



# SACNEWS

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## Inside This Issue

*The Sky According to J.R.R. Tolkien* 1

*NASA's Space Place: Space Weather* 2

*A Call For Observations- Canes Venatici* 4

*Bits & Pieces: Minutes of the June General Meeting* 6

*Calendar of Events* 7

*The Astro Ambassador* 8

*Member Services* 11

## The Sky According to J. R. R. Tolkien

By Roger Curry

I recently finished a long, slow read of J. R. R. Tolkien's trilogy, "The Lord of the Rings", the film adaptation of which was epic and seen by millions of people who never read the books.

Occasionally, in the books, I came upon descriptions of celestial events—some accurate and some not so accurate. It is hard for me to conclude whether Tolkien had a good understanding of the sky or not. Here are some notes that I made. The page numbers reference the paperback edition published by Houghton Mifflin Co., New York, NY.

"Away high in the East swung Remmirath, the Netted Stars, and slowly above the mists red Borgil rose, glowing like a jewel of fire. Then, by some shift of airs all the mist was drawn away like a veil, and there leaned up, as he climbed over the rim of the world, the Swordsman of the Sky, Menelvagor with his shining belt."

This is a very nice description of the Pleiades (the netted stars), Aldebaran (Borgil) and Orion (Menelvagor). My reading of it implies a view from the northern hemisphere, since in the mid-southern latitudes, the Pleiades, Aldebaran, and Orion, all rise simultaneously, and Orion would rise upside down. Page 80.

"In the dead night, Frodo lay in a dream without light. Then he saw the young moon rising; under its thin light there loomed before him a black wall of rock, pierced by a dark arch like a great gate."

Unless he is confusing the young Moon with the old, the young Moon rises during the day, soon after the Sun, and sets early in the evening. Page 125.

"In the midst of it there stood a single stone, standing tall under the sun above, and at this hour casting no shadow."

Unless the location is in the tropics, all objects in the sunlight will cast a shadow. If within the tropics the Sun would pass overhead, so that vertical objects do not cast a shadow, only on two days of the year. Many other references speak of snowfall, changing leaves, cold winters, all of which would indicate a temperate zone. A stone at an angle (like a gnomon) would cast no shadow (again, twice each year), but the "standing tall" implies a vertical placement. Page 134.

"The Sickle (the Hobbits' name for the Plough or Great Bear) was swinging bright above the shoulders

*(Continued on page 3)*

# NASA's Space Place

## Space Weather By Patrick Barry and Tony Phillips

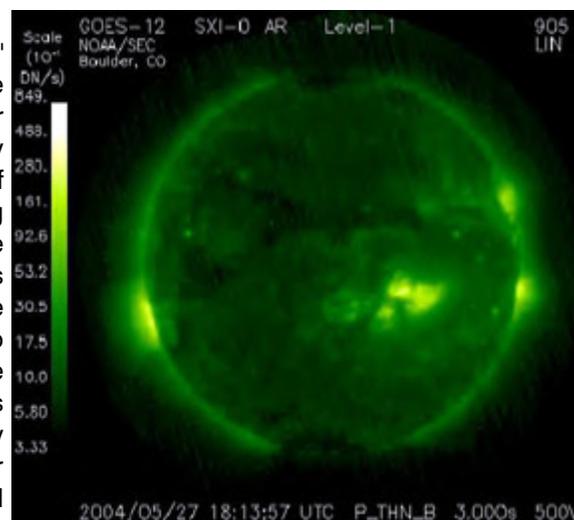
Radiation storms, 250 mile-per-second winds, charged particles raining down from magnetic tempests overhead ... it sounds like the extreme weather of some alien world. But this bizarre weather happens right here at Earth.

Scientists call it "space weather." It occurs mostly within the gradual boundary between our atmosphere and interplanetary space, where the blast of particles and radiation streaming from the Sun plows into the protective bubble of Earth's magnetic field. But space weather can also descend to Earth's surface. Because the Earth's magnetic field envelops all of us, vibrations in this springy field caused by space weather reverberate in the room around you and within your body as much as at the edge of space far overhead.

In fact, one way to see these "geomagnetic storms" is to suspend a magnetized needle from a thin thread inside of a bottle. When solar storms buffet Earth's magnetic field, you'll see the needle move and swing. If you live at higher latitudes, you can see a more spectacular effect: the *aurora borealis* and the *aurora australis*. These colorful light shows happen when charged particles trapped in the outer bands of Earth's magnetic field get "shaken loose" and rain down on Earth's atmosphere.

And because a vibrating magnetic field will induce an electric current in a conductor, geomagnetic storms can have a less enjoyable effect: widespread power blackouts. Such a blackout happened in 1989 in Quebec, Canada, during a particularly strong

geomagnetic storm. These storms can also induce currents in the metallic bodies of orbiting satellites, knocking the satellite out temporarily, and sometimes permanently.



