Starscan

Johnson Space Center Astronomical Society

Volume 23, Number 7 July 2007

WE SAY "GOODBYE"
TO A REMARKABLE COUPLE
AND SEND OUR
BEST WISHES FOR A STAR-FILLED FUTURE
HOLD US A SPOT AT FT. MAC
KEN AND LISA LESTER

TABLE OF CONTENTS

Message from the el Presidente

Greetings!

Last week I met with the Astronomy Day Planning committee along with Connie and David Haviland and John Cavuoti to help outline responsibilities for our club this year. At our July meeting I'll have a handout that will give folks an idea of what's planned. I'll also be asking for volunteers for this event. And yes, we'll be passing the hat eventually, probably September. This is a fun event for the public and for us. (Volunteers are provided lunch for free). The All Clubs meeting the night prior will be held downtown again and the guest speaker will be Steven O'Meara.

I want to thank those who attended Ken and Lisa's party at the Hommel's home. Ken and Lisa have spent countless hours for our organization and we can't thank them enough for their efforts. We can however, ask them to continue to support us at our beloved Fort McKavett! Special thanks go to Matt and Lisa for hosting this event. If you left hungry or thirsty, it was your own fault! Great food and drinks along with Matt's special beer!

At our next meeting we'll welcome Bill Leach from them North Houston Astronomy Club who will provide a presentation on Arp Galaxies. Hope to see you there!!

Bob Taylor

Letter from the Editor

By Connie Haviland

This past month we said goodbye and best wishes to a couple that has been part of our club for so long. They provided us with so many things; The Starscan, Starparty coordinator, the library, starparty chair, and vice-president and the list goes on and on. Ken and Lisa Lester have been such a supportive couple in our club and we will miss them terribly. This month we showed them how much we appreciate all that they have contributed to JSCAS and how much we will miss them, terribly. Yet, Lisa has verbally told us that we at JSCAS have an "open" invitation to come visit any time at Ft. Mac and we have that on tape. Just ask Matt Hommel. In fact, check out the pictures from the party in this month's edition. Our best wishes, Ken and Lisa.

Thanks everyone for the pictures

Star Party Dates—2007

By Lisa Lester

Summer—too hot and too many mosquitoes (nothing planned)

August 11, 2007 Moody Gardens

September 8, 2007 Haak Winery

September 15, 2007 Moody Gardens

October 11 – 14, 2007 Fort McKavett

October 19, 2007 All Clubs Meeting

October 20, 2007 Astronomy Day at the George Observatory

November 10, 2007 Haak Winery

Any additions or changes will be announced at the July meeting

Thank you! Thank you! Thank you!
From the Lesters

Ken and I want to thank each & everyone who came to out going away party and contributed to our sundial!! You are all awesome!!!! The only gift we wanted was your presence at the party and that was asking a lot given the weather! As usual, the club outdid it self. The conversation was terrific, the food outstanding, the card hilarious & the gift brought tears to our eyes. It sure is a good thing that this wasn't a real good-bye! A special thanks to Lisa & Matt Hommel for hosting the party!! Ken and I know what kind of effort is put into preparing for a large number of friends descending on your house and we truly appreciate what you did for us and everyone in the club. Thanks also to Karen and Bob Taylor for coming early to help out. We also want to thank (???) Chris Randall for taking us off the list-server while you all plotted & planned! We sure were wondering what was going on!! We will miss being with everyone at the meetings and the star parties but we will look forward to seeing you at the Fort!

Ken & Lisa

NOTE FROM EDITOR: Now Ken can see how long he has been out in the garden working AND Lisa can make sure he has been out there that long…<<smile>>

Memories of Great Times With Wonderful Friends

I sit here looking at pictures and running memories through my head. My thoughts go back to October 2001 when Dave took me to my first Fort Mac Star Party. Lisa was the first person I met and it has been wonderful ever since. I met many people that weekend, but I started a very special friendship with two unique and wonderful people. Ken and Lisa Lester.

There are so many memories with Ken and Lisa; and, I try to figure out where to begin. I had always had an interest in astronomy, and was given the opportunity to join an organization of people who had a deep love for the subject. Yet, when I stop and think of all the people I have met, Ken and Lisa are right there at the top of the list of dear friends this organization has allowed me to have.

Lisa Lester. How do I describe the friendship I have with this caring and special person? She has been there for me, a newbie with JSCAS, through all the highs and lows. She has provided me an ear to listen when I need to talk to someone; a shoulder when I needed to cry on; advice that never, ever steered me wrong; a hug when I needed one desperately, her home, so I knew I had friends who cared to spend time with me, even spent time scrap-booking in Kemah…the list goes on and on.

Ken Lester. He has allowed me to make mistakes and never made me feel small and stupid. He was there when I needed questions answered and always answered me honestly and with sincerity. He has encouraged me to handle whatever challenges that I may face and commended me for what I accomplished. He made me laugh and enjoy whatever we were doing together. Granted, he has yanked my proverbial "chain" from time to time, but always with a loving and caring hand. A friend like Ken Lester, is truly hard to find.

Lisa and Ken are such a huge part of our club, here at JSCAS. They have provided it with starparties, Starscans, a starparty chair, a vice-president to our club, and a librarian. They have provided us BBQ partys for July 4th, fireworks for July 4th and New Years', a place at their table after a week at Ft. McKavett, a glass of wine at Haak and even a margarita in Cozumel. They have rarely, if ever missed a star party and Ft. Mac wouldn't be the same if they were not there. They have never missed a Ft. Mac trip, from what I can see in the pictures. Their knowledge and help are endless. They have given to our community and schools so much.

I cannot begin to thank them for all that they have given me. I will truly miss seeing them here in Houston, even though I know they have gone on to a place that they are and will be truly happy, Ft. McKavett. Raising a glass of Haak wine to you Ken and Lisa…here is to clear nights and a star-filled future and two truly wonderful and unique friends. My best wishes to you both.

Connie Haviland
Starscan editor

Scott's going away party @ the Lesters

HAAK STARPARTIES (AND LISA GOT US 3 TIMES A YEAR!!!)

Handling the paperwork/ documentation @ Ft. Mac

A-Day, manning the Children's table 2004

ALWAYS OUT IN THE COMMUNITY, TEACHING AND HELPING WITH LEARNING ABOUT ASTRONOMY

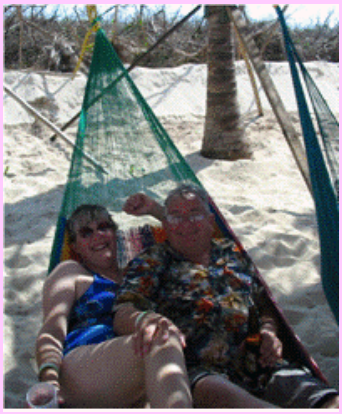
A-Day, Kiddos' table 2005

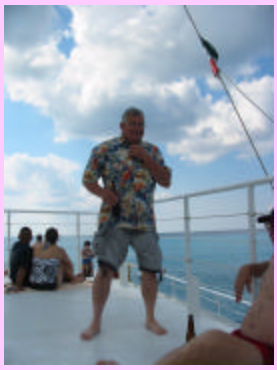
BRINGING ASTRONOMY TO THE KIDS @ MENARD ELEMENTARY SCHOOL, OCTOBER 2006

Junction Elementary School Presentations

Ft. McKavett 2005

Haak Winery
ruises
2005
&
2006





Who can forget the Many 4th of July at the Lesters?

