Saguaro Astronomy Club

SACnews

Volume 29 Issue 10 September-October 2005

Inside This Issue

Chaco and Chimney

Love and Marriage…

by Marjory Vin Williams

…go together like a horse and carriage. You can't see one, you shouldn't see one, without the other.

For those of you who know G.B. Cornucopia (from possibly as far as two decades back), if you haven't been to Chaco Culture National Historic Park recently, go but know that G.B. has vigorously taken control of this World Heritage Site.

He now has a 25-inch telescope and observatory to hold it, a computer room to exhibit CCD images, and the main building which is full of enlarged pictures of the stars. I think G.B. is there for his total National Park ranger career since few other rangers have vast archeoastronomy knowledge that he has.

Listen to G.B. rattle off the birth and death of a star in his concise way and you know he is methodical and precise in his thinking. That also makes him a conservative about assumptions. Artist Anna Sofaer, who you may have seen in the PBS Chaco Canyon film with the Robert Redford voice-over, is the most recent person to have made some discoveries and has several theories and conclusions about astronomical architecture there. G.B. says these and other conclusions are "informed speculation," and one must be careful.

For example, he will rattle off five or six interpretations of the famous Chaco Canyon star/ hand/moon pictograph other than the Taurus/Crab Supernova explanation. My response was, 'No kidding!" Then he will inform you that archeologists in the 20th century built back some of the windows/doors before they were aware of the obsession of the builders with north and south alignment and astronomical functions. For example, sometimes recent archeoastronomers may assure themselves that a door was of a certain width originally but then not know where the top and bottom of the door were.

After spending a week at Canyon de Chelly in September, I drove through the middle of the Chuska Mountains for my third visit to Chaco; the last time G.B., another camper and I gave a three-telescope star party at Fajata Butte for the September 26, 1996 lunar eclipse. This trip I was interested in Moon cycles with respect to the architecture. Well, G.B. says, Chimney Rock is the place to go.

Chimney Rock Archaeological Area is the most isolated, most northern and most remote of the Chaco "outliers." Located in Colorado, Chimney Rock has a SSW

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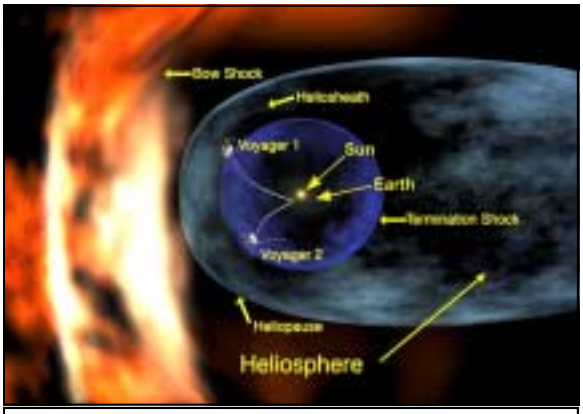
NASA Space Place

Where No Spacecraft Has Gone Before

by Dr. Tony Phillips

In 1977, Voyager 1 left our planet. Its mission: to visit Jupiter and Saturn and to study their moons. The flybys were an enormous success. Voyager 1 discovered active volcanoes on Io, found evidence for submerged oceans on Europa, and photographed dark rings around Jupiter itself. Later, the spacecraft buzzed Saturn's moon Titan—alerting astronomers that it was a very strange place indeed! —and flew behind Saturn's rings, seeing what was hidden from Earth.



Voyager 1, after 28 years of travel, has reached the Helios heath of our solar system.

Beyond Saturn, Neptune and Uranus beckoned, but Voyager 1's planet-tour ended there. Saturn's gravity seized Voyager 1 and slingshot it into deep space. Voyager 1 was heading for the stars—just as NASA had planned.

Now, in 2005, the spacecraft is nine billion miles (96 astronomical units) from the Sun, and it has entered a strange region of space no ship has ever visited before.

"We call this region 'the heliosheath.' It's where the solar wind piles up against the interstellar medium at the outer edge of our solar system," says Ed Stone, project scientist for the Voyager mission at the Jet Propulsion Laboratory.

Out in the Milky Way, where Voyager 1 is trying to go, the "empty space" between stars is not really empty. It's filled with clouds of gas and dust. The wind from the Sun blows a gigantic bubble in this cloudy "interstellar medium." All nine planets from Mercury to Pluto fit comfortably inside. The heliosheath is, essentially, the bubble's skin.

"The heliosheath is different from any other place we've been," says Stone. Near the Sun, the solar wind moves at a million miles per hour. At the heliosheath, the solar wind slows eventually to a dead stop. The slowing wind becomes denser, more turbulent, and its magnetic field—a remnant of the sun's own magnetism--grows stronger.

So far from Earth, this turbulent magnetic gas is curiously important to human life. "The heliosheath is a shield against galactic cosmic rays," explains Stone. Subatomic particles blasted in our direction by distant supernovas and black holes are deflected by the heliosheath, protecting the inner solar system from much deadly radiation.

Voyager 1 is exploring this shield for the first time. "We'll remain inside the heliosheath for 8 to 10 years," predicts Stone, "then we'll break through, finally reaching interstellar space."

What's out there? Stay tuned…

For more about the twin Voyager spacecraft, visit voyager.jpl.nasa.gov. Kids can learn about Voyager 1 and 2 and their grand tour of the outer planets at spaceplace.nasa.gov/en/kids/vgr_fact3.shtml .

