Starscan

Johnson Space Center Astronomical Society

Volume 25, Number 7 July 2009

FORTY YEARS AND COUNTING!

TABLE OF CONTENTS

MESSAGE FROM THE *EL PRESIDENTE* — 3

LETTER FROM THE EDITOR & LETTERS TO THE EDITOR — 3
CONNIE HAVILAND

STAR PARTY DATES — 4
BOB TAYLOR

WHAT'S HAPPENING AT THE GEORGE!!! —4
CYNTHIA GUSTAVA

FAMILY SPACE DAY SCHEDULE/LPI -4
KATY BUCKALOO

WHAT IT IS LIKE TO SHUTTLE TRANSPORTER PILOT - 5-7
JACK NICKEL

BETELGEUSE SHRINKING? - 8
CONTRIBUTED BY JIM WESSEL

WORK TO START ON THE DEEPEST UNDERGROUND LAB - 9
CONTRIBUTED BY BOB TAYLOR

SORTING OUT THE GREEK GODS - 10
CONTRIBUTED BY STEVE AND AMELIA GOLDBERG

SUGGESTIONS FOR OBSERVING - 11-12
CONNIE HAVILAND

MAGAZINE SUBSCRIPTION MESSAGE - 13

FOR SALE — 13

MEMBERS' GALLERY - 14

LOCAL ASTRONOMY CLUB INFORMATION— 15

LIST OF OFFICERS AND THE "LIGHTER SIDE"—16

***ASTRONOMY AND KIDS* —17-24**
CONNIE HAVILAND

Un mensaje del Presidente
(A message from the President)

Folks:

It has been one very hot period here for the last few weeks. I don't envy anyone that ventured outside more than necessary. I want to extend my heartfelt thanks to former President and elder John Erickson, and Jim Wessel for covering the June meeting. As may of you know, we saw everything but the lift-off. We hope to catch one soon to complete the story.

This month we have the pleasure of having Dr. David Garrison from the University of Houston, ClearLake as our speaker. A title is forthcoming but he has mentioned the theme of "Gravitational Wave Astronomy" as a possible title.

Also of interest within the Starscan is JSCAS's own Triple Nickel's personal account of flying the 747 with Atlantis on top. What a story! Most of all, DON'T forget, we have the 40th Lunar Landing gig at UHCL this month!!

David Haviland

LETTER FROM THE EDITOR
By Connie Haviland

Hi Everyone!!

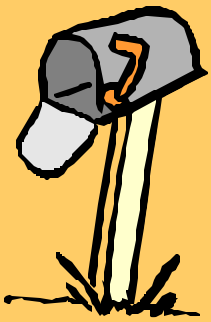
This month Dave, John and I went to Kennedy Space Center. We were looking forward to the launch of the STS-127. I have been trying to get back on track after 9 days in Orlando and it has been tough. I was going to do an article on the STS-127 launch, but it didn't happen. So, I pulled a few things together and here it is.

I have a special article this month, given to me on June 4th and it is from our very own Triple Nickel...check it out. The articles submitted by Bob Taylor and Jim Wessel are pretty interesting, too. As always, our members come through with some great articles.

Enjoy…..Connie

LETTER TO THE EDITOR

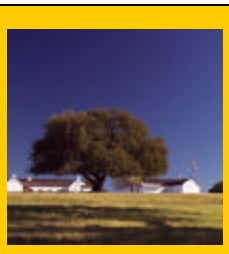
Nothing this month!!



Star Parties for 2009

Bob Taylor

JUNE—AUGUST	OPEN
SEPTEMBER 12	MOODY GARDENS
OCTOBER 15-18	FORT McKAVETT
NOVEMBER 6	HAAK WINERY
DECEMBER	OPEN



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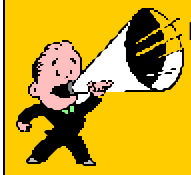
What's Happening at the George!!!

Cynthia Gustava



Need volunteers

Friday Night Groups (all times are 19:30 to 22:30)…Volunteers for domes and deck scopes are needed. Bring those laser pointers and instruct the visitors on the constellations and bright objects! Contact Cynthia Gustava at cynm31@att.net to volunteer or for more information.

July 10 – Pack 1402 Overnight (Full)

July 17 – HMNS Member's Night – Second of the summer!

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

July 04 – Mary Lockwood and Cynthia Gustava mplockwood@att.net or cynm31@att.net

July 11 – Mary Lockwood and Joe Mills mplockwood@att.net or k5jmm@yahoo.com

July 18 – Barbara Wilson and Buster Wilson gobserve@consolidated.net or retsub@ix.netcom.net

July 25 – Carl Sexton and Justin McCollum carlsexton@hotmail.com or justinmccollum@hotmail.com

Lunar and Planetary Institute

July 18th, 10am – 1pm – Rediscover Apollo

August 15, 8 p.m. – Night Viewing of Saturn and Globular Clusters

September 19, 10 a.m. – 1 p.m. – Solar System Extremes

October 17, 7 p.m. – Night Viewing of the Moon

November 21, 10 a.m. – 1 p.m. – Near Earth Objects

December – No Family Space Day Scheduled. Enjoy your holidays!

Please note: Each child must be accompanied by a responsible parent or adult the entire time they are visiting the LPI.

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

What it is like to Shuttle Transporter Pilot

Jack Nickel

JUNE 4, 2009

Well, it's been 48 hours since I landed the 747 with the shuttle Atlantis on top and I am still buzzing from the experience. I have to say that my whole mind, body and soul went into the professional mode just before engine start in Mississippi, and stayed there, where it all needed to be, until well after the flight...in fact, I am not sure if it is all back to normal as I type this email. The experience was surreal. Seeing that "thing" on top of an already overly huge aircraft boggles my mind. The whole mission from takeoff to engine shutdown was unlike anything I had ever done. It was like a dream...someone else's dream.

We took off from Columbus AFB on their 12,000 foot runway, of which I used 11,999 1/2 feet to get the wheels off the ground. We were at 3,500 feet left to go of the runway, throttles full power, nose wheels still hugging the ground, copilot calling out decision speeds, the weight of Atlantis now screaming through my fingers clinched tightly on the controls, tires heating up to their near maximum temperature from the speed and the weight, and not yet at rotation speed, the speed at which I would be pulling on the controls to get the nose to rise. I just could not wait, and I mean I COULD NOT WAIT, and started pulling early. If I had waited until rotation speed, we would not have rotated enough to get airborne by the end of the runway. So I pulled on the controls early and started our rotation to the takeoff attitude. The wheels finally lifted off as we passed over the stripe marking the end of the runway and my next hurdle (physically) was a line of trees 1,000 feet off the departure end of Runway 16. All I knew was we were flying and so I directed the gear to be retracted and the flaps to be moved from Flaps 20 to Flaps 10 as I pulled even harder on the controls. I must say, those trees were beginning to look a lot like those brushes in the drive through car washes so I pulled even harder yet! I think I saw a bird just fold its wings and fall out of a tree as if to say "Oh just take me". Okay, we cleared the trees, duh, but it was way too close for my laundry. As we started to actually climb, at only 100 feet per minute, I smelled something that reminded me of touring the Heineken Brewery in Europe...I said "is that a skunk I smell?" and the veterans of shuttle carrying looked at me and smiled and said "Tires"! I said, "Tires??? OUR??

