



Starscan

Johnson Space Center
Astronomical Society

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Scientists baffled by 'bootprint' as Mars
Express returns new Orcus Patera
images

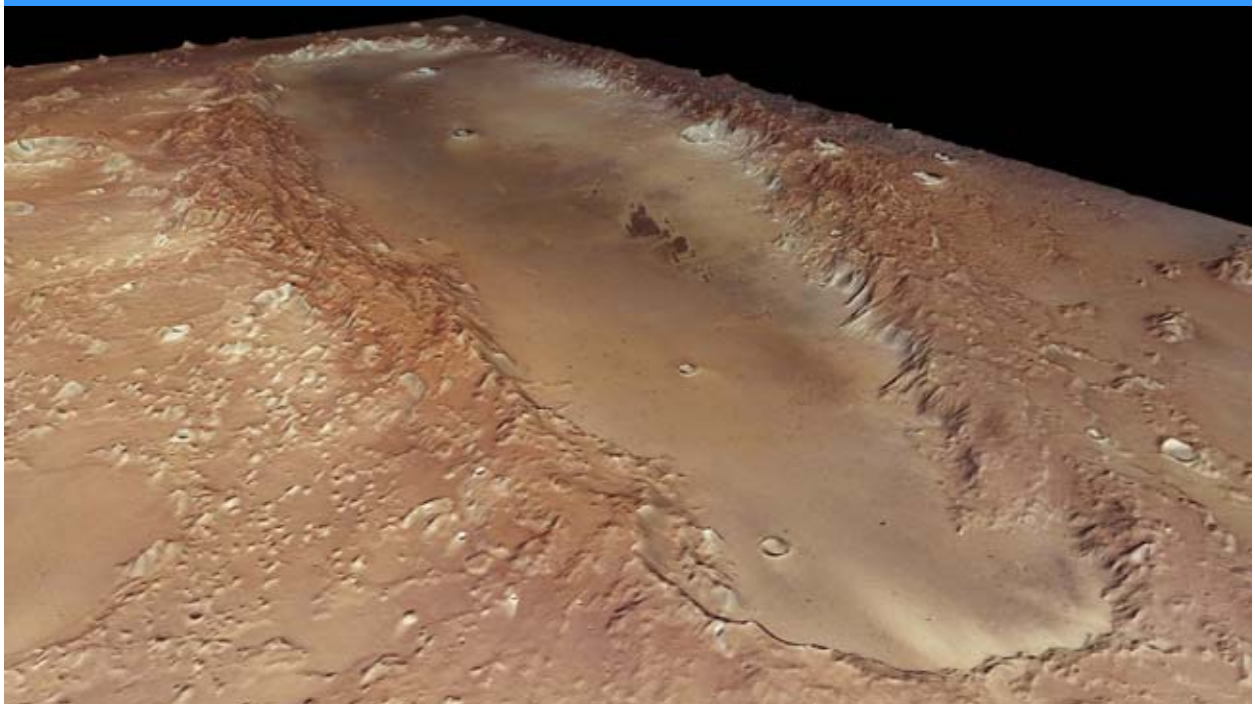


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Un mensaje del Presidente (A message from the President)

Greetings:

OK Folks... Very sorry this is late again but here we have another combined issue. There will be an October issue so as soon as I wrap this one up, I'll be working on that one. There is a lot here that I hope you will read.

Some mornings have been very good as when I let the dogs out I look up and see my friend Orion. It brings back memories that M42 was the first object I ever found on my own.

Next up this upcoming month is our trip to Fort McKavett. I can't wait to chill and get out there for some much needed star gazing. But don't hold your breath... The very next weekend is the All Clubs and ADAY. October 15 is the All Clubs meeting at the HCC Downtown campus as in year's past and on Saturday, October 16th is Astronomy Day at the George. **VOLUNTEERS ARE NEEDED** to help man the club table and anything else including deck scopes and talks.

Once again, I am coordinating the outdoor talks and may put a little bit of time in the Research Dome afterward. Hope to see you at the Fort and at ADAY.



David Haviland

LETTER FROM THE EDITOR By Connie Haviland

Hi everyone!!

I thought I would just say a few things here, before it goes to "press". As most of you know, I have taken a "semi-Sabbatical" this year. I was dealing with burnout and needed someone to fill the void for me while I gave my creative brain a rest. David has done a great job, in spite of the fact that he is wearing 2 other "hats": Pres and Secretary, for the club. After the first of the year, I will be co-editor with him and we will be putting the Starscan together. This will help relieve "burnout" and keep the newsletter going. I feel that with two different creative sets of ideas, we can do an even better job. Thanks for being patient with me. Until next month....