FORT McKAVETT

Fort McKavett March 2006

FORT MCKAVETT STARPARTIES

OCTOBER 2001

MARCH 2003

MARCH 2004

OCTOBER 2004

MARCH 2005

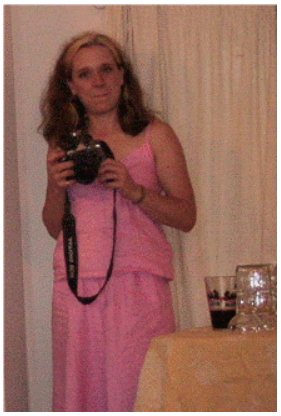
OCTOBER 2005

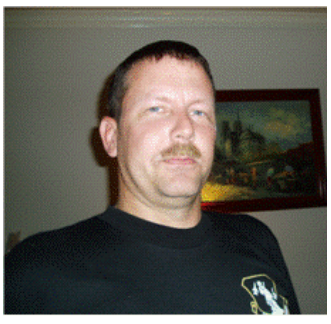
MARCH 2006

OCTOBER 2006

MARCH OF 2007 HAS BEEN SUCKED UP BY A BLACK HOLE AND THIS EDITOR WASN'T ABLE TO RETRIEVE IT.

THE PARTY





Taken by Piper Hommel

You will be missed by many

CHARLIE'S CHALLENGE

Charlie's Challenge

I read some months ago that a shortage of coltan was causing political upheaval and environmental damage in Africa. I didn't KNOW what coltan was, but I made a guess that it was an alloy of niobium (element 41) and tantalum (element 73). Niobium is usually referred to in industrial applications as columbium, and tantalum and niobium are in the same group of the periodic table. Such elements are often found together in the Earth, and in some cases it is cheaper just to smelt them together and leave them as an alloy rather than to separate them. A little reading showed that coltan is an ore containing both of those elements, and it is the tantalum that is in demand.

The application is for making capacitors. As it turns out, a negatively biased tantalum electrode in an aqueous solution quits conducting electricity when the oxide layer is very thin. Also, tantalum can be treated so that it has a high surface area in a small space. The capacitance of a parallel plate capacitor is proportional to the surface area of the plates and inversely proportional to the distance between the plates. The result is that a high-capacitance electrolytic capacitor with a tantalum cathode can be made with a very short effective distance between the plates, which makes it possible to make a tantalum capacitor very small. There are all sorts of applications for microelectronics in which size reduction is important. However, the use that is driving the current demand for tantalum (and the political and environmental consequences resulting from that) is for cellphones.

As a chemist I didn't have the knowledge of electrical circuits that would enable me to understand what this tantalum capacitor was doing in the cellphone. I checked Wikipedia for information about this. According to this source, capacitors have four possible uses: 1. To initiate surges in equipment like electric motors and fluorescent lights that take more power to get them started than to keep them going. 2. To absorb surges in circuits with sensitive components, or just to keep things operating smoothly when the electrical feeds are noisy. 3. With a coil in a circuit designed to filter AC signals, transmitting a certain design frequency and not others. 4. For energy storage somewhat like a battery.

I didn't think a polarized capacitor (the tantalum electrode must be negative) would be useful in an AC filter, which is a component that a cellphone would clearly need. I also thought that a conventional battery would be better as an energy-storage medium. I have asked two electrical engineers what function the tantalum capacitor(s) had in a cellphone. One of them said it was for an AC filter; the other said it was for energy storage.

So Charlie's Challenge is: **What function do tantalum capacitors have in cellphones?** I don't know the answer to this, so I hope to hear from the members.

RESPONSE TO LAST MONTH'S CHALLENGE

Provided by Triple Nickel

Very interesting questions. To my knowledge, none of the high performance jets put out any artificial smoke or anything. What you are seeing is common and more so in humid climates. All it is when you see the vapor or what looks like smoke, is compressed air that forms into small clouds if you will. When I used to fly the F-16, I would look over my shoulder and watch the vapor trails stream off of the wing root, back over the back of the jet. The harder I pulled on the stick (pulling g's) the thicker the vapor trail got and the more it separated from the wing surface and spread out in a more of a sheet than thin lines of vapor.

When I flew the F-15, I noticed that the wingtips were so shaped that the air, as it accelerated off of the wingtips, formed vapor trails right off of the wing tip like smoke streamers. But all of this is just compressed air, vapor trails. These vapor trails would, when the jet really turned hard and quickly, would completely cover the back of the jet or the upper part of the wing and fuselage. Remember these jets have bodies that are so shaped as to create lift themselves...so the whole body would explode into vapor when a high g turn was made! Now, the F-18 was showing you the actual sound barrier. As you go faster and faster, a bow wave, like a boat going through the water, builds up in front of the jet, and its shape, goes from air flowing over the jet until it separates and then it is perpendicular to the fuselage and then it travels aft until the jet is totally super-sonic, and this vapor barrier would then be aft of all control and lifting surfaces on the jet! This is only visible to you when the air is full of vapor, ie, high humidity. Now, the engines, along with the rest of the aircraft, are experiencing up to 9 g's during these high g turns and maneuvers. The engines are operating at those extremely close tolerances and still work at those high g's!

Your analysis of the lower pressure over the wing and the vapor forming in what should be a lower pressure area is brilliant. The only thing I feel missing is that the vapor is from the leading edge of the wing compressing the initial vapor, and then, as speed and g forces increase, the air that is just above the low pressure surface of the wings and body is being compressed so rapidly by the high angle of attack of the wing itself and therefore again, compressed air and vapor, even though lift is being produced. Remember the air is NOT static when it is at a lower pressure. SO, one could deduce that the underside where no vapor is being seen is at higher pressure and SHOULD be forming vapor as well. It probably is, but it is being pressed against the aircraft and can't be seen, whereas the top side allows the compressed air, albeit less compressed than the underside, separate into the space above the jet.

(FROM THE EDITOR: THANKS TRIPLE)

Modified Jet Stands in for Landing Orbiter - 06.26.07

Diving head first at a concrete strip from six miles up is not necessarily fun, but is certainly important for NASA's shuttle commanders and pilots.

Image Left: Jack "Trip" Nickel is a NASA Research Pilot who helps train space shuttle commanders and pilots to land the orbiter as it is returning from space. Photo credit: NASA/Steven Siceloff

After all, commanders get one shot to land the 110-ton orbiter as it glides back to Earth. There's no chance to fire up the engines and make another approach.

But the opportunity to make the flight at the controls of an orbiter is exceedingly rare, even for the best astronauts. And a normal flight path for the orbiter is well beyond normal for a conventional aircraft.

"The shuttle has the flying characteristics of a brick, basically, with wings," said Jack "Trip" Nickel, a NASA research pilot.

So the space agency outfitted four of its corporate jets with computers and a shuttle cockpit and controls. Then it modified the wings' control surfaces and thrust reversers and strengthened the main landing gear.

The result is a Gulfstream GII dubbed a Shuttle Training Aircraft that reverses its engines in flight routinely, flies with its two sets of main landing wheels down at speeds above 300 mph and pulls out of a steeper dive than any airliner is likely to see -- all without breaking into pieces.

"It's still scary," Nickel chuckled. "In a plane like this, a corporate jet, there is no sky visible out the front cockpit. All you see out the window is dirt, there is absolutely no sky. So it's a very ominous feeling. With the engines in reverse thrust, you're hanging in your harness."

Image left: Jack "Trip" Nickel and Alyson Hickey crew the Shuttle Training Aircraft during simulated shuttle landings. Nickel makes sure the aircraft is flying safely and Hickey monitors the computer onboard the aircraft and plays the role of a shuttle pilot calling out cues to the training astronaut. Photo credit: NASA/Steven Siceloff

NASA built a pair of computer-driven simulators that never leave the ground to let pilots practice, but there was still a gap between those and the physical challenge of flying the actual orbiter. That's where the Shuttle Training Aircraft, or STA, come in.

"You get the real dynamics of real air going over the aircraft (and) you just can't model that with a computer," Nickel said. "There's just no comparison to being out in the real air, seeing the real landing aids. This is just the real thing."

The purpose is to give the astronaut the best impression of what the real orbiter will feel like and exactly what the correct approach to the runway is supposed to look like.

