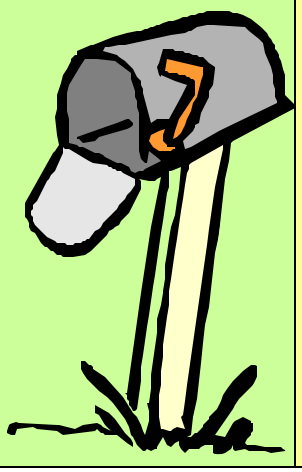
LETTER FROM THE EDITOR

By Connie Haviland

This edition has stories from the trip to the Texas Star Party. It is packed with lots of pictures from various members. I have also started something new for the "Astronomy and Kids" section. Enjoy…..

LETTER TO THE EDITOR

MAILBOX IS EMPTY



Star Parties for 2008

By John Erickson

JULY
July—No Star Party

AUGUST
August –No Star Party

SEPTEMBER
September 06 - Moody Gardens Star Party
September 27 - Haak Winery Star Party

OCTOBER
October 18 - Astronomy Day @ George Observatory
October 23 to 26 - Fort Mckavett StarParty

NOVEMBER
November 01 - Haak Winery Star Party

DECEMBER
December 12 - No Star Party

(Note from Editor: This is all I have regarding starparties, if there are more, you will have to look for John's announcements)

Sleepless in Fort Davis
2008 TSP report- Becky Ramotowski

What a tremendous week in West Texas! About 518 intrepid amateur astronomers endured rising temperatures and made the 2008 Texas Star Party a whole lot of fun. Unlike the monsoon themed TSP of 2007, this year's star party was extremely dry and hot. It was also a clear sky astronomy Mecca. Clouds were mostly non-existent until the very end of the week but by then I don't think anyone cared that distant thunderstorms were looming. Sleep deprived astronomers were in abundance all week and could be spotted by their bloodshot eyes, blank stares and sluggish gaits.

The observing fields at the Prude Ranch had patches of parched grass that rapidly wore into crop circles around the bases of our scopes as the week progressed. Only thistles bloomed and the few bugs I saw were toting water bottles in back packs. I think I saw a firefly blinking neon green "follow me to the pool" in Morse code as it traversed the upper observing field one evening.

The temperature reached 107 one afternoon and I thought I was going to hallucinate from the heat. The early settlers in the area must have managed soaring summer temperatures in creative ways or they would not have stayed in that droughty desert wilderness.

A fire that began Wednesday and burned about 50,000 acres near Marfa affected our viewing and breathing during our final days there. We could see billowing smoke clouds Wednesday afternoon, and the scent of burnt grass was quite strong depending upon wind direction.

Shane and I drove down to Marfa on Saturday and found what looked like the fire ignition site along the railroad tracks beside HWY 90. The blackened landscape was a vast flatland of charred dirt and scorched Yuccas. Slender yucca leaves baked ash-white resembled Einstein-like hairstyles and were perched on charcoaled stalks. It was a sad sight seeing them stand like burnt sentinels marking the path of the fire through the ranchland.

After checking out the fire site and then discovering a nest of baby crows on a power pole on the way back, we had a great lunch just outside of Marfa at "Mondo's". It's the local hole in the wall and serves generous plates of homemade Mexican specialties.

Shane had a big ol' mess of Mexican food, and I dined on a plate of delicious botanas. In spite of the slight smokiness, we stayed up until dawn every night. (I crashed early Friday night. I think the smoke got the best of me as my head was splitting so I went to bed around midnight.)

Shane and I completed the TSP "Globular Glory" list for one of the coveted award pins. Pluto was one of my targets for the week and I photographed the field on consecutive nights in order to identify it from its movement through the surrounding star field. Don Halter had it in his telescope midweek and we could see it using averted vision. The smoke from the grass fire near Marfa made the seeing degrade, so seeing Pluto at all was a coup.

Jack Petersen showed us an exquisite view of B86, a splendid dark area near the open cluster NGC 6520 just off the tip of the teapot's spout in Sagittarius. It is a nice contrast of bright and dark. The cluster resembles (to me) a mouse and the dark area serves as the mouse hole.

Al Kelly imaged this area after remarking how beautiful it was. I think Al collected more photons than is humanly possible. His computer monitor glowed almost continuously throughout the week with collected data.

Fred Miller shared his "Super Vision" with us. Next time you see Fred, just ask about his Super Vision and I am certain he will share it with you too! Fred was earnestly working on his Herschel list and judging by his quietude, it is a sure bet he observed a major portion of his targets.

Most nights found Charlie McLeod huddled behind the warm glow of his computer monitor while imaging. He imaged the Pluto field too- we will compare notes later. Ken and Lisa Lester were set up nearby and their laughter all week confirmed a good time was being had. Lisa's scope fell victim to a large dust devil that traversed the observing filed. The prognosis was no harm done last I heard.

Dust devils are frequent at TSP and they have been known to fatally injure telescopes after lifting them skyward and tossing them down abruptly. It's a sad sight and one that keeps attendees in a never-ending quest to figure out the best way to secure their scopes. Don Halter captured one of the biggie-sized dust devils with his cool camera. He was in the perfect spot for snaring the dusty sidewinder as it snaked across the upper field.

First timer Lynn Dippel was right at home on the upper field at camp JSCAS. She had a spot on the corner and enjoyed a bird's eye view of TSP amateurs. Jim Cate had a prime viewing spot staked out near Dennis Webb and Don Halter. Jim was the winner of the grand prize during the Great Texas Giveaway on Saturday night. It's safe to assume he is looking better than ever before.

Chuck and Connie Shaw spent two evenings with the gang while the IMAX crew of Toni and James filmed some time-lapse sequences of color changes at sunset and the nuances of the uncovering of scopes on the upper field before dusk. Dick Miller popped in for a night or two and shared Dennis' scope. It is always a treat to have Dick around as he images Arps and shares his expertise. Shane & I also looked at about 25 double stars-so my personal goal to complete my AL Double Star list of 100 was fulfilled.

As the fire kept burning toward our southwest, smoke subtly permeated our clothes and a few TSP'rs had respiratory problems. Coughing could be heard intermittently around the observing field. In spite of the smoke, the company of old and new friends made the smoke a mere nuisance and conversational fodder.

I particularly enjoyed seeing the children and spouses of my astronomer friends at TSP. We usually know the complete inventories of our observing friend's telescopes and eyepieces but often have no clue about family members who remain at home. It was nice seeing and meeting the families. New friend Christa Matthews of Houston was a frequent visitor to camp JSCAS as were old friends Jim Burnell and Bob Krishman. Christa made five-hour star trail photos from the south end of the field. Shane & I joined her on separate nights with our cameras set up on tripods documenting the activity of the observers while the stars spun long arcs overhead. One evening while waiting for the sky to darken, we were treated to some Irish fiddle music expertly played by Andrea Katz. Her repertoire of Irish tunes and reels lulled the Sun to sleep.

Bob and Lisa Summerfield of Astronomy to Go were extremely generous and hosted a book signing for me and a couple of other book authors at TSP. It was big fun! Author David Moody (Astronomical Sketching) joined the JSCAS gang under the Oak tree for the traditional Festival of the Tinned Mollusk Saturday afternoon and brought along his mandolin for our entertainment. Dennis dazzled us with his bright blue sparkly guitar.

Since Shane & I were camping in our new RV near the upper field, and were pleasantly close to the Harmony (JSCAS) bunkhouse, it was apparent to me that I had been spending too much time walking at TSP and not observing during my past years there.

Our former tent camping site was down by the swimming pool near the road. Walking to and from camp to the upper field had always been a 30-minute round trip. A couple of trips to camp took a large chunk of viewing time away each night so I think the camping by the road days are in the past for good!

During the Friday night program, I was totally caught off guard and was awarded the Lone Stargazer Award. It is a personal achievement award given for excellence and persistence in observing the sky and sharing the joy of observing with others.

The prior awardees roster is very impressive; comet discoverers, variable star gurus, asteroid discovery teams and book authors pepper the list so when they called out my name I was very surprised. It was an humbling moment and one I will cherish forever.

Next year the Texas Star party will be in April, so we will not suffocate from the heat.

Becky's TSP pics

They say a picture is worth a thousand words....

I could not write a thousand words to describe how surprised and humbled I was when they called my name out during the Friday night program at TSP. The list of prior awardees reads like a who's who roster of astronomy. I'm still grinning ear to ear!

Mars was cruising through the Beehive
Mars is the reddish 'star' at the upper left of center.

My Experience at TSP 2008
By Chuck Shaw

Was great fun to come out to TSP this year again, even if only for a couple of nights!! Toni Myers (IMAX producer) and James Neihouse (IMAX cinematographer) both wanted me to pass on how much they enjoyed meeting everyone and how they appreciated the great hospitality they were shown by everyone!

A special thanks goes to Steve Goldberg for helping me coordinate their visit and access! Steve, the visit to McDonald went GREAT by the way, many thanks for helping set that up also!!

Another tip of the hat goes to Becky and Shane!! Shane loaned James a counterweight and stuff to steady the tripod for the HD Camcorder James was using for the scouting shots they were taking, and Becky found Toni's voice recorder (and thanks to Dennis for carrying it back to Houston!!)

The reason they were out at TSP was to investigate different ways to portray how people "connect" to the sky, building up to the very emotional connection so many people have with the HST itself in an effort to try to get the audience to ponder why that connection to the HST exists. They liked what James captured, which was the time lapse transition from a world dominated by terrestrial surroundings, to one that gradually changes to being dominated by the incredible west Texas night sky, and the activity on the field during that transition period (dusk) where amateur astronomers "put their game face on" as James referred to the unwrapping and setting up of the equipment on the field. The next level up in connecting to the sky is from a large mountaintop observatory, and Toni liked the "personality" of the McDonald Observatory for the film, and the fact they could capture both the amateur and professional astronomer aspects with one trip rather than a 2nd trip to some other observatory.