Hope you have clear skies,

Connie Haviland

LETTER TO THE EDITOR

Easier to sum up than to reproduce here but it has been exciting seeing the Messier compendium be formed right here on the Netslyder with the efforts of many folk prior to the Spring Ft. McKavett trip and outing to TSP. Now that it is finished and Al was distributing them at the last meeting, one thing can be said... IMPRESSIVE... We are framing ours and another given to the club for star parties. But is outstanding that our imagers were able to pool their efforts and come up with a post of all the Messiers shot by club members!!! Well done!! If anyone wants to get a copy of the poster, you have to speak with or email Al Kelly at: al@kellysky.net



Star Parties for 2010

Bob Taylor

Oct 7-10th Fort McKavett!!!

Oct 15th – All Clubs Meeting

Oct 16th – Astronomy Day at the George Observatory

November 20th, 7p.m. LPI—Jupiter



Need volunteers

What's Happening at the George!!!



Saturday Public Observing – All times are dusk to 11:00 p.m..Please contact the following building manager teams to volunteer:

Saturday Public Observing – All times are dusk to 11:00 p.m. Please contact the following building manager teams to volunteer:

September 18: Building Managers - Mary Lockwood / Jessica Kingsley mplockwood@att.net / gnjkinsley@att.net

September 25: Building Managers— Barbara & Buster Wilson gobserve@consolidated.net



October 16th 10-1pm, Constellations.

For more information e-mail Spaceday@lpi.usra.edu or call 281-486-2106.

For more information, go to

http://www.lpi.usra.edu/education/space_days/

Or call Katy at (281) 486-2106

3600 Bay Area Boulevard, Houston, Texas

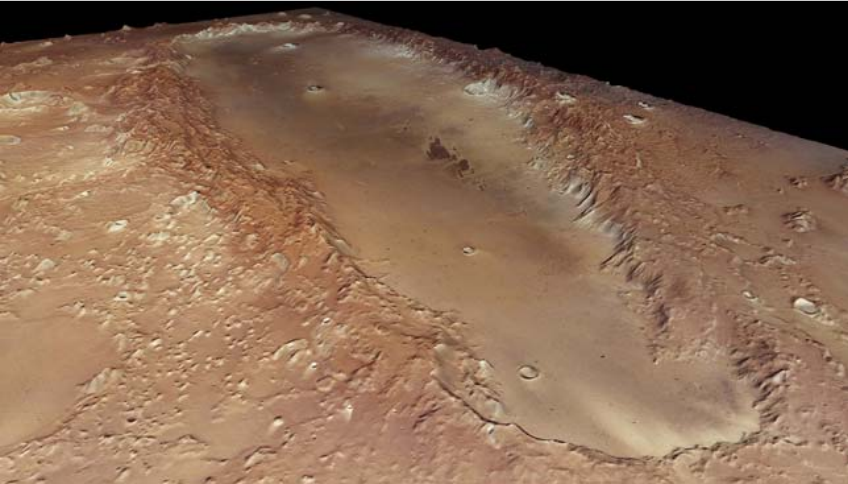


Editors note: I found this an absolutely fascinating picture and article about how this unique crater was formed on Mars.

Published in the News.au.com

<http://www.heraldsun.com.au/lifestyle/the-other-side/scientists-baffled-by-bootprint-as-mars-express-returns-new-orcus-patera-images/story-e6frfhk6-1225911955997>

Scientists baffled by 'bootprint' as Mars Express returns new Orcus Patera images



An object would have had to hit Mars at less than five degrees to cause the 385km long scar. Picture: ESA/DLR/FU Berlin *Source: No Source.*

New images of an ancient crater on Mars have failed to solve an age-old mystery for planetary scientists.



If anything, the hi-res images of the "Footprint Crater" - otherwise known as Orcus Patera - have puzzled Mars-watchers even further as to how the Red Planet was originally scarred with the 385km long depression. The picture was taken by the European Space Agency's Mars Express orbiter and released by the ESA late last week.

It sits between two volcanoes and while the name "patera" is traditionally given to irregularly shaped volcanic craters, scientists know at least enough about the Orcus Patera to know it wasn't formed by a volcano.

The most likely explanation is that it's an impact crater, although given the length of the scar, it would have to have been formed by something striking the surface of Mars at an angle of less than five degrees, possibly bouncing back off the surface.

The floor of the crater dives down to 600m below surface level, while the ridges rise up to 1800m above the surrounding plains. Another theory is that Orcus Patera originally started out as a massive circular crater, but was squashed into its elliptical form by compressional forces acting on the planet's surface. And yet another states that it may actually be two craters that have been joined by erosion, except that the ridges on either side of the crater suggest otherwise. What the new images show are the existence of "graben", massive valleys crossing the crater in an east-west direction, some up to 2.5km wide.

Smaller graben can be seen in the crater itself. Scientists believe that these could have been formed by compression in the opposite direction to that which may - or may not - have stretched the crater. Unfortunately, graben and wrinkle ridges can be found all over the planet, which means they hold no clue for scientists trying to discover the story behind the unique formation.

All that means is the "bootprint on Mars" will continue to remain a mystery for scientists, albeit one that they can now ponder over in hi-res detail, courtesy of the ESA.