Stonehaven Pot Luck Dinner & Star Party

By Steve Dodder

I'd like to invite members of SAC and their families to a pot-luck dinner/star party at our Stone Haven Observatory, located south west of Maricopa on Saturday, October 22, 2005. We'll provide soda and a barbecue grill. Bring something to throw on the grill and something to share. Chairs and a small table would be good, too. Well behaved children are welcome, and we'll have a "solar system walk" as the Sun sets. Our "special guest" will be Joe Orman, who will show us some of his wonderful astronomical slides after sunset.

Kindly arrive around 4:00 PM, with a call to the cell number below to verify weather conditions. (We'll be there, cloudy or clear, but rain may affect the event.) We have dogs, so if you're afraid, let us know.

Directions are as follows:

TAKE I-10 SOUTH TOWARD TUCSON. EXIT AT QUEEN CREEK ROAD TOWARD MARICOPA. PROCEED THROUGH MARICOPA, PAST THE HARRAH'S AK-CHIN CASINO 2 MILES. TURN WEST (RIGHT) ON PAPAGO ROAD. PROCEED WEST 5 MILES. PAPAGO TURNS SOUTH (LEFT) AND BECOMES WARREN ROAD. APPROXIMATELY 4 MILES, YOU'LL SEE BARNES RD. FOUR STREETS PAST BARNES IS PRICKLY PEAR. TURN WEST, (RIGHT), 0.6 MILES, ACROSS DEER TRAIL. YOU CAN'T MISS THE DOME.

53750 W. PRICKLY PEAR RD.
MARICOPA, AZ 85239

CELL-(602) 390-0118
HOME-(520) 424-9731
SDODDER@HOTMAIL.COM

Last Call For Observations–Sagittarius

By A.J. Crayon

I think we all know Sagittarius is supposed to be an archer, but most of us, myself included, call it the teapot. Another reference to some of its brighter stars is the Milk Dipper. Took a while to discover what stars were included. Turns out they include all four stars in the handle, two stars that form the teapot cover and μ Sagittarii. Check these out next time.

If you are doing, or contemplating doing, the Herschel 400 list, then all of these objects for this month are there with the exception of M23.

Messier 23

8" F/6 Newtonian; 38X; Charlie Whiting: Wow! At **38X** M-23 is a pretty large OC. To the NW is a bright 6.5 mag star about 20' from the center of the cluster. In the NE quadrant of the cluster there is an 8.2 mag star. There are two levels of stars visible. The first level consists of about 2-dozen stars of 9th and 10th mag stars. In a dimmer level there are probably that many or more stars of 11th – 13th mag, but they would be extremely hard to count because the background is so bright and many of them are on the threshold of visibility. At **60X** there are lots of stars resolved. M-23 is oblong shaped with the longer axis running NE-SW. It spans most of the FOV. This cluster must be close to 30' at its widest.
8" f/6 Dobsonian, 48x; Rick Tejera: Elongated 2-1 E-W, Several arced rows of stars convex to the west. Approx 40 stars.
10" F4.5 Newtonian, 50X; Ken Reeves: This open cluster is pretty big, pretty bright, and fairly evenly concentrated. For the most part there is 1 obvious layer of stars with lots of real nice arcs and curves in it. Under this, there are 2 more layers with about 70 stars total. In the 3rd layer is a nice string of 6 stars going to a bright star on the west end of the cluster. In 10X50 binoculars, the cluster is very obvious and is just resolvable.
10" f9, SCT, 56mm; Joe Goss: Open Cluster- Large, fairly bright, fairly sparse, well resolved, group of stars near center like letter "B" or number "8".
13" F/4.5 Dobsonian; 47X; Charlie Whiting: Not hard to find. Star hop from μ Sagittarius with the 80mm finder (20 X). It
can be seen clearly. At **47X** it appears much larger. Going to **83X** the stars become tiny little sparkling diamonds. [When AJ reviewed this for the Messier award, he added this note; "My first observation described this cluster as a parasol over a box protecting it from cosmic radiation! Still a favorite today."] At **120X**, fairly easy object to look at. Easy to find. A 6.7 mag star to its west and 3 to 4 9th mag stars in a line across it. Overall it had the shape of a large obtuse triangle. About a dozen bright stars. Fainter ones were also resolved.

NGC6440

NGC6440 is a globular cluster in the same field as the planetary nebula **NGC6645**, the Little Gem. The latter being only about 22 arc-minutes north of northwest. So, all that is needed to easily see both objects in the same field of view is an eye piece with a 30 arc-minute field of view.
8"f/6 Dobsonian, 71x; Rick Tejera: Brighter to the center, Very Small, in same field as NGC 6445.
10" F4.5 Newtonian, 170X; Ken Reeves: This globular cluster is pretty small, somewhat faint, round, and slightly brighter in the middle. The middle is slightly offset (no direction notes). No stars are resolved, and at best is only slightly granular. It sits in a nice string of stars. Using averted vision doesn't help.
10" f9, SCT, 14mm; Joe Goss: Globular Cluster- Small, fairly faint, not well resolved, round.
14.5" f5.2, Dobsonian, 220X; AJ Crayon: this globular cluster is in a nice Milky Way field and is in a line of three stars in a northwesterly position. It is pretty bright and fairly large, estimated 5' 10m. It has a round, large, brighter middle of about 3'. Upon first arriving at this field, at **60X**, PNe **NGC6445** came into view, towards the north, forming a striking pair!
16" f4.4 Newtonian, Rick Rotramel: GC - fS, pB, vRich, round, bM, barely resolved.

