Starscan

Johnson Space Center
Astronomical Society

Volume 27: Number 1, January 2011

A Change at the Helm!!

CHRIS RANDALL
PRESIDENT

ALDORA LOUW
VICE-PRESIDENT

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CONNIE HAVILAND

Un mensaje del Presidente
(A message from the President)

I was late getting started writing a submission for the STARSCAN, so I'll just give an introduction of myself. For those who don't know me, I've been into astronomy ever since I was a young boy. My first telescope was a Sears 4" refractor I got for Christmas in the 70's. I attempted to get back into astronomy when Haley's comet came around, but found the telescope and Houston's skies to be too formidable. Years later in college, I found a Celesteron C-8 while loading equipment for a Geology field trip. I convinced my professor to take it with us through Central Texas and the Arkansas Mountains. I fell in love with the skies. Let's just say geology all day and astronomy all night equals no sleep for the week long field trip. Eventually, while camping at Brazos Bend State Park I discovered groups observing through scopes near the nature center. I later discovered the George Observatory being built. Once it was completed I truly discovered amateur astronomy and became involved with volunteering out there. I then got involved with FBAC and joined them in 1990. I bought my first real scope in 1991, a 10" f6.3 SCT. I now own over 10 telescopes. I went to my first TSP in 1991. Soon after that I .discovered JSCAS and have been a member in 1993. I have been involved with the club for many years supporting outreach events and a behind the scenes. I've recently been the vice president of our club.

With your help we can continue to have a great organization, and bring the enjoyment of Astronomy to the public.

Let's make this a stellar year.

Chris Randall

LETTER FROM THE Co-EDITORS

Hi everyone!!

Sorry I'm a little late on this issue but I hope you will find it worth it. We're going to make some changes to the Starscan, nothing major but refocusing our efforts on the user written article. Please keep them coming and don't hesitate to send anything in you might find of use. Basics and fundamentals always welcome as well as book reviews and the like.

I'd like to say that that I would like to thank Chris and those involved in the wonderful gift given to me at the Solstice party. I've always loved barometers and amateur weather.

David Haviland

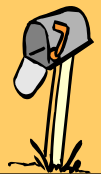
In addition, we have updated the Children's Section *Astronomy and Kids;* so for those with children, teachers or young at heart, check it out. I hope you enjoy. This month is about the moon and some interesting things to do research on.

I am looking forward to a new year and working with a new staff and administration.

Connie Haviland

LETTER TO THE EDITOR

Nothing this month



Star Parties for 2010
Bob Taylor

Dec 3rd, Gilruth

January 15th, 2010 at the LPI

What's Happening at the George!!!

Need volunteers

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

January 01 – New Year's Day: Observatory Closed

January 08 – Building Managers: Justin McCollum / Jack McKaye mccollumjjj@gmail.com / jemckaye@comcast.net

January 15 – Building Managers: Cynthia Gustava / Leonard Ferguson cynm31@att.net / leonardferguson@mac.com

January 22 – Building Managers: Tracy Knauss / Keith Rivich birdbarn2000@yahoo.com / icgalaxies@cs.com

January 15th, 7 p.m. – 9 p.m. - Night Viewing of the Moon (telescopes provided by JSC Astronomical Society

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

COLLIMATING, POLAR ALIGNMENT and CARE for AMATEUR TELESCOPES

By Al Kelly. Originally printed October 11th, 1991.

COLLIMATE

1. to make parallel (as rays of light)
2. to adjust the line of sight of...

(from Webster's Ninth New Collegiate Dictionary)

THREE TYPES OF COLLIMATION

IMAGE COLLIMATION

Adjusting the alignment of the optical elements within a telescope (or other optical system)

FINDER COLLIMATION

Making the optical axes of two or more telescopes parallel

OPTICAL AXIS/SETTING CIRCLE COLLIMATION

Making the optical axis of a telescope parallel with a reference mechanical axis (for example, a polar axis) -- a prerequisite for accurate Polar Alignment

IMAGE COLLIMATION

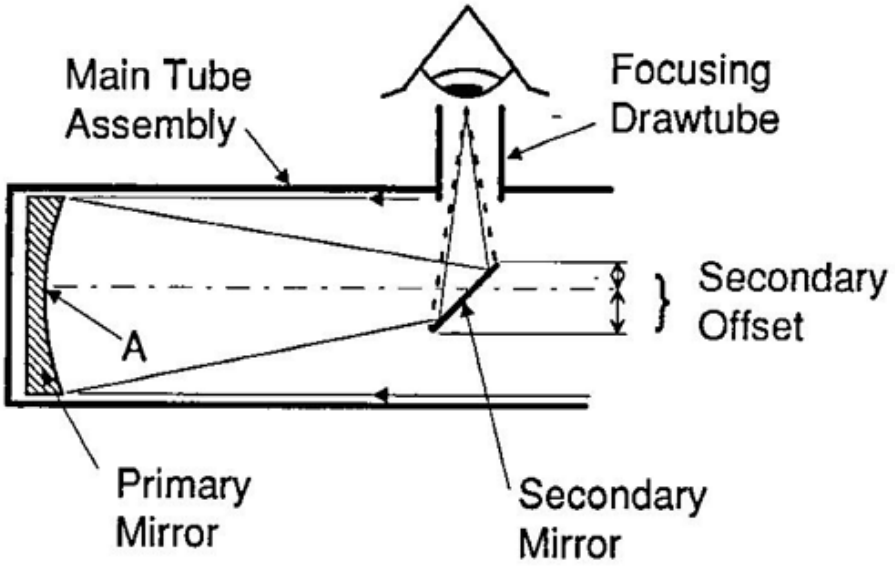
■ GOAL -- To make the optical axes of all optical elements collinear

NEWTONIANS

✦ RECOMMENDATION

Check the image collimation at least once before or during each observing session

✦ ASSUMPTIONS



1. The Primary Mirror's optical axis (A) is coincident with its physical axis (its measured centerpoint).

2. The Secondary Mirror is elliptical.

3. The correct amount of Secondary Offset has been "built in" and that the Primary Mirror is centered in the Main Tube Assembly.

4. The secondary adjustment capability exists for:

   a) Movement along the primary optical axis (toward and away from the Primary Mirror)

   b) Movement (roll) around the Primary Mirror's optical axis

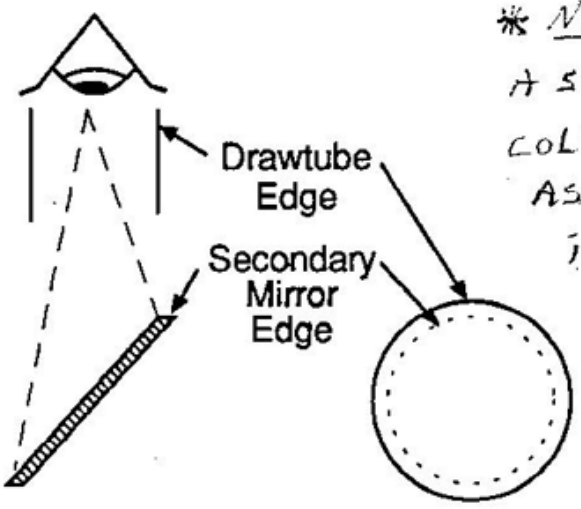
   c) Tilting the Secondary Mirror in its mount in one or more axes

5. The focusing DRAWTUBE is perpendicular to the MAIN scope tube AND points squarely to the central axis of the main tube.

✦ PROCEDURE

FIRST TASK - Make the Primary and Secondary Mirror edges concentric.