It "moves a shuttle pilot's eye through the sky along the flight path he would follow if he were flying the space shuttle," Nickel said. "It flies just like the shuttle. It emulates the shuttle exactly."

The cockpit of the Shuttle Training Aircraft features a shuttle control stick and a regular control area.

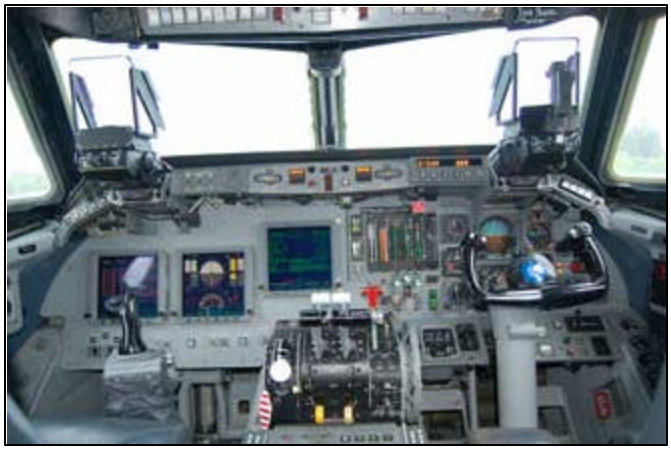


Image right: The Gulfstream G-II was modified several ways for its shuttle simulator role. Unlike the regular business jet with two sets of identical controls, the Shuttle Training Aircraft is outfitted with an orbiter cockpit on the left side of the cockpit and a set of conventional controls and displays on the right. During a landing simulation, the astronaut typically sits in the left-hand seat and the instructor pilot watches closely from the right-hand seat. Photo

The wing and engine modifications are the tools that a set of computers inside the aircraft use to make the shuttle pilots feel like they are flying an unpowered spacecraft. That means the pilots are in charge, but the computers are in control.

When the astronaut pulls the control stick back, for example, the computer decides how a real orbiter would react. Then the computer moves the wing and tail to make the STA act the same way. The movement takes a scant 50 milliseconds to occur, though, so the pilot senses no delay.

"The computer controls the airspeed and the auto-throttle controls the engines," explained Alyson Hickey, a flight simulations engineer aboard the STA.

The Shuttle Training Aircraft is a modified Gulfstream business jet that mimics the orbiter.

Image left: The Shuttle Training Aircraft practice landings at Kennedy Space Center's Shuttle Landing Facility in Florida, White Sands Space Harbor, N.M., and Edwards Air Force Base, Calif. Photo credit: NASA

During a simulation flight, she sits just behind and between the astronaut on the left and the instructor pilot on the right. Since the instructor pilot such as Nickel is making sure the aircraft is safe during the unusually demanding landing, Hickey plays the part of the shuttle astronaut that would be sitting in the right-hand seat in an orbiter.

That means she calls out milestones to the commander and makes sure the simulation is true to the real thing.

"She runs the whole simulation," Nickel said.

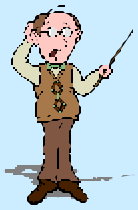
Sometimes, Nickel and Hickey team up to throw a problem at the practicing shuttle commander. This could be anything from the computer display guiding the pilot astray to a system failing at a bad time.

The landing pattern of the orbiter demands that the Gulfstream fly at about 300 mph at times in a dive that is several times steeper than that of an airliner. At the same time, the thrust reversers and deployed main landing gear add more stress to the STA.

"This aircraft is at the structural airspeed limits in simulation (mode)," Nickel said.

The reward is a realistic training session for pilots that get only one shot to glide the orbiter to a landing during a real flight.

Steven Siceloff
NASA's John F. Kennedy Space Center



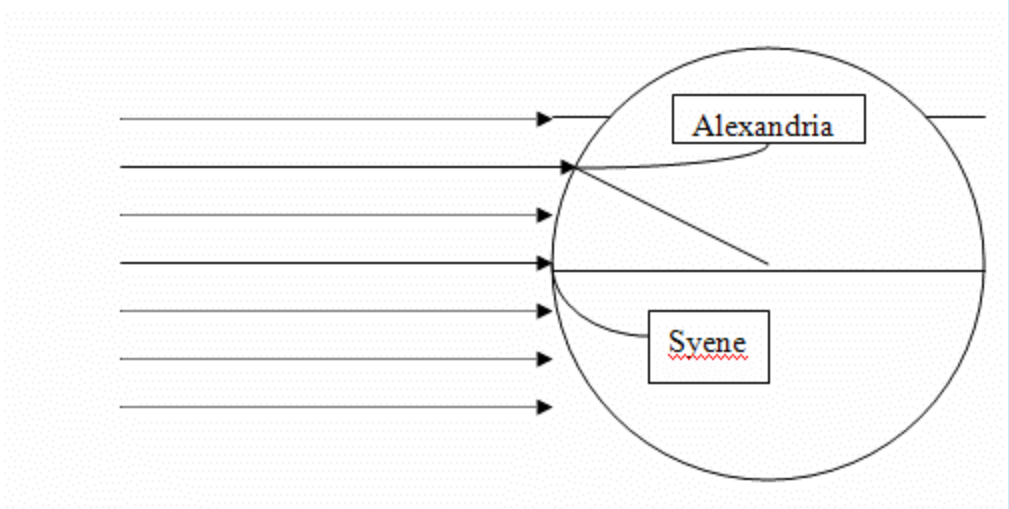
HERNAN'S ODDITY OF THE MONTH

By Hernan Contreras

Astronomers and Their Toys

Eratosthenes of Cyrene

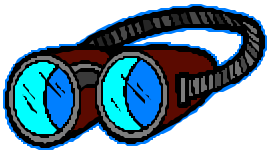
He looked into a well too deep for shallow minds and figured a way to measure the size of the earth. Eratosthenes of Cyrene (275-195 BC), like most of the ancient astronomers, knew the earth was a sphere so when he saw the sun reflect directly back from the bottom of a well at noon on the first day of summer in Syene (Aswan, Egypt) he knew he could measure circumference of the earth by comparing it to the angle to the sun at summer solstice from Alexandria, a known distance almost directly north of Syene assuming that the sun was far enough that the light beams could be considered parallel.



Of course this was not a bad assumption since he had already calculated the distance to the sun by studying eclipses to be 804,000,000 stadia and to the moon 780,000 stadia. The obvious question is how long is a stadia? And, of course, there have been a lot of studies debating the size of stadia in modern measurements. The estimates range from 150 to 170 meters with 157.2 meters being the most favored. If the favored number is taken, the measurement is remarkably accurate, but even the worst case would give you a far better estimate of the size of the earth than the one Columbus used. He calculated the circumference to be 252,000 stadia or about 39k614.4 km.

Astronomy students at Sonoma State University scheduled to repeat this experiment on Wednesday, March 22, 1999, but they had not posted their results. Perhaps the world is flat after all. Eratosthenes made a huge contribution to the body of knowledge even though none of his work, including his treatise, *On the measurement of the Earth* have survived the ages. What we know about his work we have learned from others like Plato, Theon of Smyrna, Hippocrates and a lot of others. Eratosthene was quite influential.

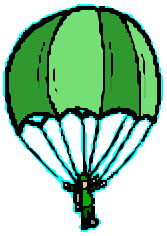
Though Eratosthenes lived a long time, his death was not natural. He committed suicide by starvation not wanting to continue living blind.