NGC6445

8" f/6 Dobsonian, 71X; Rick Tejera: Round, Brighter to the middle. Very small overall. NGC 6440 in same field.
10" F4.5 Newtonian, 170X; Ken Reeves: This planetary nebula is pretty bright, pretty large for a planetary, irregularly round, and annular. There are bright spots or possibly stars on the NW, E, and SW, and to the NW is a bright star. No central star is seen. There are a bright pair of stars to E. This is a very nice planetary with some detail noted.
10" f9, SCT, 14mm; Joe Goss: Planetary Nebula- Fairly small, fairly faint, gray/white color.
16" f4.4 Newtonian, 375X; Rick Rotramel: PN - fL, pB, rectangular box, void in center, Bluish color.
13" F/4.5 Dobsonian, 240X; Charlie Whiting: This was a tough little object to study. I went up as high as 240 X and still could not see this PN clearly. Its shape is vaguely roundish. At 120 X it was pretty dim and fairly small. A little smaller than M 57. The 8.8 mag star is on

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my Skymap chart. But, there was an extra star in the view that was not on the chart. And it was brighter than the 8.8 mag star which was.

14.5" f5.2, Dobsonian, 220X; AJ Crayon: for a PNe it is pretty bright, pretty large, and somewhat square in a southeasterly position, annular and the bright outer ring structure has brighter streaks on the northeast and southwest sides. The west side is faintest of four sides. With averted there is a faint star 3' to the west. At **290X** with the UHC and averted vision a halo is suspected, especially on the west side. It is a gem! Estimate 11th mag and is much brighter than the listed value, 30"X20". A striking pair with **NGC6440** to the south!

20" F5 Newtonian, 300X; Ken Reeves: This planetary is somewhat bright, a little small, rectangular shape about 2.5:1, elongated NNW/SSE. The ends of the rectangle are much brighter and the inside is darker. Much detail is seen with averted vision. There is a star just off the NNW end. A double star is to the E.

NGC6522 & NGC6528

These two globular clusters form an interesting pair. Perhaps they could be called the double globular, but I haven't seen that before. They are separated by about 16 arc-minutes, are directly east west of each other and can be seen together at moderate powers. These globular clusters are about 60 thousand light years away, which puts them on the other side of the Milky Way. A the only reason we can see then is because of their visibility through an opening in the Milky Way called Baade's Window.

NGC6522

8" f/6, Dobsonian, 135x; Rick Tejera: Noted in same field as NGC 6528. This is the larger of the two clusters, although both seem about the same brightness. NGC 6522 shows a dense unresolved core with a grainy & mottled halo. Could begin to detect resolved stars near the edge using averted vision. Seems to be more of the cluster on the western edge than east.

10" F4.5 Newtonian, 170X; Ken Reeves: This globular cluster is somewhat bright, slightly small, and irregularly round. The slightly brighter and very granular middle is elongated 2:1 NNW/SSE. The halo is somewhat granular. There is a field star to E that is involved, and 2 more stars to E and SW frame it nicely. This object forms a double with 6528, but this one is much nicer.

10" f9, SCT, 14mm; Joe Goss: Globular Cluster- Fairly small, fairly bright, irregular shape, not well resolved.

14.5" f5.2, Dobsonian, 220X; AJ Crayon: round, fairly bright and pretty large with a small halo. With averted vision the globular gets larger and brighter and sports a pretty large little brighter middle. It seems about 3' and 11th mag with a 12th mag star just to its south. A Broad Band filter didn't produce any changes. About 15' west is **NGC6528**.

16" f4.4 Newtonian, Rick Rotramel: GC - fS, fF, vRich, oval, dim then mbM, not resolved. 6522

NGC6528

8" f/6, Dobsonian, 135x; Rick Tejera: Seen in the same field as NGC 6522. The smaller of the duo, this one showed a mottled core with an unresolved haze around it. About half the size of its neighbor.

10" F4.5 Newtonian, 170X; Ken Reeves: This globular is pretty small, faint, round, and contains a slightly brighter middle. No granularity is seen. There is a field star just out of halo to SW. Not much, especially with 6522 being right next door.

10" f9, SCT, 14mm; Joe Goss: Globular Cluster- Fairly small, very faint, irregular shape, not well resolved.

14.5" f5.2, Dobsonian, 220X; AJ Crayon: round, moderately bright and pretty large. The outer stars form a nice halo that became larger and brighter with averted vision. It seems about 4' and 10th mag. With the Broad Band filter a pretty large gradually brighter center is easily seen. About 15' east is **NGC6522**.

16" f4.4 Newtonian, Rick Rotramel: GC - S, pF, vRich, round, dim then lbM, almost resolved. 6528

NGC6520 & B 86

8" F/6 Newtonian; 38X; Charlie Whiting: I was able to detect this small OC at **38X**. It showed as a tight group of 3 stars in a line. NW of the cluster is a pale yellow star of 7th mag. It, too, is on the line. At **160X** there were about 10 stars in the brighter level. 4 of them form a straight-line running SE to NW. These 4 plus another star in the northern section of the cluster are all 9th mag. The other stars of this level are 10th to 11th mag. At **320X** the 2nd level consists of about 10 pretty dim stars. Underneath all these stars is a light carpet of granularity. This OC is about 8' in diameter.

8" f/6 Dobsonian, 71x; Rick Tejera: Noted tight cluster very densely packed, almost squarish in shape. B 86 noted next to cluster.