BUILDING AN ASTRONOMER'S STOOL COMPLETE WITH SKETCH DESK AND RED LIGHTING

What have I gotten myself into? By Jim Wessel (editors note: this will be a multi part series spread over a number of issues)

Like a lot of people these days, I am on a budget, and funds for my astronomy hobby are rather limited. As a result, I try to maximize the things that I can make on my own to suit my needs at a less than manufactured cost. A homemade astronomer's stool fits that criterion. Post hoc, the 'economy' of this do-it-yourself seat is rather comical, as you will find out as we go. The second reason for this undertaking is that I enjoy sketching what I see at the eyepiece, so a comfortable sitting posture is a necessity rather than standing for extended periods. The final major drivers for the construction of the stool are that I wanted to be able to transport it to dark sites and it had to fit into the trunk of my car. I am very satisfied and happy to report that our improvements to the original design have achieved that goal. Assembly of the stool for observing or break down for storage in my trunk takes only about 10 minutes. I would like to take a moment and mention that any concerns with potential engineering faults, design criticisms, or suggestions for improvement that you might offer would be welcomed in personal communication.

To start my construction project, I reviewed a fair number of existing designs on the internet for astronomer's chairs, ranging from the commercially available models to designs creative individuals had come up with on their own. Then with the help of my immensely talented handyman partner, John Boyd, I started considering the pluses and minuses of the different designs, and whether or not they would work well with a Newtonian scope on an EQ mount. Remember, one thing you have to consider is that you can be really up there in height looking through an eyepiece near zenith, so some chairs are quickly ruled out. Additionally, John provided lots of insight to the capabilities of the different designs and the feasibility to successfully construct them in his workshop. One of chair designs that resonated with me wasn't truly a chair at all, but a stool. The original idea for this project came from Rod Nabholz's website at <http://www.homebuiltastronomy.com/stool/index.htm>. A stool fit the bill for capabilities (owing to the fact that we would have to scale it substantially larger to safely compensate for the higher altitude I would need), as well as simplicity to build. My final cost was bumped up a lot versus the original design due to the fact that I wanted reasonable lower back support and a good seat cushion that didn't completely compress under my weight. You can adjust your total cost against your own requirements accordingly.

I think it's appropriate to discuss the seat decision in a bit more detail, since it is the major driver to my final tally, and in the process, I may answer a few questions along the way. I knew right away that a traditional stool (just a round seat) wasn't going to work for me, so I started considering fold-up boat seats at local retailers. After trying a few for fit and comfort and noting their prices, John suggested one way to save some money might be to actually make my own seat instead. So, I went out and started that process. Well, the first thing I found out was that exterior fabric isn't cheap. Reasonable quality Naugahyde-like material that will hold up to heavy dew and cold temperatures is \$15.00+ per square yard. After consulting with the fabric store's attendant, I found out I would need 2.5 sq. yards (for my ample posterior and a back rest). So, I could figure roughly \$35.00 as a starting place for a make-it-yourself seat. Then, I quickly found out that regular old closed cell foam (my original target, as it's cheap in cost) isn't the choice for exterior padding as once moisture gets inside the fabric, mold is the eventual and unavoidable outcome. That meant using special foam padding that rejects water. Well, the fabric store thinks rather highly of this foam, to the tune \$23.00+ per foam blank, and I would need a minimum of three (two for the seat – owing for compression under my weight, and one for the back support). At this point, the make-your-own seat hits a minimum cost of \$104.00, and that's before you consider the plywood and hardware. As you might imagine, this completely caught us off guard, and I quickly reverted back to my preferred commercially available boat seat, at a cost that seems comparably economical at \$65.00 including tax. Here's the model that I decided on:



Let's go shopping!

Next, I think it's reasonable to provide the reader a complete listing of all the components needed for a homemade Astronomer's Stool (and a sketch desk). Please accept my apologies in advance if I happen to have omitted something, but I think you will find all of the major items and associated representative prices listed. My

other caveat is that John generously offered me use of any and all of his 'scrap' materials around his workshop, and that defrayed my total cost immensely.

A few of the prices of the more costly 'scrap' items are included in my tally to help provide a better estimate for the reader, while some the cheaper priced scrap items are left out. All materials will certainly factor into your construction. Of note, items marked with an asterisk (*) are used for the sketch desk and can be ignored if that's your choice. The red LED lighting system is also an option that can be avoided, if you are watching your bottom line, and the electronics related parts required for it are a separate subtotal. My total cost for the construction of the chair would be \$215.94, with an additional \$15.95 for the sketch desk, and an additional \$38.15 for the red LED lighting system.

Listing of Components:

Seat: \$65.00

Boat seat of choice – The primary user of the astronomer's stool should get a boat seat from a marine equipment retailer/reseller that is comfortable to sit in, provides good lower back support, doesn't compress or breakdown on the front edge under the user's sitting weight, and is sufficiently long enough in the seat for comfortable upper leg support. This is **THE MOST** important decision, because if you skimp on the cost here, or you get something that doesn't fit you right, you will regret it on the final product.