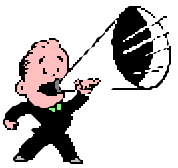


FORT (Forward Observing Recon Team)

By Ken Lester (special operations team)

Fort McKavett SHS hosted a Fort McKavett 4-H youth mini-camp Monday June 18th – Tuesday, June 19th. On Monday, the youth practiced with bows and arrows and BB guns. They also took a kayaking field trip and cooked their own dinner in the fire pits. After dinner, it was time to watch the sunset, make s'mores and set up telescopes. Ken and Lisa Lester brought their 8 inch Dobsonian telescope which Lisa operated while Ken helped three of the kids with their own telescopes. Lisa also taught Bennett Treadwell how to use her telescope. The Moon, Saturn, Jupiter, M13, a double star, and the Ring Nebula were observed through a variety of telescopes to many oohs and aaahs. Two satellites were spotted and tracked by many pairs of eyes. There were some low clouds on the horizon to the south and the west but they didn't interfere with observing. The temperature was very comfortable and no one realized how late it was until some of the kids started talking about going to bed! That's hard to believe I know, but they'd had a busy day and knew that on Tuesday there would be more fun activities. Some of the adults wanted to keep observing but realized that it was eleven p.m. and Ken had to report to work at 7:45 a.m.! So we quickly loaded up the scope and drove back to the ranch. As we got out of the truck, we paused to look up at the stars and grin! FORT's first star party had been a complete success!





What's Happening at the George!!!

Cynthia Gustava

The George Observatory has groups every Friday night in the month of June (see below) starting at 7:30 p.m. And of course, regular Saturday night public observing starting at dusk(3:00 – 10:00 pm . Volunteers for these events are always appreciated!

July 12: Overnight group
July 13: Overnight group
July 20:Overnight group
July 21: Overnight group

This editor has not received anything from Cynthia this month, yet. I have gone to their site and see that they have these groups scheduled, but I don't have the numbers.

*AND AS A HEADS-UP:*August 12-13...Perseid Meteor Shower
The George Observatory in Brazos Bend State Park will host viewing the peak of the annual Perseid meteor shower the night of Sunday August 12 and lasting until dawn Monday, August 13.
See next month's Starscan for more details

Attention Astronomy Magazine SUBSCRIBERS...

I recently received an "Urgent Warning" from Kalmbach Publishing on a bright pink form. It would seem that other third party companies have been phone soliciting subscribers asking them to renew. These groups are not authorized to represent Kalmbach Publishing and are not affiliated with them in any way. As such, the publishers of Astronomy Magazine request that you **DO NOT RENEW** your subscription with any phone solicitor nor give out any personal information. .

Authentic renewals will only come from Kalmbach in Milwaukee or Waukesha, Wisconsin.

David Haviland
Veep & Secretary.

From the Sky & Telescope and Astronomy Magazine Departments

Changes in the Sky & Telescope Subscription Policy

You can now renew your S&T directly if you are on the club plan already, you no longer need a letter from the secretary. However, if you are a new subscriber, your information and justification for the reduced subscription rate still has to be handled through the JSCAS Secretary. If there are any questions, please contact me by email listed on the JSCAS web site, a meeting, or send your new subscription form to my home address: 2407 Elkton Ct., Pearland, TX 77584. I'll get it going in the mail 48-72 hours after I receive it.

David Haviland
Veep and Secretary

JSCAS LIBRARY

We will be setting this section up monthly with a list of all the books, magazines, videos, etc that are in our library. We will also be listing what is out at the time, along with how to contact Bob and Karen Taylor, in order to check out anything from the library. So keep an eye Out each month for that information

July 2007

★ **SSO**: (Solar System Objects) Summary for the 15 July 07

Object	Const	Mag	% Ill	Rise Time	Transit	Set Time
Sun	Gem	-26.7	100	06:30	13:26	20:21
Moon	Cnc	----	3	07:31	14:36	21:34
Mercury	Ori	1.0	25	05:15	12:05	18:54
Venus	Leo	-4.5	24	09:31	15:55	22:23
Mars	Ari	0.6	87	02:03	08:40	15:17
Jupiter	Oph	-2.5	100	17:12	22:26	03:37
Saturn	Leo	0.9	100	08:58	15:34	22:14
Uranus	Aqr	5.8	100	23:18	05:07	10:57
Neptune	Cap	7.98	100	21:57	03:24	08:52
Pluto	Sgr	13.9	99	18:10	23:37	05:00

Highlighted times denote daylight events.

Lunar phases for July 07

Third	New	First	Full
07th 11:54	14th 07:04	22nd 01:29	29th 19:48

Central Daylight Time

BSO: (Bright Sky Objects)

IC 4665 (Cr 349, Mel 179) – Open Cluster in Ophiuchus, Magnitude 4.2, Size 40', Stars30.

NGC 6281 (Cr 324, Mel 161) - Open Cluster in Scorpius, Magnitude 5.4, Size 8', Stars70.

NGC 6383 (Cr 335) - Open Cluster in Scorpius, Magnitude 5.5, Size 5', Stars40.

NGC 6242 (Cr 317, Mel 155) - Open Cluster in Scorpius, Magnitude 6.4, Size 9', Stars23.

DSO: (Dark Sky Objects)

NGC 6352 (C-81) – Globular Cluster in Ara, Magnitude 7.8, Size 9'.

NGC 6543 (C-6) – Planetary Nebula in Draco, Magnitude 8.8, Size 20".

NGC 6229 (H-50-4) – Globular Cluster in Hercules, Magnitude 9.4, Size

CDMP: (Chris' Don't Miss Pick)

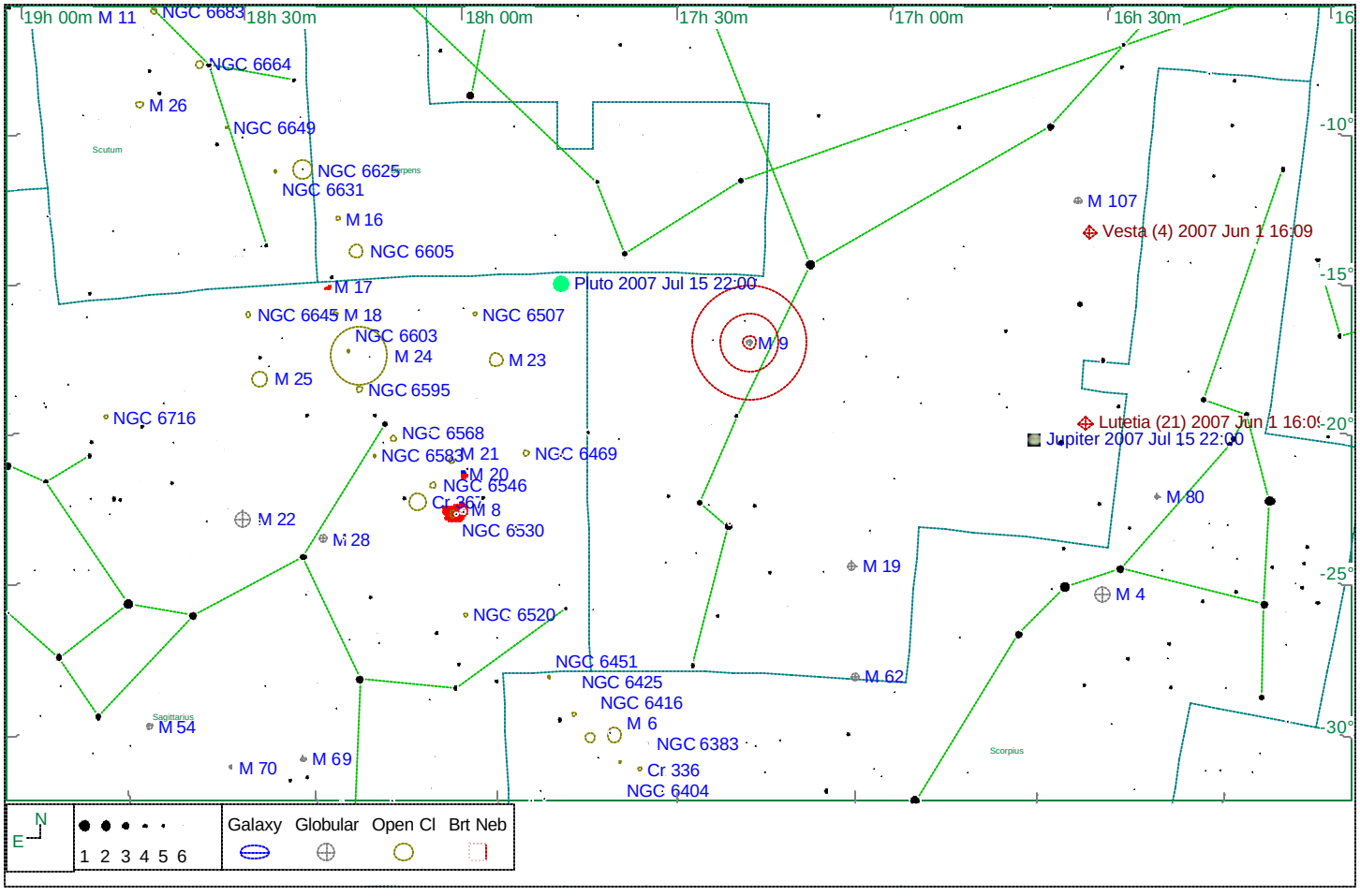
NGC 6333 (M-9) – Globular Cluster in Ophiuchus, Magnitude 7.8, Size 12.0'.

