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Double Stars: Beyond the “Pretty Pretties”

By Dick Harshaw

As an avid double star observer (over 25,000 observations and 2,000 measures published; my code in the WDS is “HSW”), I will admit that I first got into double star observing as a curious sideline after seeing Albireo (β Cygni) in an 8-inch telescope in the early 1980's. I went on to check out the hundred or so truly stunning doubles (most of them are on the SAC 110 Best Doubles list) and was almost always delighted by the simple beauty of a nicely spaced and well colored pair.

Then something happened about 1991. I moved from a relatively dark site to the suburbs of Kansas City, Missouri and fell victim to Light Pollution. My chase of the faint fuzzies suffered a staggering setback! With little time to drive 100 miles or more on a weekend to observe from dark skies, what was I to do with my 8-inch SCT? That's when I discovered the joy of double stars as suburban observing morsels. You see, the light of most double stars can easily punch through the sodium-vapor lighting haze over our suburbs and can even survive reasonably bad seeing to boot.

I soon discovered the “Bible” for the double star observer—the *Washington Double Star Catalog*, or WDS for short. (You can get it free on-line at [www. http://ad.usno.navy.mil/_proj/WDS/wds.html](http://ad.usno.navy.mil/_proj/WDS/wds.html), but be warned—it is a HUGE file and will take quite a while to learn how to use it efficiently.)

There are 103,295 systems in the WDS (many of them are C, D, E (etc) components of multiple stars, since each record is a single pairing of stars). If you filter the catalog for what lies south of your local horizon and what is too faint or too close to resolve in your telescope, you'll still have more than a lifetime of stars to check out. (A simple filter for an 11-inch scope lets about 40,000 records pass through!)

It was as I was delving deeper and deeper into the bowels of the WDS that I learned some things that no observing guide I know of tells you about. For instance, the old rule of thumb is to use 30x your aperture (in inches) as a maximum magnification. Double star observers laugh at such a rule with disdain! Hah! 30x per inch? Wimpy! Foolish! Timid! Imbecilic!

Double stars can withstand a heck of a lot of magnification (when the seeing is decent), and if you have a really tight pair to crack, run the magnification up as high as you can. (I have used as much as 1,460 power with my C-11 on a night of exceptional quality. That is about 133 times the aperture.)

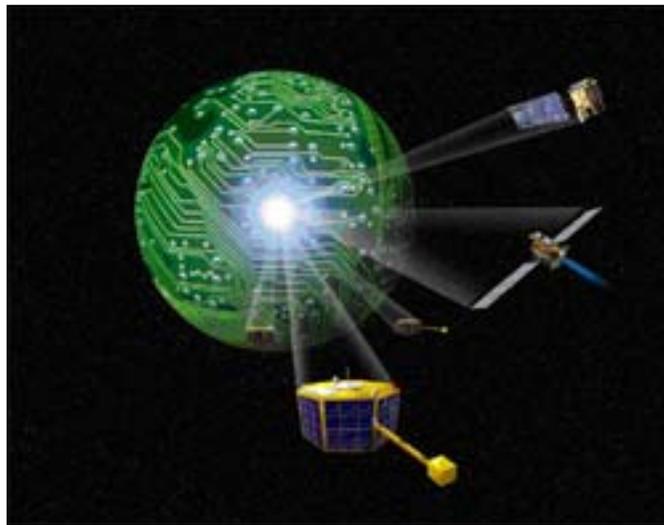
Second, the Dawes Limit (the resolving power) of a telescope is at best an approximation. As Paul Couteau, the noted French doctor and amateur double star observer has noted, you can actually detect duplicity (although not necessarily achieve a clean split)



Going My Way? Diane K. Fisher

Not many endeavors require that you plan the mode of transportation before you even know what it is you are transporting. But weighing the physics and economics of getting any sort of cargo to space is a major part of designing a space mission.