So, they will be looking at the scouting footage James shot, and working on the story board to see how things fit together over the months to come to see if this approach to making that link to the sky (then then to the HST as a powerful way for many people to experience that link), and weave that into the movie on the story of the HST that they are making!!!

Meanwhile, we are flying their 3D IMAX camera in the Payload Bay of Atlantis during the STS-125 Servicing Mission 4, currently planned for October 8, 2008, and the crew will be using the same type HD Camcorder James was using at TSP to video in-cabin scenes (which will also get converted to 3D for the movie).

The movie is currently planned to be released sometime in 2010 (there is a LOT of effort and time in making movies!!).

I hope the fire/smoke subsided for Thursday evening and the skies got back to where we like them to be!!!!

Great to see everyone and everyone have a safe trip home!!!!!!

Cheers!

Chuck

PS, Connie had a hoot!!! This was her first trip out to the TSP and she actually had FUN!!!!! (Yea!!! Maybe I will need to get ANOTHER scope for her to use??? <grin> good idea, eh????)

JULY OBSERVING

★ **SSO** (Solar System Objects) Summary for the 15 July 08

Object	Const	Mag	% Ill	Rise Time	Transit	Set Time
Sun	Gem	-26.7	100	06:30	13:26	20:20
Mercury	Gem	-1.0	78	05:26	12:23	19:25
Venus	Cnc	-3.9	98	07:20	14:11	21:06
Mars	Leo	1.7	95	10:03	16:26	22:53
Jupiter	Sgr	-2.7	100	19:51	00:58	06:05
Saturn	Leo	0.9	100	09:50	16:17	22:48
Uranus	Aqr	5.8	100	23:26	05:19	11:12
Neptune	Cap	7.8	100	22:01	03:30	08:59
Pluto	Sgr	13.9	99	18:17	23:43	05:05

Highlighted times denote daylight events.

Lunar phases for July 08

New	First	Full	Third
03rd 02:19	10th 04:35	18th 07:59	25th 18:42

Central Daylight Time

Meteor showers for July 08

Shower	Activity Period	Maximum Activity
Delta Aquarids (SDA)	Jul 12-Aug 19	27-July

★ BSO: (Bright Sky Objects)

Cr 399 (Coat Hanger) – Open Cluster in Vulpecula, Magnitude 3.6, Size 60', #Stars 40.
M 24 (IC 4715) – Open Cluster in Sagittarius, Magnitude 4.6, Size 120'.
IC 4756 (Cr 386) – Open Cluster in Serpens, Magnitude 4.6, Size 52', #Stars ~80.
NGC 6656 (M 22) – Globular Cluster, Magnitude 5.2, Size 32'.

★ DSO: (Dark Sky Objects)

NGC 6705 (M 11, Cr 391, Wild Duck Cluster) – Open Cluster in Scutum, Magnitude 5.8, Size 13', #Stars ~682.
NGC 6523 (M 8 IC 1271) – Nebula in Sagittarius, Magnitude 5.0, Size 50' x 40'.
NGC 6541 (C 78) – Globular Cluster in Corona Australis, Magnitude 6.3, Size 15'.
NGC 6853 (M 27) –Planetary Nebula in Vulpecula, Magnitude 7.6, Size 6.7'.

★ CDMP: (Chris' Don't Miss Pick)

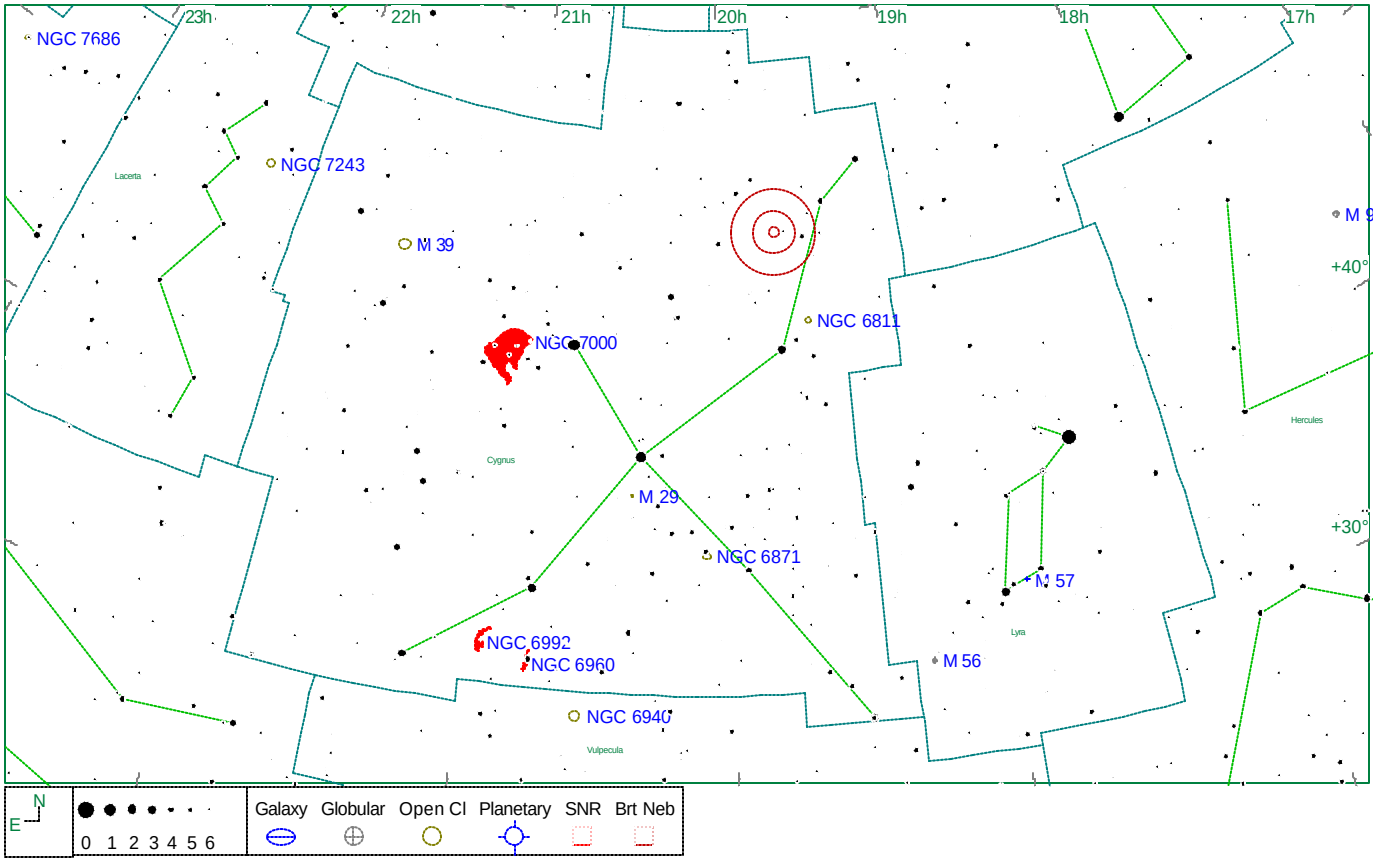
NGC 6826 (C 15) – Blinking Planetary

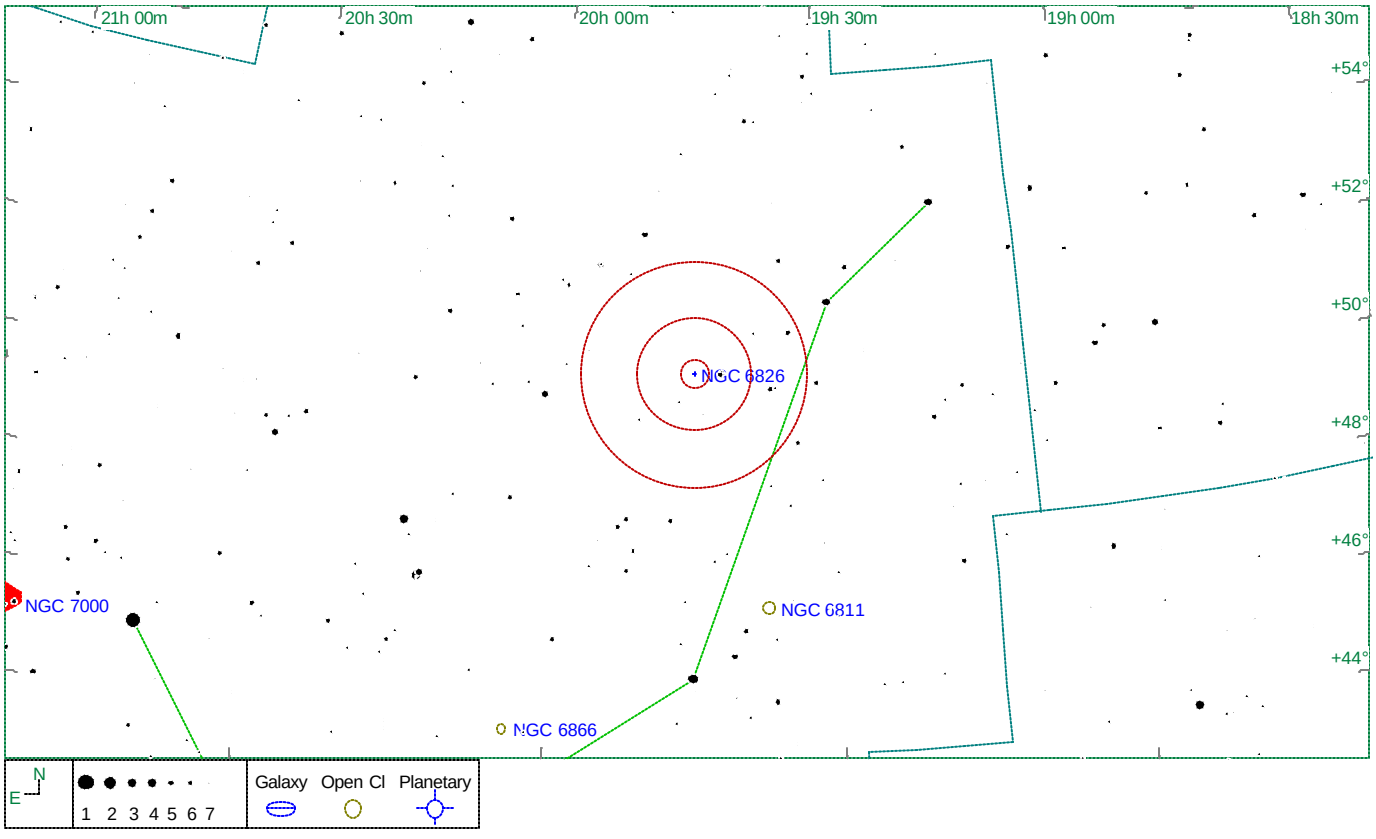
Planetary Nebula in Cygnus, Magnitude 9.8 (P) Central Star 10.4, and Size 38".