*This image shows the outer solar atmosphere, or corona, as viewed by the GOES 12 Solar X-ray Imager (SXI). It shows the plasma at 4.0 MK (million degrees Kelvin). Bright areas are associated with sunspots seen in white light images and may produce explosive events known as flares. Dark regions are coronal holes where the fastest solar wind originates. Image courtesy of the Space Environment Center/NOAA.*

Partly because of these adverse effects, scientists keep close tabs on the space weather forecast. The best way to do this is to watch the Sun. The NASA/ESA SOHO satellite and NOAA's fleet of GOES satellites keep a constant watch on the Sun's activity. If a "coronal hole"--where high-speed solar wind streams out from the Sun's surface--comes into view, it could mean that a strong gust of solar wind is on its way, along with the geomagnetic storms it will trigger. And an explosive ejection of hot plasma toward the Earth--called a "coronal mass ejection"--could mean danger for astronauts in orbit. The advancing front of ejected matter, moving much faster than the solar wind, will accelerate particles in its path to near the speed of light, spawning a radiation storm that can threaten astronauts' health.

Look for coming articles for more about space weather and about NOAA's efforts to forecast these celestial storms. Meanwhile, read today's space weather forecast at <http://www.sec.noaa.gov/>. Kids can learn about the geostationary and orbits of the GOES satellites at [http://spaceplace.nasa.gov/en/kids/goes/goes\\_poes\\_orbits.shtml](http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml).

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

*(Continued from page 1)*  
of Bree-hill.”

This is another strong hint that the location is set in the northern hemisphere. Page 171.

“Suddenly, a pale light appeared over the crown of Weathertop behind him. The waxing moon was climbing slowly above the hill that overshadowed them, and the stars above the hill-top faded.”

A waxing Moon always rises in the daytime. He got the part about the Moon causing the stars to fade right, though. Page 190.

“I have crossed many mountains and many rivers, and trodden many plains, even into the far countries of Rhun and Harad where the stars are strange.”

This is more evidence that the setting is in a temperate zone; traveling south in the northern hemisphere or north in the southern hemisphere will bring “strange” stars into view. From a tropical location, you would have to travel to polar regions to see “strange stars”. Page 242.

“The evening star had risen and was shining with white fire above the western woods.”

There seems to be some confusion here. If the “evening star” (probably Venus) was rising, it would be in the east and would be the “morning star”. To be the evening star, this “star” would have risen during the day. The implication of the passage is that the “star” rose in the west. Page 352.

Sometime around this point I stopped underlining passages until much later. There were many more references to the Moon and stars, including a full “Hunter’s” Moon, which occurs in the autumn.

The final passage that I marked is found on page 770. It does not really apply to the movement of the sky as much as it retells a common misconception.

“So deep and narrow was the chasm that the sky was dark, and in it small stars glinted. Yet as Gimli after

learned it was still two hours ere sunset of the day on which they had set out from Dunharrow.”

In fact, if you were at the bottom of deeply shaded canyon or ravine, the sky would appear brighter to you, rather like looking at a flashlight at night.

Many people believe that you can see stars in the daytime by standing inside a chimney or at the bottom of a well. The brightness of the sky does fall off if smaller and small sections of it are looked at, which is why it is possible to see stars in a telescope in the daytime. It has been computed that to see stars in the daytime, you would have to reduce the area of the sky you are looking at to a few arc-minutes in diameter. If you were lucky enough to see one star, it is very doubtful that you would see two in such a tiny space. See this article on the web for an interesting discussion: [www.wonderquest.com/daylight-stars.htm](http://www.wonderquest.com/daylight-stars.htm)

Interestingly, visual sightings of the brightest planets (Venus and Jupiter) have been made in the daytime, but it is only from extremely high locations, like the Himalayas, where you are above so much of the atmosphere that there is less light scattered by it, that the brightest stars have been spotted in the daytime sky. This is simulated during solar eclipses. Venus pops out about 10 minutes or so before totality. During totality, most of the planets are visible if they are anywhere near the Sun. Even then, the sky does not become dark like it does after sunset.

I enjoy looking for astronomical clues in literature and testing them for plausibility. There were a few passages in Victor Hugo’s “Les Miserables” that make me believe he was familiar with the sky. In “Moby Dick”, Melville mentions Aldebaran on the first page. It has been many years since I read that wonderful book and a re-reading may reveal other passages.

If anyone else has made similar “observations” in literature, I would enjoy hearing from them and perhaps doing another article like this one.