They smiled and shook their heads as if to call their Captain an amateur...okay, at that point I was. The tires were so hot you could smell them in the cockpit. My mind could not get over, from this point on, that this was something I had never experienced. Where's your mom when you REALLY need her?

The flight down to Florida was an eternity. We cruised at 250 knots indicated, giving us about 315 knots of ground speed at 15,000'. The miles didn't click by like I am use to them clicking by in a fighter jet at MACH .94. We were burning fuel at a rate of 40,000 pounds per hour or 130 pounds per mile, or one gallon every length of the fuselage. The vibration in the cockpit was mild, compared to down below and to the rear of the fuselage where it reminded me of that football game I had as a child where you turned it on and the players vibrated around the board. I felt like if I had plastic clips on my boots I could have vibrated to any spot in the fuselage I wanted to go without moving my legs...and the noise was deafening. The 747 flies with its nose 5 degrees up in the air to stay level, and when you bank, it feels like the shuttle is trying to say "hey, let's roll completely over on our back"..not a good thing I kept telling myself. SO I limited my bank angle to 15 degrees and even though a 180 degree course change took a full zip code to complete, it was the safe way to turn this monster.

Airliners and even a flight of two F-16s deviated from their flight plans to catch a glimpse of us along the way. We dodged what was in reality very few clouds and storms, despite what everyone thought, and arrived in Florida with 51,000 pounds of fuel too much to land with. We can't land heavier than 600,000 pounds total weight and so we had to do something with that fuel. I had an idea...let's fly low and slow and show this beast off to all the taxpayers in Florida lucky enough to be outside on that Tuesday afternoon. So at Ormond Beach we let down to 1,000 feet above the ground/water and flew just east of the beach out over the water. Then, once we reached the NASA airspace of the Kennedy Space Center, we cut over to the Banana/Indian Rivers and flew down the middle of them to show the people of Titusville, Port St.Johns and Melbourne just what a 747 with a shuttle on it looked like. We stayed at 1,000 feet and since we were dragging our flaps at "Flaps 5", our speed was down to around 190 to 210 knots. We could see traffic stopping in the middle of roads to take a look. We heard later that a Little League Baseball game stop to look and everyone cheered as we became their 7th inning stretch. Oh say can you see…

After reaching Vero Beach, we turned north to follow the coast line back up to the Shuttle Landing Facility (SLF). There was not one person laying on the beach...they were all standing and waving! "What a sight" I thought...and figured they were thinking the same thing. All this time I was bugging the engineers, all three of them, to re-compute our fuel and tell me when it was time to land. They kept saying "Not yet Triple, keep showing this thing off" which was not a bad thing to be doing.

However, all this time the thought that the landing, the muscling of this 600,000 pound beast, was getting closer and closer to my reality. I was pumped up! We got back to the SLF and were still 10,000 pounds too heavy to land so I said I was going to do a low approach over the SLF going the opposite direction of landing traffic that day. So at 300 feet, we flew down the runway, rocking our wings like a whale rolling on its side to say "hello" to the people looking on! One turn out of traffic and back to the runway to land...still 3,000 pounds over gross weight limit. But the engineers agreed that if the landing were smooth, there would be no problem. "Oh thanks guys, a little extra pressure is just what I needed!" So we landed at 603,000 pounds and very smoothly if I have to say so myself. The landing was so totally controlled and on speed, that it was fun. There were a few surprises that I dealt with, like the 747 falls like a rock with the orbiter on it if you pull the throttles off at the "normal" point in a landing and secondly, if you thought you could hold the nose off the ground after the mains touch down, think again...IT IS COMING DOWN!!! So I "flew it down" to the ground and saved what I have seen in videos of a nose slap after landing. Bob's video supports this! :8-)

Then I turned on my phone after coming to a full stop only to find 50 bazillion emails and phone messages from all of you who were so super to be watching and cheering us on! What a treat, I can't thank y'all enough. For those who watched, you wondered why we sat there so long. Well, the shuttle had very hazardous chemicals on board and we had to be "sniffed" to determine if any had leaked or were leaking. They checked for Monomethylhydrazine (N2H4 for Charlie Hudson) and nitrogen tetroxide (N2O4). Even though we were "clean", it took way too long for them to tow us in to the mate-demate area. Sorry for those who stuck it out and even waited until we exited the jet.

I am sure I will wake up in the middle of the night here soon, screaming and standing straight up dripping wet with sweat from the realization of what had happened. It was a thrill of a lifetime. Again I want to thank everyone for your interest and support. It felt good to bring Atlantis home in one piece after she had worked so hard getting to the Hubble Space Telescope and back.

Triple Nickel NASA Pilot

Betelgeuse Shrinking?

By Khadijah Rentas

CNN

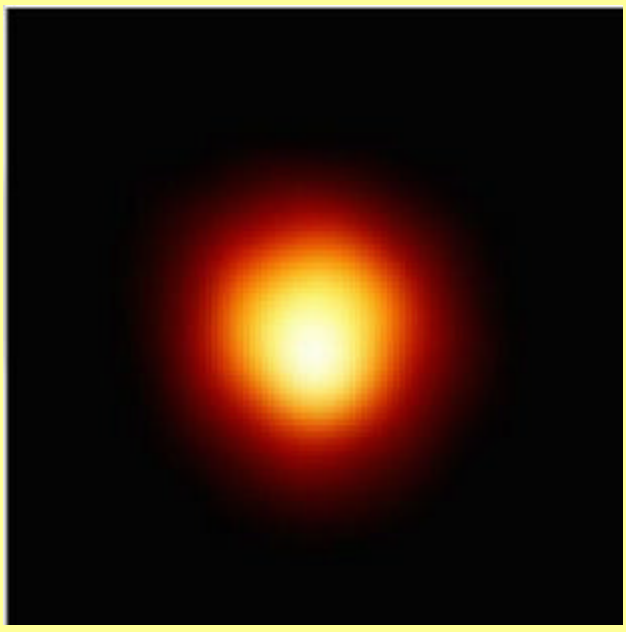
(CNN) -- You've probably heard of a shooting star. But a shrinking star? That's what researchers at the University of California, Berkeley, said has happened to the red supergiant star Betelgeuse. Almost the brightest star in the Orion constellation and visible to the naked eye, Betelgeuse (pronounced "beetle juice") has shrunk 15 percent over 15 years, and scientists have said they have no idea why. "We really don't know," said Nobel Prize-winning physicist Charles Townes. "It's a puzzle." Betelgeuse, about 600 light-years away according to NASA, has lost in its radius a distance comparable to the orbit of Venus, according to Townes.

Townes, who won the 1964 Nobel Prize in physics, began measuring the red giant 20 years ago, he said. He uses one of his own inventions, an Infrared Spatial Interferometer first completed in 1988, which consists of three telescopes with base lines of 4, 8 and 12 meters. Over the past 15 years, Townes said, Betelgeuse has shrunk in diameter more rapidly each year. It is the first time, using a consistent measuring tool, that scientists have noticed a marked change in the size of the red supergiant, said Berkeley physicist Edward Wishnow, who has studied the star with Townes for three years. A variety of measuring tools exist, Wishnow said, but other scientists have not observed a similar change.