It's one of the first issues that NASA's New Millennium Program (NMP) considers when planning a new mission. NMP has the forward-looking job to identify promising new technologies for space exploration. It then helps to mature the technology so it will be available to space missions of the future. If the technology cannot be tested adequately on Earth, the last part of this process is to actually send the technology into space. With carefully documented test results, future mission planners can confidently incorporate the new technology into their designs.



NASA's New Millennium Program selects breakthrough technologies that will be of the greatest use to future space and Earth science missions and that are perceived to be risky to the first user.

But where to begin? On call from the start, Linda Herrell is the New Millennium Program Architect. Given a list of proposed technologies, she has the job of figuring out the feasibility of wrapping a mission around them.

"We might be considering six or more technologies, anything from solar panels to imagers to masts for solar sails to more intelligent software. Of those, we may choose four. My job is to answer the question—can the selected technology be transported to and operated in space within the constraints of a low-cost technology validation project?"

Along with the list of possible mission payloads (the

technologies), Linda also has a list of spacecraft to put them on, as well as a list of launch vehicle parameters. All she has to do is try them out in every possible combination (of which there are thousands) and see what might work.

"Fortunately, we have a software tool to help with this analysis," says Linda. When it comes down to it, her job is primarily to figure out how to get the technologies into space.

"Sometimes, it's like figuring out how to get across town when you don't have your own car. You have to get creative."

She keeps a database of all possible options, including riding piggyback on another spacecraft, hitching a ride on a launch vehicle as a secondary payload, or sharing a launch vehicle with other NASA, Department of Defense, or even commercial payloads.

Her assessment is but one of a gazillion factors to be considered in planning a

mission, but it is indeed one of the very first "details" that forms the foundation for the rest of the mission.

Find out some of the technologies that NMP has already validated or is considering at nmp.nasa.gov/TECHNOLOGY/innovative-tech.html. Kids will enjoy watching Linda's cartoon alter-ego talk about her job at spaceplace.nasa.gov/en/kids/live.

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.

well below the Dawes Limit. Couteau writes about it in his textbook on binary stars, *Observing Visual Double Stars*. He speaks of the Rayleigh Limit (a more precise variant of the Dawes Limit) and gives a table of how a double star will look at various stages of sub-Rayleigh separation. See Figure 1 for an image generated from his chart.



In the chart, 1.0r (and 0.95r and so on) is the Rayleigh limit for a given telescope.

For reference purposes, the Dawes Limit is given by $4.6/D$, where D is the telescope objective diameter in inches. Thus, a 6-inch telescope should be able to just split two 7th magnitude stars that are 0.77 arc seconds apart. But the Rayleigh Limit is given by $2.52 \times 10^5 L/d_m$ arc seconds, where L is the wavelength of the light and d_m the objective diameter, both measured in meters. For a typical optical system, the Rayleigh Limit works out to

about $4.88/D$, a slightly wider spacing than the Dawes Limit.

I have “resolved” hundreds of pairs that were at or below the Dawes Limit of my telescope using Couteau’s chart; my logs show many “peanuts”, “snow men”, “figure eights”, and “eggs” and “rods”.

Your challenge, should you decide to accept it, is to find a bright pair (8th magnitude or brighter) that is BELOW your scope’s Dawes Limit and see if you can detect duplicity using Couteau’s chart. But caution: You’ll need a night of nearly perfect steady seeing. Good luck and let me know how you do! But be warned: close double splitting is not for the timid. If your scope has any serious flaws in its optics, the Couteau Test will reveal them!

Monthly Trivia Question

What was the Soviet Rocket equivalent to the Saturn V designed to launch a Soviet Cosmonaut to the moon?