*This article is used with the permission of the author, a member of the Northeast Florida Astronomical Society. Visit them at [www.nefas.org](http://www.nefas.org)*

## Last Call For Observations—Canes Venatici

By A.J. Crayon

This month's constellation, the Hunting Dogs and pronounced KAY-nee-z ven-AT-iss-see, rides south of the handle of the Big Dipper and its brightest star, Cor Caroli, is easily spotted in either of two right triangles of stars. One includes Alkaid, Cor Caroli and Arcturus and the other is Mizar, Alkaid and Cor Caroli. This star is a lovely color contrasting double; check it out next time you are observing. The name means *the Heart of Charles* and was suggested by Halley in honor of King Charles II of England. The other story has it named *Cor Caroli Regis Martyris* for Charles I, who was executed. I prefer the first story!

The hunting dogs are named *Chara*, "Dear", for Cor Caroli and *Asterion*, "Starry", for beta Canum Venaticorum. Although this constellation is star poor, it is rich in galaxies; hence most of the selections for this month are galaxies. Many of them are bright enough to be in the Messier Catalogue, but not all made it there.

The 19<sup>th</sup> century astronomer, from Italy, Father Angelo Secchi poetically named Y Canum Venaticorum "La Superba" because of its deep red tone. On red sensitive plates it is very bright on blue plates, very faint – a common trait for stars in this class.

Again, due to the fact that not enough observations were submitted in the time allotted some were taken from other sources. This is not the intent of this column, as stated here and at our meetings, this is for you, SAC members to submit your observations for inclusion. This is not happening enough and needs to change. More of you must start submitting; otherwise we may see the demise of this column.

### 2 Canum Venaticorum

8" F/6, Newtonian, 38X; Charlie Whiting: I can be seen that this is a double star. The split is clean. The primary is a very bright yellow and the secondary is a couple of magnitudes dimmer, but very blue. I estimated that the separation was about 10" and the PA about 265-degrees. At 96x the separation is more obvious, the yellow fades a little and the blue is just as a little whiter. My estimates agree pretty closely with WDS data. The primary is 5.69 mag and the secondary is 8.64 mag. At 38x there are about 10 stars in various positions around the FOV.

**8", f6, Newtonian, 80X;** AJ Crayon: this fine double is orange and very blue and is separated by about 8" in position 270°.

**15", f5, DOB, 87X;** Thad Robosson: quite yellow, currently much fainter than beta Canum Venaticorum; estimated magnitudes at 5.5.

**16" f4.4 Newtonian,** Rick Rotramel. Dbl. \* - I saw them as Orange/Blue, a fine contrast. Listed mags. 5.5/8, sep. of 11".

### Y Canum Venaticorum

8" F/6, Newtonian, 38X; Charlie Whiting: At 38x it was brighter than any star in the FOV. A lot brighter than 2 stars towards the NE (9.3 & 9.97 mag). A lot brighter than a star towards the south (9.13 mag). Switching to the 9x finder it was brighter than any stars in the vicinity. A little brighter than a star to the NE (6.11 mag). A little brighter than any of the 3 stars to the south (6.34, 6.95 & 7.91 mag). So, in spite of the data, I would estimate this star's brightness at 6.0 or brighter.

### NGC 4143

8" F/6, Newtonian, 38X; Charlie Whiting: the galaxy was just barely detectable. At 96x it began to take shape. Small, with a stellar

(Continued on page 5)

(Continued from page 4)

nucleus. The halo was indistinct. Stepping up to 192x, the halo blossomed a little to the SW, diagonally opposite from Skymap's PA. The nucleus appeared to be about 10"-20". The halo was about two or three times the diameter of the nucleus (30"-60"). If the galaxy is actually about 3' in diameter, chances are good that I saw only the nucleus and none of the halo. It is a barred spiral, so maybe I was seeing the bar. There is a bright star towards the SW (8.48 mag).

**8", f6, Newtonian, 80X;** AJ Crayon: size estimated at 2' and 12<sup>th</sup> magnitude; has a much brighter middle with a stellar nucleus of about 0.5'. The field has 12 stars from 8<sup>th</sup> mag to 12<sup>th</sup> mag.

13.1" f5.6, Newtonian, 135X; Steve Coe: Pretty bright, pretty large, elongated 1.5 X 1 in PA 135, much brighter in the middle.

**14.5" f5.2, Dobsonian, 220X;** AJ Crayon: pretty large, very elongated in an easterly position, 5'X2' and 11<sup>th</sup> mag. With direct vision this galaxy has a suddenly much brighter middle that is offset to the east. With averted vision the suddenly brighter middle is more centered with some mottling noted on the north and south sides. The field has about three faint stars to the south.

