



# Central Arkansas Astronomical Society

# The Observer

## Officers

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- **Vice President**
- Donald Ferren
- **Treasurer**
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- Stacy Edwards
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- John Reed
- Don Lewis
- Jim Dixon
- Activities Director
- Sandy Morris



## The Moon by Kyle Edwards details on page 2

## Starfield of Dreams

By James R Fisher

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“Field of Dreams” is one of my all time favorite movies. It has a strong baseball theme, which I love as passionately as astronomy, but the real message of the movie is about family and the after-life.

“Field of Dreams,” has a supernatural plot in which an Iowa farmer and baseball fan named Ray Kinsella, portrayed by Kevin Costner, plows under his corn and builds a baseball field in an effort to attract the ghost of “Shoeless” Joe Jackson. Jackson, considered by many baseball historians to be one of the greatest players of all time, was banned from baseball by the commissioner for his role in the 1919 Chicago “Black” Sox scandal. In an age when baseball players made only workman’s wages, Jackson and 7 of his White Sox teammates were alleged to have taken money from a gambling syndicate. Historians agree that Shoeless Joe took the money, but many believe that he did not intend to throw the 1919 World Series, which the White Sox lost to the underdog Cincinnati Reds.

After hearing a mysterious voice, Ray thinks the ghost of Shoeless Joe will find redemption playing ball on his former corn field. Soon Shoeless Joe emerges from the corn and believes Ray’s baseball field is literally an adjunct of heaven. Other ball players from the after-life soon follow out of the corn and at the end of the movie we learn one is actually Ray’s estranged and late father. In the emotionally charged climax they play a game catch and bridge their emotional divide. I still turn to mush when I hear Costner deliver the dialogue “Dad, wanna have a catch?” in the movie’s penultimate scene.

Continued on page 8



*An Eastern Fence Lizard  
suns lazily on a deck railing*

## July Meeting

The July meeting will be tailored toward a visiting group with theme being Beginning Astronomy. It will start at 5:30 with Solar viewing and demos, 6:30 barbecue pot luck, 7:30 Planetarium Show with star gazing to follow.

If you would like a map & directions to River Ridge Observatory, please just drop an email to: [info@caasastro.org](mailto:info@caasastro.org). Hope to see YOU there!

## Test your summer sky knowledge on p. 3!

## A New Fashioned Barn Raising by Jim Dixon

On June 9<sup>th</sup>, CAAS members came to the River Ridge Observatory to build a new storage building. As should be expected, much discussion and research had gone on before this day. The discussion started last year as members talked about moving the lawn mower and other implements of destruction out of the East Observatory building so that whoever occupied that building would not have to worry about other members having to go into his or her area to get to that equipment. Unfortunately there was not much in the way of alternatives until late last year when member Allen Lee donated money to CAAS for the purpose of purchasing a storage shed. Over the next few months, we identified several potential buildings and finally settled on a 7'x7'x7.5' building from Rubbermaid. At least one work party was called off due to rain but finally the big day came.

Pat Morris made the purchase and delivered the very heavy box to the property. Members Pat and Sandy Morris, John Reed, Donald Ferren, Rocky Togni, Chris Lasley, Thomas Baskins, Jim Dixon, and proto-member Samantha Dixon arrived at the appointed time.

First, not surprisingly, was the foundation. Someone brought a tiller to break of the ground to the east side of class room. This allowed us to level the area and build it up where needed. Also not surprisingly, this took a while but was finally done. Once level, we poured concrete anchors and Samantha learned how to mix concrete.

The floor went down fast but the first side was slightly warped and took a lot of effort. Once that side was up, the other walls went up pretty quickly. We placed the roof complete with skylights on top (as it should be) and secured everything down. Finally, about five hours after the dirt work started, we rolled the lawn mower inside and placed a pad lock on the door.



## On the Cover— The Moon

This image was made by taking four images of the different parts of the Moon with my ToU-Cam webcam on my Orion 70mm refractor. To take each image, I had the webcam record several hundred frames, then used a program called Registax to stack the best frames. Then I combined the finished images into a mosaic in Photoshop. When combining them, I blurred out the edges of each individual image to make sure no lines showed up in the finished image, then aligned them all and did some light sharpening.





## Member Bio—Kyle Edwards

Q. When did you first become interested in astronomy?

A. I first became interested in astronomy when I was 11 or 12 years old.

Q. Do you recall the first object that took your breath away?

A. I remember looking at Saturn back in 2002. It took me a while to find it, but I was amazed at how clear the rings looked in my little 3 inch reflector. Later that night I saw a very bright object that I initially thought was Venus, but looked at it through the telescope and figured out it was Jupiter because of its cloud bands and four moons.