10" F4.5 Newtonian, 100X; Ken Reeves: This open cluster is pretty bright, somewhat small, pretty rich, and pretty condensed. There is a bright star to the W does not interfere. 3 levels of stars with possible background haze and a star count of 30. A star on the E side is yellow. Count about 30 stars. A very nice object!

10" f9, SCT, 14mm; Joe Goss: Open Cluster- Small, fairly bright, fairly rich in stars, very round shape.

14.5" f5.2, Dobsonian, 140X; AJ Crayon: there are 15 stars to 10th mag and 10 others to 13th mag. There is an orange star in the middle of a 3' circle with another circle to the west containing 8 stars. The dark Nebula Barnard 86 is just to the west and an orange star on the

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other side.

16" f4.4 Newtonian, Rick Rotramel: OC - fL, pB, Rich, round grp. in mid, oval outside, ~50 stars.

20" F5 Newtonian, 180X; Ken Reeves: This open cluster is pretty bright and somewhat small. The central portion is round with a bright orange star in the middle. There are about 4 levels of stars with about 25 stars in the central area and another 20 or so stars in the outlying area. To the W is **B-86** which is extremely dark, triangular shape, with only about 10 stars over the nebula. Some less opaque nebulosity extends E and S towards the open cluster.

Barnard 86 & NGC6520.

8" f6, Newtonian, 80X; AJ Crayon: this interesting dark nebula is 15'X10' in a southeasterly position and has eight 13th magnitude stars in the dark area. The field includes a 7th magnitude star about 10 arc-minutes to the north, a 12 star chain on the southwest side in a southeasterly position and NGC6520 to the northeast with about 1000 stars from 11th through 14th magnitude limit of the telescope.

8" f/6 Dobsonian, 71x; Rick Tejera: Noted very obvious next to NGC 6520. Squared off dark spot next to 6520 about the same size or just a bit larger. Stands out due to NGC6520 and rich Milky Way field.

10" f9, SCT, 14mm; Joe Goss: Dark Nebula- Very dark area with very few stars, elongated 2x3.

NGC6629.

8" f6, Newtonian, 60X; AJ Crayon: this planetary is about 12th magnitude, 10" arc-seconds in diameter and is seen only with averted vision. Any more power was just too much. It is situated in a nice field of about 15 stars from 8th to 12th magnitude.

10" F4.5 Newtonian, 240X; Ken Reeves: This planetary is pretty bright, very small, and round with no annularity noted. Using averted vision doesn't do too much. To SE is a pretty bright star, a slightly fainter star to NW at an equal distance, and a very faint star to the ENE. The UHC filter doesn't bring out any more detail, but was helpful in finding it. The central star was suspected, especially with averted vision.

10" f9, SCT, 14mm; Joe Goss: Planetary Nebula- Very small, very faint, grey/white color, not well resolved.

16" f4.4 Newtonian, Rick Rotramel: PN - S, pB, bright disk w/bright middle, maybe the central star.

Call for Observations

On to October where we find what constellation riding just past the central meridian right after twilight? Scutum. The first two objects start at the place EE Barnard called the *Gem of the Milky Way*, the Great Rift of the Milky Way in the Scutum star cloud. The two are the open clusters **NGC6682** and **NGC6683**. To start off locate beta Scuti, it will be the jump off star for hoping to both clusters. **NGC6682** is located about 2° west of beta Scuti at 18h 39m 37.0s –04° 48' 48". The star density will make it difficult to locate this one, but be patient, pan around and enjoy the scenery. The second, **NGC6683**, is about 2° south of southwest from beta Scuti at 18h 42m 13.0s –06° 12' 42". Like the first, this cluster is located in a rich field. Again, pan around and enjoy the scenery. Don't forget to include some notes about the sceneries impression on you. Now hop on over to 8th magnitude **M26**. Then on to **M11**, commonly called the *Wild Duck*. It doesn't look like that in any of our modern telescopes. Can you see this cluster without any optical aid? Let us know your results – even negative ones. Winding down this month's list is the globular cluster **NGC6712**. Then 24' east of southeast you'll find the last object, **IC1295**, at magnitude 12.7. That's all for now. We will re-visit some day later and take a look at other goodies located in this wonderful constellation.

Sticking, or trying to stay with summer constellations for November, let's take another pass at Cepheus. There's enough there for seconds without doing any others from the past and most will be open clusters, so get your open cluster observing hat on, go out and enjoy these for now. First is **Berkeley 59**, located about 45 arc-minutes from the border with Cassiopeia; can you see some of the nebulosity involved with this cluster? **NGC188** is next and has been referred to as one of the oldest known open clusters. Let us know if it is easier to find than Berkeley 59. The third object on our list is **NGC6951**. The SAC database lists **NGC6952** at the same location. Although both are listed as mid life barred spiral galaxies their descriptions are very different. I haven't research why this difference. If you do, please submit with your observations. The remaining objects will be open clusters, starting with **NGC7023** that is located in some nebulosity. Our next is **NGC7129**, also located in nebulosity. Both of these clusters are reported to be involved in some nebulosity. Let us know if you can see any and describe its appearance. Completing the middle objects is **NGC7226** a pretty bright cluster. The last two objects are the bright nebula **NGC7538** and **Markarian 50** an open cluster, that I haven't yet observed, with a 9.8 magnitude star.