**16" f4.4 Newtonian, 200X,** Rick Rotramel. G - fB, pS, nearly R, faint outside, w/stellar nucleus.

### NGC 4631

**8" f6, Newtonian, 120X;** AJ Crayon: 15'X5' 10<sup>th</sup> mag with a very mottled middle, 12<sup>th</sup> mag star attached at the middle of the north side; the field has 8 stars 20' north and 10 stars from 10<sup>th</sup> mag to 14<sup>th</sup> mag limit of the telescope. NGC4627 is just to its north.

13.1" f5.6, Newtonian, 135X; Steve Coe: 150X very bright, very large, extremely elongated 6X1 in PA 90 with a bright middle. There is a star attached on the north edge and the galaxy is brighter along the north side. The body is very mottled and there are bright and dark markings within the structure of the galaxy along the body. I just watched "Crimson Tide" maybe it is a submarine with an incoming torpedo (the companion NGC 4627)

**14.5" f5.2, Dobsonian, 220X;** AJ Crayon: very bright, extremely large and very elongated, about 10-1, in an easterly position. This breath-taking object filled the 15 arc minute field of view! It is very mottled and brighter

to the east side; the west side has less mottling that is smaller and fainter, and gradually tapers off to nothing.

**16" f4.4 Newtonian, 200X,** Rick Rotramel. G - B, vL, very elongated, w/mottling, w/one bright spot near each side of nucleus. G - NGC4627 is just north of the nucleus, small oval & faint.

16/18" Newtonian, 125X; *The Night Sky Observer's Guide:* Awesome! NGC4631 is an extremely long, very thin 15' X 2' E-W spindle with an irregularly bright, mottled halo and highly tapered ends. A well concentrated knot is on the western tip, and numerous bright and dark splotches are along the length of the major axis. A 12<sup>th</sup> magnitude star touches the northern edge of the halo near the spindle's center, and a 13<sup>th</sup> magnitude star is just north of the galaxy's western tip. 2' NW of the 12<sup>th</sup> magnitude star is companion galaxy NGC4627, a faint 1' X 0.5' smudge.

### NGC 4656

**8" f6, Newtonian, 80X;** AJ Crayon: bright, very elongated in an easterly direction, **100X** 10'X2' 11.5mag (10.9 hard to accept could be the low surface brightness) not as long as NGC4631. NGC 4657 appears attached to the northerly end.

13.1" f5.6, Newtonian, 150X; Steve Coe: Pretty bright, large, much elongated 4X1 in PA 30. not much brighter in the middle, no real nucleus, just several bright spots near the center of the galaxy. The "hockey stick" shape is obvious.

**14.5" f5.2, Dobsonian, 180X;** AJ Crayon: a very interesting pretty bright, very irregular, elongated galaxy in a northeast position angle where the northeast end arcs to the east, joining NGC4657. Hence the nickname Hockey Stick! There is considerable mottling at the north end and some brighter mottling to the southwest end.

**16" f4.4 Newtonian, 200X,** Rick Rotramel. G - pB, fL, irregular shaped, large at one end, tail hook at the other. The Hockey Stick Galaxy.

### M3, NGC 5272

**8" f4.5 Newtonian, 180X,** Rick Rotramel. GC - B, pL, Round, vRich, gradually br/middle, many strings of stars on the outside. A real beauty!!!

**8" f6, Newtonian, two observations;** AJ Crayon: one of my first observations of this globular cluster was at **50X**

(Continued on page 9)

## Bits & Pisces: Minutes of the General Meeting, June 4, 2004

### Recorded by Joe Macke

President Thad Robosson called the meeting to order at 1932MST. There were 41 attendees.

1. Thad welcomed the assembly and asked if there were any guests in attendance. There were four including a previous member and a new member.
2. Treasurer Al Stiewing invited the guests to sign the guest book and reminded everyone that there were member services forms available. He reported that the club has \$1483.87 in the checking account, \$4329.13 in savings and \$20.00 on-hand.
3. Al also handed out nametags and still has tags for absent members Michael Weiss and Bill VanOrden.
4. Newsletter editor Rick Tejera informed the guests that if they sign the guest book, he would send them a complimentary copy of the SAC newsletter. The June newsletter should be posted on Monday, June 7.
5. Deep-sky chairman A.J. Crayon reported that he received some observations of Leo Minor, but had to add some from Steve Coe and himself, possibly due to the unusual constellation and the poor weather.
6. The next constellations for observing reports to be included in his column are Canes Venetici and Virgo. The format for observations is in the column.
7. A.J. then offered a commercial for the Vickers CCD atlas. The new version is \$93 for the Northern and Southern hemispheres with a CD. The URL is <http://www.gjs.net/~vickers>.
8. Mr. Crayon then related that during the last new moon weekend, he'd been observing with the Sirius Lookers at a site near Stoneman Lake and Lake Mary. He met a gentleman and his young teenage son. They had discovered the Urban List on the SAC web site and were very appreciative. Dave Fredericksen added that he'd met a man from Ireland who'd downloaded the SAC database.
9. Steve Coe had free handouts; first, a list of the observing sites and directions. Second, he had a list of double stars to use to help determine seeing. The pairs range from magnitude 7 to 9 and the separation from 0.8 to 2.5 arc seconds. He invited the members to go out and observe the stars, take notes on the magnification, telescope, site, your estimate of the seeing and your personal condition. For the doubles, note whether the stars are 1. not split, 2. appear like a loaf of bread, 3. notched, or 4. separated by a dark lane. For your personal condition, note whether you are sleepy, have consumed coffee, alcohol, etc. Just do a quick peek at the stars. In September, the observations will be compared to see whether a useful measure of seeing can be compiled.
10. An attendee noted that Steve's book is featured in this month's "Scientific American" book club. The secretary hopes that this does not damage Steve's reputation.
11. Show and Tell: Paul Dickson played several excerpts from the radio program "Star Date" that discusses the upcoming transit of Venus across the Sun's disk. The program's web site (<http://stardate.org>) has transcripts.