Q. What is your astronomical specialty (imaging, sketching, etc.)?

A. I would say that planetary imaging and writing astronomy software would be my specialty.

Q. What kind of telescope was your first? What equipment do you use now?

A.. I started with a Tasco 3 inch reflector on a rickety alt/az mount. Now I have a Takahashi CN-212 telescope that is switchable between Cassegrain or Newtonian modes that I use for imaging. I also have two refractors, a 70mm Orion and an 80mm Celestron short tube.

Q. How long have you been involved with CAAS (previously MARS)?

A. Since 2003.

Q. What do you do for a living?

A. I do not have a job yet. I am planning on going to ASU Beebee this fall, and taking a two year course in computer networking.

Q. And, what other hobbies do you enjoy?

A. In addition to astronomy, I enjoy programming, hunting, and listening to heavy metal music.

## Summer Sky Trivia by Rocky Togni



Test your knowledge of the summer sky.

1. Dimmer this year (2007) than it was last year.
2. A famous summer star that is named after a famous person.
3. Name two former and future pole stars visible in the summer.
4. A house divided cannot stand and neither can this constellation.
5. The first star photographed, first star to have its spectrum analyzed, and to have its parallax measured. Only one answer please!
6. Name the stars of the “Stinger”.
7. The least of all Northern constellations.
8. It divides only in summer.
9. A Roman arch requires a (an) \_\_\_\_\_.
10. Mars has a “Rival”.
11. Frodo fought the Great Goblin. You can view M\_\_ in the summer.
12. Show piece double of the summer skies.

# Upcoming Events

## July 2007



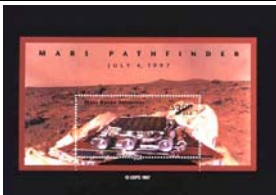
- July 1—Venus & Saturn conjunction
- July 1—Pinnacle Mountain State Park (PMSP) Moonlight Cruise on Lake Maumelle
- July 4—Tenth anniversary of Pathfinder rover on Mars
- July 6—Earth at Aphelion (94.5 million miles)
- July 7—Last Quarter Moon
- July 14—New Moon
- July 14—Monthly CAAS Meeting
- July 14—PMSP Stargazing Cruise on Lake Maumelle
- July 15—PMSP Stargazing Cruise on Lake Maumelle
- July 20—Mercury at Greatest Elongation from Sun 20° in the morning sky.
- July 21—Woolly Hollow State Park Public Star Party
- July 22—First Quarter Moon
- July 28—PMSP Public Moon Party
- July 29—Full Moon
- July 29—PMSP Moonlight Cruise on Lake Maumelle

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 Venus & Saturn	2	3	4	5	6	7 Last Qtr Moon
8	9	10	11	12	13	14 New Moon / CAAS
15	16	17	18	19	20 Mercury Elonga-	21 WHSP Star Party
22 First Qtr Moon	23	24	25	26	27	28 PMSP Moon Party
29 Full Moon	30	31				

## August 2007

- August 5—Last Quarter Moon
- August 10—PMSP Stargazing and Meteors Cruise on Lake Maumelle
- August 11—Monthly CAAS Meeting
- August 11—PMSP Stargazing and Meteors Cruise on Lake Maumelle
- August 12—New Moon
- August 13—Perseid Meteor Shower peaks
- August 18—PMSP Public Star Party
- August 19—First Quarter Moon
- August 20—30th anniversary of launch of Voyager 2
- August 27—45th anniversary of launch of Mariner 2, Venus flyby mission
- August 28—Full Moon and Lunar Eclipse

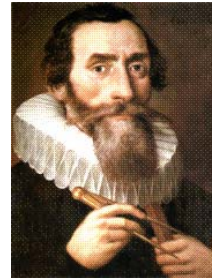
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5 Last Qtr Moon	6	7	8	9	10	11 CAAS Meeting
12 New Moon	13 Perseid Meteor Shower	14	15	16	17	18
19 First Qtr Moon	20	21	22	23	24	25
26	27	28 Full Moon	29	30	31	



## Minutes from the June Meeting

President Rocky Togni called the meeting to order at approximately 7:10 p.m. About 16 members and guests were in attendance. We were so pleased to have Jim and Cathy Fisher with us, and hope they will return again soon!