Last Months Answer: Which man came the closest to the moon without landing on it? (hint, It’s not Jim Lovell): Tom Stafford Commanded Apollo 10, a dress rehearsal for the moon landing that included all aspect of a lunar landing except the landing itself. Stafford & Lunar Module Pilot Gene Cernan (who would later command Apollo 17 and become the last man on the moon) piloted the Lunar module “Snoopy” into a Decent orbit. Once at pericyynthion of 50,000’, they executed an abort and ascended back to John young in the Command module ‘Charlie Brown’. The Flight was designed to test all the rendezvous maneuvers needed in actual lunar orbit. The flight was not without it’s moments. During Trans lunar Injection (TLI) the S-IVB Booster

suffered severe vibrations tha almost caused Stafford to abort the mission. Also, In lunar orbit, an incorrect switch setting on the Abort Guidance System Caused Snoopy to fly wildy at staging 50,000 above the moon as it tried to follow conflicting commands from two computers. The sudden gyrations caused Cernan to utter, on live mike, “SonofaBitch”. This caused some PR problems as the media reported stories questioning the “cool” astronauts were expected to maintain no matter the situation. Outside of these two instances, the flight was a success and gave the clearance for Apollo 11 to go for landing.

In June 1971, Stafford was assigned as Deputy Director of Flight Crew Operations at the NASA Manned Spaceflight Center. He end his space flight career as Apollo Commander of the Apollo-Soyuz Test Project.

Call For Observations—Sculptor

By A.J. Crayon

Sculptor is a minor southern constellation with no associated mythology. How many other constellations don't have some kind of mythology? Even though it is minor there are several deep sky objects worth observing. Let's get to them right away.

NGC7793

The NGC Description says, "*Like a comet (1850)*" except for Bonds discovery observation, only the larger scopes did not see it this way, at least for this version of the column.

8" f6, Newtonian, 38X; Charlie Whiting: A small arc of 11th mag stars points the way to this galaxy. It shows as a small gray cloud. 60 X. NGC 7793 shows no texture. It appears as uniformly bright. Elongated about 6' long by 3' or 4' wide. Aligned E-W. It was described as looking like a comet. For just a fleeting moment I saw a brighter part of this galaxy off to one side. For just that moment it did look like a comet.

8" f/6, Dobsonian, 60X; Rick Tejera: Seen as bright and elongated 3-1 E-W. Slightly brighter along the northern edge, gradually fading to the south. There is a curved chain of 4 stars to the north pointing right at it.

8" f10, SCT, 104X; Dick Harshaw: (suburban location). It is large and faint, with a NE-SW axis. Note the 12th mag star nearby. The galaxy is 9 million light years away and was discovered in 1850 by Bond with the 26-inch WNO refractor, who likened it to a comet. It is the faintest of the five major members of the Sculptor Galaxy Group.

10" f4.5, Dobsonian, 46X; Dave Hofland: ~3° SSW of Zeta Sculptoris, **46x** it is located ~1.5° W of a remarkable little asterism that looks to me like a mini Scorpius, an ~20' long arc of stars SW to NE with the "body" a longer wider spaced arc ~40' long extending to the N. Visual double 6.1 mag AL Sculptoris with companion 6.8 mag HR 9050 2' sep at PA 05 is 50' NNW. At **163x** the galaxy is a large very diffuse smooth oval glow ~6' x 4' PA ~90° with no obvious core. AV reveals 3 small 11th mag stars popping out ~6' NNW.

11" f10, SCT, 127X; Jimmy Ray: Lives up to it "Comet Like" title. Is elongated with a somewhat brighter core. There is a 12th magnitude star visible within the "nebulousity" of this galaxy.

14.5", f4.7, Dobsonian, unknown power; Paul Lind: Very large, Bright, a little Elongated, gradually brighter in the middle, (Lots of things look like comets. I didn't see one here).

14.5", f5.2, Dobsonian, 220X; AJ Crayon: This large and pretty bright galaxy is 10'X6' in an easterly position and 9th mag. It has a very, very, slowly little brighter, somewhat elongated, middle and I mean little brighter middle. During moments of good seeing the middle appeared round with a stellar nucleus. It never appeared comet like to me. There is a 13th mag star just off the northern spiral arms.