A short break was taken at 2008MST.

The meeting re-convened at 2018MST.

Before introducing the speaker, Vice President Jennifer Keller reported that Dean Ketelsen had been awarded the Clifford Holmes Award for Outreach at RTMC.

Jennifer then introduced the evening's speaker, William K. Hartmann, who was/is involved with the Mariner 9 and Mars Global Surveyor projects. He gave a talk on the geology of Mars, the evidence for the existence of water and how the planet's wobble might have allowed for more surface water.

At 2150MST, Ryan Wyatt of the Hayden Planetarium gave a very short demonstration of "Digital Space," a computer program that allows visualization of astronomical data. The program can be downloaded from their web site at <http://haydenplanetarium.org>. Be sure to look for the user's guide since the program's operation is not particularly intuitively obvious.

The meeting adjourned at 2205MST.

# August 2004

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## Schedule of Events for July & August 2004

July 2nd	Moon is Full at 1109 mst.
July 2nd	<b>SAC General Meeting at Grand Canyon University at 1930, Speaker Steve Dodder, will speak about our nearest Star. A board meeting will precede the General Meeting at 1830. All are welcome to attend.</b>
July 9th	Moon at Last Quarter at 0734mst.
July 10th	<b>SAC Star Party at Cherry Rd. Sunset: 1943, Ast Twilight: 2126, Moonrise 0105</b>
July 17th	Moon is new at 1124 mst.
July 25th	Moon is at first Quarter at 0337 mst.
July 27th	<b>ATM &amp; Astro-Imaging Sub groups meetings at Precision Guitar at 1930</b>
Jul 30th	<b>Blue Moon SAC Meeting At Grand Canyon University at 1930 Speakers: Doug Snyder &amp; Dave Healy from the Huachuaca Astronomy club will talk about observing the transit of Venus from Europe &amp; Alaska, respectively</b>
July 31st	Blue Moon at 1805 mst.
Aug. 7th	Moon at last Quarter at 2201 mst.
Aug. 7th	<b>SAC Star party at Cherry Rd. Sunset 1924, Ast Twi Ends: 2058, Moon rise 2335</b>
Aug. 16th	Moon is new at 0124 mst.
Aug. 23rd	Moon at first Quarter at 1012 mst.
Aug. 24th	<b>ATM &amp; Astro-Imaging Sub groups meetings at Precision Guitar at 1930</b>
Aug. 27th	<b>SAC General Meeting at Grand Canyon University at 1930: Speaker Gene Turner will speak on an alternative way to preserve a piece of Dark Sky. He will also have some of solar photography with him</b>

## The Astro Ambassador

### By Rick Tejera

Most of the people I work with know about my passion for astronomy. Maybe it's the flyer's for our Public events with my name on them, maybe it's the astro-photos on my desk or the copies of Sky & Tel & Astronomy on my filing cabinet. At any rate, this knowledge has convinced most folks that I'm the person to ask when they see something on the news about an astronomical event or if they happen to look up into the sky at night and notice that there are little points of light up there. It never ceases to amaze me how little people know of the night sky. Invariably after working at my office for 9 years, I can predict with reasonable accuracy what questions, I'll be asked and when.

For example: Without fail when Venus is at it's eastern apparition and reaches about 20 degrees above the horizon at sunset, it's time for the following exchange: Co-worker: "Hey Rick, Last night I was looking out my window and there was this really bright light in the sky. Looked like an airplane. Rick (Cutting into the explanation of what they saw) "Venus." Co-worker "Are you sure?" me: "Yes, I've been watching it myself the past two weeks." Co-worker "Really, I just saw it yesterday, wasn't there the day before" Rick: Yes it was, you just didn't look, it'll be in the southwestern sky after sunset for the next several weeks." Co worker: "Cool, I never noticed it before", me: "Actually you asked me the same question the last time Venus was visible." The conversation usually ends with me sighing and shaking my head.