The floor was then turned over to Kyle for his presentation entitled: "Using Orbital Elements to Find the Position of Planets." Kyle gave an overview of Johannes Kepler's laws of planetary motion, and how the orbital elements can be used to determine planetary positions. He explained that the positions of asteroids and satellites can also be determined in this way (Kyle mentioned that this is how <http://www.heavens-above.com> does it.) Following Kyle's topic, John Reed, Jim Fisher, Rocky Togni, and others contributed some very interesting historical information about Johannes Kepler and Tycho Brahe, the times in which they lived, the data they were able to collect and the correct conclusions they were able to draw without the aid of the astronomical telescope (which had not yet been invented). Fascinating topic!



Following the presentation, the business meeting was opened by Rocky with a big THANK YOU to all who helped with the work party earlier in the day. Pat Morris picked up the new storage building (for which the finances were contributed by Allen Lee). Pat & Sandy Morris, John Reed, Jim and Samantha Dixon, Donald Ferren, Chris Lasley, and Thomas Baskins all helped with the ground prep and set-up & installation of the building. It looks very nice in its new home, and will serve the club well for many years to come.

The July meeting was discussed. CAAS will host the Perryville Methodist Couples Club at the property on July 14th - our regular meeting night. It was decided that the activity will be structured roughly as follows:

5:30 -- solar viewing; a moon phase demonstration by Jim Dixon in the classroom; Bill Sanders will demonstrate how various types of telescopes work.

6:30 -- supper (menu to be discussed and decided upon via the email list);

7:30 -- John Reed will give an introduction to the evening sky using Stellarium; a very abbreviated business meeting will be held.

8:30 -- the sky should be dark enough for some serious observing.

July will bring three weekends of CAAS activities in a row:

July 14 -- Meeting / Host Couples Club

July 21 -- Woolly Hollow Star Party

## Close Up On the Teapot

The Teapot, like the Big Dipper, is an asterism that is probably better known than the official constellation that it resides in. In this case, that constellation is Sagittarius the Archer. Sagittarius is often depicted as a centaur making it one of two constellations modeled on that mythical creature.

You've probably heard that the center of the Milky Way galaxy lies in the constellation of Sagittarius. In fact, it lies near the spout of the Teapot. Consequently, this area is packed with nebula and star clusters.

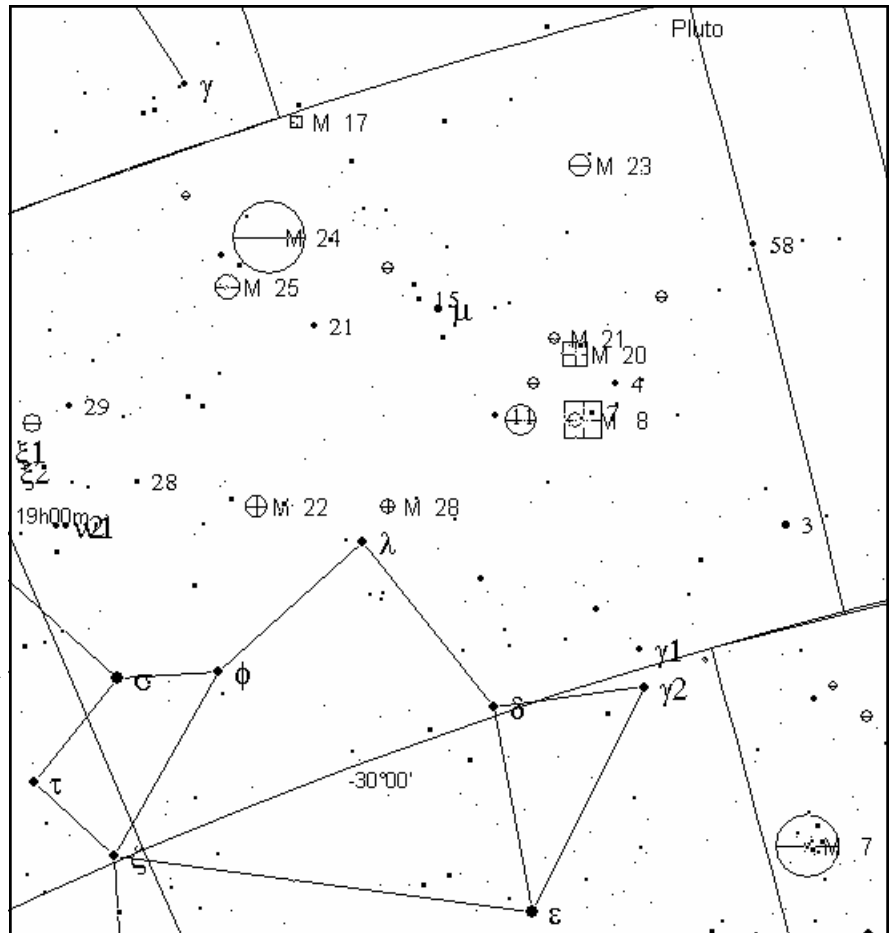
The following is a short list of deep sky objects to be found near the Teapot:

- M8 – the Lagoon Nebula
- M17 – the Swan or Omega Nebula
- M18 – a galactic star cluster that pales in comparison with its neighbors.
- M20 – the Trifid Nebula featured in many low budget sci-fi movies.
- M21 – a galactic star cluster.
- M22 – one of the brightest globular clusters in the sky.
- M23 – a galactic star cluster.
- M24 – a unique type of Messier object, this is a Milky Way star cloud about 2 degrees by 1 degree in size. Makes you wonder how M. Messier could have confused this object for a comet.
- M25 – a small galactic cluster.
- M28 – a small globular cluster.

Sagittarius proper has several more Messier objects but they are farther from the Teapot and not appropriate for this article.

If you tire of nebulae and star clusters, you might try your hand at Kuiper Belt Objects. After many years in Serpens and Ophiucus, the original and most famous KBO of all – Pluto – has crept back into the zodiac and into Sagittarius. I guess technically Pluto is not a KBO but it would have been one if it had been discovered in another era. The 14<sup>th</sup> magnitude former planet is no easy target but it is barely achievable visually in a 10" or larger telescope (and dark skies) and much smaller scope if you have a camera. A few years ago, I was lucky enough to have six clear dark nights over an eight day period. I set up my scope and camera on the same point each night and was able to track the motion of Pluto as it traveled a small but easily measurable amount each day.

All in all, the Teapot is a delight to cruise around in every summer.



## Minutes from the June Meeting (continued from page 4)

July 28 -- Pinnacle Mtn Star Party

Sandy noted that Pinnacle Mountain State Park will be having their Stargazing Cruises soon, and Mr. Mullins has asked for volunteers to help with this. Please contact him at the Pinnacle Mountain Visitor Center if you would be willing to go along and help give a sky tour on beautiful Lake Maumelle. Mr. Mullins also has asked for ideas and input concerning 2008's star party schedule.

Pat gave the Treasurer's report, and noted that the Astronomical League dues may be going up this year, but we are not sure how much.

In the spirit of fundraising, Stacy Edwards mentioned that the excellent book reviews in the newsletter could be productive by simply linking to Amazon.com, and signing up to receive a portion of the proceeds for all who use our link to purchase materials. It was suggested that this be discussed at the next board meeting.

Rocky mentioned that our August meeting night - the weekend of Aug 11-12 - will be a meteor shower, and suggested that we might hold an all-night "Meteor Watch" at the property that evening.

Stacy presented Carl Freyaldenhoven and Bill Sanders with their beautiful, and well-deserved, 2006 Astronomical League Outreach Award pins and certificates. CAAS is very proud of the energy and effort put into outreach activities, and we were all encouraged to keep track of our participation this year in order to apply for the 2007 award. Bill showed us his "trophy hat" on which he has his many AL pins displayed - congratulations, Bill!

Jim Dixon noted that the locks at the property have been changed to be more effective. The lock on the outside of the bathroom building is now changed to match the lock on the external gate. The lock on the gate on the inside of the bathroom building is now the same combination that was on the outside of the building. With this in place, all members and guests can have access to the restroom facilities.

Carl Freyaldenhoven stumped us all with a scientific demonstration using a simple copper pipe, an aluminum cylinder, and a steel cylinder (which was a good bit heavier than the aluminum). Which one do YOU think would fall more quickly through the copper tubing?? We were amazed at the answer, and the reason behind it.

Rocky adjourned the meeting, and a group of folks went out to help Wade check out the cable tension on the roll-off roof of the east observatory. The sky was cloudy, and the members were weary from a long day's work, so after a bit of snacking and visiting, everyone headed home.