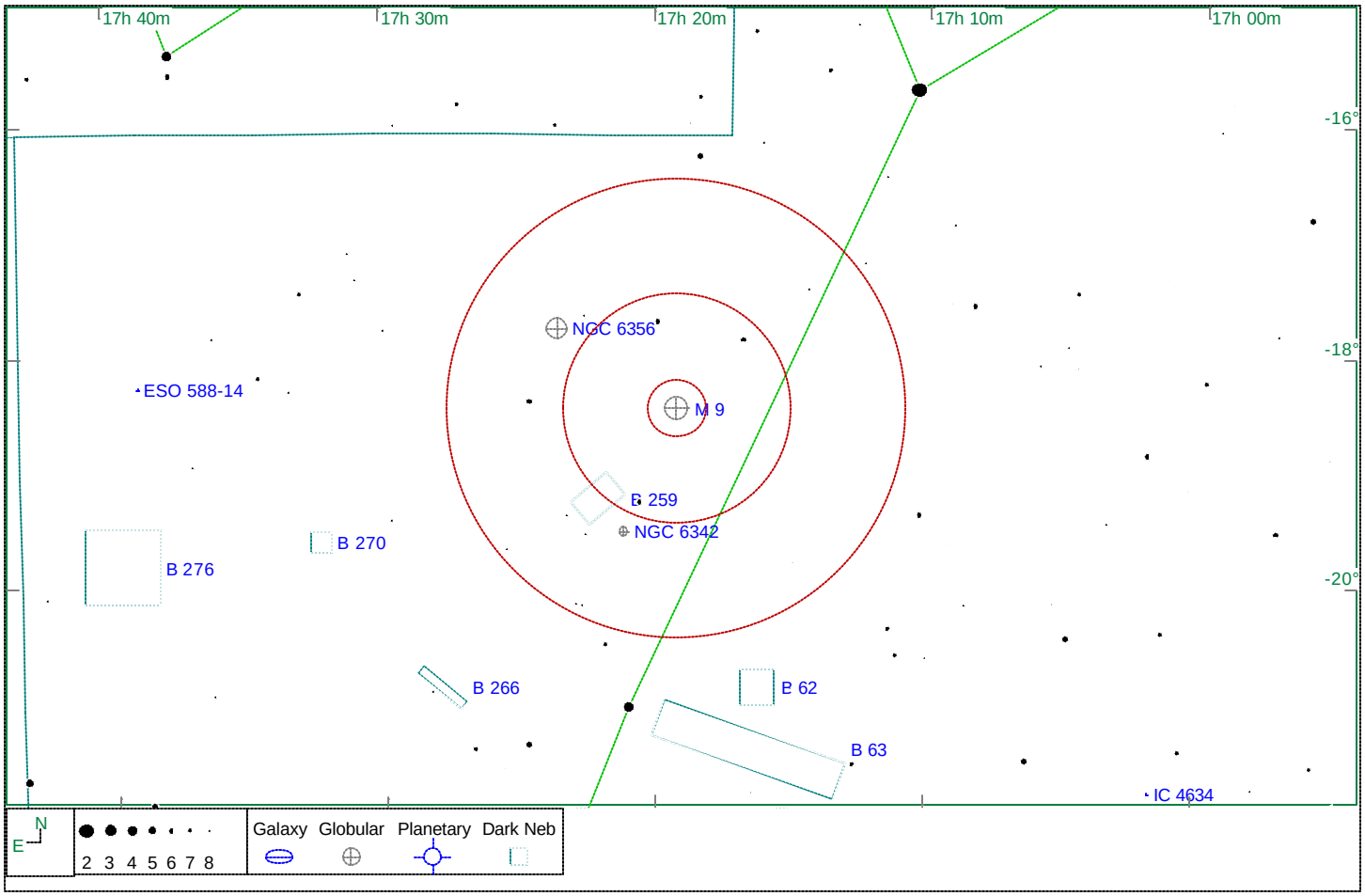
M9 is one of the original discoveries of Charles Messier, who cataloged this globular cluster on May 28, 1764, and described it as "Nebula without star" of 3' diameter. It was first resolved into stars by William Herschel about 20 years later.

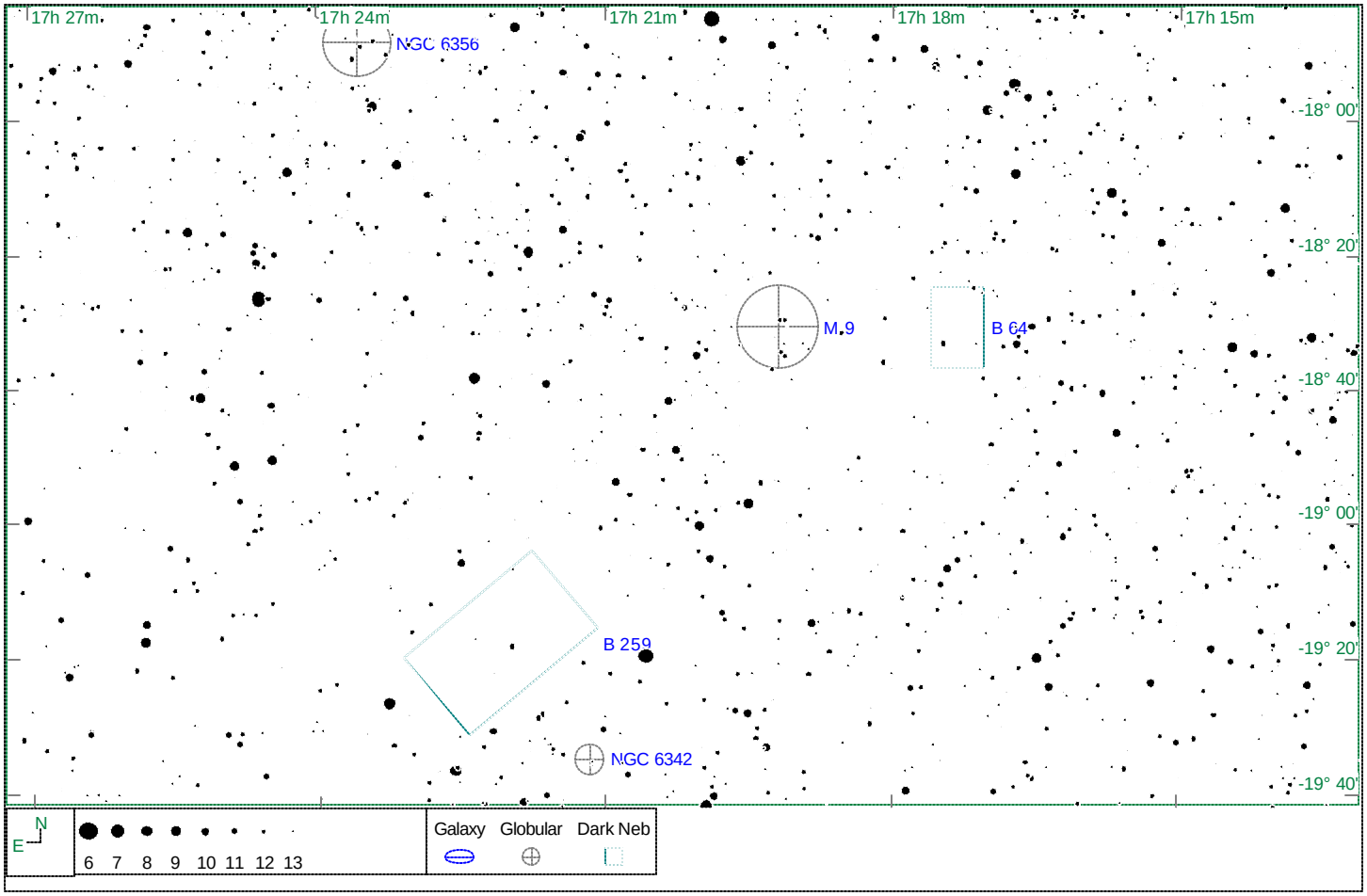
It is one of the closest globular clusters to the center of our Galaxy, with a computed distance of 5500 light-years from the Galactic Center. It is receding from us at the very high velocity of 224 km/sec.
This globular cluster can just be glimpsed as a dim small and round nebula in 10x50 binoculars under good conditions.