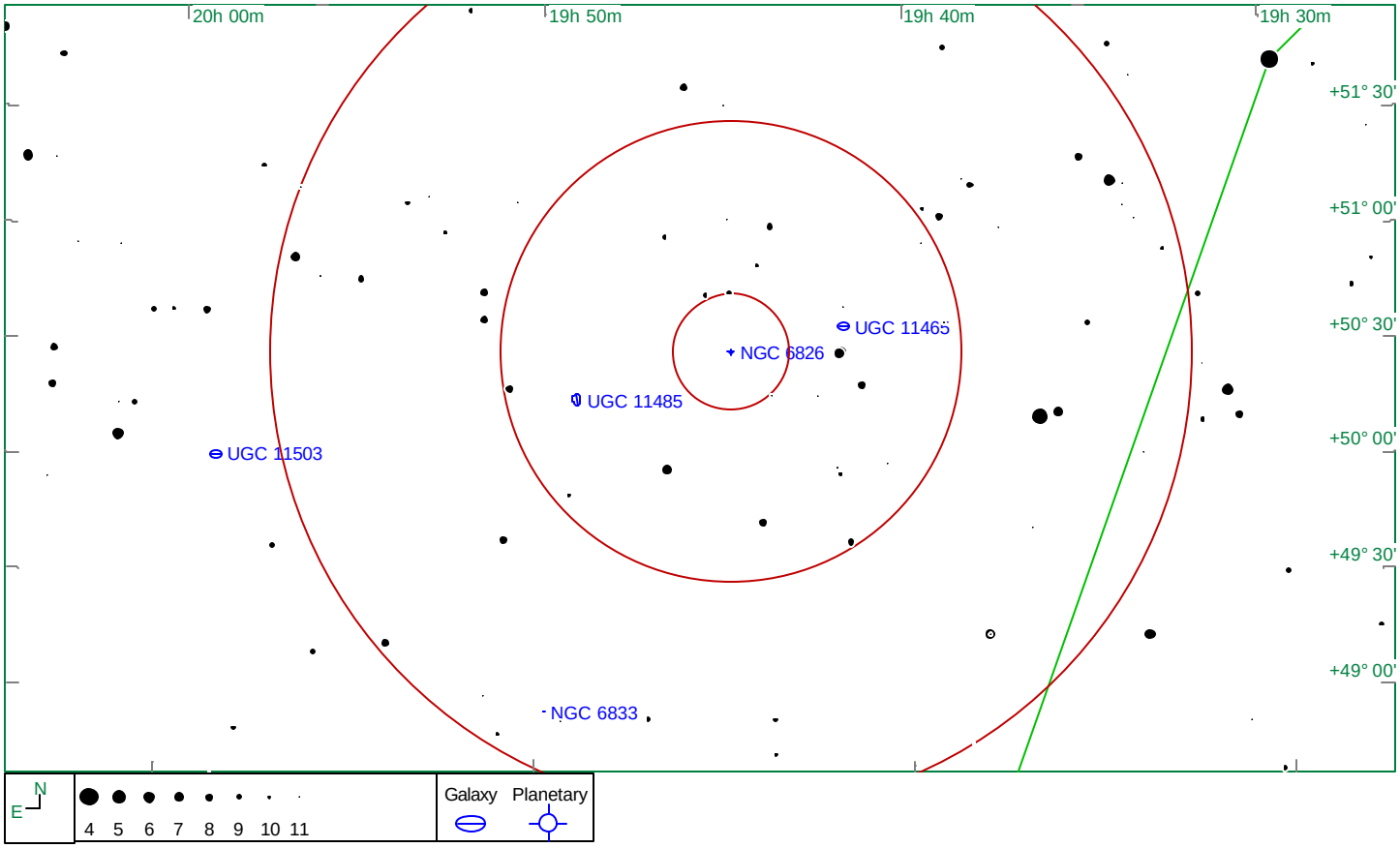
NGC 6826 is a wonderful example of a planetary nebula due to the amount of detail it presents. First of all, the name refers to the nature of human vision and not that of the nebula at all! The nebula appears to "blink" because it is dim. Human eyeballs have their least sensitive cells in the center of the fovea. Thus, staring at this object makes it appear to dim (or even disappear) whereas using averted vision makes the nebula look brighter. In a telescope this nebula glows a neon green with bright central star. For Visual observers, once you've found the nebula, switch from looking at it with straight vision to averted vision and back again. You should then understand why it is called the Blinking Planetary. By switching visions, it "blinks" from central star to planetary nebula. Note: in large apertures it does not work. It works great in an 8-inch telescope.

For this and further info go http://www.seds.org/ or http://www.ngcic.org/ for more information.

This will be my last Visual SIG Article. Hernan has agreed to take it over. I will still be available for help with your observing. Thanks a lot for your viewer ship. Clear dark skies. Chris.







For those who missed it, the LPI Star party was a great success. Stephanie fed us pizza and drink, then we (Myself, Walt, Matt, and John) showed the Moon, Saturn, and Mars to the Teachers Staff and some interns.

Then the highlight of the night was the STS/ISS pass. It was beautiful bright pass. They were nicely separated playing follow the leader across the sky, starting at Gemini then both passed in front of the star Alphard (alpha Hya), and disappearing in the southeast in the earths shadow. During the pass we also had a nice flare on the station to the amazement of the watchers.

Pass data:

SAT	Mag	Starts	Alt./Az.	Max.	Alt./Az.	Ends	Alt./Az.
STS-124	0.5	21:35:55	10°/WNW	21:38:20	24°/SW	21:39:33	18°/SSW
ISS	-0.5	21:35:56	10°/WNW	21:38:21	24°/SW	21:39:34	18°/SSW

Chris

June 11th event

What's Happening at the George!!!

Cynthia Gustava

George Observatory July Events

Friday Night Groups (all times are 19:30 to 22:30)…Volunteers for domes and deck scopes are needed. Contact Cynthia Gustava at cynm31@comcast.net.

July 11 – HMNS Member's Night (second of the year)

July 25 – Crosby Church Group (30+)

Saturday Night Public Viewing (dusk to 23:00)…Volunteers for domes and deck scopes are needed. Contact the building manager teams below.

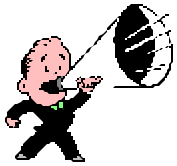
July 5 – Justin McCollum and Carl Sexton justinmccollum@hotmail.com or carlsexton@hotmail.com

July 12 – Leonard Ferguson and Cynthia Gustava leonardferguson@mac.com or cynm31@comcast.net

July 19 – Jack McKaye and Wes Whiddon jemckaye@comcast.net or wwhiddon@concentric.net

July 26 – Tracy Knauss and Keith Rivich birdbarn2000@yahoo.com or icgalaxies@cs.c

Need volunteers



ASTEROID MAPPING PAYS OFF

Paul Maley

June 18 marked another landmark success in Texas astronomical event observation. The most favorable asteroid occultation of 2008 in the state was successfully observed by a number of amateur astronomers in Mexico, Florida and Texas including a former president of JSCAS, Wycke Hoffler (now aged 74) who lives in Titusville, Florida and has a 24-inch f/4.3 Dob. This occultation featured an 8.8 magnitude star that was eclipsed for up to 19 seconds along an east west path as shown in figure 1. It is a shame that many Houston observers were unable to drive down for this remarkable event. But the fact that it occurred on a week day morning, under a full moon, certainly contributed to the low turnout.