Lumber: >\$21.50

1/2 sheet of 3/8" plywood (for trapezoidal shaped leg to pedestal supports) = \$11.50

2 8ft 2x4s (used for pedestal and feet) = ~ \$10.00

9" X 9 1/2" X 3/4" plywood (the unique size for this particular chair seat). This size will vary by chair model and forms the attachment site under your seat, Scrap

18" 2x4 (for a foot rest), Scrap

* 1/4" plywood, 18" x 22" (sketch desk top), Scrap

* 1x6, 2 x 18" (sides of sketch desk), Scrap

* 1x6, ~ 17" long (front cross brace for sketch desk), Scrap

* 2x4, ripped 2 x, ~ 17" each (cross braces for Sketch desk), Scrap

Hardware: >\$97.94 (an additional \$15.95+ to build out the sketch desk)

4 longer (appropriate to the chair), screws (these attach your chair to the 3/4" plywood base and replace the short screws supplied with the chair) = Cost and size are dependent on your seat's existing screw size, mine were \$0.68 ea.

1, 1" pipe floor flange = \$6.41

1, 3/4" pipe floor flange = \$4.91

1, 3/4" X 20 1/2" pipe (w/ threads on one end), cut and smoothed on opposite end, Scrap, would be \$6.54.

8 appropriate screws (for connecting the 2 pipe floor flanges to wood), Scrap, would be ~\$1.00

4, 1/4-20 'T' nuts, (these form the permanent attachment points holding the 1" floor flange to the chair's 9" x 9.5" 3/4" plywood base), Scrap, would be ~\$1.00

Carpenter's glue, Scrap

Wood putty, Scrap

36, 3" wood screws, Scrap, figure a couple of dollars

2, 3/16" x 1" x 4' steel flats (these form the armrest supports) = \$16.58

1, 1/8" x 1.5" x 6', steel flat (this provides additional lateral support to the armrest supports) = \$12.19

4, #8, 1/2" screws (these attach the armrest supports to the armrests) = ~\$1.00

10, #8 X 3/4" flathead wood screws (to attach the armrest supports to the wood piece under the seat) = \$3.00

4 Threaded rods (1/4-20 X 8 1/2"), (these hold the lower section of the removable legs in place and could be replaced with bolts), Scrap, would be 0.98 ea.

8 matching wing nuts (for the 'removable legs' of the pedestal) = \$2.00

8 matching flat washers, Scrap, \$0.50

4, 1/4-20 X 5 1/2" bolts for the 'removable' legs = \$0.49 ea.

4 matching wing nuts = \$1.00

2, #2 Screw Eyes for attachment of a hanging footrest under the seat = \$0.95

2, "S" hooks (provide quick disconnect for ropes supporting the hanging footrest) = \$0.60

1, 8' piece of 3/8" channel, cut into 4 x 18" (gives outside edge protection on the plywood supports) = ~\$12.00

1, 8' piece aluminum angle, cut into 4 x 18" (gives protection to the hanging foot rest), Scrap, would be ~\$12.00

~ 7' of Nylon rope (for the hanging foot rest, and to secure the sketch desk to the chair), Scrap

1, 1/2" X 8" Hex head bolt, cut to length and drilled to accept a retaining cotter pin (this provides the basis for the seat height adjustment, large diameter for strength), Scrap, would be \$1.51

1 appropriate sized flat washer, Scrap, would be \$0.19

1 cotter pin, Scrap, would be \$0.50

2 carrying handles, scrap

* 2, #208 Screw Eyes for sketch desk restraint, Scrap = \$0.95

* 20, 3/4" #6 wood screws (to attach Plexiglas cover to sketch desk) = \$2.00

* 1/8" X 20" x 20" sheet of Plexiglas (provides smooth writing surface for sketch desk top), Scrap, it would be ~\$13.00

* ~16, 2" wood screws to build out sketch desk braces, Scrap, ~1.00

Primer and Paint(s) of choice: >\$31.50

Exterior Primer = \$15.00

Exterior Paint = \$15.00

Rustoleum primer, Scrap, would be ~\$4.00

Rustoleum paint = \$4.00

Electronics – red LED lighting system only: > \$38.15

4, pkg of 2, 2.6V 5mm red LEDs @ \$1.49 ea. = \$5.96

2, pkg of 5, 150Ω resistors @ \$0.99 ea. = \$1.98

1, pkg of 5, 33Ω resistors @ \$0.99 ea. = \$1.98

1 project box (becomes the 'junction box')= \$2.49

2, pkg of 2, 1/8" mini plugs @ \$2.99 ea. = \$5.98

2, pkg of 2, 1/8" mini jacks @ \$3.29 ea. = \$6.58

50' spool of 2 conductor cable = \$9.89 (leftover shielded audio cable was used and actual length required could

vary according to your own design)

1, 2.1 mm power jack = \$3.29 (accepts the plug from the battery box to supply power to the junction box)

Power supply (a battery box for 4 "C" batteries) = price not pursued, as John had a suitable one on hand

In the next issue of the StarScan, I will cover the necessary measurements and the construction of the all important center pedestal.