The other part of this sci-fi mystery is what happens next. Although shooting stars aren't actually stars at all -- they are meteoroids -- red supergiant stars are stars, and those like Betelgeuse are not known to change in size, Townes said. But varying brightnesses of red supergiants have been recorded, and as stars become smaller, they tend to become brighter as they become hotter. However, as Betelgeuse has shrunk, it has not changed in brightness, Wishnow said. All the scientists have now are unanswered questions. "Is it going to collapse or explode? It's a surprise," Townes said. "If it shrinks, it might get brighter because it'll get hotter, or it might explode and get brighter. If it explodes, well, it might produce a lot of gas, and a lot of stuff would be thrown out. It might then be a very small bright star, or it might even be a black hole. An explosion would be very surprising."

For now, scientists will keep their eyes to the sky.

(Contributed by James Wessel)



We go to space to explore and experiment. Here is an article submitted by our own Bob Taylor that shows that we are looking within ourselves to include Earth itself.

Work to start on the deepest underground lab
At 4,850 foot below surface, site is ideal for experiments on dark matter

By Dirk Lammers

updated 6:16 p.m. CT, Mon., June 22, 2009

SIOUX FALLS, S.D. - Far below the Black Hills of South Dakota, crews are building the world's deepest underground science lab at a depth equivalent to more than six Empire State buildings — a place uniquely suited to scientists' quest for mysterious particles known as dark matter. Scientists, politicians and other officials gathered Monday for a groundbreaking of sorts at a lab 4,850 foot below the surface of an old gold mine that was once the site of Nobel Prize-winning physics research.

The site is ideal for experiments because its location is largely shielded from cosmic rays that could interfere with efforts to prove the existence of dark matter, which is thought to make up nearly a quarter of the mass of the universe. The deepest reaches of the mine plunge to 8,000 feet below the surface. Some early geology and hydrology experiments are already under way at 4,850 feet. Researchers also hope to build two deeper labs that are still awaiting funding from Congress.

"The fact that we're going to be in the Davis Cavern just tickles us pink," said Tom Shutt of Case Western Reserve University in Cleveland, referring to a portion of the mine named after scientist Ray Davis Jr., who used it in the 1960s to demonstrate the existence of particles called solar neutrinos. Davis and a colleague named John Bahcall won a share of the 2002 Nobel Prize for physics for their work.

The old Homestake Gold Mine in a community called Lead (pronounced LEED) was shut down in 2001 after 125 years. Pumps that kept the mine dry were turned off years ago, so workers have been drying it out to prepare for the new research. Before the labs are built, crews must also stabilize the tunnels and install new infrastructure. The lab at 4,850 feet is not much to look at yet. A rusty orange film covers the walls, floors, ceilings and debris left behind by miners.

The first dark matter experiment will be the Large Underground Xenon detector experiment — or LUX — a project to detect weakly interacting particles that could give scientists greater insight into the Big Bang explosion believed to have formed the universe. Shutt, along with Brown University's Rick Gaitskell and nearly a dozen collaborators will work at the site to search for dark matter, which does not emit detectable light or radiation. But scientists say its presence can be inferred from gravitational effects on visible matter. Scientists believe most of the dark matter in the universe contains no atoms and does not interact with ordinary matter through electromagnetic forces. They are trying to discover exactly what it is, how much exists and what effect it may have on the future of the universe. Physicists have said that without dark matter, galaxies might never have formed. By learning more about dark matter, they hope to understand better whether the universe is expanding or contracting.

The research team will try to catch the ghostly particles in a 300-kilogram tank of liquid xenon, a cold substance that is three times heavier than water. If they tried to detect dark matter above ground, the highly sensitive detector would be bombarded by cosmic radiation. Scientists hope to start construction on the two deepest labs by 2012 and open them by 2016. The projects are expected to cost $550 million.

Technician Bill Heisinger drills holes in the shaft wall for a plaque June 22 in a dedication ceremony the Sanford Underground Science and Engineering Laboratory at the former Homestake Gold Mine in Lead, S. D. Before the labs are built, crews must also stabilize the tunnels and install new infrastructure.

Sorting Out the Greek Gods

The planets along with several constellations and other night sky objects are named for gods of ancient Greece, although most are now known by their counterpart in later Roman religion.

Sorting out the relationship among the gods is complicated as most religious stories from antiquity have multiple versions, yet we'll introduce some of the better-known members of this family of Greek gods (with their Roman names in parentheses).

It all began in a void of nothingness called Chaos, out of which arose the first goddess Gaia (Earth). Without need of a male, she gave birth to Uranus, the god of the sky and the first ruler of the universe. He became Gaia's mate and together they produced many children, some of whom were the Titans

One of the Titans was Cronus (Saturn) who married his sister Rhea; they had six children: Zeus, Poseidon, Hades, Demeter, Hestia, and Hera.

Uranus, fearing his children would rebel against him, had them imprisoned, but with help from Gaia, Cronus and the Titans escaped and defeated Uranus. But he too fell victim to his own children who defeated him and the Titans.

His three sons divided the universe among themselves. Zeus (Jupiter) became god of the heavens and earth, and king of the gods. Poseidon (Neptune) became god of the seas and earthquakes. Hades (Pluto) became god of the underworld (later incorporated into other religions as "hell").

Zeus (photo below), the most important of the gods, married his sister Hera, and fathered several children with her, one of whom was Ares (Mars). He fathered many more children by other women, some of whom were immortal goddesses and some mortal humans.

Some of the well-known were Aphrodite (Venus), goddess of love and beauty; Apollo, god of youth; Artemis (Diana), the huntress goddess; Hermes (Mercury), messenger of the gods; Perseus, a Greek hero; Heracles (Hercules), god of strength and courage and Greek hero; Helen of Troy, and the Muses, gods of creativity.

Among his grandchildren were Eros (Cupid), son of Ares and Aphrodite; Pan, son of Hermes; and Asclepius (Ophiuchus), son of Apollo and god of healing.

Now with this introduction to some of the Greek gods and goddesses, maybe you'll feel more at home under the night sky.

Contributed by Amelia & Steve Goldberg

See the Stargazer Web site at http://www.stargazerpaul.com

Some observing suggestions for July

July 1, 2009
Earth will reach its maximum distance from the Sun this week, roughly three million miles farther than when we were closest to the Sun in January. This point in Earth's year-long orbit is known as aphelion.

July 2, 2009
The planet Jupiter is one of the brightest objects in the sky. Only the Sun, Moon, and Venus regularly outshine it. Right now it rises before midnight and stands well up in the south at first light. It looks like a brilliant cream-colored star.

July 3, 2009
Antares, the bright orange star that represents the "heart" of the scorpion, is a little to the lower left of the Moon as darkness falls tonight. Antares is about 600 light-years away. It is one of the largest and brightest stars in the galaxy.

July 4, 2009
The Big Dipper stands in the northwest at nightfall with its bowl spilling toward the horizon. Follow the two stars that form the outer edge of the bowl to the right to find Polaris, the North Star. Despite its reputation, Polaris isn't very bright.

July 5, 2009
The Moon passes across the heart of the Milky Way galaxy tonight. The Moon lines up above the "spout" of the tea-pot-shaped constellation Sagittarius. The core of the Milky Way is in that same direction, about 27,000 light-years away.

Constellation
Scorpius and Sagittarius are still visible in the southern sky. They are filled with star clusters and nebulae. Look for the bright red star, Antares in Scorpius, as well as M6 and M7, two lovely star clusters. In Sagittarius.

Look for Vega in Lyra, Deneb in Cygnus, and Altair in Aquila. Together, they form the Summer Triangle. By the end of July, look for Cassiopeia. Andromeda rises around the same time.