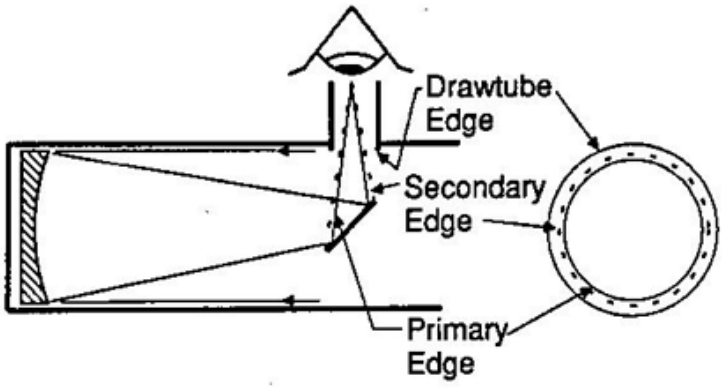
Step 1. While viewing through the Focusing Drawtube*, adjust the Secondary Mirror so that its edge appears to be circular and concentric with the edge of the drawtube.



* NOTE: View through a small aperture (~2mm) collimating tube to assure that your eye is centered in the focuser.

NOTE: Be certain your eye's pupil is centered in the drawtube. The use of a "collimating tube" with a 2 - to - 3 mm centered hole assures this.

Step 2. Adjust the tilt of the Secondary Mirror to make the edge of the Primary Mirror (as reflected by the Secondary) concentric with the edges of the Secondary and the Drawtube.

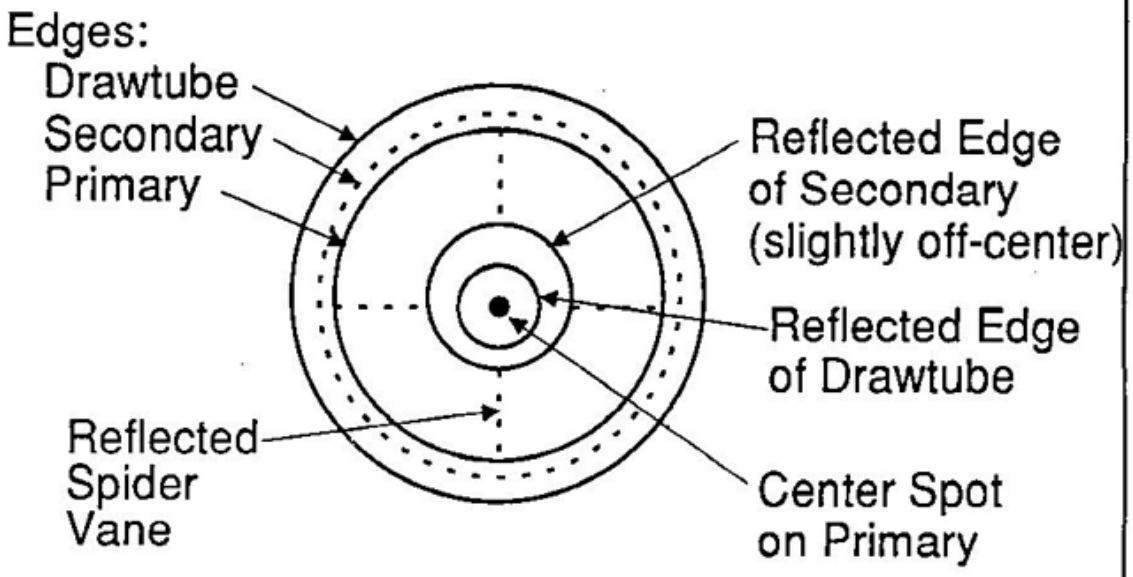


NOTE: After successfully completing Step 1, if large tilt or other adjustments are necessary to accomplish Step 2, verify that the Primary Mirror is properly centered in its cell and that the cell is centered in the Main Tube Assembly. After making any corrections to the placement of the Primary Mirror, repeat Steps 1 & 2.

SECOND TASK - Center the Drawtube reflection.

Adjust the tilt of the Primary Mirror until the reflected image of the Drawtube is centered in the Primary Mirror.

NOTE: Place a "white spot" at the exact center of the Primary Mirror (a "hole reinforcer" works nicely). Use a centering mask or stencil to place the "spot" exactly. This "spot" makes the centering process much easier.



Once all of the steps have been correctly performed, the reflected edge of the Secondary Mirror will not be perfectly concentric with the edge of the Primary Mirror or the reflected edge of the Drawtube. This effect will be particulary noticeable in "fast" Newtonians (less than F8).

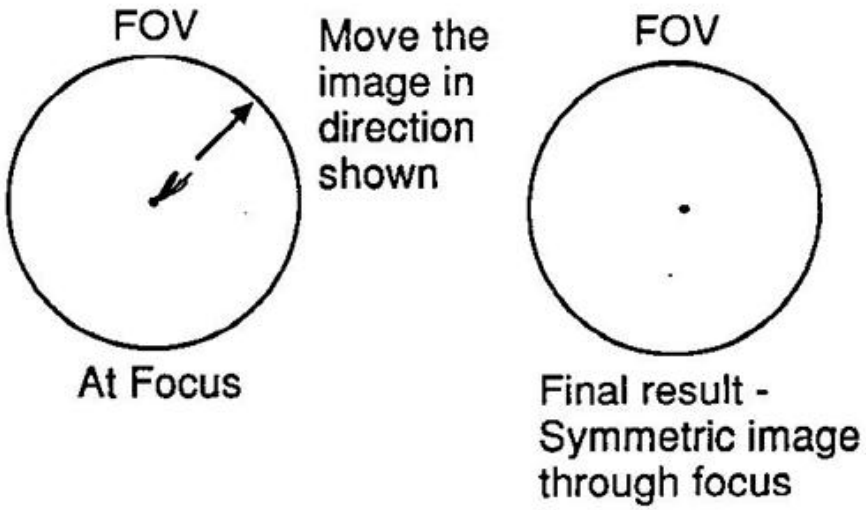
THIRD TASK - Perform Star Collimation (this might not be necessary after completing the first and second tasks).

Step 1. While using a medium-to-high magnification (8-12 times the aperture, in inches) examine the image of a bright star at the best possible focus.

The image should be examed ON AXIS; that is, in the CENTER of the field of view (FOV).

Step 2. If any "flaring" of the focused image is noticed, adjust the tilt of the Primary Mirror slightly, so that the image moves in the direction of the "flare".

Step 3. Re-center the image and repeat the process until the "flare" disappears.



REFRACTORS

- ✦ RECOMMENDATION

  Don't EVER drop your refractor from a tall building or run over it with a truck.

- ✦ Only if it is ABSOLUTELY necessary (after having dropped your refractor from a tall building or run over it with a truck):

  - Check/adjust the seating (tilt) of the Objective's mounting cell in the Main Tube Assembly.
  - Check/adjust the seating of the Focusing Tube Assembly in the Main Tube Assembly.
  - If you are using a diagonal, check/adjust the seating of the prism or mirror.
  - Use the Star Collimation technique as described for Newtonians (adjust the tilt of the Objective Lens).

SCHMIDT-CASSEGRAINS

- ✦ RECOMMENDATION

  Don't change the factory collimation unless the imaging is obviously faulty, night after night.

- ✦ Only if the factory collimation has been disturbed:

  - Check/adjust for loose or missing screws in the Corrector Plate Seating Assembly.
  - Check/adjust the seating of the mirror or prism in the diagonal.
  - If necessary, adjust the tilt of the hyperbolic Secondary Mirror by turning (SLOWLY, SLIGHTLY, and ONE AT A TIME!) one or more of the three screws on the outside of the Corrector Plate's central obstruction. To obtain proper tilt, use the Star Collimation technique as described for Newtonians.

FINDER COLLIMATION

■ GOAL -- To make the optical axes of two (or more) telescopes parallel.

Use a star as the target for aligning the finder's optical axis with the main optical axis. Using a foreground (terrestrial) object often results in an offset error due to parallax.

OPTICAL AXIS/SETTING CIRCLE COLLIMATION

■ GOAL --To make the optical axis of a telescope parallel with a reference mechanical axis.

This procedure is a prerequisite for accurate polar alignment.

✦ ASSUMPTIONS

1. Accurately scribed setting circles
2. The longitudinal axis (length) of the Main Tube Assembly is perpendicular to the mount's declination axis
3. The longitudinal axis of the Main Tube Assembly is collinear with the main optical axis (proper image collimation will sufficiently ensure this)

✦ PROCEDURE

Step 1. Using high magnification, center a distant, fixed object in the main optics. Note the declination reading.