Closest Encounter with Jupiter until 2022

From: http://science.nasa.gov/science-news/science-at-nasa/2010/15sep_jupiter/

Author: [Dr. Tony Phillips](#) | Credit: Science@NASA

Sept. 15, 2010: Been outside at midnight lately? There's something you really need to see. Jupiter is approaching Earth for the closest encounter between the two planets in more than a decade--and it is dazzling.



The night of closest approach is Sept. 20-21st. This is also called "the night of opposition" because Jupiter will be opposite the sun, rising at sunset and soaring overhead at midnight. Among all denizens of the mid-night sky, only the Moon itself will be brighter.

Science@NASA reader Tamas Ladanyi took this picture of a friend photographing Jupiter over a lake in the Bakony mountains of Hungary on Sept. 5th. "The giant planet was remarkably bright," says Ladanyi.

Earth-Jupiter encounters happen every 13 months when the Earth laps Jupiter in their race around the sun. But because Earth and Jupiter do not orbit the sun in perfect circles, they are not always the same distance apart when Earth passes by. On Sept. 20th, Jupiter will be as much as 75 million km closer than previous encounters and will not be this close again

until 2022.

The view through a telescope is excellent. Because Jupiter is so close, the planet's disk can be seen in rare detail--and there is a lot to see. For instance, the Great Red Spot, a cyclone twice as wide as Earth, is bumping up against another storm called "Red Spot Jr." The apparition of two planet-sized tempests grinding against one another must be seen to be believed.

Jupiter's "kissing red spots" photographed by Alan Friedman of Buffalo, NY, using a 10-inch telescope. The full-sized image shows the golden disk of Jupiter's moon Io.

Also, Jupiter's trademark South Equatorial Belt (SEB) recently vanished, possibly submerging itself beneath high clouds. Researchers say it could reappear at any moment. The dramatic resurgence would be accompanied by a globe-straddling profusion of spots and cloudy swirls, clearly visible in backyard telescopes.

And *what* was that flash? Amateur astronomers have recently reported a surprising number of fireballs in Jupiter's atmosphere. Apparently, many small asteroids or comet fragments are hitting the giant planet and exploding among the clouds. Researchers who have studied these events say visible flashes could be occurring as often as a few times a month.

Finally, we mustn't forget the moons of Jupiter because they are also having a close encounter with Earth. These are planet-sized worlds with active volcanoes (Io), possible underground oceans (Europa), vast fields of craters (Callisto), and mysterious global grooves (Ganymede). When Galileo discovered the moons 400 years ago, they were no more than pinpricks of light in his primitive spy glass. Big, modern amateur telescopes reveal actual planetary disks with colorful markings.

It makes you wonder, what would Galileo think?

Answer: "I'm getting up at midnight!"

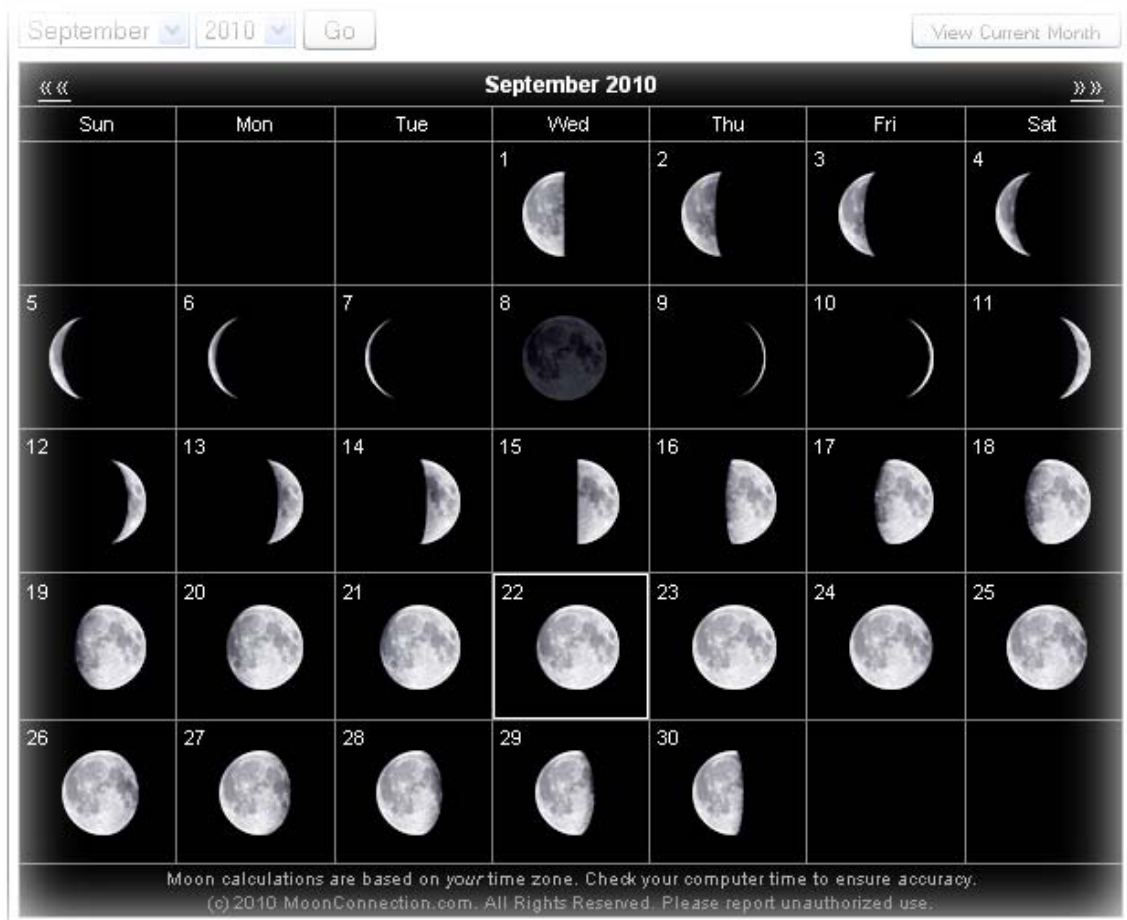
ADAY/ALL Clubs Meeting.