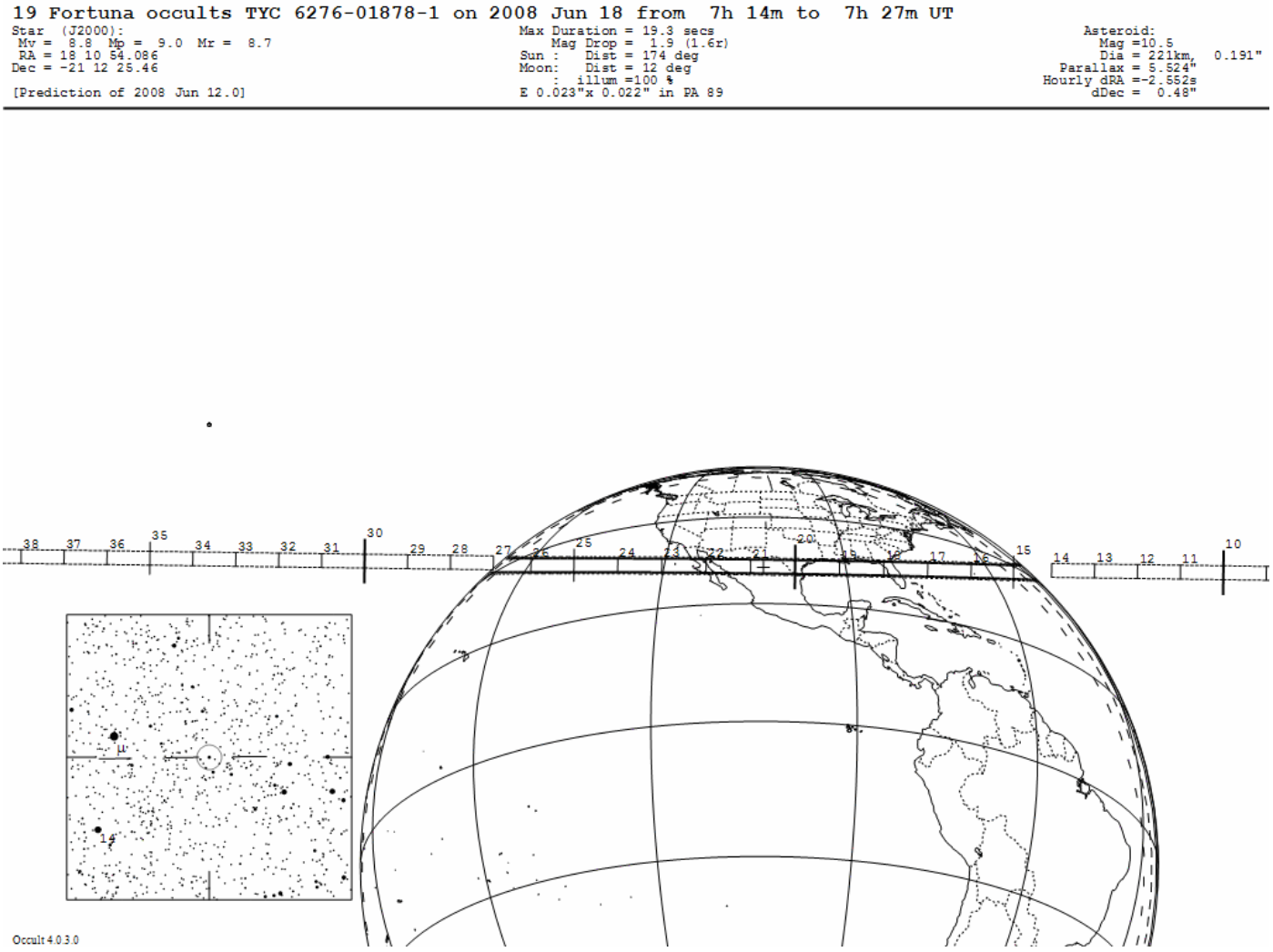


Figure 1. The path of the June 18, 2008 Fortuna occultation as depicted by Steve Preston.

The graphic below shows how well the asteroid (19) Fortuna was mapped with gaps noticeably present near the center line where it passed through Corpus Christi Observers in Mexico helped to cement the profile as they have become more active in recent years.

For this occultation I decided to make the 400 mile round trip drive to Beeville and set up at the Beeville Municipal Airport. I can state that excluding the $6 in tolls it cost about $80 in gas to make the trip. Humidity is generally high in that area but for some reason there was a slight wind which helped mitigate the presence of fog. I used my C11 and Watec 902H to successfully video record the occultation which was made all the more challenging by the fact that the target star was only 12 degrees away from a 100% sunlit moon!

I had alerted Scott Campbell who was also in Beeville and he observed the occultation just north of me, while Richard Nugent had driven to Goliad and was just north of Scott (chord numbers 7, 6 and 5 on the graph). Also alerted was Paul Gabriel who lives in McAllen; he was the southern most Texas observer and also got a good hit from his house. Dave Clark was apparently the only Houston observer to attempt this and he saw a miss from his site on the north side of town. The initial reduced shape of Fortuna can be seen when all the disappearance and reappearance timings from the separate stations are combined; the figure appears as a near circular (as noted in the Hubble observation) with slight irregularity to the south and south east parts of the graph. This is a two dimensional instantaneous shape and as the asteroid rotates once in 7.4 hours one might expect the 3 dimensional shape to be rather similar.

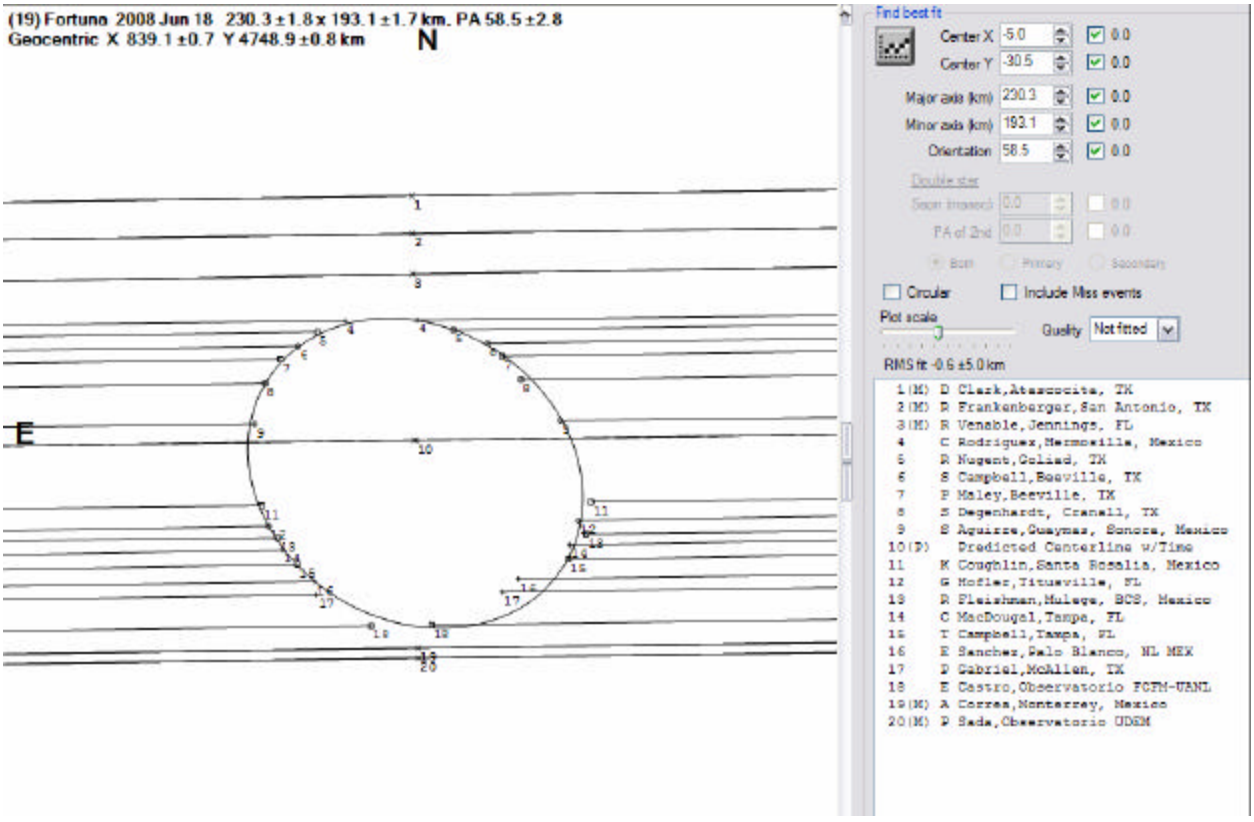


Figure 2. The OCCULT software profile showing a composite of the reported observations.

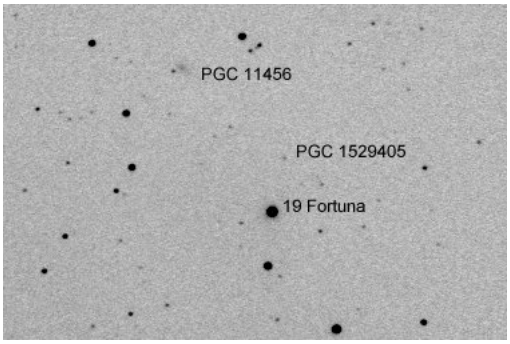
Fortuna is named for the Roman goddess of luck and that is indeed what we basically encountered. If you go online to Wikipedia, you will see that: 19 Fortuna is one of the biggest main belt asteroids. It is made up of stuff similar to 1 Ceres: a darkly colored surface that is heavily space weathered and made up of primitive organic compounds, including tholins. It was discovered by J.R.Hind in 1852.

Fortuna is 225 km in diameter and has one of the darkest known geometric albedos for an asteroid over 150 km in diameter. Its albedo has been measured at 0.028 and 0.037. The Hubble Space Telescope saw Fortuna in 1993. It was resolved with an apparent diameter of 0.20 arcseconds (4.5 pixels in the Planetary Camera) and its shape was found to be nearly spherical. Moons were searched for but none were detected.

The way to interpret the plot in figure 2 is to look first at observations 1,2,3,18 and 19 which show no interruption in star brightness. Chord 8, for example stops and then resumes indicating the duration of occultation. Notice how unique each chord is and the special contribution by every observer.

What is not depicated are the two spectacular failures by David Dunham and Scott Degenhardt. Each had flown from another state to Texas and set up multiple untended video stations in south Texas. Without dew heaters, all those stations fogged over. Scott was somehow able to pull one of his 6 stations out of the mud, so to speak, and recovered one set of timings from a tape shown as chord number 6. Scott has developed a portable set of 6 occultation stations that will be described in more detail at the annual IOTA meeting to be held in September in Apple Valley, CA.

All in all this shows what can be done when a dedicated team commits from across a widely geographically favored area. I will continue to post advance notices of upcoming events on my web page http://www.eclipsetours.com/events so that those of you who might be able to watch in the future can come out and participate.