Try to view the Dark Nebula, Barnard 64 which is just to the West of M-9.

For this and more information on M-9 go to seds.org




17h 40m
17h 30m
17h 20m
17h 10m
17h 00m
-16°
-18°
-20°
NGC 6356
M 9
ESO 588-14
B 259
NGC 6342
B 270
B 276
B 266
B 62
B 63
IC 4634
N
E
2 3 4 5 6 7 8
Galaxy Globular Planetary Dark Neb


17h 27m
17h 24m
17h 21m
17h 18m
17h 15m
NGC 6356
-18° 00'
-18° 20'
-18° 40'
-19° 00'
-19° 20'
-19° 40'
M 9
B 64
B 259
NGC 6342
N
E
6 7 8 9 10 11 12 13
Galaxy Globular Dark Neb

Telescope Solutions - Clayton Jeter
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One of our members has a shop and here is what he does and how you can contact him. Clayton Jeter

Honey Almond Stars

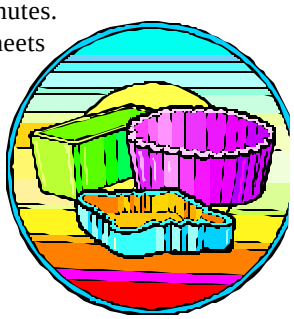
2 1/2 cups all-purpose flour
1/2 teaspoon baking soda
1/2 teaspoon salt
1 teaspoon ground coriander
1 teaspoon ground cinnamon
1 teaspoon ground ginger
3/4 cup honey
1/2 cup firmly packed brown sugar
1/2 cup granulated sugar
2 large eggs
1/2 teaspoon almond extract
2 cups almonds, ground fine in food processor
1/4 cup light corn syrup
Juice of 1 lemon

In a bowl, whisk together the flour, baking soda, salt and spices. In a large saucepan, heat 1/2 cup of the honey and sugars over low heat, stirring, just until sugars are dissolved. Remove pan from heat and let mixture cool slightly. In a large bowl, beat together eggs and extract. Beat in honey mixture and stir in ground almonds.

Stir in flour mixture to form a soft dough. Wrap dough in plastic and let stand at room temperature for 4 hours.

Preheat oven to 350 degrees F. Line two baking sheets with parchment paper. Divide dough into quarters and roll each flat to about 1/4 inch thick. Use star-shaped cookie cutters to cut cookies and transfer to baking sheets, re-rolling scraps as needed.

Place cookies in oven and immediately turn down to 325 degrees F. Bake for 15-20 minutes, or until firm. Meanwhile, in a small saucepan, heat remaining 1/4 cup of honey, corn syrup and lemon juice until it reaches a boil, about 3 minutes. When cookies are ready, remove them from the oven and brush warm cookies with the warm glaze. Transfer sheets of cookies to racks to cool



Recipe Summary
Difficulty: Easy
Yield: about 3 dozen cook-

User Rating:

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

Members' Gallery
July 2007
Barred Spiral Galaxy

From: Randy Brewer

This is one of the two images that I got at the 2007 TSP before the rain started that lasted the whole week. I had to use the color from a previous attempt at this image taken with another scope since I only got time to get the luminance this trip.

Optics: 14.5" RC at F/6 and Tak Mewlon 300 @F/9
Mount: Takahashi EM-500 on a Takahashi PierCameraSBIG ST-10XME

Filters: Astrodon LRGB Filters
Exposure: LRGB = 90:20:20:20 minutes
Date: May 13th, 2007
Location: Ft. Davis, Texas

Johnson Space Center Astronomical Society

Club Officers

President – Bob Taylor

Vice President – David Haviland

Secretary – David Haviland

Starscan Editor – Connie Haviland

Star Party Chairperson – John Erickson

Librarian – Bob and Karen Taylor

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Web Master Chris Randall

SIGS

Observing Awards – Triple Nickel

Astronomy 101 — Triple Nickel

CCD Imaging – Al Kelly

Binocular Observing – Leslie Eaton

Telescope Making – Bob Taylor

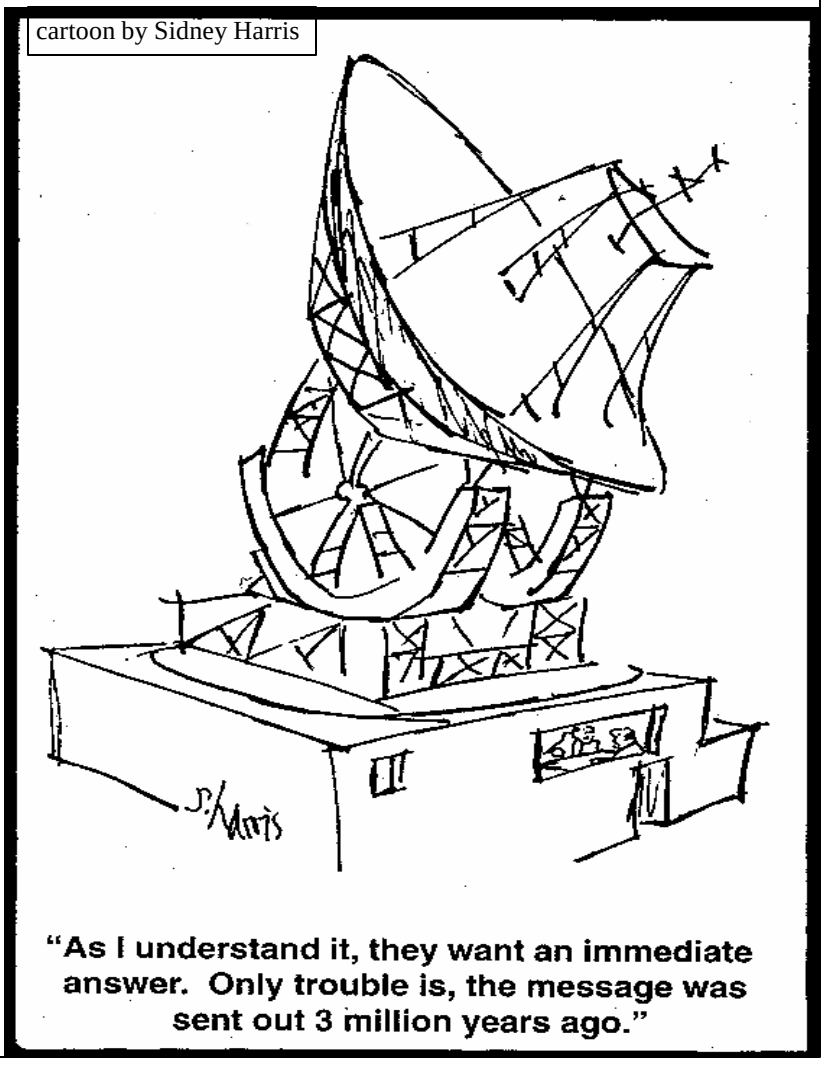
Starscan Submission Procedures

Original articles of some relation to astronomy will be accepted up to 6 p. m. (1800 hrs) on the 25th of each month. THE most convenient way to submit articles or a Calendar of Events is by email 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.