The All Clubs Meeting is a “GO”... set your calendars for October 15th Friday at the HCC downtown main auditorium. 3100 Main Street, Houston, TX. Meet, greet, and eat 7pm. Meeting at 8pm, ends 10pm. Speaker is Dr. David Talent. Contact Aaron Clevenson for any questions: aaron@clevenson.org

Astronomy Day is Saturday October 16th at Brazos Bend State Park, George Observatory starting at 3pm ~ 10:30pm. Please check the new ADAY site for more information: www.astronomyday.info



PHASES OF THE MOON FOR THE MONTH OF September -2010



Want more moon details? [Click Here To Learn About Quick Phase Pro](#)

SUNRISE AND SUNSET SCHEDULE FOR

SEPTEMBER -2010

[Gmail - stuff...](#) - [starhopper157@gmail...](#)
[Closest Encounter with Jupiter until 20...](#)
[Fireballs Light Up Jupiter - NASA Science](#)
[Monthly Sunrise Sunset Times fo...](#)
[Fort Bend Astronomy Club Home Page](#)

September 2010
Houston, Texas

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 Twil A: 5:36am Sunrise: 6:58am Sunset: 7:46pm Twil A: 9:07pm Moonrise: none Moonset: 2:11pm Last Qtr: 11:22am	2 Twil A: 5:36am Sunrise: 6:59am Sunset: 7:43pm Twil A: 9:06pm Moonrise: 12:34am Moonset: 3:08pm	3 Twil A: 5:37am Sunrise: 6:59am Sunset: 7:42pm Twil A: 9:04pm Moonrise: 1:32am Moonset: 4:02pm	4 Twil A: 5:38am Sunrise: 7:00am Sunset: 7:41pm Twil A: 9:03pm Moonrise: 2:37am Moonset: 4:52pm
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Daylight Saving/Summer Time is in effect for the entire month.
Courtesy of www.sunrisesunset.com

Folks:

In times past, people that have wanted to take advantage of the club discount have had to write their check, put it in with the renewal slip, and then either mail it to me at my home or chase me down at a meeting. In most cases, within a week, I have sent out the renewal. Sometimes, and I don't really mind, the renewals have gone out at my expense for the postage. Without hesitation, question, or fail, it is not the most efficient means to maintain club subscriptions. So as secretary, I'd like to try something new...

You get all your stuff ready for the subscription, whether it be Astronomy or Sky & Telescope, you keep it - you hang on to it. Email (most reliable) or tell me when you see me that you want to take advantage of the club discount for either or both of these publications and that you need a supporting letter. What I'll do is get the letter together and email the "letter from the treasurer/secretary" back to you as a PDF. You print it off, and enclose it with your renewal. For this to work your computer must have Adobe Reader (which is free) and a means to print it. I would like this procedure to become the "Standard Operating Procedure" for Astronomy/S&T discounts through JSCAS. For those still not in the computer age, we can process things as we have in the past.

Clear skies,
David Haviland



NEED A NEW CLUB SHIRT?

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FOR YOUR MONOGRAM NEEDS**

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CONTACT CONNIE AT:
conniescreativdesign@gmail.com

Webpage is under construction, but will be up soon and I take
PayPal as well.



ACTUAL PICTURES OF
WHAT I HAVE DONE
BOTH LIGHT
AND DARK
BACKGROUNDS

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- Repair and upgrades for all makes
- **FOR SALE:** Refurbished telescopes... all designs
- Cleaning, collimation, and star testing
- Custom fabrication
- Schmidt Cassegrain Telescope specialist



**Call 713-569-7529 for complete
service**

Light pollution:

Any adverse effect of artificial light including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste.