Negative Image
[Two faint galaxies are just visible
PGC 11456, catalog mag +16.1 &
PGC 1529405, catalog mag +17.8]

Courtesy of **www.richweb.f9.co.uk/astro/images-2005-09-30.htm**

A photo taken by Lynn Palmer showing our observing site on March 14, 2008 at our JSCAS observing site at the successful Germania asteroid occultation in Varadero Beach, Cuba.

Members' Gallery—July 2008
Taken by Several Members of the Club
ALL FROM TSP-2008

THIS MONTH WE HAD SEVERAL GREAT SHOTS TAKEN BY OUR MEMBERS, SO I INCLUDED AS MANY AS I COULD.

RANDY BREWER'S

LYNN DIPPEL'S

PICTURES FROM
SHANE RAMOTOWSKI

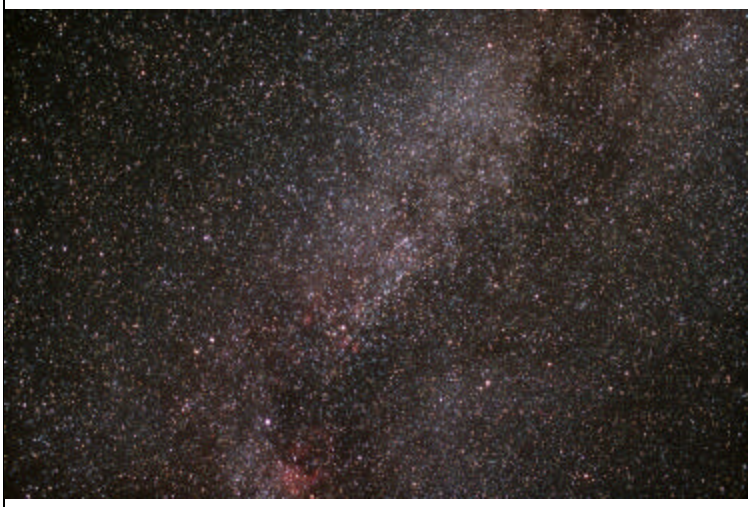
The sun with clouds passing by, taken with my camera through Shane's scope

Exposure Information

Location—Fort Davis, TX - TSP 2008
Date—2 Jun 2008
Optical Instrument—Nikkor 50mm f/1.2 Lens
Focal Length—50 mm
F Ratio—5.6
Exposure Length—5 hours
Film—35mm Fuji Provia 100 Slide Film

This photo was inspired by a new friend that I met at the Texas Star Party this year

Cygnus Wide Field



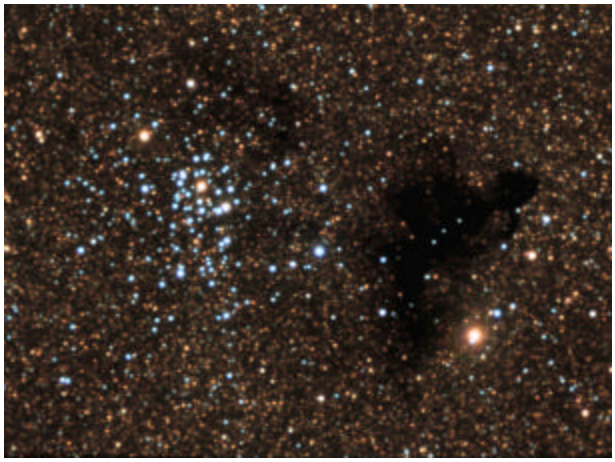
This is the first time I've shot Cygnus fat (wings on the large dimension) -- I like the way it turned out. There is a little more of the veil on the slide, but I'm having a bit of trouble bringing it out with the scanner.-

Exposure Information

Location—Fort Davis, TX - TSP 2008
Date—6 Jun 2008
Optical Instrument—Nikkor 50mm f/1.2 Lens
Focal Length—50 mm
F Ratio—5.6
Exposure Length—30 Minutes
Film—35mm Fuji Provia 100 Slide Film

And now for my favorite: see http://www.kellysky.net/4448larg.jpg for an LRGB of galaxy NGC 4448 and VERY interesting background galaxies. The unusual fellow at the upper left is UGC 07576, listed variously as "galaxy with jet(s)" or "possibly polar ring galaxy". I have found no other color images of this galaxy. The little spiral at top center and the distended galaxy above and to the right opf 4448 have 2MAS designations. The two apparently interacting galaxies to the left of 4448 are known as VV279A/B.

Can't wait for next TSP!---Al Kelly



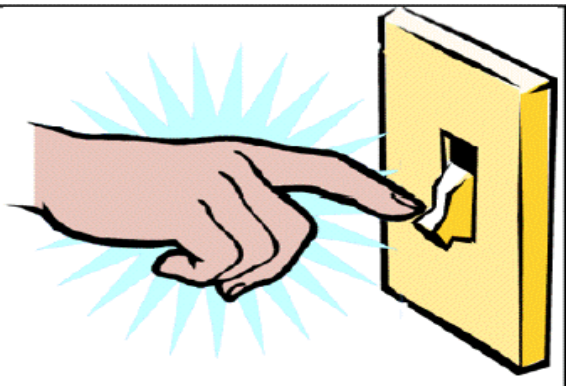
We have had several things coming and going in previous months, but we don't have anything to post this month.

LIGHTS OUT – EARTH

Above is one example of our efforts in participation with “Lights Out” around the world. This is the Golden Gate Bridge with her lights out.

Help turn off the lights...

Join the
International Dark-Sky Association (IDA)
http://www.darksky.org
"To preserve and protect the nighttime environment and our heritage of dark skies through quality outdoor lighting."



Houston Area Astronomy Clubs

Brazosport Astronomy Club
Meets the Third Tuesday of the month, 7:45p.m.
At the Planetarium
400 College Drive
Clute, Texas (For more information, contact Judi James at the Planetarium 979-265-3376)

Fort Bend Astronomy Club http://www.fbac.org
Meets the third Friday of the month, 7:00 p.m.
First Colony Conference Center
3232 Austin Pkwy
Sugarland, Texas

Houston Astronomical Society http://spacibm.rice/edu/~has
Meets the first Friday of the month, 8:00 p.m.
University of Houston, University Park
Science and Research Building, Room 117

Johnson Space Center Astronomical Society

2008-Club Officers

President – David Haviland
Vice President – Chris Randall
Secretary – David Haviland
Starscan Editor – Connie Haviland
Star Party Chairperson – John Erickson
Librarian – Bob and Karen Taylor
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SIGS

Observing Awards – Triple Nickel
Astronomy 101 — Triple Nickel
CCD Imaging – Al Kelly
Binocular Observing – "OPEN"
Telescope Making – Bob Taylor
Deep Sky Observing – Chris Randall

Starscan Submission Procedures

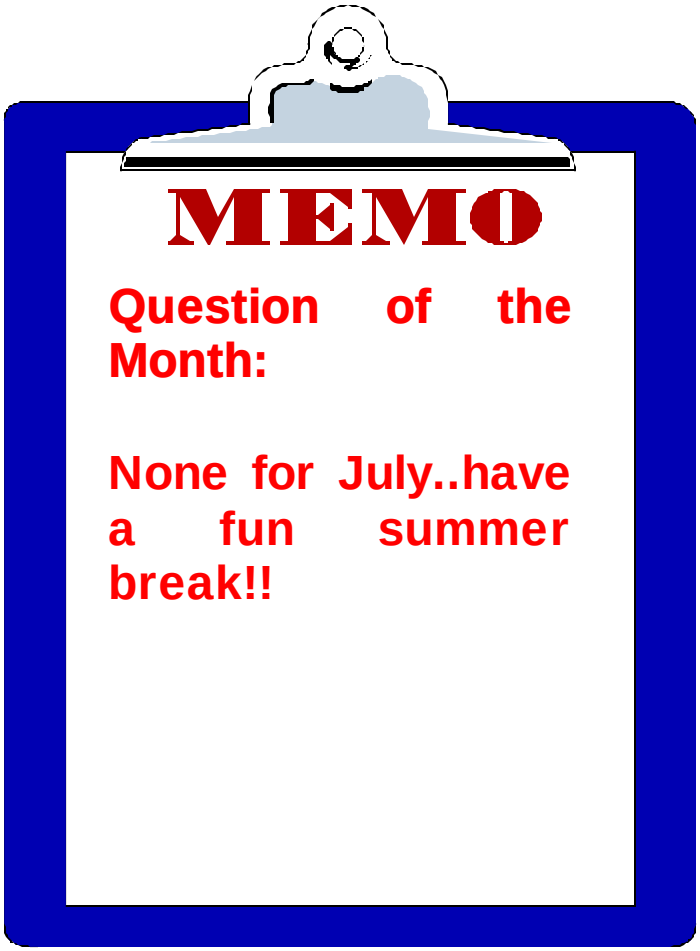
Original articles of some relation to astronomy will be accepted up to 6 p. m. (18:00 hrs) on the 25th of each month. THE most convenient way to submit articles or a Calendar of Events is by email and is preferred, but hard copies (CD, disk) are also accepted. All articles must include author's name and phone number. Also include any picture credits. Word, WordPerfect, and text files will be accepted. I have set up a special email account so that I can keep all of the Starscan articles, pictures, information, etc, separate from all of the other email I get. This makes is much easier to edit and set up the Starscan

Please send all submissions to:
conniesstarscanaccount@gmail.com

The author of individual articles bears all responsibility for publishing any e-mail addresses in the article on the World Wide Web

Astronomy and Kids

This is the section strictly for kids (or kids at heart). We will be including information, stories, ideas, puzzles or anything that has to do with astronomy. The only difference here is, it will be directed for children. We don't discourage parents or any other adult to get involved. In fact, we encourage it strongly. So we hope you enjoy this section and if it touches a child's interest in astronomy, our