November 2005

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			

Schedule of Events for November 2005

Nov. 2nd	New Moon at 0125 mst.
Nov. 7th	Mars at opposition at 0057 mst.
Nov. 9th	Moon at first quarter at 0157 mst
Nov. 15th	**ATM/Astro-Imaging Subgroup Meetings at Thad's Shop 19:30, See page 10 for directions.**
Nov 16th	Moon is full at 0057 mst.
Nov. 18th	**SAC General Meeting at Grand Canyon University at 1930. Guest Speaker: Don Machholz. Please note the meeting will be in a different location on the University. See page 12 for details.**
Nov. 23rd	Moon at third quarter at 2211 mst.
Nov. 26th	**SAC Star Party at Flat Iron. Sunset: 1724, Ast Twilight Ends: 18515, Moonrise: 0312.**

Last Call For Observations-Scutum

By A.J. Crayon

The Shield of Scutum is a very nice Milky Way region, to say the least. Looking down or tangent to an inner arm of the Milky Way is what forms the star cloud in this constellation. There are a few really nice objects to be had and a number of nice ones. An area I've often enjoyed is near the northwestern edge near the Great Rift of the Milky Way; earlier alluding to what EE Barnard called the *Gem of the Milky Way*. There are two open clusters that are *supposedly* near this area, NGC6682 and NGC6683 respectively. Although neither standout very well from the background, what was hoped for was that the observer would pan around the area and "discover" the Great Rift. We shall see if this month's observers lucked out.

NGC6682

NGC6682 is located about 2° west of beta Scuti at 18h 39m 37.0s –04° 48' 48". The star density will make it difficult to locate this one, but be patient, pan around and enjoy the scenery. Unfortunately I don't have any observations with the 8".

10" F4.5 Newtonian, 100X; Ken Reeves: This open cluster is in Sky Atlas 2000, but not in Uranometria (the original version). It is a multiple star system consisting of 1 bright star and 3 fainter stars nearby. To the N is a very faint grouping of stars, which are pretty faint, somewhat small, and elongated N/S. Overall, it is pretty poor, pretty loose, with 3 levels of stars over some haze, and maybe 10 stars.

14.5-inch f5.2, Dobsonian, at 60X; AJ Crayon: panned around rich Milky Way field and the Great Rift and never saw anything that looked like a star cluster at the appointed position. There were several about 1° away but were discarded as likely prospects. Regardless this, along with **NGC6683**, is a magnificent area and I suggest just panning around to enjoy the scenery!

NGC6683

The second, **NGC6683**, is about 2° south of southwest from beta Scuti at 18h 42m 13.0s –06° 12' 42". Like the first, this cluster is located in a rich field.

8" f6, Newtonian, 80X; AJ Crayon: coarse cluster that fills about 1/2 the field of view and is at the edge of the Scutum star cloud. It is indescribably beautiful, ya gotta see it!!!

10" F4.5 Newtonian, 100X; Ken Reeves: This open cluster is hard to discern, it is a slight increase in concentration of the Scutum Star Cloud. It is somewhat bright, somewhat large, pretty poor, and fairly loose. There are 3-4 levels of stars and much background haze, containing perhaps 20 stars.

14.5-inch f5.2, Dobsonian, at 60X; AJ Crayon: a very rich Milky Way field bordered by a starkly starless area, called the Great Rift of the Milky Way. The cluster is difficult to detect, as it doesn't stand out at all from the plethora of background stars. But there are 2 or 3 likely candidates that slightly stand out. One of them at **140X** has 20 stars 12th to 13th mag in a 10' area and is surrounded by a ring of a starless area about 5' to 10' wide. Panning around at **60X** this selected grouping of stars for the cluster is small, round, faint and unresolved. To the west, north and south is the starless region. The difference between rich Milky Way field and starless region can very easily be seen in one field! There is an unidentified reddish star nearby at 18h 40m -6.4 deg which is close to SAO 142572, or NSV 24574.

M26

8" f6, Newtonian, 115X; AJ Crayon: 7', 50 stars with curving dark lanes thru the center. It includes 2 boxes of stars with an arrow pointing away from the main body.

10" F4.5 Newtonian, (power not recorded); Ken Reeves: This open cluster is not very big, moderately bright, and not very condensed. I counted about 15 stars, 2 fairly bright stars, 4 levels of stars, and a very nice curving chain on WNW side.

14.5-inch f5.2, Dobsonian, 90X; AJ Crayon: shows three pretty bright stars forming a right triangle, 30 other pretty stars forming either a smooth arc through the triangle group or a rather straight line. In the **9X50 finder** it appears to be a round nebulosity.

M11

In the call for observations it was requested for observers to see if this cluster could be seen without optical aid. So far only Rick Rotramel has risen to the occasion and saw it naked eye – from dark skies.

8" f6, Dobsonian, 49X; Rick Tejera: Very remarkable cluster. One very bright star in center. Very compact and round cluster. Central part of cluster almost square in shape, although overall a roundish shape to the cluster. Many dim stars resolvable around the edge. At 122X the square central part of the cluster more well defined, with lots of small grouping of stars in various parts of the square. There is a noticeable empty spot along the western edge of the square. More stars than I'm willing to count!

8" f6, Newtonian, 200X; AJ Crayon: this power provided

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this observer with a new view of this spectacular open cluster. It filled the 20' field of view with the bright 9th mag star in the center. The small clump of stars to the west that are surrounded by a dark lane were very distinct, easily seen and were generally round in shape. The stars to the east formed lines that left two dark areas, like eyes. There were several other chains of stars and dark lanes not easily seen at low powers.