18" f4.5, Dobsonian, 329X; Dan Gruber: This galaxy is

about 6' X 8' elongated E - W. The faint halo blends into the background. The core is about 1' X2' E - W and mottled with 2 or 3 brighter areas.

Blanco 1

8" f6, Newtonian, 9X finder; Charlie Whiting: There were about 20 stars inside a 90' circle. At **38X** there is eight stars of 7th and 8th magnitude within the 50' FOV of this eyepiece. About 25 dimmer stars were scattered throughout.

8" f/6, Dobsonian, 60X; Rick Tejera: Large loose cluster. Gert could not show the entire cluster in the widest field I have. I Concentrated on the northern half which seemed to have more going on. Mostly noted as several chains of stars in various directions, While seemingly unrelated, they paradoxically also seem connected, Hard to describe.

8" f10, SCT, 104X; Dick Harshaw: (suburban site). Very large, it overflows the 24 min field. It is sparse and hardly noticeable as an open cluster. It was only discovered in 1949. The discoverer, V. M. Blanco, found it by doing a statistical count of A0 stars in the sky using data compiled by Kapteyn. He found that the density of A0 stars in this part of the sky was five times the average, suggesting a cluster, which he eventually proved to be the case. An interesting tidbit: if the sun was the size of a baseball, this cluster would be 6,740 miles in diameter with its baseballs spread out about 1,085 miles apart!

11" f10, SCT, 56X; Jimmy Ray: A very large open cluster that required quite a bit of panning around just to take it all in (will try a field reducer next time). Has an outer "ring" of stars that becomes sparse to non-existent on the southwest (?) side. The stars in the center of the ring form a triangular or semi "bow tie" asterism.

14.5", f4.7, Dobsonian, unknown power; Paul Lind: Very, very large, about 15 bright stars in a large "V-shape" in 10 X 80 finder it reminds me a little of the Table of Scorpius.

18" f4.5, Dobsonian, 55X; Dan Gruber: This open cluster is very large, exceeding 90' wide, and scattered loosely. I saw about a dozen mag. 7 - 9 stars and more than 25 stars mag 10 or dimmer. There's a bright star, zeta Sculptoris, in the NW quadrant. From this star there's an equilateral triangle of stars about 10' away at PA 180 and two possible doubles 30' away at PA 90. The cluster contains many chains and possible doubles scattered throughout.

NGC 253

8" f6, Newtonian, 38X; Charlie Whiting: Wow and wow, again! What a bright and large galaxy! I had tried to see this galaxy from my Glendale backyard, but could not detect it due the very bright background in my southern sky. But, at Farnsworth Ranch it is so obvious, it could almost ruin my dark adaptation. Going to **120X** the galaxy spans the FOV from edge to edge. It is mottled. It is very elongated and aligned NE to SW. Its nucleus appeared be

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offset from the center towards the SW. It was flatter on one side than the other. Later at **60X** it was a fabulous object. It is about 25' long and 1/5 or 1/6 as wide. 3 dim foreground stars seem to be shining through its halo. In this view the mottling was very pronounced.

8" f6, Dobsonian, 72X, Rick Tejera: Seen as very elongated along a WSW Line. Very bright toward the eastern side and also much wider at this point, tapering to the west, gradually fading as well. Star involved towards the western edge. Dust lane between arms noted on south edge west of the bright core to the east. Looks like one arm visible to the west. Spectacular object, one of my favorites.