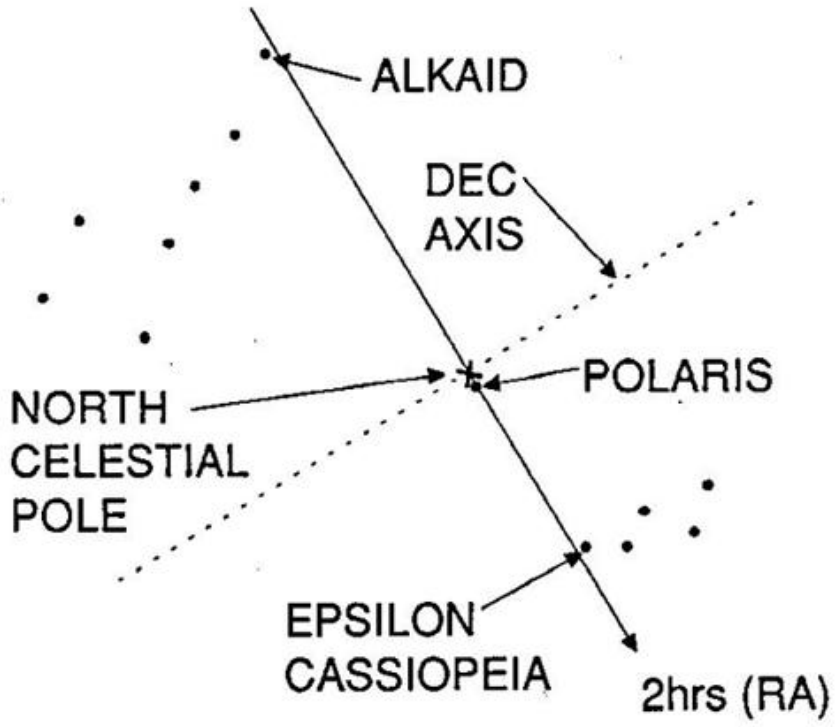
Step 2. Tumble the telescope tube 180 degrees in right ascension and re-center the same object in the main optics by tumbling the required amount in declination.

Check the declination reading on the same setting circle. If the reading is not the same as before, adjust the setting circle to the coordinate exactly halfway between the first and second readings.

Step 3. Repeat, as necessary, until the declination reading is consistent.

POLAR ALIGNMENT STEPS

- Accomplish the proper image collimation and declination setting circle adjustment.
- Roughly align the mount's polar axis with Polaris (with the declination reading at 90 degrees, adjust the mount to get Polaris in the main optical FOV).
- Rotate the mount's polar until the declination axis is perpendicular to an imaginary line running from the end star in the handle of the Big Dipper (Alkaid) through Polaris to Epsilon Cassiopeia (the dimmest of the 5 "W" stars).



- Tilt the tube assembly on the declination axis TOWARD Cassiopeia (2 hrs RA) to a reading of 89.2 degrees and lock in place.
- Turn, tilt, shim, or otherwise adjust the mount until Polaris is CENTERED in the main optical field of view at medium-to-high magnification.
- If done accurately, polar alignment will be plus-or-minus 10 minutes of arc. This is entirely sufficient for visual purposes and for guided astrophotography.

NOTE: It might not be good enough for unguided, long-exposure astrophotos; even in this case, periodic worm-gear error will probably yield more star trailing than polar misalignment.

CARE AND FEEDING SUGGESTIONS

- ✦ Check wingnuts, screws, and so on, before using your telescope. Tighten these items, if necessary, but be careful to not overdo it!

- ✦ Keep internal reflections down by repainting with KRYLON ultra-flat black spray paint, as necessary.

- ✦ Plastic bags make good mirror covers, lens caps, parts holders, and so on. However, do NOT use dark green or black bags (such as HEFTY-type lawn and leaf bags), since the chemical dyes in them outgas in sufficient heat and can contaminate optical surfaces.

- ✦ Here is a recommended cleaning solution for your telescope lenses and mirrors:

  - 2/3 pint of distilled water
  - 1/3 pint of isopropyl alcohol
  - 1 - to - 2 drops (NO MORE!) of biodegradeable liquid dish detergent

  Shake container with these items throughly before each use!

Recommended Optics Cleaning Procedure

- ✦ First, blow off all major particles by using a large ear syringe (you get one of these with each new baby!)

- ✦ Second, (for mirrors that can be freed from their mountings or that are on mountings that are impervious to water) run lukewarm tap water over the mirror surface until all loose dirt is gone.

- ✦ Third, use 100% NATURAL cotton swabs:

  - Wipe off the remaining particles/dirt with swabs SOAKED in the cleaning solution. Use gentle, light strokes; one stroke per unit area.
  - Repeat, using swabs SOAKED in 100% isopropyl alcohol.
  - Repeat, using dry swabs, until the surface is dry.

WARNINGS:

- Do not let particles build up on the swabs (change swabs often!).
- Do not allow portions of swabs which have touched your fingers contact the optical surface; skin oils are difficult to remove and can harm coatings!
- Avoid repeated rubbings after the optical surface is dry.

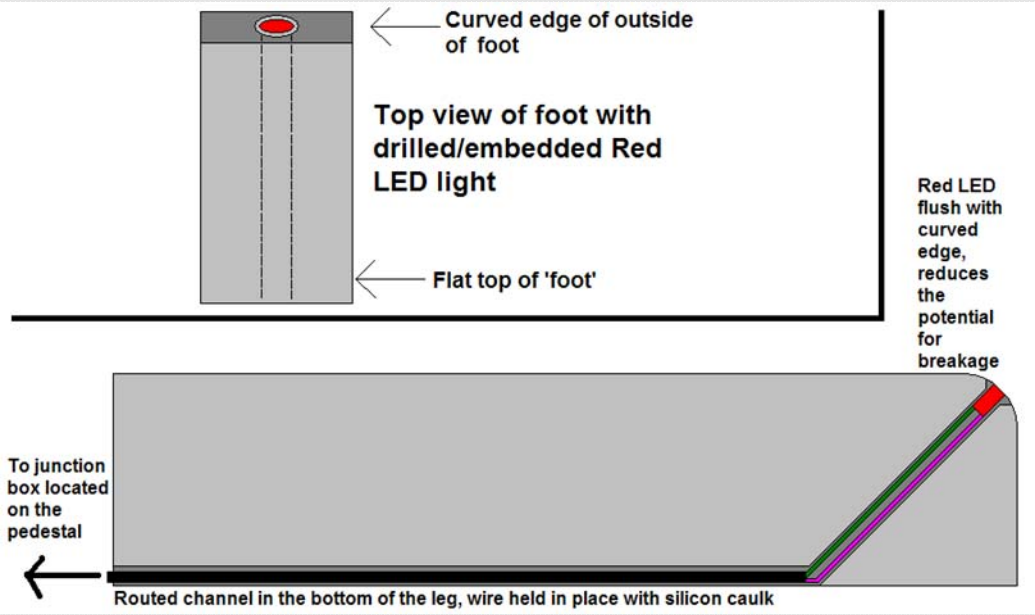
A Guide To Making Your Own Red LED Lighting System

Protection in these dark and troubling times…

By Jim Wessel

In this case, I mean the danger of tripping in the dark. Here is another case in which I did not plan ahead, and things might have been easier if I had. As the stool was nearing completion, I was still thinking about what final touches I could add to it to make it really exceptional in both form and function. I have seen lights attached to telescope tripods to alert onlookers to the tripod's widespread footprint in the dark. I thought this was a bright (pun intended) idea and in my case would serve to increase the aspect of safety when I carried my astronomer's stool to a publicly attended dark site. My original idea was to go out and buy a few battery powered, press top LED lights. The thinking was that I would cut a notch out of the upper surface of the four stool legs that matched the circumference of the lights, installing them, and then perhaps placing a strip of metal over the light to hold it in place and somewhat protect it from being directly stepped on when getting into or out of the chair. This method has a few drawbacks. Among them are the ever present danger of breaking the lights since they are wider than the width of the 2 x 4 'foot' and the cut-out notch itself would structurally reduce the upper surface of the stool's feet. That upper surface has a critical role as a step when the chair is at or near its maximum height. Also cutting that notch out would weaken the area right before the upper curve of the foot, making it more susceptible to breaking off entirely. For all these reasons, and coupled with the fact that John dabbles in electronics, made us look in a different direction.