10" F4.5 Newtonian, 100X; Ken Reeves: This fantastic open cluster is pretty large, extremely rich, very bright, and pretty well condensed. There is 1 bright star in middle and 2 levels of stars around bright central star. Approximately 80-100 stars were estimated, with most of the stars to the W of the bright central star. There are 2 star poor areas, and 2 fairly bright stars to the SE.

14.5-inch f5.2, Dobsonian, 60X; AJ Crayon: 90 faints stars, pretty large, pretty faint grouping of stars with one bright in the middle and two to the southeast; a dark bay is in the center of this nice looking cluster. This view is a ghostly looking creature. At **140X** the three brighter stars stand out more with the dark lane almost bisecting the entire cluster in an almost northerly position. During a moment of good seeing about 10 very faint stars were resolved in the dark bay. There is a chain of fairly bright stars in a semi-circle outside of the main cluster that reminds this observer of a flock of wild geese. At **290X** it fills the field of view! There are many dark lanes surrounding square like groupings of stars. The central area has the faintest stars. At **300X** this gorgeous open cluster has several interesting lines of stars at acute angles. The stars seen in a dark central area, as seen by the 8 inch under similar skies, number about 10 down to about magnitude 14 and are imbedded in a somewhat square glow of unresolved stars. With the 14.5-inch these stars numbered about 50 or so in a square with about 5 stars in a trail emanating from one corner. At **440X**, WOW! What can be said that hasn't been said before? At this magnification, the cluster was as larger as the field of view. To my eye, on this night, this magnificent cluster is very large, very bright and irregularly round or almost boxy. There are many dark lanes that isolate groupings of stars. Each grouping of stars contains anywhere from six to 40 stars with some including a glow of unresolved stars. These groupings range visibility from bright to faint and in size from small to very small. When will you ever stop looking at this cluster? This open cluster was easily seen in the **9X50** finder.

16" f4.4 Newtonian, Rick Rotramel: OC - (from memory) fL, pB, vRich, compressed, oblong, a beautiful cluster with a nice orange star near the middle. Yes, I've seen it naked eye from dark skies.

20" F5 Newtonian, 180X; Ken Reeves: Observed with 1/4 moon in the sky, Wow! It fills 1/2 field of view. A bright yellow star dominates the cluster, with 2 fairly bright stars to the S. It is somewhat of an arrow shape pointing SW. Many dark spots or voids were noted. There are 2 levels of stars with some haze. About 180 stars counted with direct vision.

NGC6712

This globular cluster is in the 110 SAC Best of the NGC and Herschel 400 observing lists.

8" f6, Dobsonian, 72X; Rick Tejera: Noted as dim fuzzy spot (moon is still out at 1st Quarter). Unable to resolve any stars. Noted as very round in shape. Noted in same field as IC 1295. Seen as as mottled haze about 2' in size. Brighter toward the middle and slightly elongated about 1.1-1 E-W. At 122X more oblate to the north, washed out at this power. Re-observe under darker skies.

8" f6, Newtonian, 100X; AJ Crayon: this globular is round with a bright middle nucleus. In moments of good seeing many more stars become visible. It is in a very rich Milky Way field with 50 9th mag stars and other from 10th to 14th mag limit.

10" F4.5 Newtonian, 140X; Ken Reeves: This globular cluster is pretty large, round, and pretty bright. I was able to resolve about 20 stars with averted vision at the center. The haze is pretty granular. A very nice globular.

16" f4.4 Newtonian, 200X; Rick Rotramel: GC - fL, fB, and fairly loose globular, irregular density.

IC1295

8" f6, Dobsonian, 72X; Rick Tejera: Noted in same field as NGC 6712. Very small stellar like, would not have seen it if not for obvious field stars pointing at it. Using the O-III it is barely visible although obvious from the blue color.

8" f6, Newtonian, 100X; AJ Crayon: with UHC, hood, averted vision and moments of good seeing; only the southern part of a 13th mag. semi-circle was seen with a 12th mag star attached to the west side. Don't overlook the nice globular cluster NGC 6712, which appears in the same wide field of view.

10" F4.5 Newtonian, 140X; Ken Reeves: Right next to GC 6712 is this planetary nebula. It is virtually invisible without a filer, but with the UHC, it is just a little fainter the 6712. With averted vision it is round and possibly fainter in the middle. There are stars to the W, E, and S. This is a nice planetary. It is unusual for an IC planetary to be this good.

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Bits & Pisces-Minutes of the Sept 16th General Meeting

Recorded by Susan Pritchard

The September 16, 2005 meeting was opened at 7:30 pm by President Thad Robosson, who welcomed all visitors and members. He invited the visitors to introduce themselves and sign the guest book to receive a copy of the SAC newsletter. Al Stiewing gave the Treasurer's Report—the club has an overall balance of $4191.82.

Announcements: President, Thad Robosson brought up the proposed Amendment to the Constitution for waiver protection. This amendment would change the Constitution and allow the Board to vote on waivers for club events. This information had been posted on the SAC website, SACnews, SAC Forum and SAC Board discussion lists. Paul Dickson displayed the proposed amendment and the changes on the slide screen. There was a discussion by the members concerning the proposed amendment, the legal obligations and insurance protection. Then A.J. Crayon stepped forward to give reasons to support the amendment approval and Stan Gorodenski came up to give reasons not to support the amendment. Following these positions, Thad called for a vote on the proposed amendment. The vote was 24 in favor of the amendment and 3 not in favor; the amendment proposed change passed.