Planets
Venus, the dazzling morning or evening star, outshines all the other stars and planets in the night sky. It begins the year in the evening sky, well up in the west as darkness begins to fall. It will disappear from view in late March as it passes between Earth and the Sun. It will return to view as a “morning star” by early April, and remain in the morning sky until December.

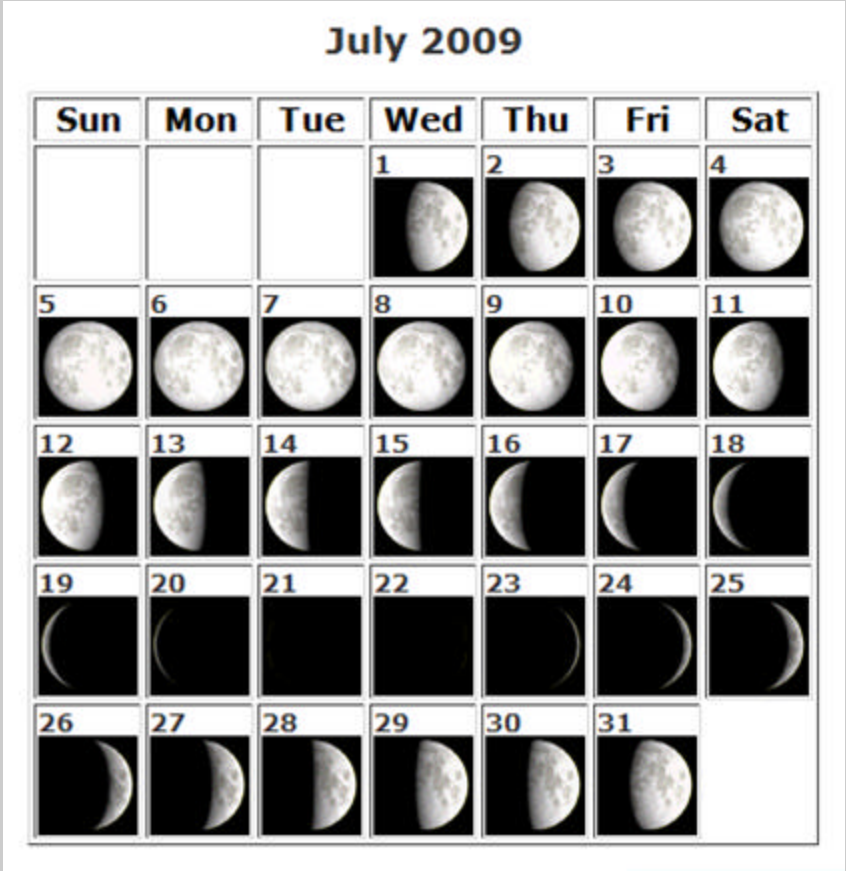
Mars climbs into view as a modest orange “star” quite low in the east or southeast at sunrise in late February. As the year progresses, it will pull farther away from the Sun and be visible for more of the night. By late in the year, it will in view for more than half of the night, and will outshine all but two planets and one star. Mars will stage beautiful encounters with Venus in mid-April and again in mid-July.

Saturn looks like a bright golden star. It spends the first eight months of the year in Leo, the lion, then moves into the neighboring constellation Virgo, the virgin. Saturn is at its best in early March, when it's closest to Earth. It disappears behind the Sun in late August, then returns to view in the morning sky in October

Check out the Milky Way and a blue moon this month. Jupiter is the only bright planet left in the evening sky. Try viewing it right after sunset while it is high in the sky. Neptune and Uranus will be rising in the east, Neptune around 10 p.m. late in July, Uranus around 11. Neptune is in Capricorn, Uranus in Aquarius.

Saturn and Venus have become morning planets. Venus rises at dawn at the beginning of July. By the end of the month, it is rising at 3 a.m. Saturn passes behind the sun, and by the end of July is rising around 4 a.m.

PHASES OF THE MOON FOR JULY



SUNRISE AND SUNSET FOR HOUSTON

72009 Lat: 29.8012 Lon: -95.3883 Timezone: GMT-6

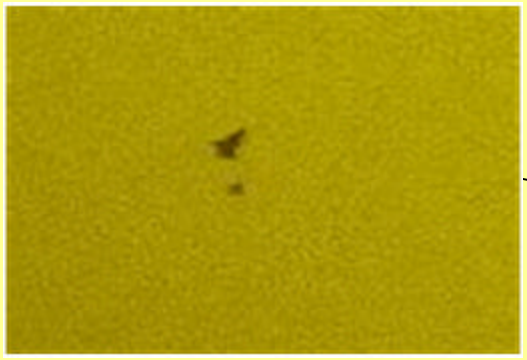
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 Rise 5:24 Set 19:26	2 Rise 5:25 Set 19:26	3 Rise 5:25 Set 19:26	4 Rise 5:25 Set 19:26
5 Rise 5:26 Set 19:26	6 Rise 5:26 Set 19:25	7 Rise 5:27 Set 19:25	8 Rise 5:27 Set 19:25	9 Rise 5:28 Set 19:25	10 Rise 5:28 Set 19:25	11 Rise 5:29 Set 19:24
12 Rise 5:29 Set 19:24	13 Rise 5:30 Set 19:24	14 Rise 5:30 Set 19:24	15 Rise 5:31 Set 19:23	16 Rise 5:31 Set 19:23	17 Rise 5:32 Set 19:23	18 Rise 5:33 Set 19:22
19 Rise 5:33 Set 19:22	20 Rise 5:34 Set 19:21	21 Rise 5:34 Set 19:21	22 Rise 5:35 Set 19:20	23 Rise 5:35 Set 19:20	24 Rise 5:36 Set 19:19	25 Rise 5:37 Set 19:19
26 Rise 5:37 Set 19:18	27 Rise 5:38 Set 19:17	28 Rise 5:38 Set 19:17	29 Rise 5:39 Set 19:16	30 Rise 5:40 Set 19:15	31 Rise 5:40 Set 19:15	

Folks:

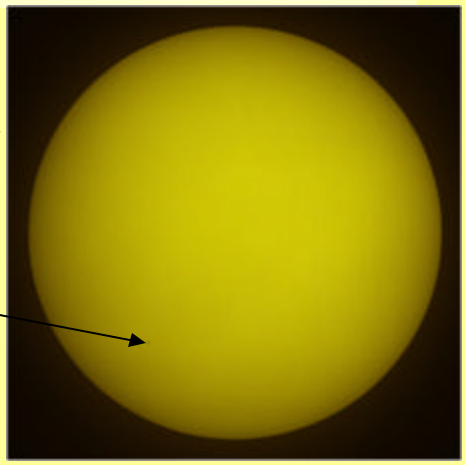
In times past, people that have wanted to take advantage of the club discount have had to write their check, put it in with the renewal slip, and then either mail it to me at my home or chase me down at a meeting. In most cases, within a week, I have sent out the renewal. Sometimes, and I don't really 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.