After a bit of back and forth brainstorming, I finally proposed to John that we build the entire LED lighting system from components to our own design and specifications. The main idea was that the red LED light would be located near the distal tip of each of the feet and would be recessed to become flush on the top surface of the foot. Secondly, the line providing the power would be run along the length of each of the four legs to a single central power supply. A preliminary sketch of the idea in both a top and side view immediately follows.



To start us on the path of a new lighting system, John made a practice foot with exactly the same dimensions as the ones that were already built into the pedestal. This was a good thing, because it allowed us to figure out how to hold the wood at a solid 45° angle for drilling for the LED light without crimping the wood in a vise (a piece of wood to either side of the practice foot worked nicely). The practice foot also allows us to figure out how we were going to rout out the thin areas where the wiring would be run along inside the bottom of the feet. The two pictures below show the routed out areas under a foot and the central pedestal, respectively.

Design of a lighting system for this my stool was a little complex as there are two removable legs and a pedestal between the two permanent legs. Since the overriding design was to be able to remove a pair the legs, this also meant we had to also be able to disconnect the power cables from the power supply. This problem was solved by screwing a junction box (photo of its location below, left) to one of the fixed legs with three 1/8" mono mini jacks (normally used for audio purposes) installed in the top long side of the box and a 2.1 mm power jack installed in one end. This power jack enabled us to use an existing battery box (photo of battery box, below, right) with an output of 6 volts from 4 "D" cells and eliminated the need for an "On/Off switch" by allowing one to simply unplug the power supply. If desired, an alternative power supply configuration can be designed, and here is an online reference website to that end: http://led.linearl.org/led.wiz

LEDs for the fixed legs could be wired permanently in series as they never have to be disconnected. A 33 ohm 1/4 watt resister was soldered to the negative lug of the power jack along with another wire that was connected to the negative lugs of each of the three mini jacks. Here is a picture of the internals of the junction box.

The negative wire from another two wire cable was connected to the other end of the resistor and the cable run through a hole in the bottom of the box, through a vertical hole in the leg, to the channels cut in the bottom of the permanent legs and around the pedestal (picture here to the left).

The positive wire from this cable and another wire were soldered to the positive lug of the power jack. The second wire was soldered to each positive lug of the three mini jacks. Length of the wire from the resistor was measured, cut, stripped, and the negative end soldered to the cathode lead of one LED. Shrink tubing was used to cover the joint and wire up to the plastic of the LED. The other wire was soldered to the anode lead of the LED and another sleeve of shrink tubing placed over the connection. Here is a close up of a red LED unit (left), and a second picture (right) shows the seated red LED in the tip of a foot.

The entire red LED unit was electrical taped before sliding the assembly through the hole in the leg to position it and fixing the cable in the prepared channel in the bottom of the legs. A second LED assembly was prepared and put in place in the other fixed leg and the cable was run to the point where the original cable entered the channel from the junction box. The anode wire from the first LED was soldered to the cathode wire of the second LED and the joint protected by shrink tubing. Next, the anode wire of the second LED was soldered to the positive wire from the junction box and protected by shrink tubing. Note that a slight enlargement had been prepared in the leg channel to accommodate these connections (pictured here).

Preparation of the LEDs for the removable legs was slightly different. These would be single LEDs, powered by parallel circuits, and require more resistance to limit current (150 ohm, 1/4 watt resistors were used), and also require a 1/8" mini plug to connect to the junction box (positive wire to the tip electrode and negative to the body). One removable leg require an extension of the cord slot up the back end of the leg to allow passage of the cable and a hole drilled slightly above the junction box in the support wedge of the fixed leg to allow access for its plug (picture below, left). The second removable leg required a hole drilled from the channel in the bottom at a point even with the junction box on the fixed leg and a hole drilled through the support wedge of the removable leg to allow access to the junction box for its plug.

The wires were not looped around the outside of the vertical support for fear of them being damaged by either an errant foot, or the hanging footrest itself. The previous two images (center and right) show the other sides of the holes in relation to the feet that the two wires provide power. If you compare them with the previous picture, and think about the geometry for a second, you will quickly deduce which wire goes to which leg. This gives yet another way to make absolutely sure that the correct removable leg is re-attached to the correct position on the central pedestal when it is being re-assembled.

All wiring on the underside of all the feet and central pedestal have been silicon caulked into place, so they are somewhat protected from sticks and stones and such on the ground, but yet it can be quickly removed to make any needed repairs or adjustments.

If you are playing along at home, and following the logic here, you will realize that there is one unoccupied female jack on the junction box. Well, for a change I was thinking ahead and asked John to give me the means to provide electricity to a similar lighting system for the legs of my future tripod. Using the same wiring process as described above, a cable had the near end capped with a male plug (positive wire to end electrode and negative to body). The terminal end of the cable was stripped and 3 additional wires were spliced onto it (positive to positive wires and negative to negative with all protected by shrink tubing).

Those three wires were each capped with a red LED light unit (150 ohm resistor soldered to the cathode side of each LED and each lead protected with shrink tubing). This allows for one red LED light to be attached to the outside of each of the three legs of my eventual tripod mount. They will likely be secured in place with Velcro. The following 3 pictures show (1) the wiring system for the tripod, (2), the whole lighting system lit up with John's tripod stepping in for the demonstration, and the whole illuminated with ambient lighting, and finally (3) the red LED system up and running, glowing in the dark.

I am very pleased with the final functionality of the entire lighting system. There is very little chance of damage to the wiring within the pedestal proper, and the wire running to the tripod would be easy enough to replace if it was broken or severed. I believe that there is sufficient light for safety's sake but not so much light that it will be distracting to other observers while at a dark site. Theirs is a distinct possibility that the 3 wires at the distal end of the tripod lighting cable aren't long enough to run down the legs for my tripod, but this is a relatively easy fix down the road.

Next Month: Things I would have done differently, acknowledgements, and a final wrap-up.

More U.S. cities dimming the lights

From USA Today

By Haya El Nasser, USA TODAY

Dark-sky legislation — laws requiring such measures as shielding outdoor lighting to reduce light pollution — has been embraced by about 300 counties, cities and towns.

More than 50 state bills have been introduced in the past two years, and seven were enacted. Eighteen states —Arizona, Arkansas, California, Colorado, Connecticut, Hawaii, Maine, Minnesota, Missouri, New Hampshire, New Mexico, New York, Oklahoma, Rhode Island, Texas, Vermont, Virginia and Wyoming — have adopted dark-sky legislation in recent years, according to Bob Parks, executive director of the Tucson-based International Dark-Sky Association.

The laws have won support in states such as Texas, home to several military bases, because lights at night can interfere with military drills. Trying to simulate flying over remote parts of Afghanistan is difficult when skies are aglow from city-light glare. "It's a broad environmental issue, and it's also a safety issue," Parks says. "It's a pure waste of energy, dollars, and it contributes to greenhouse emissions. ... For every watt of electricity used needlessly, somewhere a coal power plant is generating that electricity." The association, which has 5,000 members worldwide, was founded in 1988 by an astronomer in Tucson who noticed an impact of city lights on stargazing. Local ordinances were enacted to direct lights toward the ground instead of the sky and to not light areas that don't need illumination, Parks says.

Since then, evidence has mounted that nighttime lights disturb animals and ecosystems. This month, findings presented at the American Geophysical Union in San Francisco showed that sky glow over cities interfered with chemical reactions that naturally clean the air at night. Fairfax County, Va., a suburb of Washington, adopted standards in 2003 that prohibit outdoor lights from shining upward. "It still provides quality lighting and lighting that's not intrusive," says Jack Reale, county planner.