8" f10, SCT, 83X; Dick Harshaw: Very bright and large, and grainy at medium to high powers (where some mottling shows up). Its axis runs NE-SW and it has a bright, star like nucleus. A most impressive view! It looks a little brighter in the E end. Two 8th mag stars lie off the S end. This is the brightest member of the Sculptor group of galaxies, which is grouped around the South galactic pole (therefore, also sometimes named "South Polar Group"). The Sculptor group is perhaps the nearest to our Local Group of galaxies. NGC 253 is also one of the brightest galaxies beyond the Local Group. The RASC Observer's Handbook gives the common name Silver Coin Galaxy for this galaxy. NGC 253 was one of the major discoveries of Caroline Herschel, the sister of William Herschel (according to John Herschel's GC). She discovered this object on September 23, 1783 with "an excellent small Newtonian Sweeper" of 27 inches focal length and a power of 30 (William Herschel's description). William Herschel included it in his catalog as No. V.1.

8" f6, Dobsonian, 120X, Rick Tejera: SW part of Galaxy much more visible than at 71x. Showing much mottling in SW, Suspected more of the dust lane in NE noted at lower power. Much brighter to edge than at lower power. Noted 2 10th mag stars at the SW edge of the galaxy.

10" f4.5, Dobsonian, 46X; Dave Hofland: 5° NNW of Alpha Sculptoris very large, bright, very elongated smooth textured glow ~15-20' x 5' in PA 45° framed by 5 9th mag stars. One of these stars is ~3' N of the NE tip, one is ~10' SW of the SW with another nearby ~8' NNW and also ~10' from the galaxy's SW tip. The final two are a pair separated by ~4-5' in PA 100, the W member of the pair is <1' from the SE side of the galaxy ~5' from the SW tip. At **71x** and AV extends the length of the outer halo to nearly 30', centrally an ~5' x 2' bright nucleus that fades rather quickly in to the surrounding fainter halo.

11" f10, SCT, 56X; Jimmy Ray: About 40 arc min in size with a "Cassiopeia" like asterism of stars stretching perpendicularly across one side (north?) and two small stars above and below the arms on the opposite side of the galaxy. It is very elongated; almost edge on in shape with a bright core. A hint of a spiral arm was visible on the near side and appeared to be clockwise in rotation.

14.5", f4.7, Dobsonian, 78X; Paul Lind: Fantastic (that's a scientific term), Large, Bright, Mottled fills half of a 52-minute field at 78X.

18" f4.5, Dobsonian, 135X; Dan Gruber: This large galaxy is about 30' X 10' elongated NNE - SSW with a distinct halo. The core is about 8' X 6' with some mottling evident. At **209X** a long dark lane is visible on the NW, a shorter lane is on the SE and there is some darkening across the N side of the core. Very impressive!

NGC 288

8" f6, Newtonian, 38X; Charlie Whiting: This GC was seen as a fairly large gray smudge nestled to the south of a group of 9th, 10th and 11th mag stars. **60X**, it looks like it is starting to show some resolved stars. It is about 10' in diameter. With a wide-angle eyepiece at **120X** it shows lots of resolved stars, but they look like they are underwater with wave motion. With a Barlow, also yielding **120X** the view was steadier. Nicely resolved stars looked like pinheads shining from a pincushion. The remaining cloudiness indicated there are many, many more unresolved stars. A nice object!

8" f6, Dobsonian, 72X; Rick Tejera: Seen as very large and bright. Mottled appearance throughout, but many stars resolved. Fades slightly toward the SW.

8" f10, SCT, 83X; Dick Harshaw: (suburban site, 40 deg latitude). Faint and unresolved, it is beautiful at medium powers. Globular cluster NGC 288 was discovered by William Herschel on October 27, 1785 and cataloged by him as H VI.20. It lies 39,100 light years from the Galaxy's center. In the "sun as a baseball" scale, this globular would be five times the diameter of earth!

10" f4.5, Dobsonian, 163X; Dave Hofland: 3° NNW of Alpha Sculptoris, ~2° SE of NGC 253, ~10' diameter irregular roundish very grainy glow ~7' SE of 8.5 mag HD 5067, a 10' wide triangle of ~10th mag stars just to the cluster's NE and a 10th mag. star ~7' NW. I saw this as rich but unresolvable even with AV. At **285x** and AV increased the course grainy texture but I was still unable to resolve individual stars. As to the question of "tight vs. loose" I give it loose as the course grainy texture is spread pretty evenly to my eye over the ~10' diameter area.