.Do you have a question about light pollution, protecting the night sky, or IDA's resources? **Get Help from IDA** <http://www.darksky.org/mc/page.do?sitePageId=56399>

Photograph © [Phil Hart](#)

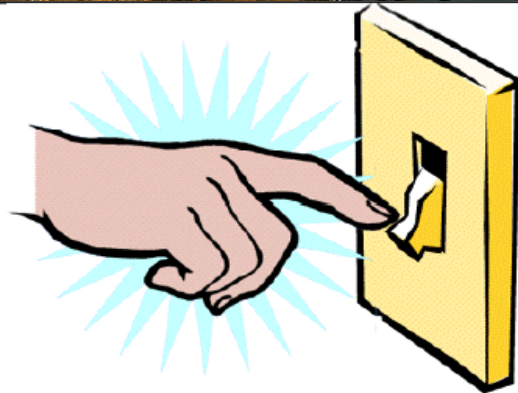


Help turn off the lights...

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."



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.

Houston Community College Southwest Campus—Main Lecture Hall

10141 Cash Rd

Stafford, Texas 77477

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

North Houston Astronomy Club <http://www.astronomyclub.org>

Meets the fourth Friday of the month, 7:30 p.m.

In the Teaching Theatre at Kingwood College

20000 Kingwood Drive

Kingwood, Texas

Galveston Stargazers

Meets the first Wednesday of the month At Home Cut Donuts, 6807 Stewart Rd, Galveston, TX

From 7PM to 9PM.

Contact: Jim Gilliam at Jim.Gilliam@dars.state.tx.us or

At (409)795-3620, M - F, 8AM to 5PM

Houston

Area

Astronomy

Clubs

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 it 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

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 –
Librarian – Bob and Karen Taylor
Historian – Chris Randall
Scientific Expeditions – Paul Maley
Web Master—Chris Randall

SIGS

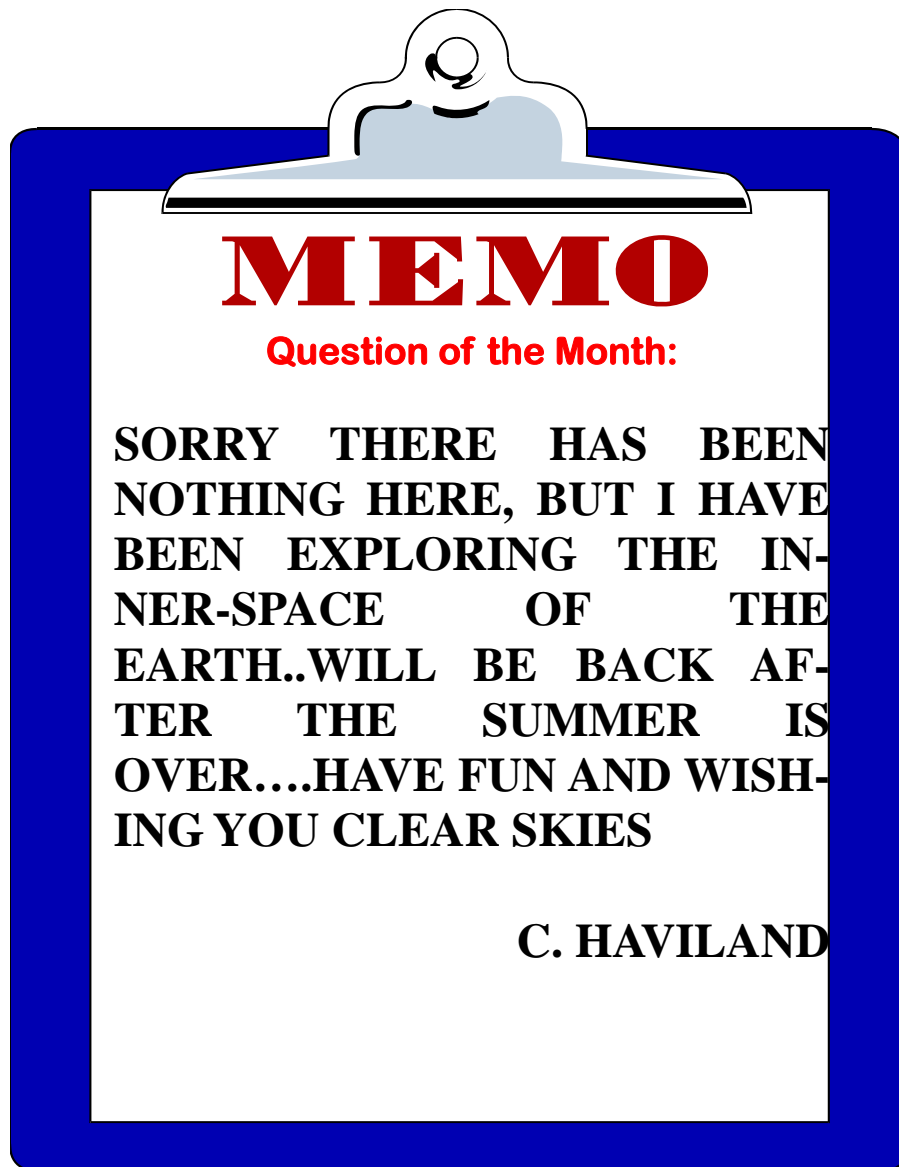
Observing Awards – Triple Nickel
Astronomy 101 – Triple Nickel
CCD Imaging – Al Kelly
Binocular Observing – “OPEN”
Telescope Making – Bob Taylor
Deep Sky Observing – Hernan Contreras