Before the ordinance, the glare of outdoor lights often spreads outside property lines and "in many cases was shining in a neighbor's window," he says. "The intent was to establish outdoor lighting standards that reduce the impact of glare, light trespass and overlighting and to promote safety and energy conservation. ... It's designed to put light where it's needed." Fairfax County is working to strengthen its standards.

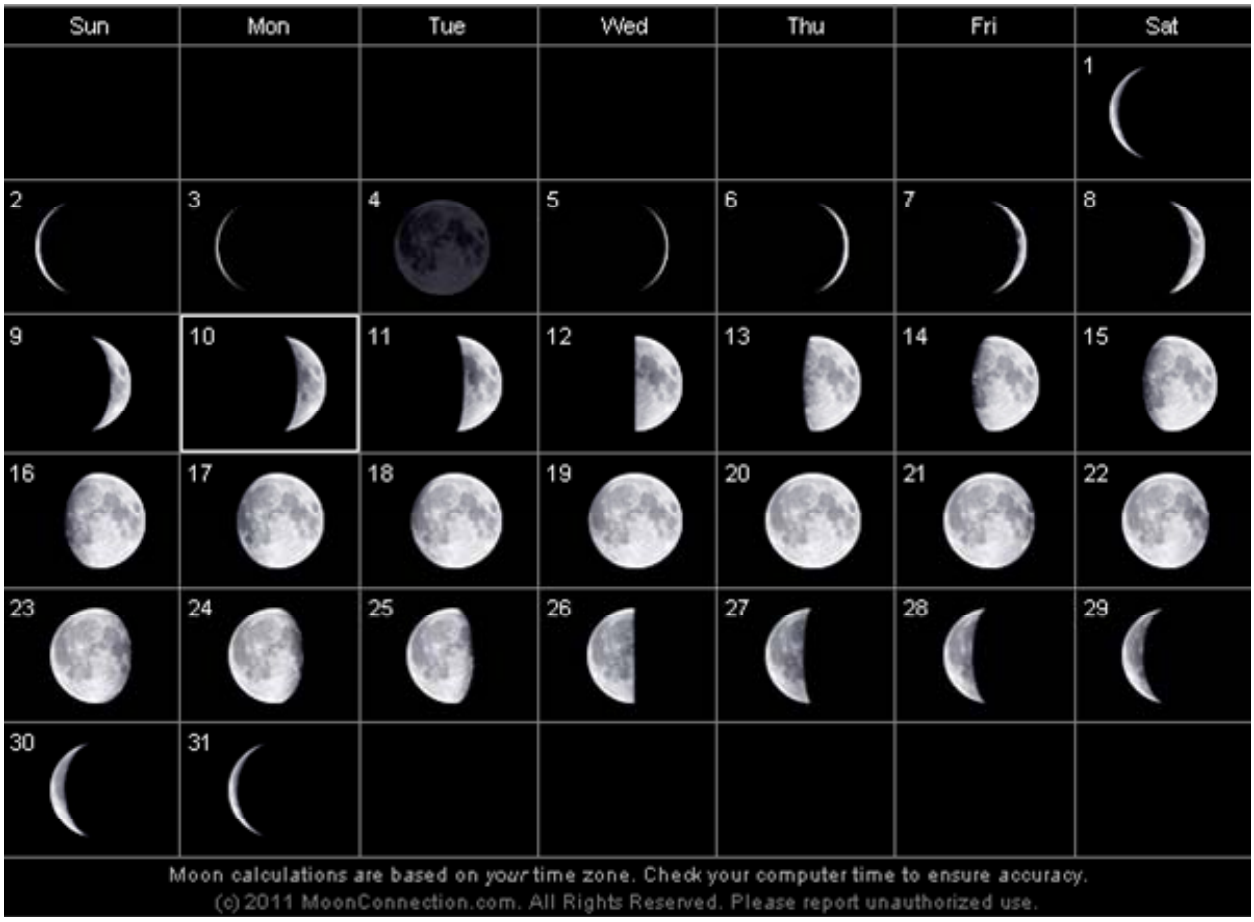
Lights from Las Vegas, 85 miles away, illuminate the night sky at Dantes View in Death Valley National Park, Calif., as

Separately, the Virginia Department of Transportation has replaced many streetlights with fixtures that shield the light from shining upward. Smaller cities have been more aggressive in changing outdoor lighting laws. Southampton, N.Y., recently passed an ordinance after more than a two-year tug of war that pitted environmentalists against citizens concerned about safety. The law sets wattage limits and the hours that outdoor lights can be left on.

"Cities and local governments can adopt policies ... but it's more forceful if the state legislature comes in," says Melissa Savage, program director in Washington for the National Conference of State Legislatures. Some developers oppose the restrictions, but most support guidelines that don't change when they build outside city limits, Parks says. His group is working with the Illuminating Engineering Society, a professional group that sets design guidelines, to develop standard lighting ordinances that municipalities can adopt for new construction. Builder Ted Clifton, head of Clifton View Homes in Coupeville, on Washington state's Whidbey Island, is a fan. "It's just going to save you money," he says. "You can burn 4 watts instead of 100, and it's all lighting the surface you're walking on."

http://www.usatoday.com/news/nation/environment/2010-12-29-light-pollution_N.htm

PHASES OF THE MOON FOR THE MONTH OF JANUARY 2011



SUNRISE AND SUNSET SCHEDULE FOR

JANUARY 2011

January 2011

Houston, Texas

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 Sunrise: 7:17 Sunset: 17:33 Moonrise: 4:49 Moonset: 15:15
2 Sunrise: 7:17 Sunset: 17:33 Moonrise: 5:48 Moonset: 16:11	3 Sunrise: 7:17 Sunset: 17:34 Moonrise: 6:41 Moonset: 17:10	4 ● Sunrise: 7:18 Sunset: 17:35 Moonrise: 7:28 Moonset: 18:09 New Moon: 3:04	5 Sunrise: 7:18 Sunset: 17:36 Moonrise: 8:09 Moonset: 19:07	6 Sunrise: 7:18 Sunset: 17:36 Moonrise: 8:45 Moonset: 20:03	7 Sunrise: 7:18 Sunset: 17:37 Moonrise: 9:17 Moonset: 20:58	8 Sunrise: 7:18 Sunset: 17:38 Moonrise: 9:48 Moonset: 21:50
9 Sunrise: 7:18 Sunset: 17:39 Moonrise: 10:16 Moonset: 22:43	10 Sunrise: 7:18 Sunset: 17:39 Moonrise: 10:45 Moonset: 23:35	11 Sunrise: 7:18 Sunset: 17:40 Moonrise: 11:15 Moonset: none	12 ◐ Sunrise: 7:18 Sunset: 17:41 Moonrise: 11:47 Moonset: 0:28 First Qtr: 5:33	13 Sunrise: 7:18 Sunset: 17:42 Moonrise: 12:23 Moonset: 1:23	14 Sunrise: 7:18 Sunset: 17:43 Moonrise: 13:03 Moonset: 2:20	15 Sunrise: 7:18 Sunset: 17:44 Moonrise: 13:50 Moonset: 3:18
16 Sunrise: 7:18 Sunset: 17:44 Moonrise: 14:43 Moonset: 4:17	17 Sunrise: 7:18 Sunset: 17:45 Moonrise: 15:43 Moonset: 5:14	18 Sunrise: 7:17 Sunset: 17:46 Moonrise: 16:48 Moonset: 6:08	19 ○ Sunrise: 7:17 Sunset: 17:47 Moonrise: 17:56 Moonset: 6:58 Full Moon: 15:22	20 Sunrise: 7:17 Sunset: 17:48 Moonrise: 19:05 Moonset: 7:42	21 Sunrise: 7:17 Sunset: 17:49 Moonrise: 20:13 Moonset: 8:23	22 Sunrise: 7:16 Sunset: 17:50 Moonrise: 21:20 Moonset: 9:01
23 Sunrise: 7:16 Sunset: 17:50 Moonrise: 22:26 Moonset: 9:38	24 Sunrise: 7:16 Sunset: 17:51 Moonrise: 23:31 Moonset: 10:15	25 Sunrise: 7:15 Sunset: 17:52 Moonrise: none Moonset: 10:54	26 ◑ Sunrise: 7:15 Sunset: 17:53 Moonrise: 0:36 Moonset: 11:35 Last Qtr: 6:58	27 Sunrise: 7:15 Sunset: 17:54 Moonrise: 1:41 Moonset: 12:21	28 Sunrise: 7:14 Sunset: 17:55 Moonrise: 2:43 Moonset: 13:10	29 Sunrise: 7:14 Sunset: 17:56 Moonrise: 3:42 Moonset: 14:05
30 Sunrise: 7:13 Sunset: 17:56 Moonrise: 4:36 Moonset: 15:02	31 Sunrise: 7:13 Sunset: 17:57 Moonrise: 5:24 Moonset: 16:00					