WORD SEARCH SOLUTION

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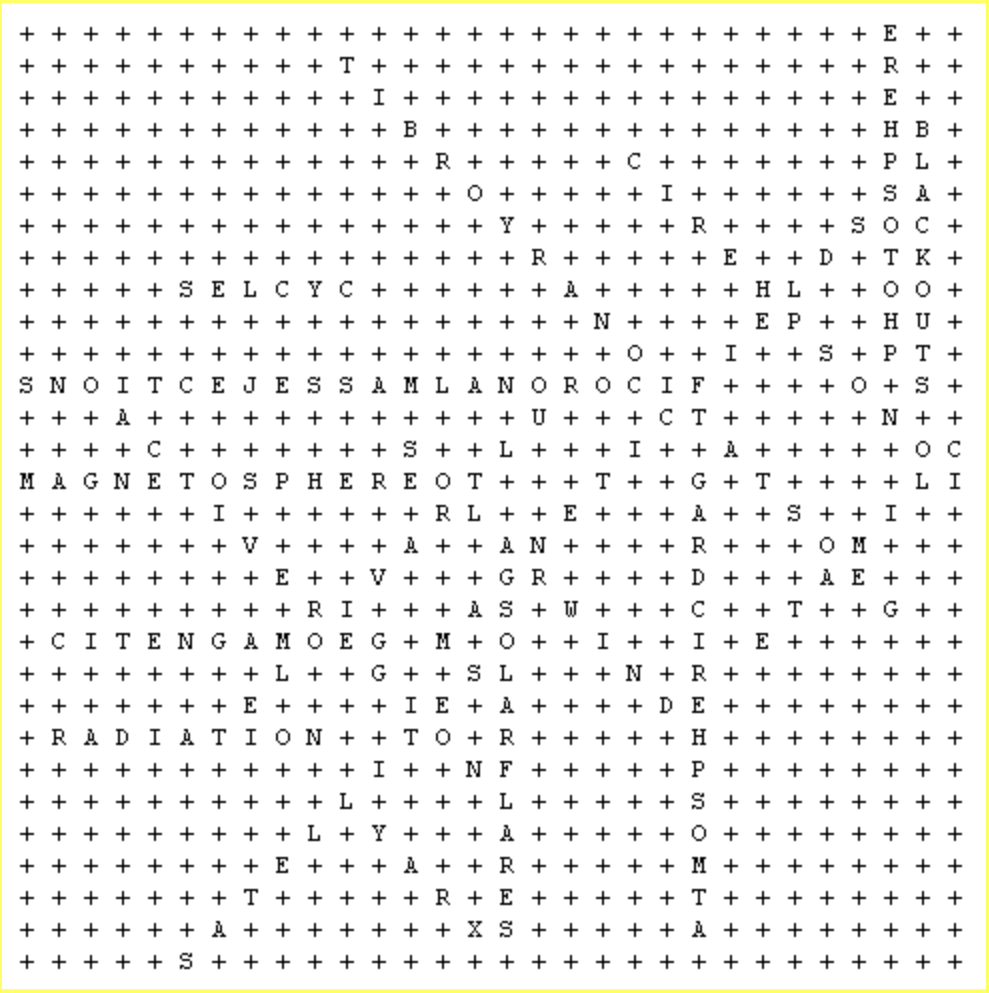
W **E**



S

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(Over,Down,Direction)
ACTIVEREGION(4,13,SE)
ATMOSPHERICDRAG(22,29,N)
BLACKOUTS(29,4,S)
CLIMATE(30,14,SW)
CORONALMASSEJECTIONS(20,12,W)
CYCLES(11,9,W)
GEOMAGNETIC(12,20,W)
GEOSTATIONARYORBIT(28,19,NW)
IONOSPHERIC(30,15,NW)
MAGNETICFIELDS(14,20,NE)
MAGNETOSPHERE(1,15,E)
PHOTOSPHERE(28,11,N)
RADIATION(2,23,E)
SATELLITES(6,30,NE)
SOLARFLARES(16,19,S)
SOLARWIND(13,14,SE)
ULTRAVIOLET(17,13,SW)
XRAY(15,29,NW)

This section of the Starscan will be concentrating on introducing the constellations to those who have just discovered astronomy as a hobby. I will be introducing a constellation every month. I have also included in this edition a chart that you can print out and keep. It includes the season for which a constellation can be seen. It also is a binocular chart. This way, you can start learning, without the need of a telescope. It is very important to learn your constellations as much as possible, but it is not necessary. I want the youth in our group to learn this, so that they will become familiar where everything is.

To start off, you don't need an expensive telescope to enjoy the heavens. In fact we will use two means of stargazing -- the naked eye and binoculars. The examples I give in the texts use the field of vision of 10x50 binoculars. Although many recommend this size for astronomy other sizes may do as well -- even 7x35 field binoculars will give you plenty of enjoyment, even though there are binaries you won't be able to split or deep sky objects which won't be very appealing.

If you are looking to purchase binoculars, besides 10x50 I would recommend 7x50. While larger powered binoculars, greater than 10x, might bring slightly more enjoyment, they are rather more expensive and their size means a stabilizing tripod is necessary to eliminate the jiggling. This reduces the flexibility of the binoculars. In fact, if you plan on a long session even 10x50s can use a tripod.

Before you buy, talk to shop owners, read journals such as Astronomy and Sky & Telescope, and ask questions on news groups such as "sci.astro.amateur" and "alt.astronomy". Attend starparties, such as the ones the club attends. Go online and research the different constellations that are mentioned here in this section. A really fun site would be that of the Hubble telescope. There you will find a beautiful collection of the various nebulas and galaxies that are found in the constellations. This way, you can decide what constellation captures your interest.

Lets start off with Circumpolar constellations. Circumpolar constellations are those which never sink below the horizon, such as Ursa Major and Cassiopeia if you live in Seattle or Winnipeg, or Toucan and Pavo if you live in Sydney or Christchurch.

Circumpolar constellations change their aspect dramatically throughout the night. In the early evening one might have to go 'east' or right of a major star to find a particular object; as night progresses the constellation has turned such that the direction may appear to be 'up' or apparently north but it's still actually east! (It becomes really confusing when the constellation has made a half-circle and is now below the Pole Star. Now in order to move 'east' of your star you have to move toward the western horizon!)

Before you can understand the north and south of a particular star you need to know where the Pole Star is (North or South). In the Northern Hemisphere, this means you must first locate the familiar "Big Dipper" (or Plough in the UK) that makes up part of Ursa Major. Study Ursa Major on this web site or in my Pocket Guide if you've purchased a copy. Now draw a line from beta Ursae Majoris through alpha, and right on past until you encounter the tip of the handle of the "little dipper", much fainter but a distinct dipper none the less. This is the Pole Star and is the brightest star of this fairly dim constellation. Once you've found it in the skies, make a mental note of where it is. It won't drift from night to night, so you needn't make the observation every single evening. Once you've got the location of the North Pole, just keep it as a reference. 'North' from any other star in the heavens is a line drawn in the direction of this Pole Star.

I could go on and discuss the Southern Hemisphere, but since we don’t live there, I will leave that to you to research. I did read somewhere online that for Southern Hemisphere residents, the Pole Star is sigma Octantis, which isn't quite as easy to locate. There is the Southern Cross, just like we have the Northern Cross. With that said, I hope you enjoy this section and it motivates you to continue with astronomy and encourages you to do more research about constellations.

Sagittarius

Transit Date of principal star: 13 July

Sagittarius has a muddled history. In ancient times the asterism of three bright stars in a curved line was seen as a bow to some, leading both Greek and Roman writers to confuse the constellation with Centaurus.

As stated in "Centaurus", this constellation (in part) represents Cheiron, the king of the Centaurs. Sagittarius is also half-man, half-beast, said by some to have been placed in the heavens to guide the Argonauts in their travels.

Others claim that the constellation was invented by the Sumerians, that Nergal (as the supreme god of war) is found on two cuneiform inscriptions. Yet this interpretation is open to debate, for Nergal is not necessarily linked with a bow.

In the Gilgamech epic, Nergal is one of the "seven gods" to whom one sacrificed sheep and oxen. His name, in Sumerian, means "Lord of the Great Abode", that is, of the Underworld. Yet there are few extant stories that provide much of a picture of this god. Hammurabi, the great lawgiver (18 century BC) called him "the fighter without a rival who brought him victory" over those who would resist his laws. He was also seen as the god of plagues, and of destruction.

However to consider Nergal as the prototype of The Archer seems to be stretching the evidence. For whatever reason, when the select group of twelve constellations was codified sometime in the third millennium BC, The Archer was one of them.

It was the Romans who named the constellation Sagittarius ("sagitta" is Latin for `arrow'), although several stars carry Arabic names which identify just which portion of the constellation they represent:

Alpha Sagittarii is named "Rukbat": (Rukbat al Rami=Archer's knee), and beta Sgr is "Arkab" (Tendon).

The bow is outlined by three stars:

Lambda Sgr: "Kaus Borealis" = the northern (part of the) bow

Delta Sgr: "Kaus Meridionalis" = the middle (part of the) bow

Epsilon Sgr: "Kaus Australis" = the southern (part of the) bow

The arrow tip is gamma Sgr ("Al Nasl" = the point)

While the asterism of the bow is quite apparent, it takes some imagination to see the half-man, half-beast pulling back on the string. Perhaps it helps to know that zeta Sagittarii is named "Ascella" (the armpit of the archer), while nu Sgr is "Ain al Rami": The Eye of the Archer.

The Bayer stars are generally third and fourth magnitude. The brightest star is epsilon Sgr, while alpha Sgr is nearly fourth magnitude. In fact, there are fourteen stars brighter than alpha).

The constellation has a number of fine binaries, and several superb deep sky objects.

Double stars:

Nu1 Sagittarii is a fixed binary with faint companion: 5.0, 10.8; PA 97º and separation 2.5".