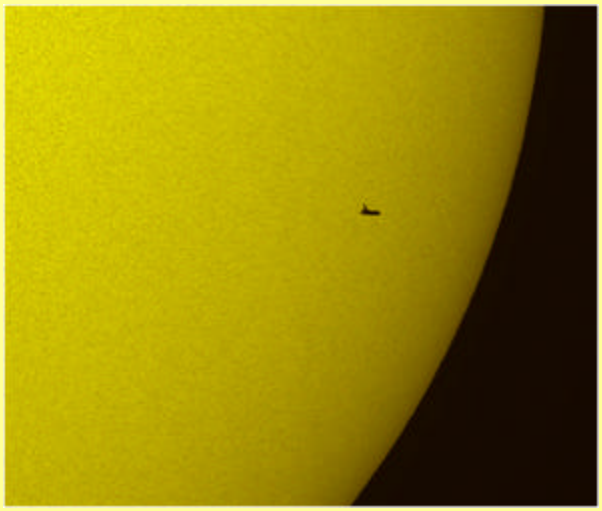
Clear skies,
David Haviland



The shuttle and Hubble on May 14th, 2009 .



May 12th of Atlantis (below)



Shuttle going over San Antonio (Contributed by a friend of John Cavuoti's, sent by John)

Taken by Bob Taylor at Kennedy Space Center

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

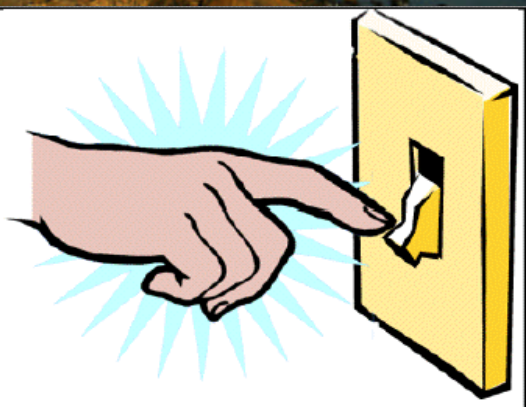
.Do you have a question about light pollution, protecting the night sky, or IDA's resources? **Get Help from IDA** http://www.darksky.org/mc/page.do?sitePageId=56399

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.
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

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

2008-Club Officers

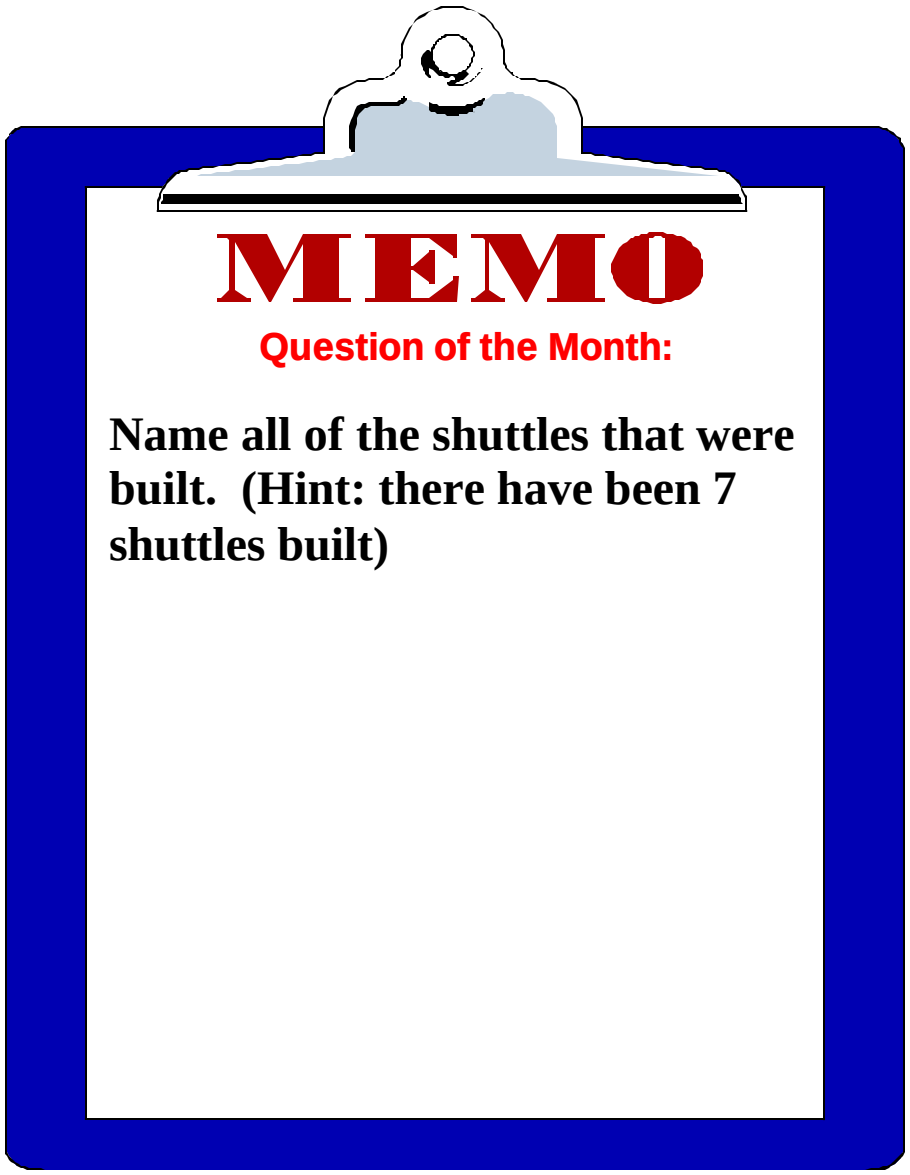
President – David Haviland
Vice President – Chris Randall
Secretary – David Haviland
Starscan Editor – Connie Haviland
Star Party Chairperson –
Librarian – Bob and Karen Taylor
Historian – Chris Randall
Scientific Expeditions – Paul Maley
Web Master—Chris Randall