**Keep your eyes open in late August for the September/October issue of the Observer, which will include an informative article on "Helping Kids Succeed in the Wonderful World of Astronomy," plus lots of astronomy news-you-can-use for the fall observing season. There's plenty of room for YOUR article!**

## Starfield of Dreams (continued from page 1)

I think about “Field of Dreams” often when I am observing. After becoming obsessed with astronomy as a teenager, I left the ranks of active astronomy for many years. Through college, law school, a hectic career, a difficult first marriage, and parenting 2 kids, I lost touch with the night sky. That changed in 1996 when I moved to a small community in rural Illinois and bought a house that backed-up to a corn field. On clear summer evenings the Milky Way and the tassels of the corn stalks seemed to dance together in the breeze. I kept waiting for Shoeless Joe to emerge from the corn, but instead another apparition appeared above the field; Comet Hale-Bopp. Once again I was passionately in love with the night sky.

My father and I had our rocky moments, but unlike Ray and his father, overall we had a good relationship. He was not an astronomer but he did all he could to encourage my love for the stars. I was an average student and reading was a chore for me. The summer I turned 13, I went to Boy Scout camp and signed up for the astronomy merit badge class. I was instantly hooked. On my 13<sup>th</sup> birthday my parents gave me a department store 60 mm refractor. When I desired more aperture, my dad bought me a quality 6” Newtonian reflector. He bought me every book I wanted on astronomy and drove me to meetings and star parties of the Mid-South Astronomical Research Society -- now the Central Arkansas Astronomical Society (CAAS) – which met near our home in Little Rock. I remember without complaint that he drove me to the University of Arkansas at Little Rock observatory for the transit of Mercury in the pre-dawn on the unseasonably cold morning of November 10, 1973.

What my father seemed to understand was that by loving to learn all I could about astronomy, I also loved to learn. Period. That trait served me well through college, law school, and now 22 years of practicing law.

In early 2004 my career offered me the opportunity to return to my hometown. By then my dad was 81, his health was declining rapidly due to age and congestive heart failure. I knew I would never get another chance. He lived another wonderful 22 months.

His funeral was attended by hundreds. A former U.S. Senator and the man since elected Arkansas’s governor were among the attendees. In obituaries and eulogies, he was hailed for many accomplishments; among them World War II veteran, award winning newspaper editorialist, unselfish public servant, a valued community and church volunteer, and loving and devoted family man. To me he was just “Dad;” a man of incredible integrity, warmth, and best of all a Cracker Jack sense of humor.

Last fall I had lunch in a restaurant near my office. As I got up to leave, I heard a familiar voice call my name from the rear of the dining room. That voice belongs to a close friend from my salad days. I don’t remember the exact occasion, but I first met Robert at CAAS meetings in 1972. We were the same age and we stayed active in astronomy through high school and friends through our late twenties. In 1992 I moved out of state and sadly Robert and I lost touch.

After that chance meeting, Robert and I quickly renewed our friendship. One of the first things he told me was that he saw my dad’s obituary in the paper the previous year and decided to attend the funeral. He said that between of the crush of people paying respects to me and my family after the service and his need to return to work, he left before he could say hello. Although a full year passed before I became aware he was even there, I was deeply touched by Robert’s thoughtfulness to attend my dad’s funeral; a man he had last seen in the 1970’s.

This past Christmas my wife and I had dinner at my sister’s home. The week before our stepmother had given to my sister a box of old photographs that she had found in our dad’s study. Included was an 8x10 black and white photograph of a teenage boy standing proudly with his 6” Newtonian telescope just before a star party. I had forgotten posing for that photo, but I know who took the photo and I remember offering him the first views of Saturn at that star party.

After years of “freelancing” as an amateur astronomer, I recently decided it was time I join (or in this case rejoin) an astronomy club. Therefore, I made plans recently to attend the Astronomy Day Star Party at Pinnacle Mountain State Park west of Little Rock and sponsored by the CAAS. On the morning of the star party I received a call from Robert. Today Robert is an IT manager and a published science fiction short story author, but is not an active astronomer. He called to invite me to the monthly meeting of the Little Rock Science Fiction Book Club. I invited him to the star party instead. He and his girlfriend Mary accepted *my* invitation.

Continued on page 9





## CAAS Members Really Shine! By Stacy Edwards

- **Bill Sanders** and **Carl Freyaldenhoven** were both recognized at the June CAAS meeting with the [2006 Astronomical League Outreach Award](#). Earning this award requires participation in at least five qualifying astronomical outreach events in the year, a number which these two easily exceed. THANK YOU to Bill and Carl for your dedication to helping others learn about astronomy!
- One of **Kyle Edwards'** recent Mercury image was the June 11 feature on [Universe Today](#). Way to go, Kyle!
- And **Jim Dixon** was given a full half-page spot in the Astronomical League's quarterly magazine, *The Reflector*, for his award-winning [lunar eclipse image](#) and his accompanying write-up. Congratulations, Jim!