11" f10, SCT, 127X; Jimmy Ray: Numerous individual stars are spread within and around a fainter "core" of "nebulousity" A small triangular shaped cluster of stars appears to open out and extend from the main body of this globular.

14.5", f4.7, Dobsonian, unknown power; Paul Lind: Large, Bright, about 40 stars are brighter than rest. It's loose in the way that M13 is loose, having chains of stars.

18" f4.5, Dobsonian, 209X; Dan Gruber: A 15' X 10' globular cluster elongated NNW - SSE. Three parallel chains of stars running NNW to SSE and consisting of 10 - 15 mag. 10 - 11 stars cross the cluster. About a dozen fainter stars were resolved. There is no obvious core, just a brighter background in the central 5 - 10'.

Sculptor Dwarf

8" f6, Newtonian, 38X; Charlie Whiting: This is my lowest power eyepiece. I was dead-on the field of stars where this galaxy is located. It is huge. It should have filled my

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President's Corner

By Rick Tejera



Two Years ago, after reading that I had been Elected president of SAC, I got an E-mail from Sue Rose, the president of the Astronomical Observing Society of New York, and one of the nicest persons I never met :), Saying Congratulation on being elected President of the Club. After a meaningful pause, she added "Or Condolences". I told her I'd let her know in 2 years which it would be. Well Sue, It was Congratulations. As I look back on the past two years I realize how lucky I've been. My tenure was, compared to my two predecessors, free of any major issues, I got to preside over our 30th Anniversary Celebration, but most of all I got to say I was the president of the finest group of amateur astronomers anywhere. Not only are our members probably the most active & accomplished observers in one group, but I consider many of you great friends as well. Over the past 11 years I've been a member, my growth as an observer is due mainly to the friendly advice & mentoring I've had over the years. Thanks to all of you for that.

As quiet as my tenure was, I certainly could not have kept the club on track without help, and for that I thank me fellow board members, who in actuality bore the brunt of the work. First is Paul Lind, who took the office of Vice President and promptly got the look of "Oh my God, what Have I done?" Well what he did was get us an interesting speaker each month. I know this takes time and effort and is something I'd personally never consider doing. Paul Thanks.

Yet another Paul. Dickson that is. He's done a fine job of keeping out financials in order. Let's not forget he had the additional burden of keeping track of the monies in & out for the 30th Anniversary Dinner. While the rest of us mingled during the meeting breaks, Paul would be busy collecting dues & subscriptions and generally answering membership questions. Maybe now he'll be able to mingle. Thanks Paul.

Our outgoing Secretary, Jennifer Polakis, left after only one year in office, but that was because she Stepped up to Vice President. Jenn has taken the minutes from a generally bland recap of the meeting to a poetic rendering that only she can do. Her assistance in planning the 30th anniversary dinner was invaluable. It was she who located and negotiated the rate for the Challenger Center and it was Jenn who Convinced Dr. Davies to take time from his schedule to speak to us. She is, in my

opinion the embodiment of what SAC is all about. I'm privileged to call her my friend.

I'd be remiss in not mentioning Susan Pritchard, who served as secretary my first year in office. I could always count on getting the minutes and a nice photo of our speaker for the NL. Susan also has been kind enough to host our past two holiday parties at her house. Thanks For all you've done.

Finally there's Tom Polakis, who, as Properties manager, has Schleppeed around our Projector and other items to and from the meetings, Including the Killer Screen. This before we realized that we could leave it in the meeting room and no one would even notice it was there! Tom's always been there with good advice when called for (and sometime when not), and like his wife, is has left his stamp on what the club has evolved to.