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

Astronomy and Kids

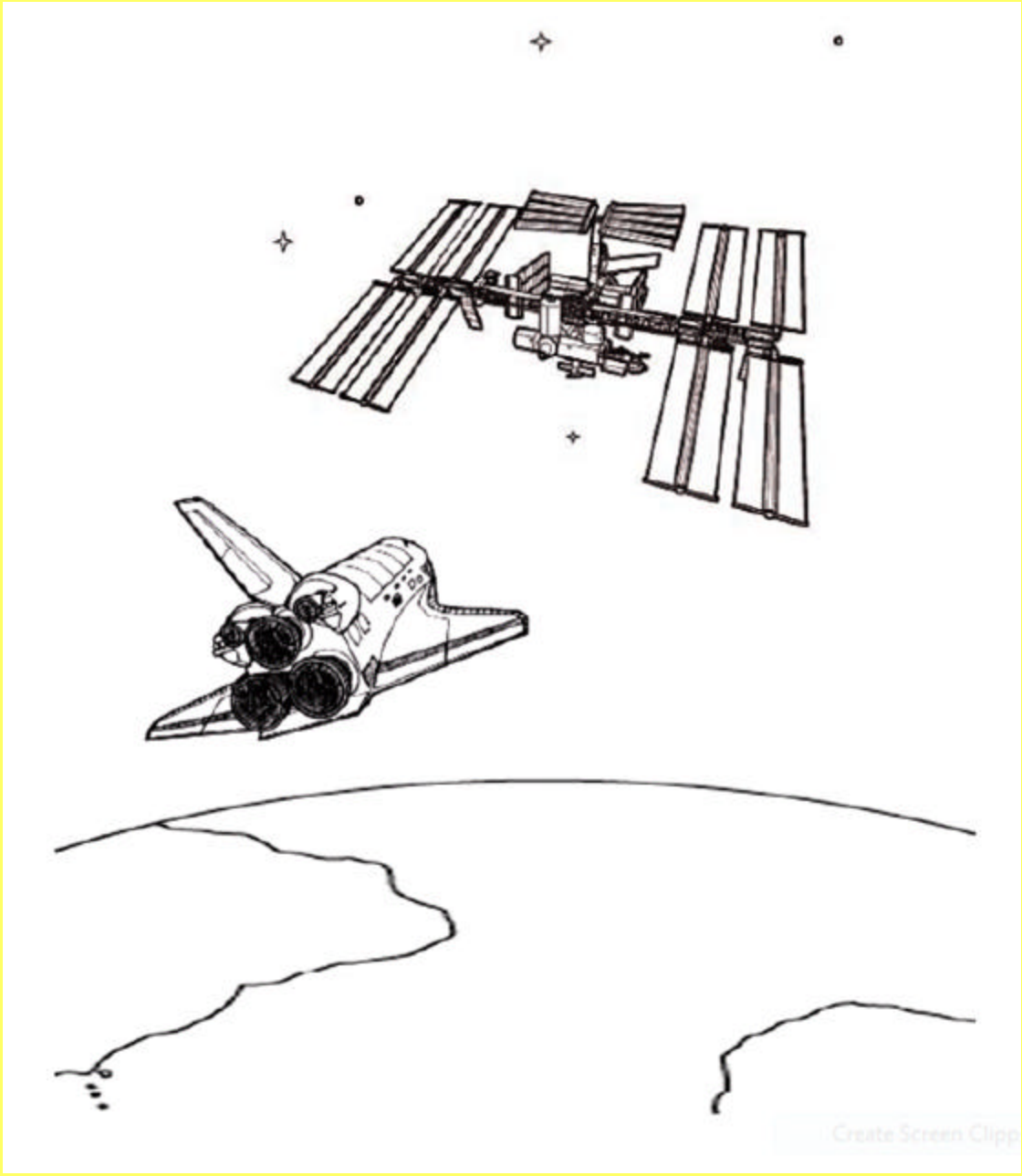
This is the section strictly for kids (or kids at heart). We will be including information, stories, ideas, puzzles or anything that has to do with astronomy. The only difference here is, it will be directed for children. We don't discourage parents or any other adult to get involved. In fact, we encourage 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!!



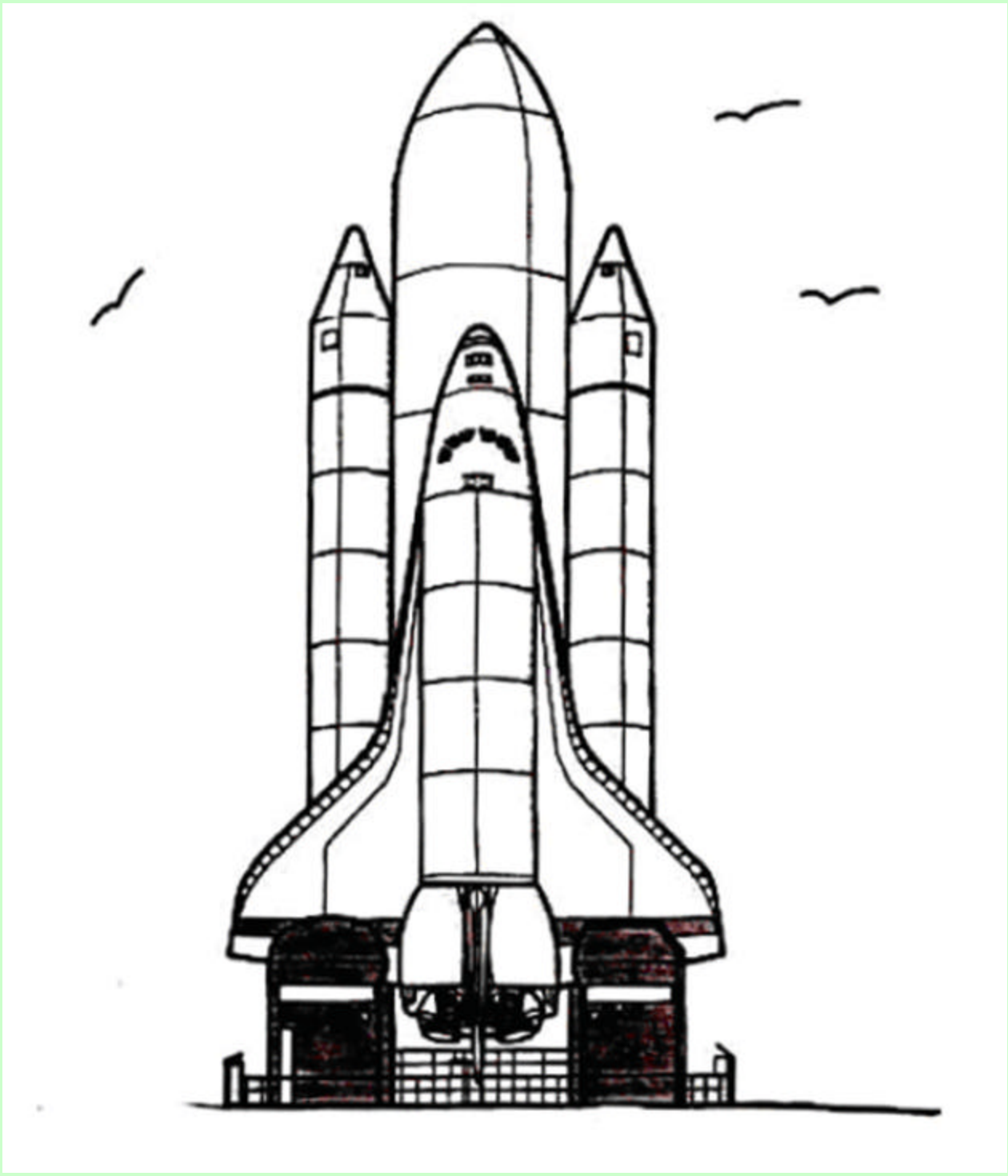
MEMO

Question of the Month:

Name all of the shuttles that were built. (Hint: there have been 7 shuttles built)