Note that nu1 and nu2 are not gravitationally bound, although they form an optical binary of some historical importance: these two stars caused Ptolemy to write about "a nebulous double star" long before Hershel coined the term "binary".

54 Sgr also catalogued as h 599 is a multiple system:

AB: 5.4, 12; PA 274º, separation 38"; AC: 8.9; PA 42º, 45.6". The primary has a reddish tinge to it.

Rho1 and rho2 form a nice triangle with h 2866:

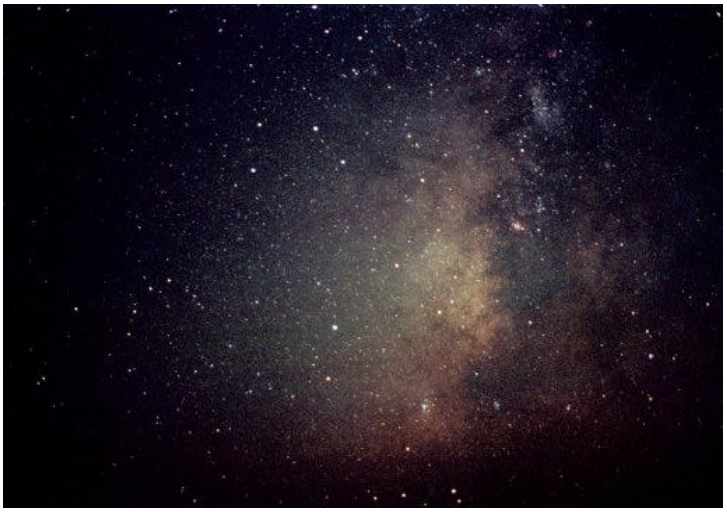
AB: 8.0, 8.3; 53º, 23.4"

AC: 8.6; 137º, 24".

Variable stars:
Sagittarius has a variety of variables, some of which are suitable for small scopes, primarily cepheids but also one Mira-type long range variable.
Upsilon Sgr is an eclipsing binary (beta Lyrae type: EB) with an unusually long period of 137.9 days. Its range will be undetectable to most observers, from 4.53 to 4.61, but what makes the system interesting is that it seems to be one of the most luminous systems known (with an estimated absolute magnitude of around -7.5).
The brightest cepheids are: W Sgr (4.3-5.1 every 7.6 days) and X Sgr (4.2-4.9 every 7 days).
R Sagittarii is a long-period variable fluctuating from 6.7 to 12.8 every 269.84 days. In 2000 the maximum should occur in the second week of July.
The star is found two degrees NE of pi Sagittarii, or just past the midpoint of a line between pi and rho Sgr.

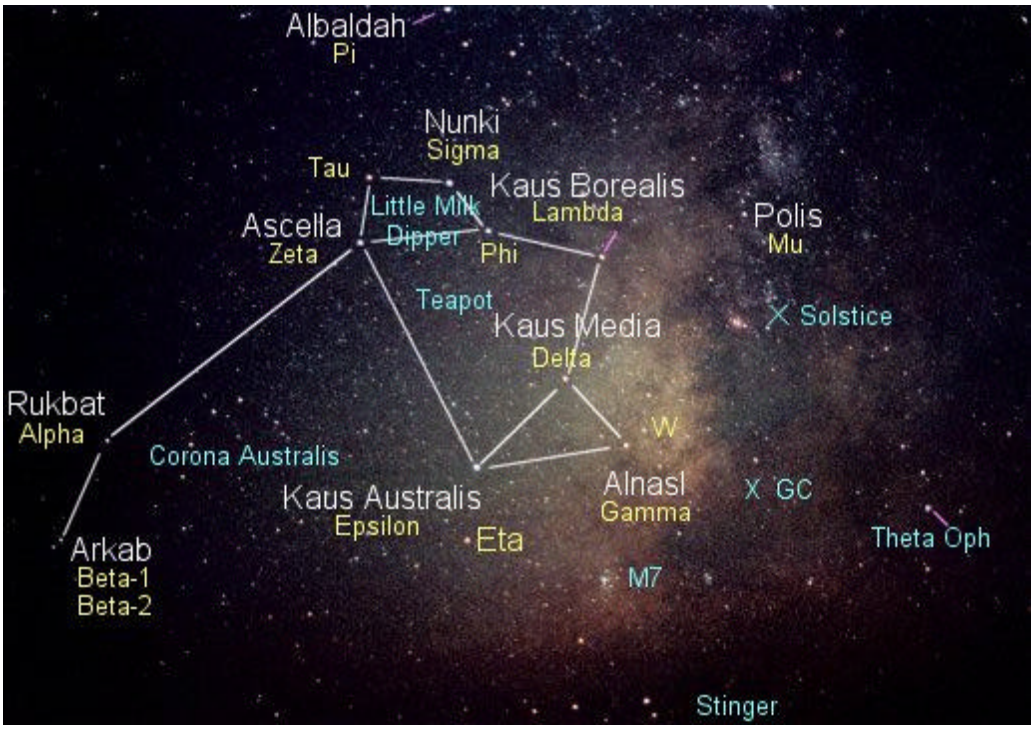
Deep Sky Objects:
Sagittarius has fifteen Messier objects, far more than any other constellation. However these fifteen are of varying quality. Three are spectacular, and a number of others are bright and impressive but a number are quite disappointing. While they are all included here, due to space limitations the less interesting objects have been omitted from the constellation graphic.
M8 (NGC 6523) is a marvellous diffuse nebula known as the "Lagoon Nebula".
This naked eye object is considered to be from 3500 to 5100 light years away. A dark band divides the nebula in two. While easily spotted with the eye, there is a wealth of detail that can only be brought out with at least a medium sized scope.
The open cluster NGC 6530 is contained in the eastern part of the nebula. The young cluster (only several million years old) is nicely contrasted against the nebula.
The Lagoon Nebula is five degrees west of lambda Sgr and one degree north.
M17 (NGC 6618), the "Swan Nebula" or the "Omega Nebula", and occasionally known as the "Horseshoe Nebula". This nebula resembles the tail of a comet: a bright diffuse trail of light with a bit of a hook on it. It is about 5000 light years away.
The Swan Nebula is five degrees north of mu Sgr, and one degree east.
M18 (NGC 6613) is an open cluster of about twenty stars; a rather undistinguised member of the Messier group found one degree south of M 17.
M20 (NGC 6514), the "Trifid Nebula", is another delight, but only with larger scopes, which will bring out the three dark lanes familiar on photographs. In the same field is M 21, an open cluster of about fifty stars.
The Trifid Nebula is found 1.5 degrees north of the Lagoon Nebula.
M21 (NGC 6531) is a rather unspectacular open cluster 0.7 degrees NW of M20.
M22 (NGC 6656) is a fine globular cluster, a highly concentrated group of perhaps five hundred thousand stars in total, about 20,000 light years away. It lies two degrees NE of lambda Sgr.
M23 (NGC 6494) is a pleasantly scattered open cluster of about 120 stars located four degrees northwest of mu Sgr and one degree north.
M24 (no NGC) is a bright "star cloud", which contains the open cluster NGC 6603.
M25 (no NGC) is a bright open cluster but without much interest.
M28 (NGC 6626) is a bright condensed globular cluster, much less spectacular than M 22 but a fine object none the less. It is one degree NW of lambda Sgr.
M54 (NGC 6715) is a globular cluster, difficult to resolve.
M55 (NGC 6809) is another globular cluster, less concentrated than those previously mentioned. It is about 20,000 light years away, and lies between zeta Sgr and theta Sgr: seven degrees east of zeta and one degree south.
M69 (NGC 6637) is a globular cluster of little merit.
M70 (NGC 6637) is another globular cluster, two degrees east of M69. It too is of little interest.

M75 (NGC 6637) is the faintest of globular clusters in this constellation.
NGC 6822, "Barnard's Galaxy". Very faint; the larger the scope the better. This irregular dwarf galaxy is about 1.7 million light years away, making it one of the closest of its kind. It's in the same region as 54 Sgr, six degrees northeast of rho Sgr.
Since Sagittarius sits at the very heart of the Milky Way, there are many more deep sky objects to study: planetary nebulae abound, as well as both bright and dark nebulae and of course star clusters, especially of the globular variety.



NOTE: This is what you see when you look at the constellation, Sagittarius.

This is how you “diagram” it with your mind.