Standard/Winter Time for 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

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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

Light pollution:

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

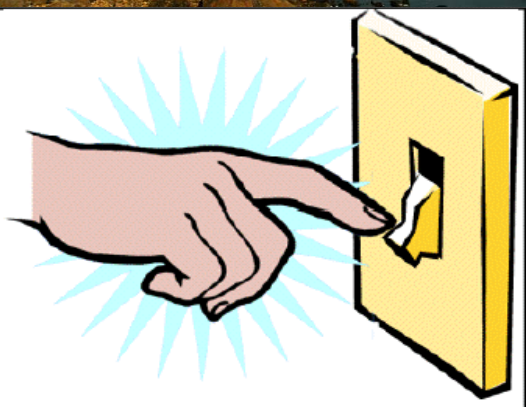
.Do you have a question about light pollution, protecting the night sky, or IDA's resources? **Get Help from IDA** http://www.darksky.org/mc/page.do?sitePageId=56399

Photograph © Phil Hart

IDA
THE LIGHT POLLUTION AUTHORITY

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.
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

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

Johnson Space Center
Astronomical Society

2011-Club Officers

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Vice President – Aldora Louw
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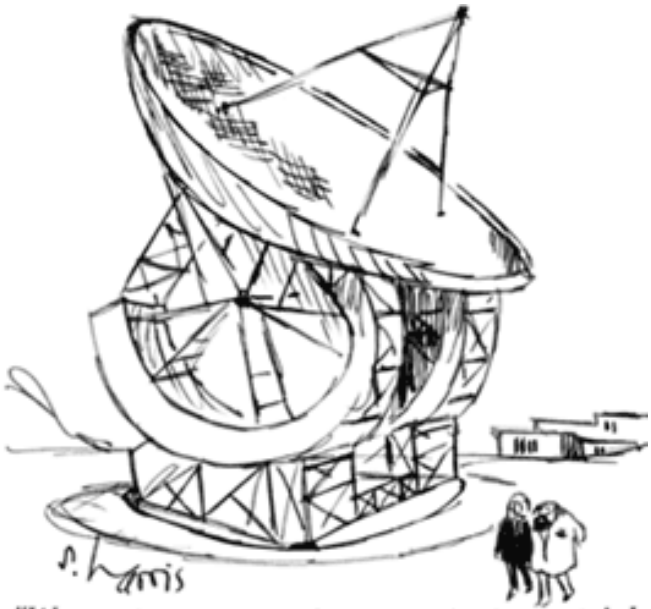
Scientific Expeditions – Paul Maley
Web Master—Chris Randall

SIGS

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

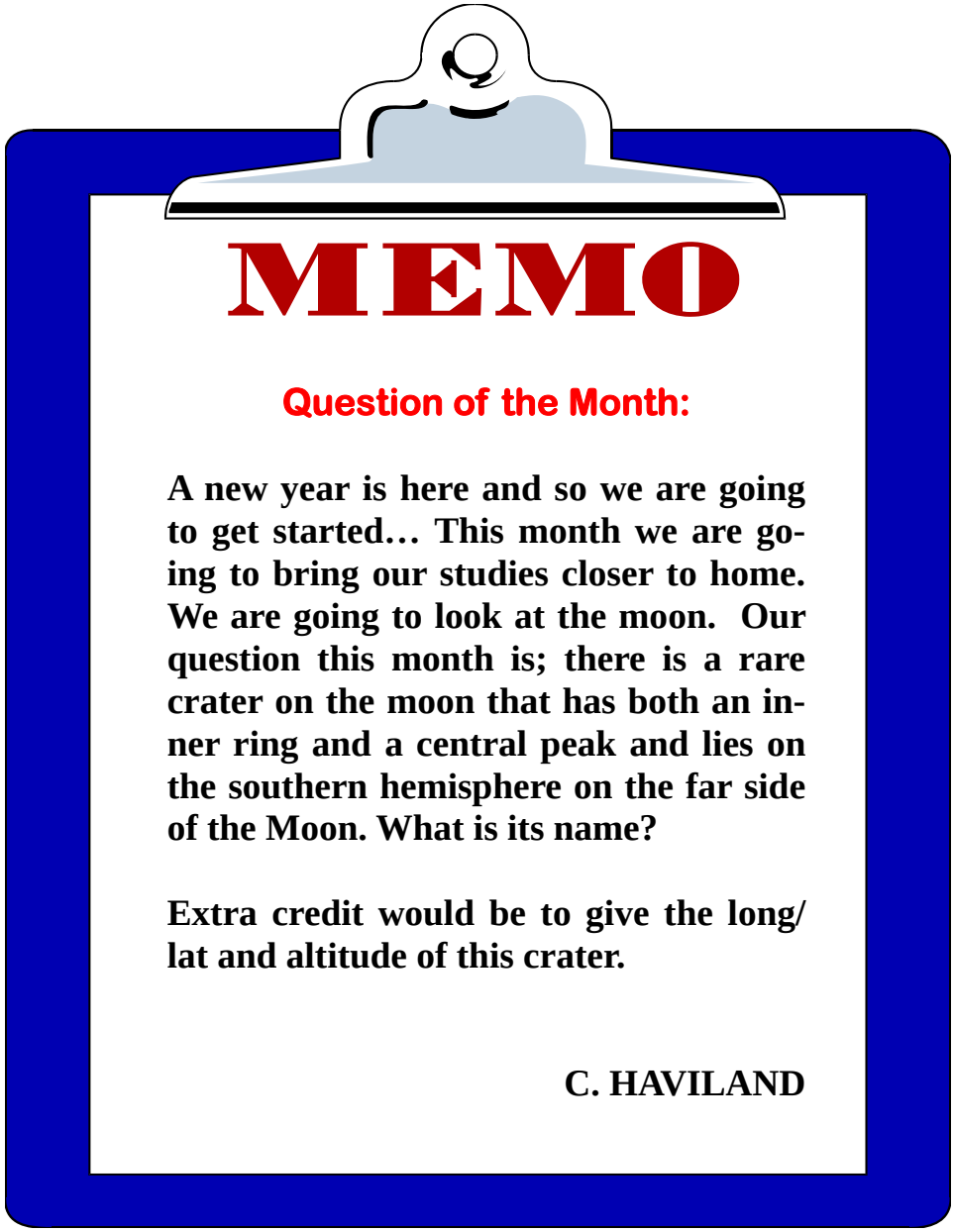
WHO SAID ASTRONOMERS DO NOT HAVE A SENSE OF HUMOR?



"We sent a message to any extraterrestrial beings in deep space. It was picked up by an observatory in Great Britain. They didn't understand it."

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!!