Once the first amendment vote passed, there were a couple of minor changes in the wording of other constitution articles and votes were taken to make the changes. These passed unanimously.

After the break—other announcements:

- ★ Steve Coe requested help from members in providing pictures of nebulae for his newest book and reminded members to pick up flyers for the next Public Star Party on October 8th at Thunderbird Park.
- ★ Jack Jones reported that the Public Star Party at Dreamy Draw was a success with members bringing a dozen telescopes and at least 150+ people attending.
- ★ Steve Dodder gave more information about the pot-luck on October 22 at his observatory, Stonehaven—Joe Orman would be there to expound on his list of naked-eye objects.
- ★ Margie said that Jack Jones has agreed to be co-coordinator for the next Grand Canyon North Rim Star Party.
- ★ Al Stiewing introduced the main speaker; Mike Spooner, an expert amateur telescope and mirror maker. In addition to his discussion on telescope making, he showed a video of close-ups of the Moon and Jupiter.

After the meeting ended, all were invited to come to JB's on the southwest corner of Northern and 35th Avenue for food and fellowship.

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Call for Observations

Sticking, or trying to stay with summer constellations for November, let's take another pass at Cepheus. There's enough there for seconds without doing any others from the past and most will be open clusters, so get your open cluster observing hat on, go out and enjoy these for now. First is **Berkeley 59**, located about 45 arcminutes from the border with Cassiopeia; can you see some of the nebulosity involved with this cluster? **NGC188** is next and has been referred to as one of the oldest known open clusters. Let us know if it is easier to find than Berkeley 59. The third object on our list is **NGC6951.** The SAC database lists **NGC6952** at the same location. Although both are listed as mid life barred spiral galaxies their descriptions are very different. I haven't research why this difference. If you do, please submit with your observations. The remaining objects will be open clusters, starting with **NGC7023** that is located in some nebulosity. Our next is **NGC7129**, also located in nebulosity. Both of these clusters are reported to be involved in some nebulosity. Let us know if you can see any and describe its appearance. Completing the middle objects is **NGC7226** a pretty bright cluster. The last two objects are the bright nebula **NGC7538** and **Markarian 50** an open cluster, that I haven't yet observed, with a 9.8 magnitude star.

The western part of Pegasus is our area of interest for December. With the holidays coming up it will be a little more difficult to get out and observe, so let's not tarry around and get out before they are upon us. That being said our first object, **NGC7042**, is found in the extreme south west part of the constellation about 3.5° north of delta and gamma Equulei and is a rather faint 12.8 magnitude. If you have a larger telescope look for its companion **NGC7043** a scant 5.5' to the northeast at a magnitude of 14.7. Our next object is about 4° to the east of

Officer Nominations & Dues Renewals

As the year winds down, it is time for a few important reminders. First, is it is time to begin the process of electing new officers for 2006. Currently, All offices, excepting the position of Secretary are up for nomination due to term limits. These positions and the incumbents are listed below:

- President– Thad Robosson
- Vice President– Jennifer Polakis
- Secretary– Susan Pritchard (not up to term limit)
- Treasurer– Al Steiwing
- Properties-David Fredericksen

Nominations were opened at the October meeting and the following people accepted nominations to the respective positions:

- President– Rick Tejera
- Vice President– Paul Lind
- Secretary– Susan Pritchard
- Treasurer– Paul Dickson
- Properties– Tom Polakis

Further nominations will be heard at the November meeting, after which, a vote will be held if necessary.

If you would like to be a part of helping the club continue to be the best around, please consider a run for one of these offices.

As usual, Please join me in thanking the outgoing board for their hard work and dedication the past two years.

On another note, A reminder that ALL memberships expire at the end of the year. Please renew early to ensure your continued membership. We do extend a three month grace period, after which you will be dropped from the membership roster and will no longer receive the newsletter. Early renewal will also help us get a more accurate idea of the clubs budget for the coming year, so if you haven't already done so, please renew now. Individual memberships are still only $28.00, Family memberships, $42.00, a true bargain.

(Continued from page 1)

view of the Chaco area. The three hour drive there includes Aztec Ruins National Monument and beautiful and big Navajo Lake in its path.

I got the feeling G.B. was assured of lunar conclusions at Chimney, but still evaluating some of the lunar and solar "strong conclusions" at Chaco Canyon.

Imagine Chacoans working their way north, up the rivers somewhere between 1000 and 1050. There is this pronounced twin pinnacle rock formation which one naturally looks to from the valley below and easily watches the sun and moon rise in relation to these rocks. Imagine then in 1053, when an 18 year cycle lunar standstill suddenly crosses over the summer solstice mark and the next year Taurus produces this great new star! They must have been awed by these and consequently built the buildings to mark these events.

Coming back, I suggest going across Colorado and Utah, going south on 261 from Natural Bridges (Don't let the 3 miles of dirt road signs deter you.), camping at lonely and isolated Goosenecks, then down to Kayenta, Flag and Phoenix.