Iridium flares are another source for questions. I'm actually surprised at how many folks have seen them just by looking in the right place at the right time. Heck, I've missed them and I KNEW where to look. I usually tell that what they saw was Motorola's billion-dollar

entertainment system for amateur astronomers. Usually gets a laugh. Satellites also tend to bring on the UFO questions. "No, it was probably a weather satellite or a communication satellite". "But it was blinking". "Then it was probably an expended rocket booster tumbling and reflecting light in an irregular pattern". "You Sure?". "Yeah, I'm sure".

The best one was the guy who came up and said "Hey Rick, Yesterday I saw the most amazing thing. I heard an airplane and looked up and I thought I saw the moon. How can you see the moon during the day? A quick (by my standards) explanation of orbital mechanics usually ends the conversation. While I'm on the moon, there was the time I had to De-bunk the story about the reason we can't see the far side of the moon was that it was always in the dark. An orange, grapefruit & lemon helped solve that one.

Then, of course the media doesn't help people's perception of the sky a whole lot. Last summer I was inundated with people asking me about the once in a lifetime chance to see Mars. I can't begin to count how many times I told them, just wait two years, it'll be pretty much the same, just happened to be THE biggest this year, but it's usually not much smaller at opposition. I did manage to get few of them out to our Mars party last October, so I guess the effort wasn't wasted.

A few weeks ago someone asked me if I has seen all the planets in a line, like they said on the news. I actually had to think about that. I thought for a minute she was referring to the conjunction a few years ago, but then after drawing a mental star chart of the planets, I

*(Continued on page 10)*

(Continued from page 5)

and it was seen as round with a bright large middle. Years later, a much more recent observation at **120X**, it was seen as 10' 8<sup>th</sup> mag, large, round, very compressed with a very gradually brighter middle and stars resolved about the edges. The field has 12 stars from 10<sup>th</sup> to 13<sup>th</sup> mag with three bright ones forming a right triangle. This globular cluster was visible in both a 6X30 and an 8X50 finder.

**14.5" f5.2, Dobsonian, 290X;** AJ Crayon: this globular cluster, almost filling the 20' field; is very large, very rich, very bright with the middle containing the nebulousity of unresolved stars. This middle also has unresolved stars all across the face, just beyond, which contains swarms of stars in close proximity to each other. Farther out the stellar density decreases.

### M94, NGC 4736

**8" f6, Newtonian, 100X;** AJ Crayon: 10'X8' 11<sup>th</sup> mag, very large, a little elongated in a northerly direction and has a gradually brighter middle. The field has 4 stars from 10<sup>th</sup> to 13<sup>th</sup> mag.

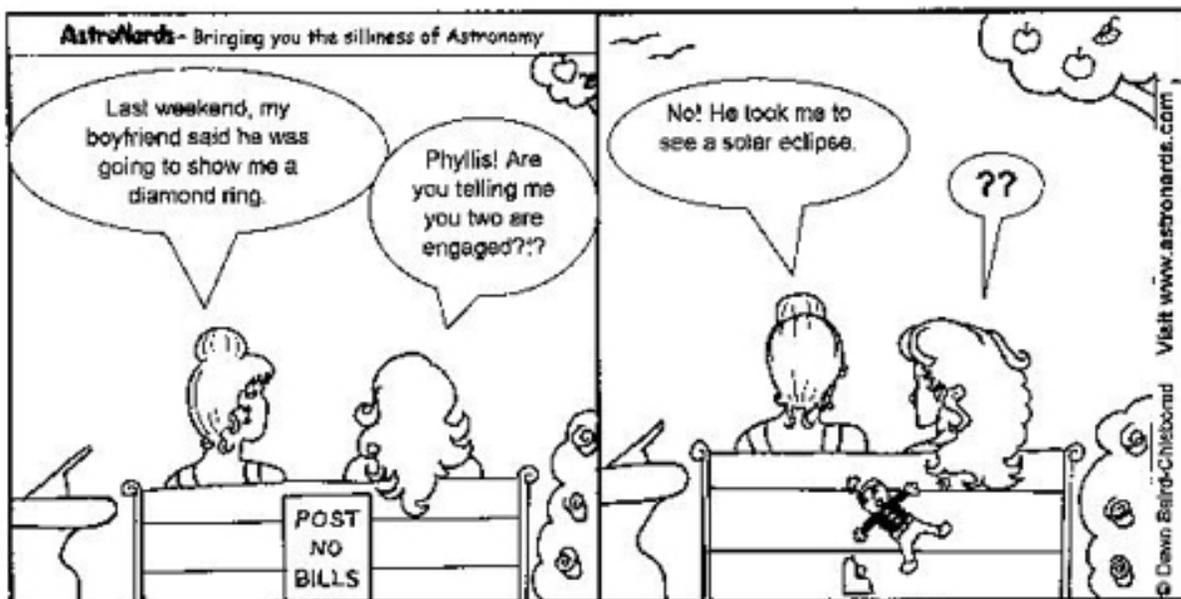
**14.5" f5.2, Dobsonian, 220X;** AJ Crayon: large, bright, round, face on spiral, with a large gradually very much brighter round middle. With averted vision the galaxy gets bigger. With a UHC the bright middle is easily seen, but the arms are difficult to detect.