Please send all submissions to:
txconstance@houston.rr.com

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

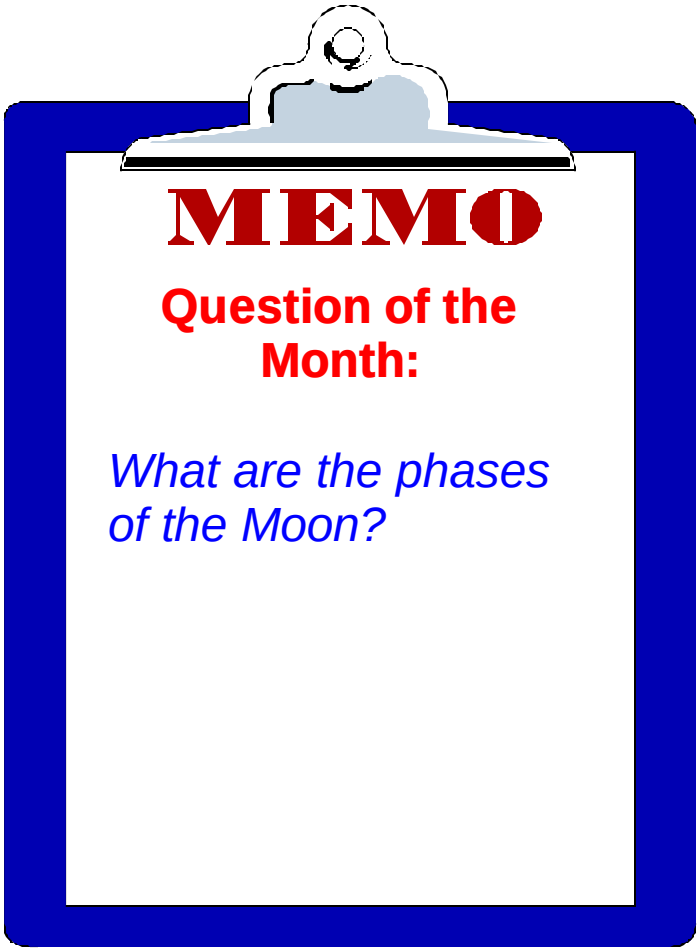
cartoon by Sidney Harris



"As I understand it, they want an immediate answer. Only trouble is, the message was sent out 3 million years ago."

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!!

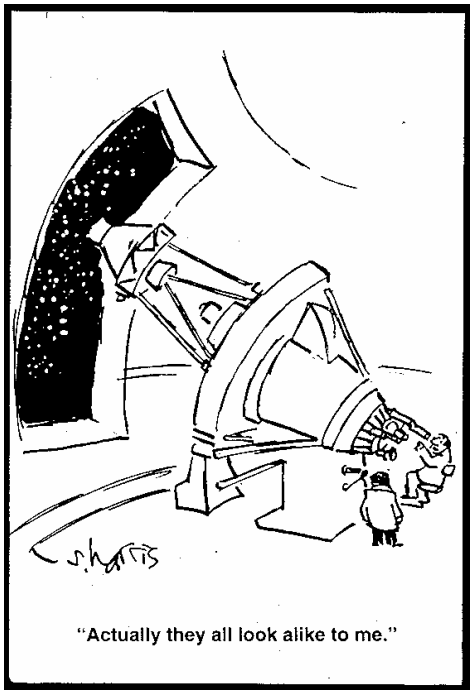


PUZZLES AND SOLUTIONS

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

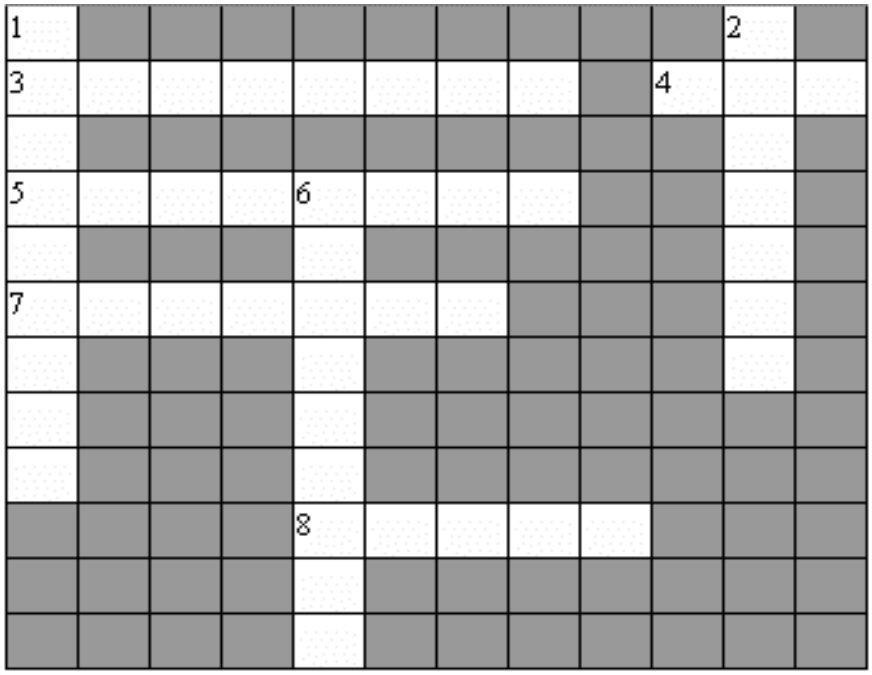
APASTRON
BLACKHOLE
BOLIDE
CEPHEID
CLUSTERS
DWARF
GALAXY
LUNATION
METEOR
METEORITE
METEOROID
MICROMETEORITES
ORBIT
PARALLAX
PERIHELION
QUASAR
SELENOGRAPHY
TELESCOPE

Sometimes I hear the phrase listed at the bottom of the cartoon. In future issues, we will try to explain and show how they really don't ALL look the same. Look for that in the coming issues.



"Actually they all look alike to me."