The Binocular Menu

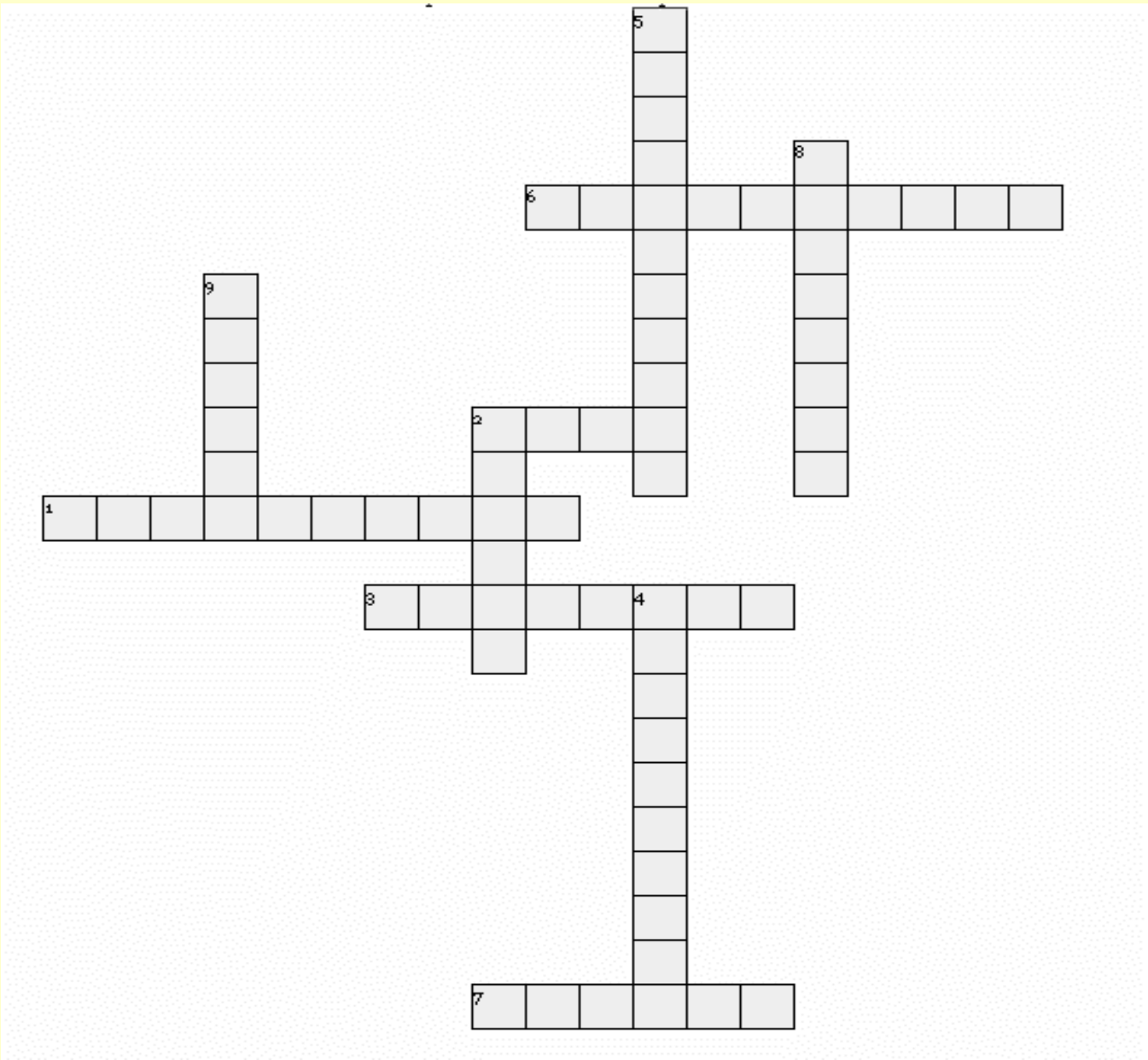
Winter	Spring	Summer	Autumn	Northern Circumpolar	Southern Circumpolar

Andromeda	Antlia	Apus	Aquarius	Aquila
Ara	Aries	Auriga	Bootes	Caelum
Camelopardalis	Cancer	Canes Venatici	Canis Major	Canis Minor
Capricornus	Carina	Cassiopeia	Centaurus	Cepheus
Cetus	Chamaeleon	Circinus	Columba	Coma Berenices
Corona Australis	Corona Borealis	Corvus	Crater	Crux
Cygnus	Delphinus	Dorado	Draco	Equuleus
Eridanus	Fornax	Gemini	Grus	Hercules
Horologium	Hydra	Hydrus	Indus	Lacerta
Leo	Leo Minor	Lepus	Libra	Lupus
Lynx	Lyra	Mensa	Microscopium	Monoceros
Musca	Norma	Octans	Ophiuchus	Orion
Pavo	Pegasus	Perseus	Phoenix	Pictor
Pisces	Piscis Austrinus	Puppis	Pyxis	Reticulum
Sagitta	Sagittarius	Scorpius	Sculptor	Scutum
Serpens	Sextans	Taurus	Telescopium	Triangulum
Triangulum Australe	Tucana	Ursa Major	Ursa Minor	Vela
Virgo	Volans	Vulpecula		

This binocular menu is also
arranged by season.

I thought I would introduce you to astronomy with the use of binoculars. You don't have to have to have a telescope to view the universe. There are many things that can be viewed through the binoculars. Here is a list to go by while viewing through binoculars. See that they are arranged by colors for the seasons. Use this chart when you want to gaze at the sky.

CROSSWORD PUZZLE



Across:

1. The center of gravity of the Earth, and moon.
3. Period between new moons. 29 days 12 hours 44 minutes
2. The hazy-looking patch surrounding the nucleus of a comet.
6. The faint glow of the moon when the side facing Earth is dark
7. The _____of an object is how much light it reflects

Down:

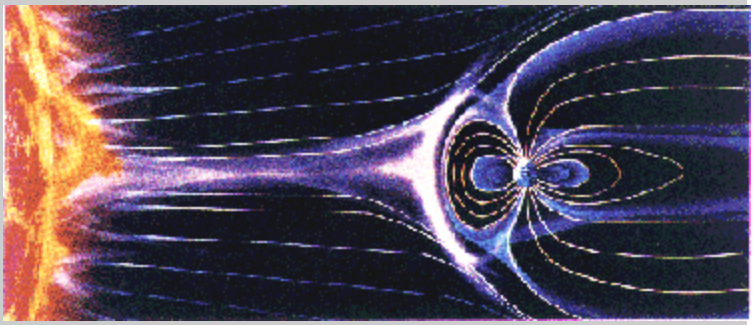
2. The outermost part of the Sun's atmosphere
4. Region of the Earths atmosphere
5. The remnants of an a dead star, they are incredibly compact, and spin very quickly, some spin 100 times a second.
8. A rock, or Minor Planet orbiting the Sun.
9. A group of stars, gas and dust held together by gravity

ANSWER TO LAST MONTH'S "QUESTION OF THE MONTH"

Space Weather is the term scientists use to describe the ever-hanging conditions in space. Explosions on the Sun create storms of radiation, fluctuating magnetic fields, and swarms of energetic particles. These phenomena travel outward through the Solar System with the solar wind. Upon arrival at Earth, they interact in complex ways with Earth's magnetic field, creating Earth's radiation belts and the Aurora. Some space weather storms can damage satellites, disable electric power grids, and disrupt cell phone communications systems.

What are scientists talking about when they say "space weather"? How is it like weather on Earth? How is it different? How does space weather affect me? Can astronomers forecast space weather, and if so, how? What are the unsolved mysteries in the field of space weather?

What are we talking about when we describe the weather on Earth? We usually think of temperature, the speed and direction of the wind, air pressure, whether rain or snow is falling...Basically, when we say "weather" we mean conditions in our atmosphere that change from time to time.



This picture shows material from the Sun coming towards the Earth. It is the Sun's magnetic field carried in this material that causes magnetic storms. Image courtesy NASA.

"Weather" in Space?

There is a kind of weather in space, too. It isn't quite the same as weather on Earth (you can't really have wind if there is no air!), but it is similar in some ways. When you hear someone talk about "space weather", they are discussing conditions in space that change from time to time. Sometimes the Sun gives off more radiation, sometimes it gives off less. A flow of charged particles (not air!) called the "solar wind" constantly streams outward from the Sun. The speed and pressure of this "solar wind" change all the time. Space is filled with magnetic fields, which control the motions of charged particles. The strengths and directions of the magnetic fields often shift. Changes in radiation, the solar wind, magnetic fields, and other factors make up space weather, just like changes in temperature, rainfall, and winds make up weather on Earth.

Space Weather Starts at the Sun

Most of space weather starts at the Sun. The amazing amount of energy the Sun gives off is what makes space weather go. Sometimes there are storms on the Sun, called solar flares and Coronal Mass Ejections (CMEs). These storms fling showers of radiation and powerful magnetic fields outward through our Solar System. Most storms miss Earth completely, but some storms hit our home planet. Those are the space weather storms we care about the most!

Space Weather Around Earth

When space weather from the Sun reaches Earth, it runs into our planet's magnetic field and its atmosphere. The radiation and magnetic fields in space weather swirl around Earth in very complex patterns. Earth is surrounded by a sort of magnetic bubble called the "magnetosphere". How do space weather storms affect Earth? Partly this depends on what the storms from the Sun are like. But it also depends on how how those storms flow around and through Earth's magnetosphere. What are we talking about when we describe the weather on Earth? We usually think of temperature, the speed and direction of the wind, air pressure, whether rain or snow is falling...Basically, when we say "weather" we mean conditions in our atmosphere that change from time to time.

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Changing Space Weather

Like weather on Earth, space weather is always changing. Some space weather storms form in minutes or hours. An "active region" on the Sun can last for many days or weeks, causing space weather storms for that whole time. Earth's weather has long cycles, such as the gradual changes in temperature that come with the changing seasons. The Sun, too, has cycles; for example, the 11-year long sunspot cycle that brings along stormy and calmer space weather at different times in the cycle. On Earth, we call long-term trends in weather "climate". Space weather also has trends lasting decades or centuries, which we can think of as the "climate" of space weather. Finally, the Sun has changed during the billions of years it has been around. These changes in the Sun have caused long term "climate change" effects in our space weather.

Space Weather and People - Why Should I Care?

Why are people interested in space weather? Why should you care about space weather? The Sun is the main source of energy for our planet. It makes plants grow and makes our weather go. Changes in the Sun could make a big change in our weather and climate on Earth. Radiation from space weather storms can damage satellites, like the ones used for cell phone communications. That radiation can also harm astronauts, or even people on some kinds of jet airplane flights. Really powerful space weather storms can even knock out the electricity over large areas. But not everything about space weather is bad. Effects of space weather can be beautiful, too. When radiation from a storm crashes into our atmosphere, it sometimes makes really cool light shows. These light shows are called the aurora, or the Northern Lights and the Southern Lights. ose storms flow around and through Earth's magnetosphere.

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If you want to study more about Space Weather, go to http://www.windows.ucar.edu/windows.html and click on the site available there.

NEXT MONTH WE WILL HAVE SOME INFORMATION ABOUT THE SUN...

Snoopy says, never stop looking up..reach for the stars and may you always have clear skies!!!!