**15", f5, DOB, 87X;** Thad Robosson: easily spotted with a nearly stellar core. At **190X** shows extended core and faint outer halo not easily seen. Averted vision helps. Hints of spiral structure are somewhat evident, as are many brighter knots.

## Call For Observations

For August column bite the bullet and do Virgo! So many galaxies so little time and we can start just about anywhere we want. Let's begin with the brighter Messier objects and heart of the Virgo cluster of galaxies M84, M86 and friends NGC4387, NGC4388 all in the same field of view. After this observation, count the number of galaxies you see in a 1° field centered on NGC4387 and report your count. Next M49, the brightest of the Virgo galaxy cluster, again count the number of galaxies in a 1° field and report. Finally, rounding out the galaxy pig out, M87 and M89. For the double star 31 Virginis (S.W. Burnham 924 and verified with Guide 8) should do, its separation is a little closer than those in the past but should be split able for just about any reasonable size telescope. For a lagniappe add SS Virginis, a pulsating variable; what color do you see?

For the September installment, Ophiuchus will be the constellation. For the selections we'll stick with globular clusters and planetary nebula, as they are plentiful here. We will skip dark nebula and save them for another time. Here are the selections; M107, M10, IC4634 a 12<sup>th</sup> mag planetary, NGC6284 a 9<sup>th</sup> mag globular, NGC6309 PNe 11.6m, NGC6342 a 10<sup>th</sup> mag globular cluster, NGC6369 11<sup>th</sup> mag planetary nebula. Finally there's NGC6572 an 8<sup>th</sup> mag planetary, but look for STF2096 a triple star.



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*(Continued from page 8)*

realized some newsie, must've somehow figured out that five planets would be visible in the evening sky. I told her that the planets are always in a line (didn't bother to try to explain the ecliptic). It just happens that they're spread out from one horizon to the other. Told her if she looked real careful, she could see a sixth planet. "Where", she asked. "Look down" I said.

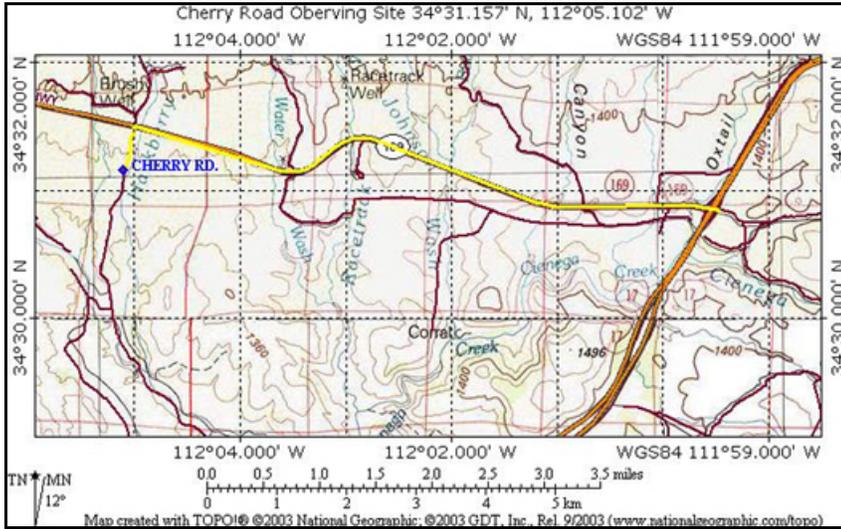
Now one might think that I find these exchanges a bit annoying, but that is not really the case. I have to remind myself that not everyone shares my passion for astronomy. I lament at the lousy job our schools do of teaching basic astronomical awareness (as evidenced by the questions related previously). I am at least gratified that people ask the questions when they notice something strange up there, even if it's the milky-way (I read somewhere that fewer than one in five people in the world have seen the milky way. Once during a blackout in Los Angeles, the police were inundated with calls about the strange white band of light in the sky, how sad is that?). I therefore consider myself an ambassador of astronomy. My goal is not to make converts out of everyone (although there are those who'll argue that point) but to at least get people to think about our place in the vastness of our universe. I try to avoid cosmological concepts, as they tend to overwhelm the mind with the out of the box thinking required to understand them (that and the fact that I usually have to read the articles

in S&T twice to begin to understand them myself). Just some simple basics about how far away things are, what causes things to appear they way they do and such. I also try to help folks look in the right direction when something of interest is going to occur. I know as August approaches, I'll get questions about the Perseids. Most folks will be a bit disappointed to learn that the best views come in the early hours, but I know someone will get out of bed a 2 a.m. to take a look. Hopefully they won't be disappointed.