JULY'S CROSSWORD PUZZLE



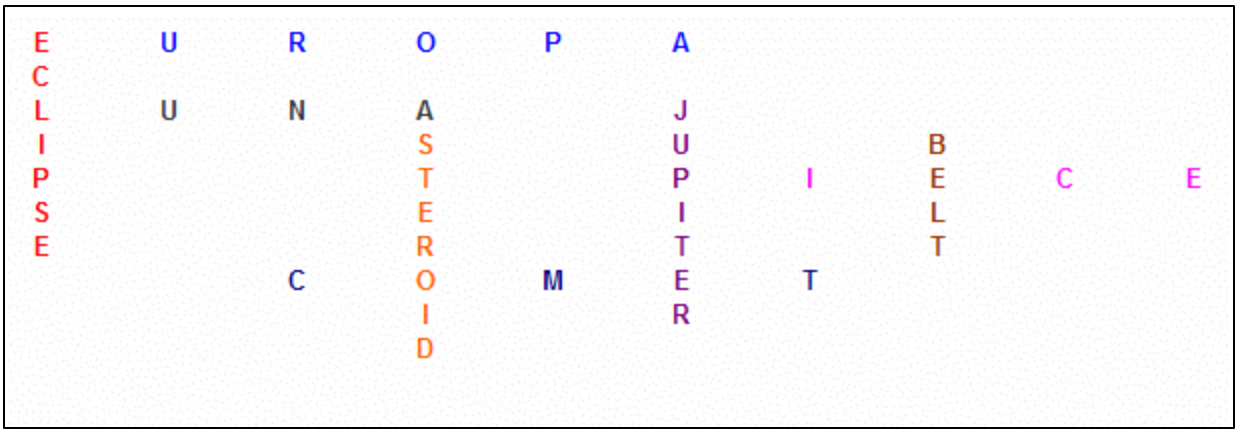
ACROSS

3. Period between new moons. 29days 12 hours 44 minutes
4. amount of time it takes the Earth to spin once on its axis
5. A group of stars, or galaxies which are held together by gravity
7. An awesome, large telescope orbiting the Earth
8. the path one object takes around another

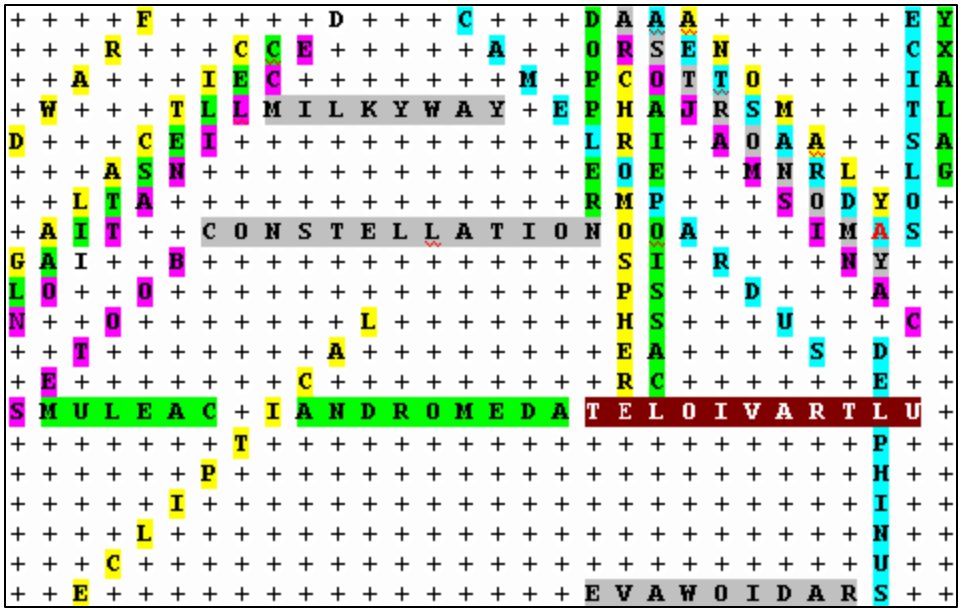
DOWN

1. A region of space around a very small and extremely massive that not even light can escape.
2. a group of stars, gas and dust held together by gravity
6. Instrument used to observe remote objects (preferably stars, galaxies and planets/moons)

Puzzle of the month



Astronomy Solution #3



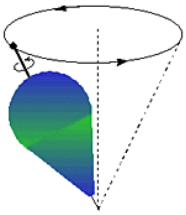
ANSWER TO THE QUESTION OF THE MONTH

The Earth spins on its "axis". This axis is an imaginary line running through the Earth. If you were to be high above the Earth, looking straight down along the axis, all the points on Earth would appear to move in circles around the axis. If you followed this axis out into space from the northern hemisphere on Earth, it would point toward a particular star in the sky. We call that star the "North Star" since it sits in the direction that the spin axis from the northern hemisphere of Earth points.

At present, the star known as Polaris is the North Star. However, Polaris has not always been the North Star and will not always be the North Star. To understand that, we need to look at how the Earth spins on its axis.

The spin axis of the Earth undergoes a motion called precession. If you have ever watched a spinning top, you know that its spin axis tends to stay pointed in the same direction. However, if you give it a slight nudge, the axis will start to change its direction, and its motion traces out a cone. This changing of direction of the spin axis is called precession. So what gave the Earth the "nudge" it needed to start precessing? The Earth bulges out at its equator, and the gravitational attraction of the Moon and Sun on the bulge provided the "nudge" which made the Earth precess. It was the ancient Greek astronomer and mathematician Hipparchus who first estimated the precession of the Earth's axis around 130 B.C. The period of precession is about 26,000 years. In other words, it takes 26,000 years for the axis to trace out the cone one complete time.

(CONT'D)

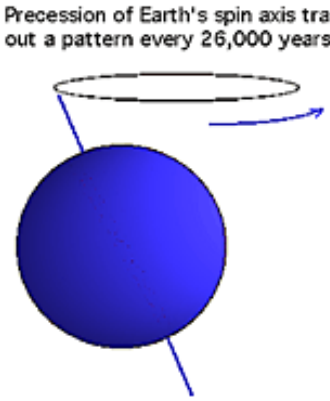


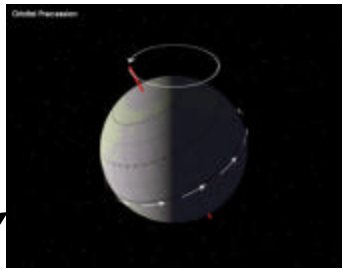
You can see precession of the spin axis in a spinning top

Earth's spin axis also precesses. It takes 26,000 years to go around once!

So now you can see why Polaris will not always be aligned with the north spin axis of the Earth - because that axis is slowly changing the direction in which it points! Right now, the Earth's rotation axis happens to be pointing almost exactly at Polaris. But in the year 3000 B.C., the North Star was a star called Thuban (also known as Alpha Draconis), and in about 13,000 years from now the precession of the rotation axis will mean that the bright star Vega will be the North Star. Don't feel bad for Polaris, however, because in 26,000 more years it will once again be the Pole Star!

By the way, there is not currently a star in the direction of the southern hemisphere spin axis. So we do not now have a "South Star".





If you want to see this animated,
go to http://starchild.gsfc.nasa.gov/docs/StarChild/question.html

Steps to Countdown - Find out how the space shuttle gets ready for launch.
We included this section because next month we will have an announcement regarding Shuttle launches

Provided by NASA (http://www.nasa.gov/audience/forkids/artsstories/AS_Steps_to_Countdown.html)

Many things must be done before a shuttle can launch.

The shuttle has many parts. They are made in different places in the United States. The finished parts are sent to NASA's Kennedy Space Center in Florida. The external tank is put together in Louisiana. It rides on a barge to Florida.

big as a baseball diamond. The crawler has tracks of wheels like a tank. It is very, very slow. It moves about one mile per hour on a road called the crawlerway.

When the shuttle gets to the launch pad, NASA has more work to do before countdown. The shuttle may sit on the launch pad for weeks. This is the countdown clock. It tracks the amount of time until launch.

The astronauts get into the orbiter about 3 hours before launch. Everyone waits for the words, "3… 2… 1… Liftoff!"

The solid rocket boosters come from Utah. They ride on a train to Florida. The orbiter is the part of the shuttle that looks like an airplane. When the orbiter returns from space, it lands at Kennedy Space Center.

Sometimes the orbiter has to land somewhere else due to bad weather in Florida. Then it rides piggyback on an airplane to Florida. Before taking off at Kennedy Space Center, the orbiter gets a checkup. It may need repairs. It may need some new parts.

Then the orbiter moves to the Vehicle Assembly Building. The VAB is one of the largest buildings in the world. The external tank and solid rocket boosters are waiting in the VAB. NASA workers connect the orbiter to these parts. NASA calls it "stacking."

After all of the parts are put together, the whole vehicle is called the Space Transportation System. Now it's time to move to the launch pad. The Space Transportation System rides on a crawler. The top of the crawler is as