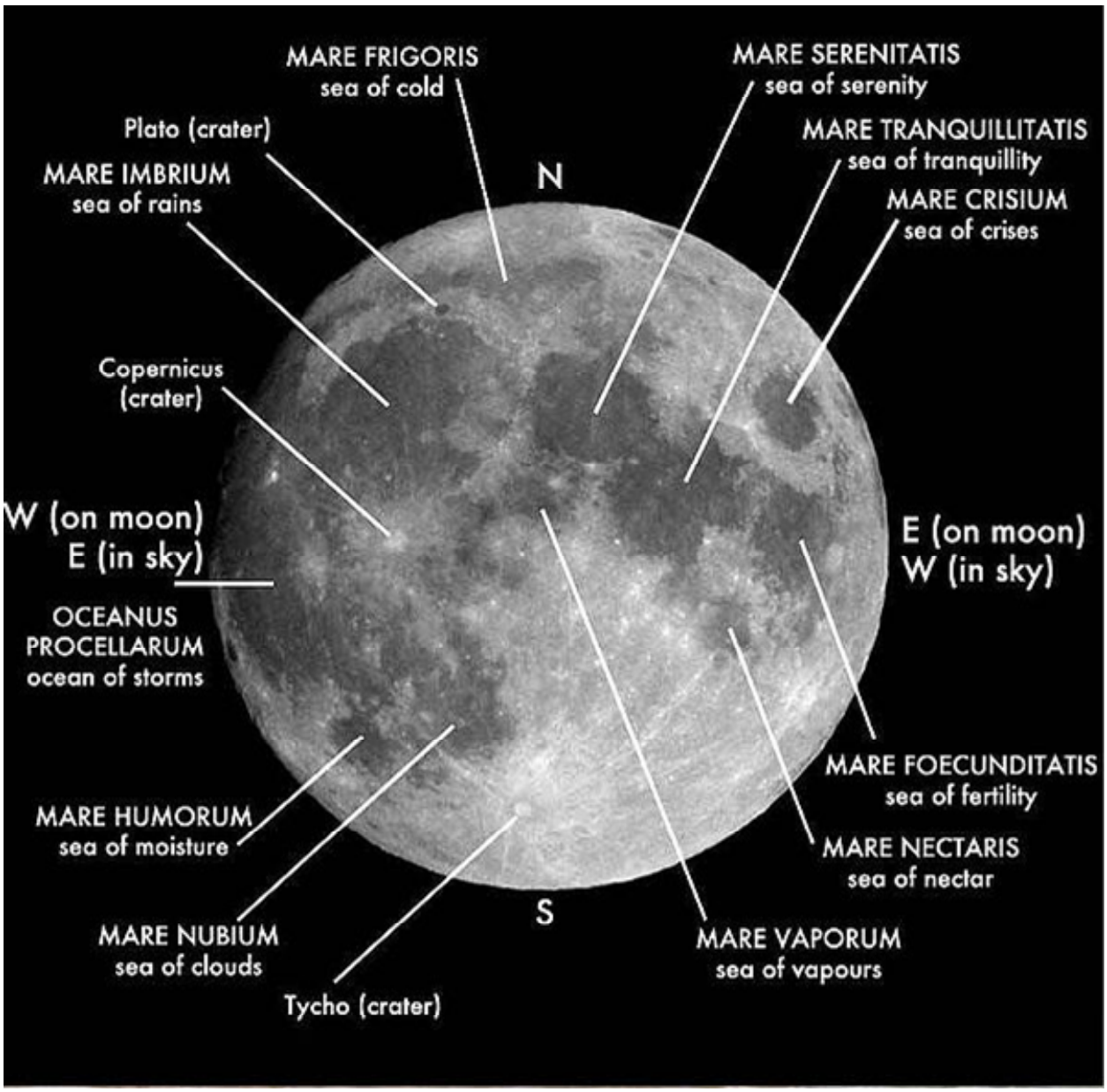
MEMO

Question of the Month:

A new year is here and so we are going to get started… This month we are going to bring our studies closer to home. We are going to look at the moon. Our question this month is; there is a rare crater on the moon that has both an inner ring and a central peak and lies on the southern hemisphere on the far side of the Moon. What is its name?

Extra credit would be to give the long/lat and altitude of this crater.

C. HAVILAND

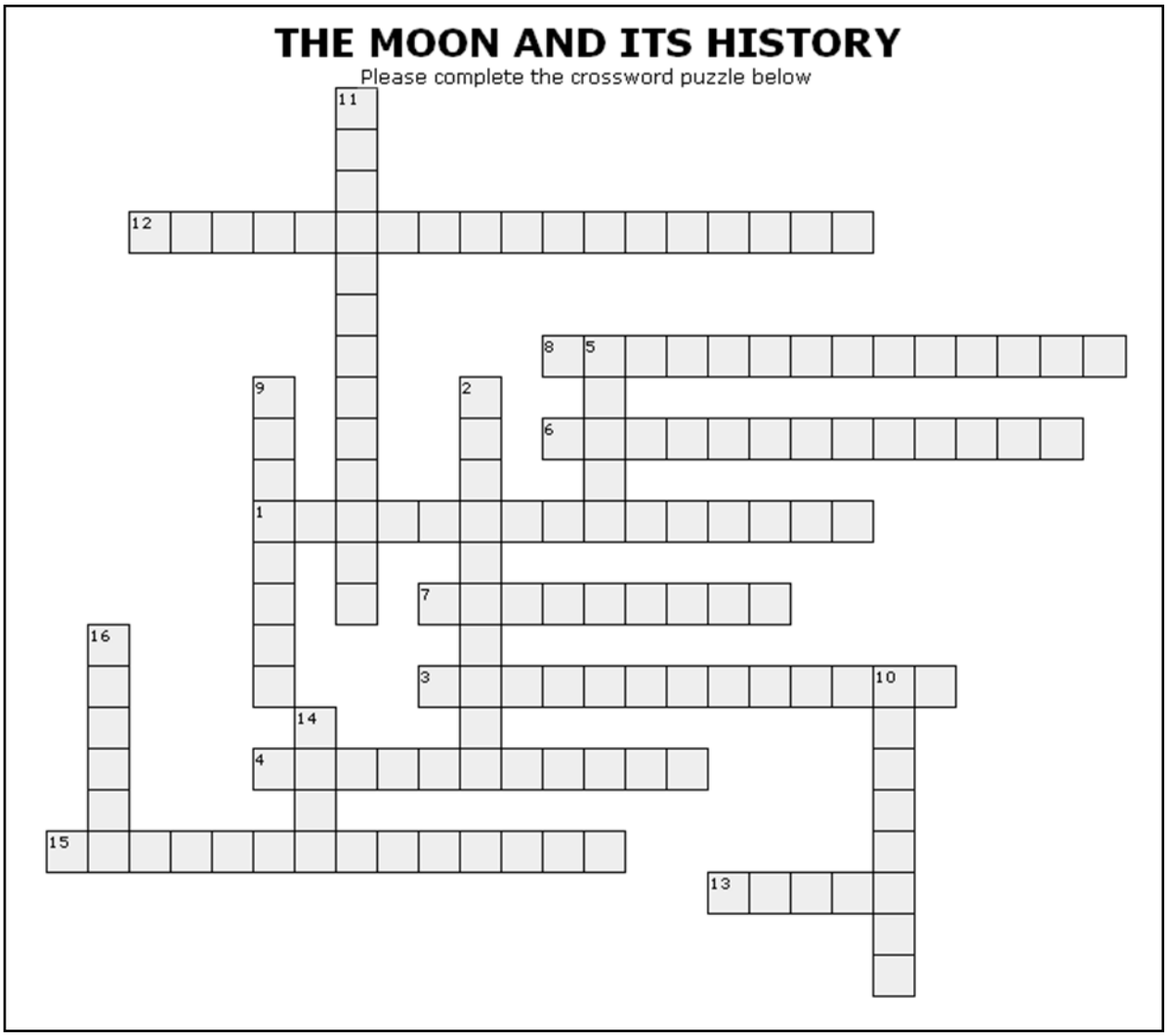


Lunar nearside with major maria and craters

NAME_____

THE MOON AND ITS HISTORY

Please complete the crossword puzzle below



Across:

1. A lunar mare that sits just to the east of Mare Imbrium on the Moon, also called the Sea of Serenity"
3. The landing site for Apollo 12
4. The region that might be well suited for a moon colony or a lunar base.
6. Winding, meandering channels or valleys in the lunar surface
7. A large lunar impact crater that lies on the southern hemisphere on the far side of the Moon
8. An accomplished Japanese photographer and amateur astronomer, author of Geological Features & Watching Guide for the Moon.
12. The landing site for Apollo 16
13. The rim of this crater was chosen as the target of the Surveyor 7 mission.
15. The landing site for Apollo 15

Down:

2. A lunar crater located in eastern Oceanus Procellarum.
5. The lunar module name for Apollo 16
9. The landing site for Apollo 14
10. Apollo 15 was the first of the three J_____.
11. The preferred landing point for Apollo 17 was called _____.
14. The Japanese lunar mission, launched in Sept, 2007.
16. A princess in Japanese medieval folklore who came from and returned to the moon.