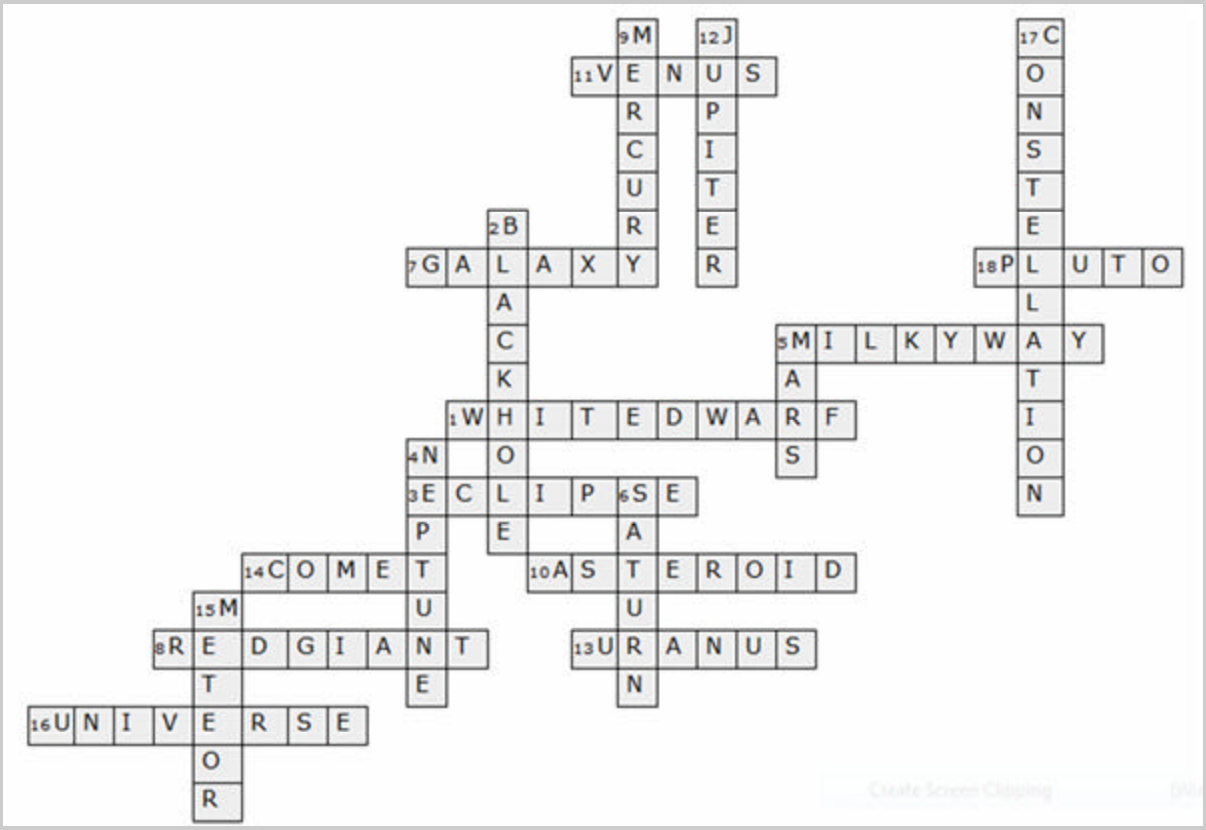
THIS MONTH IS ABOUT THE SHUTTLE AND THE INTERNATIONAL SPACE STATION



COLOR AND LEARN
ABOUT THE SHUTTLE

SOLUTIONS TO JUNE'S PUZZLES

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



SOLUTIONS cont'd

QUESTION OF THE MONTH:

Question: Define what is a planet and what is a dwarf planet

Answer: The definition of "planet" set in 2006 by the International Astronomical Union (IAU) states that in the Solar System a planet is a celestial body that:

- is in orbit around the Sun,
- has sufficient mass to assume hydrostatic equilibrium (a nearly round shape), and
- has "cleared the neighbourhood" around its orbit.

A non-satellite body fulfilling only the first two of these criteria is classified as a "dwarf planet", which is not a type of planet, while a non-satellite body fulfilling only the first criterion is termed a "small solar system body" (SSSB). Initial drafts planned to include dwarf planets as a subcategory of planets, but because this could potentially have led to the addition of several dozens of planets in the Solar System, this draft was eventually dropped. In 2006, it would only have led to the addition of three (Ceres, Eris and Makemake) and the reclassification of one (Pluto). The definition was a controversial one and has drawn both support and criticism from different astronomers, but has remained in use.

According to the definition, there are currently eight planets and five dwarf planets known in the Solar System. The definition distinguishes planets from smaller bodies and is not useful outside the Solar System, where smaller bodies cannot be found yet. Extrasolar planets, or exoplanets, are covered separately under a complementary 2003 draft guideline for the definition of planets, which distinguishes them from dwarf stars, which are larger.

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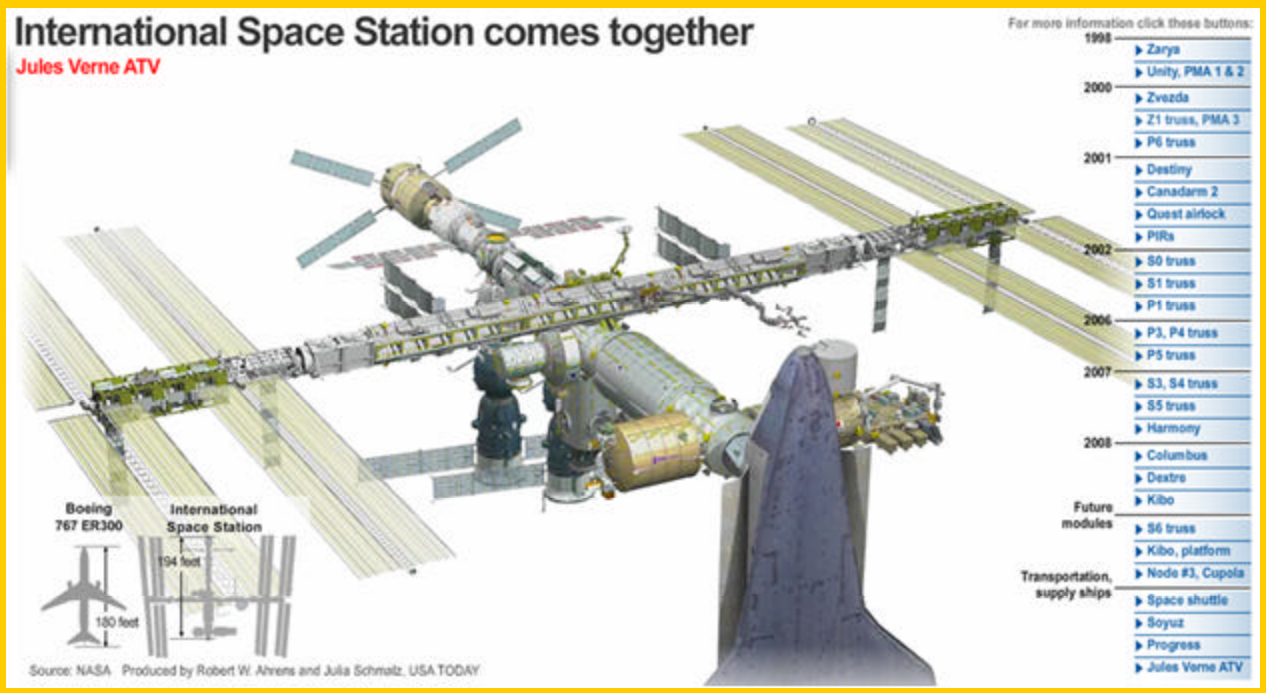
Cool website to see the building of the ISS structure at http://i.usatoday.net/tech/graphics/iss_timeline/flash.htm