If you or another CAAS member has been recognized for an astronomical effort, be sure to let us know so we can brag on our stars in *The Observer*!

## Starfield of Dreams (continued from page 8)

The sky above the star party was crystal clear. Anyone who has spent time in Arkansas will know that good seeing is the exception rather than rule, but this was it! First, a brilliant sun set behind Pinnacle Mountain, then the deep blue quickly reveal a crescent moon, dazzling Venus, then Saturn and the stars began to pop.

Having only recently joined CAAS and not yet having attended a formal meeting, I only knew a few members. I made an effort to introduce myself to as many of the club members as I could. But because of the excellent sky and many star party guests anxious to view through the telescopes, I stayed busy through-out the evening.

Towards the end of the star party, I saw a familiar looking gentleman milling around the scopes near where I had set up. Suspecting – incorrectly – that he was a CAAS member I introduced myself to him. I quickly realized that he was a star party guest and was there with his wife and adult daughter. We all chatted briefly, I offered them a view of Saturn in my scope, and then wished them a pleasant evening. As they walked away I could hear them in conversation but could not make out what they were saying.

But within minutes the daughter returned and asked me to repeat my name. After I replied, she then asked who my father was. I answered and then she then turned to her own father and exclaimed, “He *is* Bob’s son!”

They told me they all attended the same church with my father and for years prior to his death were students in his popular adult Sunday school class. They told about what a wonderful Sunday school teacher he had been. They also told me I looked just like him. “Not quite,” I said as I removed my ball cap and rubbed my nearly bald head and recalled the flowing maim he had even on his deathbed. I also told them about what a great father he had been and how he encouraged me in my youth to include buying me telescopes and carting my friend Robert and me to star parties like this one.

For the rest of the evening, I thought about my dad and observed the sky with my friend who shares his name. Robert and I later caught up with Carl, the longest tenured member of CAAS. Carl remembered Robert and me from our teen years in the club. The three of us reminisced about the early days of the club to include great star parties at a place we dubbed “Star Hill;” the same place where I posed for my father’s camera beside my telescope.

As the star party wound down I looked up at the sky and thought it was a perfect night: a beautiful moon, but not too bright; a clear crisp night, but not too cold; and friendly, enthusiastic and appreciative star partiers. If it wasn’t heaven, it was darn close.

*Dad, wanna see Saturn through my scope?*

## NASA Space Place

### Chew on This by Diane K. Fisher

The Mars robotic rovers, Spirit and Opportunity, are equipped with RATs, or Rock Abrasion Tools. Their purpose is to abrade the surface patina off the Mars rocks so that the alpha x-ray spectrometer can analyze the minerals inside the rocks, rather than just on the surface.

But future robotic missions to Mars will be asked to go even further below the surface. Scrapers and corers will gather rock samples of substantial size, that, in order to be analyzed by a spectrometer, will need to be crushed into a fine powder.

Crushing rocks on Mars? Now there's a problem that brings to mind a multitude of possible approaches: Whack them with a large hammer? Squeeze them until they explode? How about just chewing them up? It was with this latter metaphor that the planetary instrument engineers struck pay dirt—so to speak.

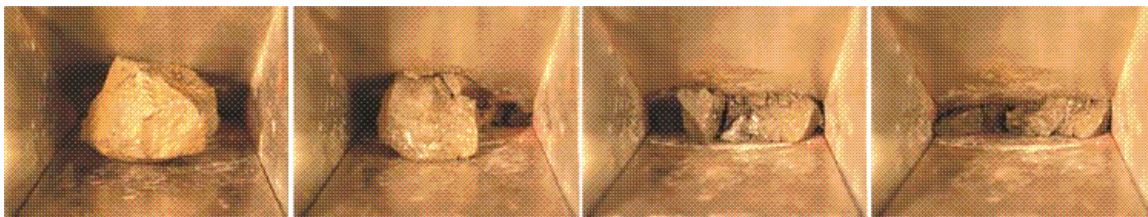
Thanks to NASA's Planetary Instrument Definition and Development Program, a small group of NASA engineers came up with the Mars Rock Crusher. Only six inches tall, it can chew the hardest rocks into a powder.