WHO SAID ASTRONOMERS DO NOT HAVE A SENSE OF HUMOR?



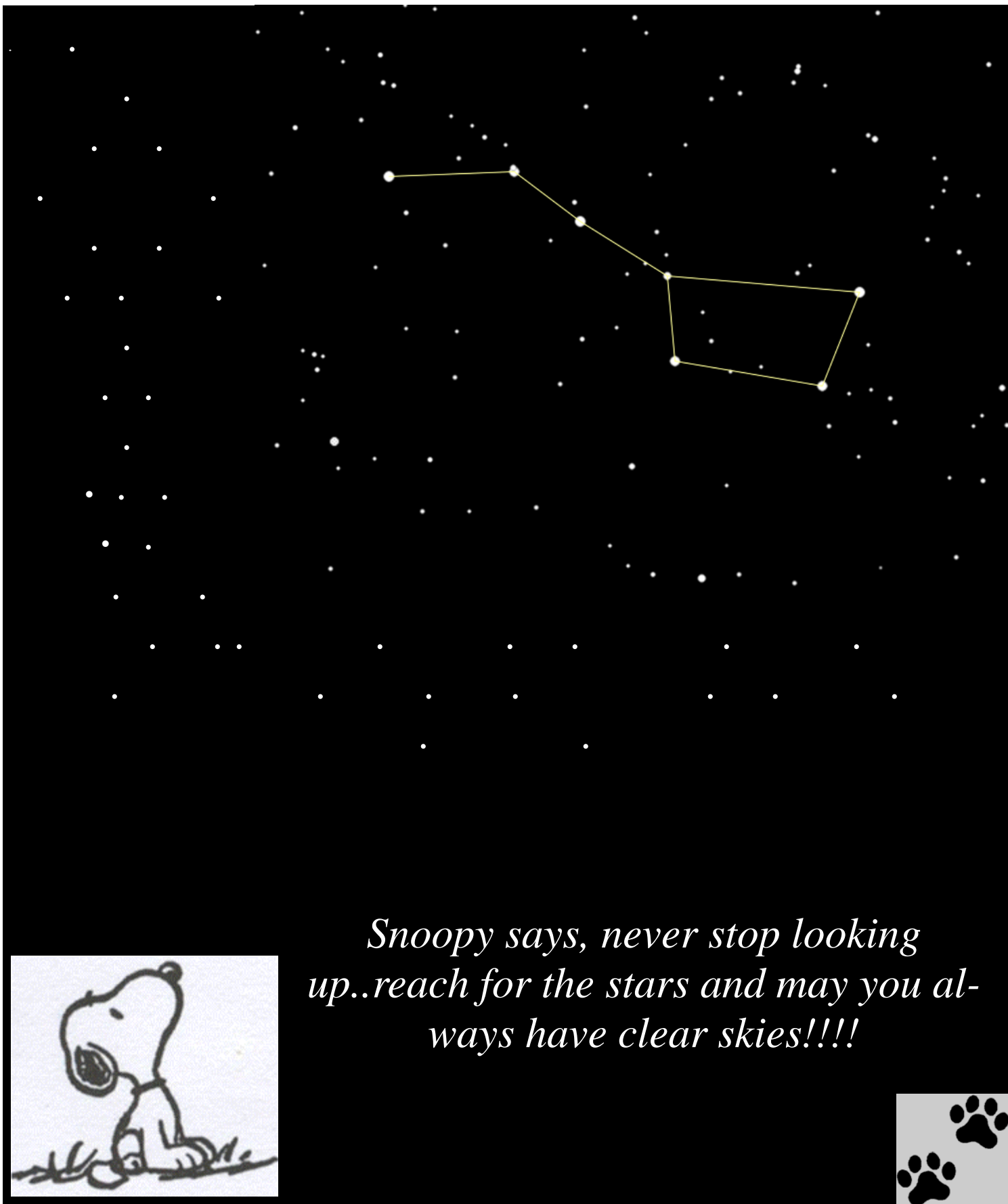
Astronomy and Kids

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 goal has been achieved. Enjoy!!



LEARN YOUR CONSTELLATIONS





*Snoopy says, never stop looking
up..reach for the stars and may you al-
ways have clear skies!!!!*