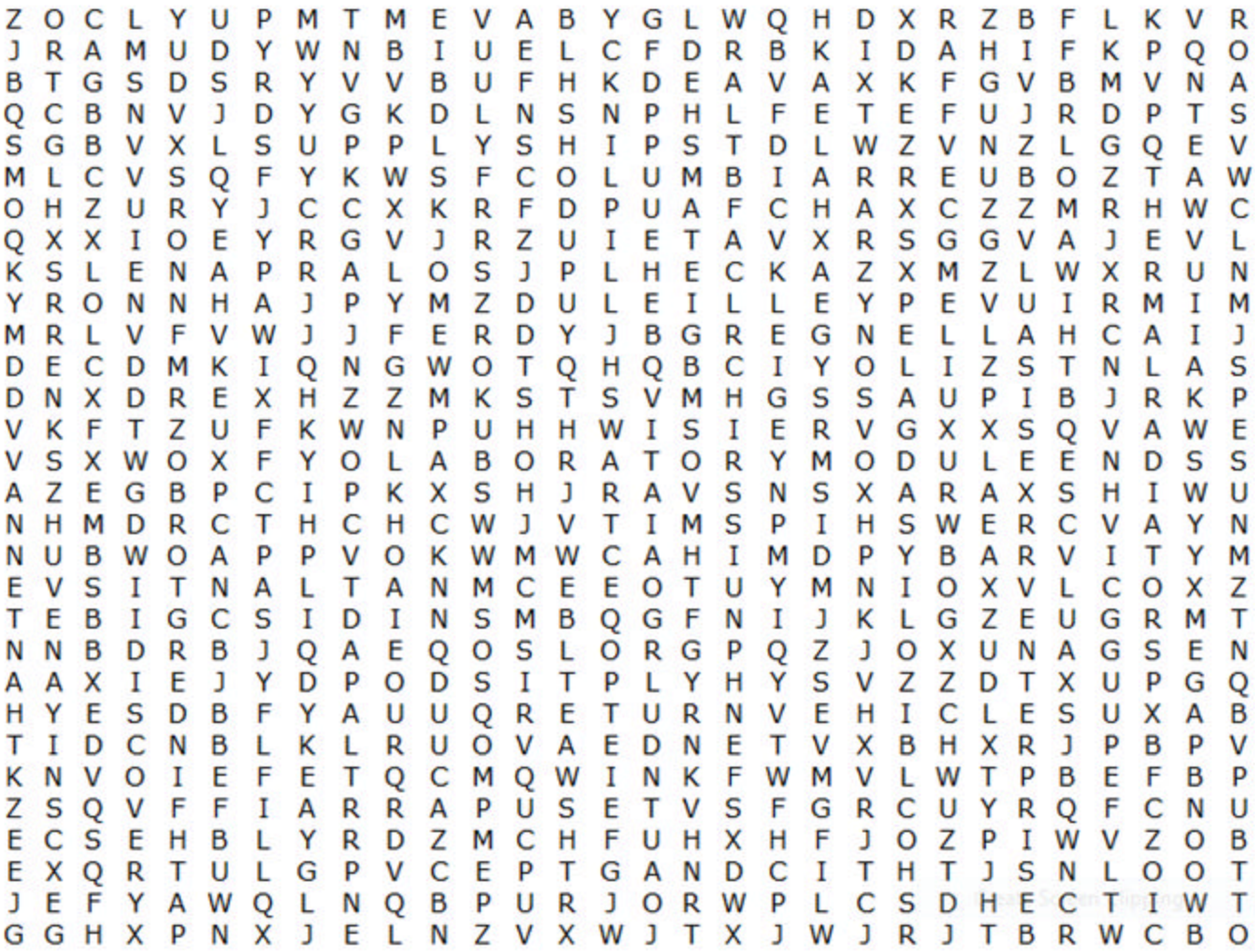


NAME _____

DATE _____

WORD SEARCH

INTERNATIONAL SPACE STATION



Crewships
Antenna
Habitation Module
Laboratory Module
Nodes
Return Vehicles

Service Module
Solar Panels
Supply Ships
Thermal Radiators
Truss Beams
Columbia

Challenger
Discovery
Endeavour
Atlantis
Enterprise
Pathfinder

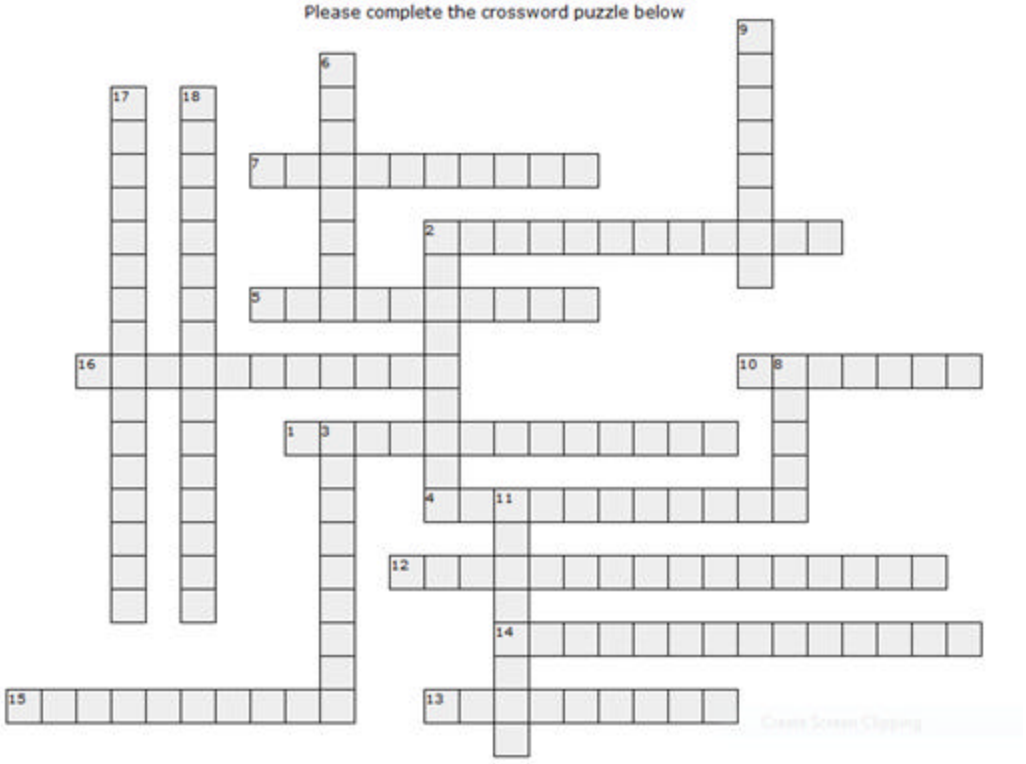
NAME _____

DATE _____

INTERNA-
SPACE

TIONAL
STATION

Please complete the crossword puzzle below



Across:

1. Houses systems to remove carbon dioxide and maintain temperature, oxygen, and air pressure levels.
2. Shuttle that was 1st called Enterprised and used for testing
4. what are used to remove waste and bring supplies
5. Shuttle 1st launched on Apr 4, 1983
7. Serve as the long backbone of the space station, holding the solar arrays, radiators, and modules together
10. Used to communicate with Mission Control and with arriving and departing spacecraft.
12. Houses equipment for microgravity experiments on materials and living things
13. Shuttle 1st launched on Aug 30, 1984
14. Provides an emergency egress from the ISS
15. Shuttle that was built for testing
16. Produce electricity for use during both the daylight and dark parts of the orbit (45 minutes of each in continuous rotation).

Down:

2. Delivers new crews to the ISS and brings returning crews back to Earth.
3. Shuttle 1st launched on May 7, 1992
6. Shuttle 1st launched on Apr 13, 1981
8. Connects sections and provides passageways and storage space.
9. Shuttle 1st launched on Oct 3, 1985
11. The Russian ship that was used as a supply ship
17. Has living quarters with showers, private compartments, and an eating area.
18. Vent excess heat built up by the space station into the cold of space.

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