Well, maybe not finally, Thanks need to go out to AJ Crayon for his work in keeping the Messier Marathon as great as it is.. Steve Coe for planning and running the major Star Parties (5M & Sentinel), not to mention his work developing the observing databases that our club is renown for. Jack Jones for coordinating public events & outreach, Because of him many people have gotten heir first look through a telescope. And Now Finally (really) Gene Lucas. Without Gene, I wouldn't be writing this. Gene has assumed a role of unofficial Club Historian, and has always provided guidance on issues involving the club's constitution, which he helped draft. It's a testament to him that the Constitution has held up as well as it has. Thanks to all of you.

As I step down, I do so knowing that I'm leaving the club in dedicated & capable hands. I offer my congratulations & support to Steve Dodder & the incoming board. As before, I will continue to take an active role in club affairs and will continue on in my role as editor of SACnews.

Over the next month, My board will work with Steve & the incoming board to ease the transition. It will certainly be different attending the meetings from the other side.

I hope to see you all at the holiday party. If not have a safe and happy holiday season. I'll see you next year. Clear Skies to all!!

January 2008

<i>SUN</i>	<i>MON</i>	<i>TUE</i>	<i>WED</i>	<i>THU</i>	<i>FRI</i>	<i>SAT</i>
	☾ 1	2	3	4	5	DOTM Star Party, Antennas
6	7	8 ●	9	10	11	12
13	14	15 ☽ ATM Meeting 1930, Paul Lind's House	16	17	18 SAC Meeting, GCU 1930	19
20	21	22 ○	23	24	25	26
27	28	29 ☾	30	31		

Schedule of Events for January 2008

Jan 5th	DOTM Star Party at Antennas Sunset 1737, Ast. Twilight: 1905, Sunrise 0608
Jan. 8th	Moon is New at 0446mst
Jan. 15th	Moon at first Quarter at 1245
Jan. 15th	ATM Sub group meeting at Paul Lind's house
Jan. 18th	SAC Meeting at Grand Canyon University at 1930
Jan. 22nd.	Moon is full at 065mst.
Jan 29th	Moon at Last Quarter at 2202mst

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eyepiece from edge to edge. But there was no trace of it in my 8" telescope. Bummer!

8" f6, Dobsonian, 60X; Rick Tejera: Noted as very slight brightening of the sky after matching the field stars. There is a chain of 3 stars at the end of the brightening. It was elongated about 2-1 E-W.

14.5", f4.7, Dobsonian, unknown power; Paul Lind: It's a stretch of the imagination that I saw this. If anything, there's a slight sky brightening west of the star GSC 7001:963.

NGC 613.

8" f6, Newtonian, 38X; Charlie Whiting: this small galaxy was easily visible, parked right next to a 10th mag star to its NE. At **60X** it seems to show some texture in spite of its small size. A stellar nucleus seems to pop into and out of view. At **120X** NGC 613 is slightly elongated. Aligned SE-NW. There appears to be an extended nucleus distinct from the halo.

8" f10, SCT, 65X; Dick Harshaw: (suburban site). Faint. The ends look hooked. The axis seems to run E-W. A Seyfert galaxy, 64 million light years away.

8" f6, Dobsonian, 81x; Rick Tejera: Seen as elongated 2-1 NW-SE. Very bright moderately brighter to the middle to a bright central core There appeared to be a slight bulging to the NE and some hint at spiral structure to the south.

10" f4.5, Dobsonian, 46X; Dave Hofland: ~8° E of Alpha Sculptoris, just a tad more than half the way towards Nu For, ~ 40' NW of 5.7 mag Tau Sculptoris, a dim but not difficult to pick up small oval glow. At **163x** FOV is dominated by a pair of 9th mag stars sep by ~7' at PA ~130°. NGC 613 is a diffuse oval glow ~5'x3' PA ~ 120, <1' SW of the SE star of this pair. Hints of a small stellar core with AV, edges are rather well defined.