The Mars Rock Crusher has two metal plates that work sort of like our jaws. One plate stays still, while the other plate moves. Rocks are dropped into the jaw between the two plates. As one plate moves in and out (like a lower jaw), rocks are crushed between the two plates. The jaw opening is larger toward the top and smaller towards the bottom. So when larger rocks are crushed near the top, the pieces fall down into the narrower part of the jaw, where they are crushed again. This process repeats until the rock particles are small enough to fall through a slit where the two plates are closest.

Engineers have tested the Mars Rock Crusher with Earth rocks similar to those expected to be found on Mars. One kind of rock is hematite. The rusted iron in hematite and other rocks help give Mars its nickname "The Red Planet." Another kind of rock is magnetite, so-called because it is magnetic. Rocks made by volcanoes are called basalts. Some of the volcanoes on Mars may have produced basalts with a lot of a mineral called olivine. We call those olivine basalts, and the Rock Crusher chews them up nicely too.

Visit [www.jpl.nasa.gov/technology](http://www.jpl.nasa.gov/technology) to read the latest about other NASA technologies for exploring other planets and improving life on this one.

*This article was written by Diane K. Fisher and provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*



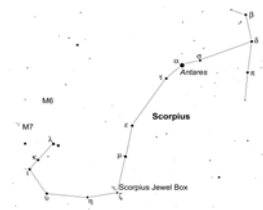
Caption:

*Looking down on the jaws of the Mars Rock Crusher, we see a magnetite rock get crushed into smaller and smaller particles.*

## Answers to Summer Sky Trivia

1. *Dimmer this summer (2007) than it was last summer.*

**δ Scorpius or Dschubba** in the claw of the Scorpion shined at magnitude 1.6 magnitude last year has faded to normal at magnitude 2.3. Similar in composition to Gamma Cassiopeia, which in 1937 brightened from 2.25 to 1.6 and then faded to about 3.0 taking about 15 years to return to normal. Both stars are Spectral Type B0 and have very rapid rates of rotation, occasionally flinging mass from their equators.

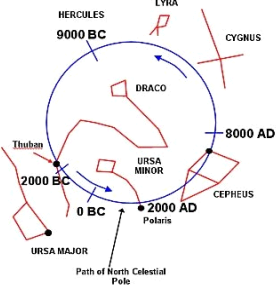


2. *A famous summer star that is named after a famous person.*

**Barnard's Star** is the closest star to earth other than the three stars in the Alpha Centauri system. This 9.5 magnitude red dwarf lies just 5.94 light years from earth. Lying a few degrees east of Beta and Gamma Ophiuchi, Barnard's Star has the greatest proper motion of any star- 10.4" per year.

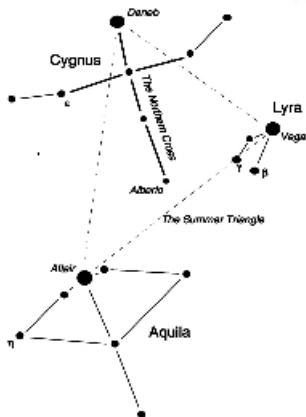
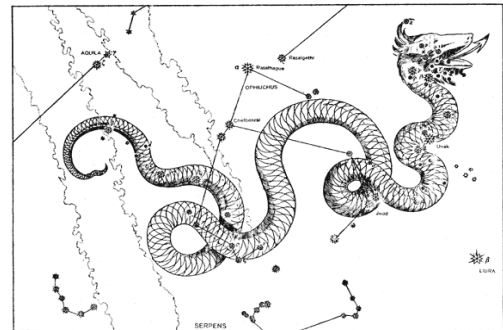
3. *Name two former and future pole stars visible in the summer.*

The precession of the earth's axis causes the pole to move in a complete circle every 26000 years. Polaris is the pole star now. **Thuban** was the pole star in 3000 BC when the great Pyramid was built and will be again about 23000 AD. The great Pyramid is the most perfectly aligned building on earth with the main passage lining up with Thuban (about 3000 BC). **Vega** was the pole star (about 5 degrees from pole) around 12000 BC and will be again in 14000 AD.



4. *A house divided cannot stand and neither can this constellation.*

**Serpens** the serpent is the only constellation divided into two parts by the serpent bearer himself Ophiuchus. An ancient constellation included by Ptolemy in his list of 48 constellations. Serpens Caput represents the head and Serpens Cauda the tail. Bayer designations go by brightness between both parts, i.e. there is only one α, one β, etc. M5, M16, and a little of the Milky Way reside in Serpens.