PLEASE NOTE THAT THIS IS JUST A TIP OF THE INFORMATION AND HISTORY OF THE MOON. THIS IS JUST TO GET YOU STARTED. WE PLAN TO DO MORE STUDYING ABOUT THE MOON, AFTERALL, ONE OF YOU COULD BE PART OF THE COLONIZATION ON THE MOON, PRIOR TO SHOOTING OFF FOR MARS..JUST THINK OF THE POSSIBILITIES AND YOU WILL KNOW ALL ABOUT IT AND NOT GET LOST!!

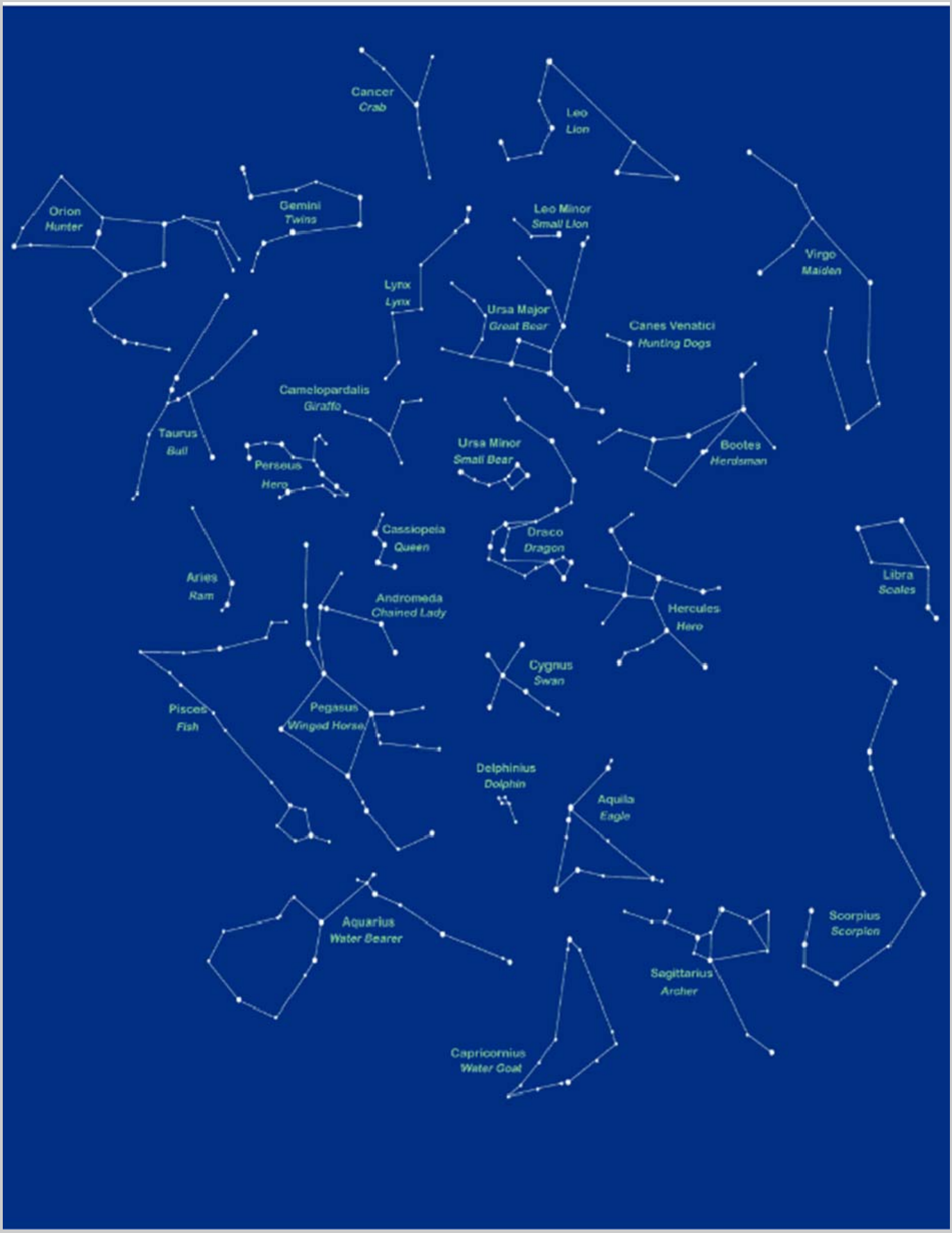
A LITTLE BIT ABOUT THE MOON

FIND THE WORDS

O B X Z P O R Z H K J I T A N U X Y R Z W M W N W L P S Z P
F C B Z S G H T D E S C A R T E S M O U N T A I N S I N H P
A L I R F S D P M C P M P U F E T I F T Z L P I M S H Q A E
N Q A F V B D R G N O U B P V Y Q S F M H Q X K A E A U E K
Q U N F R F I L I W N P B D Y M W E Q H B G C G R L D K N Q
T B T A P T U Q R P V I E R E Q J U P H V L R N I L L U R E
N K O Y J C A X A E E U K R Z O H Z F X Y F T E U I E B G T
W I N S Q E Q V F S I P Q I N R B K T R I V R D S R Y L P F
R Q I C P U M A R E S E R E N I T A T I S C U D H S A M I E
N O A E J Z F G G I R A I L E H C L H N L V L X I U P Y H D
S I D B N A V W P H O J Y S L J A U U J B O I C L O E N Z Q
R J I O Y K X F A R P B N O B I J T S O P D Q E L U N N L Q
D W I T K C S A U F F D S Z J K W Y H U X R Z J S N N T E V
M R D Z I R Y A E K V D R Y E S R C E F V J G U E I I M V N
O E X R J U M R W M U Y Z I K H Y M M U L M L S W S N K U V
R J K M G A L V U G E H M D N T A K N Q N V D L J R E J P V
B L Q A R M K B V C O J W H C M O T O M A R O S H I R A O J
Q I K F T I B F W R S Y V Q G V F B A K R P I W M L J A R W
O X D S P S Y S C H R M C C T N A D O U F X W E G B P J S O
J I X M G S I F W C V F R D B O D F N Q R P S F F X L Q Y U
Z U E L G I I Z X D W S Q O M Y K F L O V U A Q H F J F U O
B H Y M Y O O U Z U R Q S A T B T L V I J B S D E B I N U Z
O L D H R N I T Z T O Z H L W S A H L X K W M L L R U W E M
Z M A S Q S Z U V C J N G B N J F N O V H J M Z I A G I P Z
C K Y A V X M J W W K I X C U B I O L Z Y J D B O T C X C S
W D A K W P R I M F W X X B F A J W N Q U I X W H P T R O R
B D N R B F X K N G U P K V E F T P D A J Y L Y Z Z F R C K
M W W Q C U B Y V X Q O X C S J I L K J E T P B E X Y J O L
W Z Y K S U M J H G V R J Q Q D H J D X V C Q U X H U F B W
N E J C G E T G T V M K K R Y W H N Z E C D O W R X H Q U X

- ANTONIADI
- TYCHO
- MOTOMAROSHIRAO
- FRAMAURO
- DESCARTESMOUNTAINS
- MARESERENITATIS
- JAXA
- COPERNICUS
- SINUOUSRILLES
- HADLEYAPENNINE
- ORION
- KAGUYA
- MARIUSHILLS
- OCEANOFSTORMS
- MISSIONS
- TAURUSLITTROW

LEARN YOUR CONSTELLATIONS



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