Before electricity lit up our skies, the night sky was a source of fascination to people around the world. The ancient mythologies of all cultures have vivid tales of heroes and villains held within the stars. The stories tried to tie in their existence in an obviously much large scheme of things. Some say today's culture is too fast paced to notice such mundane things as stars, but I disagree. Life just one hundred years ago was not as easy as we have it today. I doubt any of us would be able to manage, given the opportunity to travel back in time. I'm amazed that at the end of a day of hard work just to put a few meager scraps on the table, that people took the time to look up. All it takes is one look and most folks will at least have their curiosity aroused. It's our job to fuel that fire. So the next time that fellow come to me and says, "Hey Rick, Last night I was looking out my window and there was this really bright light in the sky. Looked like an airplane.", I'll smile and say: "Venus".

# SAC Meeting and Observing Sites

## Cherry Rd. Star Parties



Take I-17 north to the Cherry Rd exit. Turn west (left) and continue on Cherry Rd for about 5 miles. Turn Left on the dirt road just past the sign that says Cherry 6. Note you turn in the direction Opposite the arrow on the sign. The site is 1/2 mile in through a fence on your right. Please close the gate behind you and make sure it remains closed at all times

## ATM & Astro-Imaging Subgroup Meetings

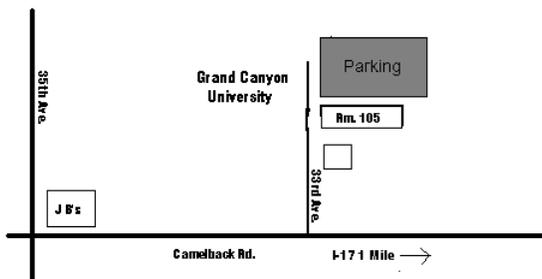
The ATM (Amateur Telescope Making) and Astro-Imaging sub groups meet at Thad's Shop, Precision Guitar, on the Tuesday before the General meetings. The address is: 4442 N. 7th Ave, Phoenix. To get there:

Precision Guitar, is located at 4442 N. 7th Ave, suite # 6. Specifically, this is the SOUTHWEST corner of the STOPLIGHTED intersection at 7th Ave and Campbell. (Campbell is 1/2 mile SOUTH of Camelback, and 1/2 mile NORTH of Indian School) The suite on the end sports a large "Allied Cabinet Refinishing" sign on the front of the facade. We are further in (west) at suite 6. Please see <http://www.precisionguitar.net/ShopSatPhotoA.jpg> for a bird's eye view map.....



## General Meetings

7:30 p.m. at Grand Canyon University, Fleming Building, Room 105: 1 mile west of I-17 on Camelback Rd., North on 33rd Ave., Second building on the right.



# SAGUARO ASTRONOMY CLUB

July 2004

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*Videmus Stellae*



## SAC Schedule of Events 2003-2004

### SAC Meetings

Jan 9th, 2004	<b>Jul 2nd, 2004</b>
Feb 6th, 2004	<b>Jul 30th, 2004</b>
Mar 5th, 2004	Aug 27th, 2004
Apr 2nd, 2004	Sep 24th, 2004
May 7th, 2004	Oct 29th, 2004
Jun 4th, 2004	Nov 19th, 2004

### ATM & Astro-Imaging Group Meetings

Jun 29th, 2004	<b>Jul 27th, 2004</b>
Aug 24th, 2004	Sept 21st, 2004
Oct. 26th, 2004	Nov. 16th, 2004

### SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise	Site
Jan 17, 2004	1747	1915	0429	F
Feb 14th, 2004	1814	1938	0327	F
Mar 13th, 2004	1839	2002	0328	F
April 10th, 2004	1859	2025	0124	F
May 15th, 2004	1924	2103	0404	C
June 12, 2004	1942	2127	0234	C
<b>Jul 10th, 2004</b>	<b>1943</b>	<b>2126</b>	<b>0105</b>	<b>C</b>
Aug 7th, 2004	1924	2058	2335	C
Sep 11th, 2004	1840	2005	0405	C
Oct 9th, 2004	1804	1927	0256	F
Nov 6th, 2004	1734	1859	0141	F
Dec 4th, 2004	1723	1851	0027	F

F= Flat Iron; C= Cherry Road