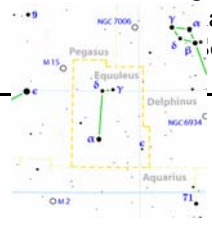
5. *The first star photographed, first star to have its spectrum photographed, and first star to have its parallax measured. Only one answer please!*

**Vega** was photographed (or daguerrotyped) in 1850, had its spectrum photographed in 1872, and debatedly in 1837 was the first star to have its parallax measured. It also had a car named after it in 1971. Vega is in the constellation Lyra and also part of the Summer Triangle asterism along with Deneb in Cygnus and Altair in Aquilae.

## Answers to Summer Sky Trivia

6. Name the stars of the “Stinger”.

The stinger is Scorpius is made up of two stars - 1.59 magnitude **Shaula** ( $\gamma$  Scorpius) & 2.68 magnitude **Lesath** ( $\mu$  Scorpius). Shaula in Arabic means raised tail and Lesath means pass of a poisonous animal. If Shaula was about .1 mag brighter, Scorpius would have two first magnitude stars.



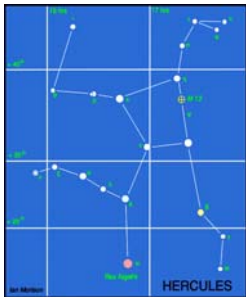
7. The least of all Northern constellations.

**Equuleus**, latin for little horse, is the smallest constellation visible in continental America (only Crux in the southern skies is smaller). It is very inconspicuous with only 3 - 4<sup>th</sup> magnitude stars and few notable deep sky objects. Galaxies NGC 7015,7040,7045,7046 reside in Equuleus.

8. It divides only in summer.

The summer **Milky Way** splits in Cygnus. You may need to travel to a dark site to see it. You'll be glad you did. When you look at the milky way you are seeing the arms or plane of the Milky Way Galaxy. The Milky Way Galaxy is about 100,000 light years across and 1000 light years thick and shines with over 200 billion stars.

9. A Roman arch requires a(an) \_\_\_\_\_.

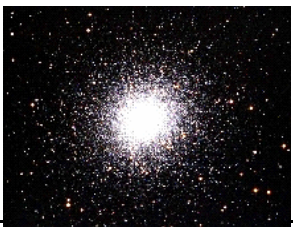


**Keystone**, an asterism in the constellation Hercules. The keystone was considered to be the most important stone of a Roman Arch. The Keystone also contains the Great Globular Cluster M13 on the west side. It was named after the Roman name (*Hercules*) of the Greek Mythological hero Heracles. It also contains another Messier globular M92. Alpha Hercules (Rasalgethi) is an interesting double star with both components being variable - 3.1 to 3.9 and 5 to 7. The brighter of the pair is red orange with the dimmer star blue green. It has been classified green in some observing accounts.

10. Mars has a “Rival”.

**Antares**, from the Greek, the “Rival of Mars”. The 15<sup>th</sup> brightest star at magnitude .92, located in Scorpius, is an M-Type supergiant, like Betelgeuse. When Mars is near Antares and at a similar magnitude they make a fine red pair.

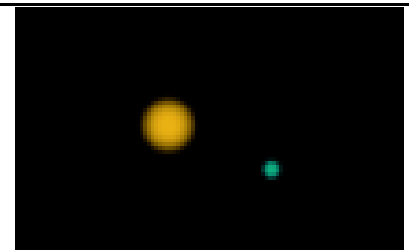
11. Frodo fought the Great Goblin. You can view M\_\_ in the summer.



The Great Globular Cluster **M13** in Hercules is the brightest globular in the northern hemisphere at magnitude 5.8. It is spectacular when resolved in a 6” or bigger telescopes. The cluster is composed of several hundred thousand stars and is about 25,000 light years from Earth.

12. Showpiece double of the summer skies.

**Albireo** or  $\beta$  Cygnus, the head of the swan, is a magnificent double with magnitudes (3.1 and 5.1). With contrasting colors of gold and blue, the pair is easily seen at low power. They had been considered as merely an [optical double](#), not orbiting around a common point as a true [binary star](#) system would be. However, in spite of the large distance between them, it has been shown that they are a true binary system. The brighter, yellow member of the



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The Sky in mid  
 July 2007 at 8  
 PM CST from  
 35° North  
 latitude