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southeast and is **Messier 15,** a grand globular cluster, which needs little or no introduction. A long sought after planetary nebula, located within the confines is Pease 1. If you have time and want extra credit see if you can observe this challenge. To do so I suggest getting a finder chart. One that I have used can be found on Doug Snyder's site at http://www.blackskies.com/peasefc.htm. It will also help if you have an OIII filter. Moving on we next get to 12.4 mag **NGC7137**, a bared galaxy located just under 1° southeast from 5th magnitude 12 Pegasi. Next up is **NGC7177** another barred at an 11.2 magnitude. It is located 2.5° east of northeast from 5th magnitude 13 Pegasi. One type of object we haven't investigated is a non-existent entry and such is **NGC7210** located at RA 22 06.4 Dec +27 07 or about 30' northeast from 6th magnitude SAO90241. There is a grouping of stars making a nice right triangle and is just to the northwest. If you have some time, do some research to determine why this is a non-existent object. **NGC7217** is next; at magnitude 10.1 located almost 2° south and slightly west of pi Pegasi. It is a mid-life spiral that should display some nice detail – look for it! Located 2.5° west of northwest of Matar is **NGC7303** with rather asymmetrical spiral arms. Can you detect them?

SAC Meeting and Observing Sites

November Meeting Change

An Important reminder that our November meeting will be held in a different venue at Grand Canyon University. The change is to accommodate our Speaker for November, the one and only Don Maccholz. Mr. Maccholz is generally recognized as one of the greatest visual discoveries of comets in our day. We are pleased to be able to have him speak to our club about his discoveries.

Due to the high anticipated turnout, Al Steiwing has secured a larger room on campus fornthis meeting. We will meet in the Williams Bldg. which is Bldg #35 and is located off 32nd Ave (you normally turn in to 33rd). If you are coming from I-17, turn in at the entrance where the Church is located and follow the road to the Williams building on the right. See the map below for details.

SUCH A DEAL

For Sale

Meade 8" LX200 Classic; ex cond, extras $1,750.
SBIG ST-7E CCD camera w/CFW-8 filter; R,G,B,IR block filters $1,750.
Buy both for $3K. 602-809-1025 days, 623-572-0305 eves.

SAC Membership Services

Membership– Memberships are for the calendar year and are pro-rated for new members as follows: Jan– Mar: 100%; Apr– Jun: 75%; Jul-Sep: 50%; Oct-Dec; 25%.

☐ $28.00 Individual Membership
☐ $42.00 Family Membership
☐ $14.00 Newsletter Membership
☐ $ 7.50 Nametag for members
(will be mailed to address below)

Magazine Subscription Services

The following magazines are available at a discount to club members. Check the magazines you wish to subscribe to or renew, and pay the club treasurer. Please allow 3-4 months for the order to be processed.

☐ Sky & Telescope $33.00/yr
☐ Astronomy $34.00/yr

Please Print

Name:_____

Address:_____

City:_____ St:____ Zip:_____

Phone:_____

E-Mail:_____

Make Check Payable to : SAC

Bring completed form to a meeting or mail it with your remittance to:

SAC Treasurer
c/o Al Stiewing
16210 Desert Holly Dr
Sun City, AZ 85351

☐ **Check here if this is an update of information already on file.**

SAC on the Internet

SAC has several E-mail mailing lists. To subscribe, send an email to the email address and put Subscribe in the subject box.

SAC-Announce@freelists.org: SAC-Announce is a mailing list for just club announcements, Typically 3-5 messages per month.

SAC-Forum@freelists.org: SAC-Forum is a general discussion mailing list. Topics should be related to Astronomy or SAC

SAC-Board@freelists.org: SAC-Board is a mailing list for discussions of club business. If you'd like to see how the club is run (or not run), or have a question about the club, this is the list to read. Typically month to month matters are discussed.

AZ-Observing@freelists.org: AZ-Observing while not a Sac list , is well attended by SAC members. This is the list to with observing places around Arizona. Find out where people are going and what they saw.

Printed Newsletter

Sac can save a lot of money if you download the PDF version of the newsletter. PDF files are readable by both PC's and Macs. When the newsletter is published, a message will be sent to the address indicated above with the URL of the newsletter. Check the box below if you don't have access to the internet or if your prefer a printed copy.

☐ **Please send me a hard Copy of the newsletter**

SAGUARO ASTRONOMY CLUB

May 2005

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SAC Schedule of Events 2005

SAC Meetings

Jan 28th, 2005	Jul 22nd, 2005
Feb 25th, 2005	Aug 19th, 2005
Mar 25th, 2005	Sep 16th, 2005
Apr 22nd, 2005	Oct 14th, 2005
May 20th, 2005	Nov 18th, 2005
Jun 17th, 2005	Dec 16th, 2005

ATM & Astro-Imaging Group Meetings

Jan 25th, 2005	Jul 19th, 2005
Feb 22nd, 2005	Aug 16th, 2005
Mar 22nd, 2005	Sep 13th, 2005
Apr 19th, 2005	Oct 11th, 2005
May 17th, 2005	Nov 15th, 2005
Jun 14th, 2005	Dec 13th, 2005

SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise	Site
Jan 8th, 2005	1740	1908	0706	F
Feb 5th, 2005	1807	1931	0549	F
Mar 5th, 2005	1831	1954	0434	F
Apr 2nd, 2005	1853	2018	0319	F
May 28th, 2005	1918	2053	0532	C
Jun 25th, 2005	1945	2131	2313	C
Jul 30th, 2005	1932	2108	0126	C
Aug 27th, 2005	1901	2029	0009	C
Sep 24th, 2005	1822	1946	2253	C
Oct 29th, 2005	1742	1946	0428	F
Nov 26th, 2005	1724	1851	0312	F

F= Flat Iron; C= Cherry Road