14.5", f4.7, Dobsonian, unknown power; Paul Lind: Fairly bright, Large, suddenly brighter in the middle, very elongated

18" f4.5, Dobsonian, 329X; Dan Gruber: Elongated E - W approximately 3' X 9', brightening to a 1' X 2' core with no obvious nucleus.

Call for Observations

There is much left to do in Cassiopeia, so let's not wait any longer for this one as there are more than 60 objects well within reach of many SAC scopes. First give **M52** a try as it was skipped last time around. Then just 40' northwest is the asterism on the SAC list titled **Airplane** or **Arrow** and is located at RA 23h 20.0m Dec +62° 20". It is pretty large, so use low power, and bright. What does it look like to you? Don't worry if it doesn't look like either, let us know anyway. Getting away from the NGC give the open cluster **Berkley 4** a try, it is reported to have 25 stars in 5'. Do you agree? The next 3 clusters are on the Herschel 400 list. About 1° 30' northeast of γ Cassiopeia is **NGC381**, a compressed cluster. The next cluster is **NGC436**, has about 30 stars in a 5' area and is located 1° 48' southwest from δ Cassiopeia. Three degrees east and a little south of Segin, ϵ Cassiopeia, is **NGC559**. Does it seem pretty large to your eye? **Stock 2** has over 150 stars in a 60' area and is north of the Double Cluster. Enjoy these clusters; before you know it spring and galaxies will be upon us.

Perseus, the great Medusa slayer is up for a second go around. There remains a nice selection of deep sky objects worthy of another review, starting with **M 34**. It supposedly has 100 stars; how many can you count and down to what magnitude? Second is a naked eye asterism that we should all be familiar. It is known as Melotte 20, the asterism Saxophone or the Alpha Persei moving cluster. It is an easy naked eye object, but try binoculars, finder and a wide field eyepiece if you have a wide field telescope. There are a number of dark nebulae here and **Barnard 1** and **Barnard 2** are pretty large and close together. See if you can get them in the same field of view. Give the cluster **IC 348** a try and see if you can detect the involved nebulosity. Its 10' has 20 stars. **NGC1496** is a small *segment of a ring* according to the NGC Description that has 10 stars in 6'. The last 2 open clusters are part of the Herschel 400 program. **NGC1513** has 50 rather faint stars. Finally **NGC1528** has 40 stars in a rather large area.

Such-A-Deal

For Sale: Meade Starfinder 10" Dobsonian Reflector \$550: IDEAL starter scope or affordable upgrade for someone with aperture fever. In very good condition - one careful lady owner!

Factory-supplied focuser has been replaced with an upgraded model. Price includes two eyepieces (9.7mm & 26mm Super Plossls) & a counterweight system. Seller is located in Flagstaff.

Contact: Dr Diane Hope cell phone: ▼ 480-627-9472 or email: di.hope@asu.edu (please put 'Telescope' in subject line of message).

For Sale: Orion 80mm ED apochromatic refractor 600mm f/7.5 on a altazimuth mount with slow motion controls, 25mm Plossl eyepiece. \$400.00

Orion 102mm Maksutov-Cassegrin: 1300mm f/12.7 on a Orion Tele Track Tracking mount, 25mm Plossl eyepiece. \$300.00

Call Damion at 602-240-5421

damionbow2@aol.com

Bits & Pisces, Minutes of October 26, 2007 Regular Meeting By Jennifer Polakis, Secretary



There were 46 in attendance with no guests.

The big news is we have an ATM up and running again thanks to Paul Lind who graciously offers his shop on Tuesdays prior to the regular meeting date. He has a nice work shop and tools including a Foucault tester. A special thanks to his wife Gail as well.

The other big news is Comet Holmes! A usually ~17th mag. freckle in the scope every 6.88 years, outbursting to a ~mag 2.5 naked eye fuzzy star in Perseus. Tom Polakis brought his Pronto to view it during the break. It was the first time any of us had seen a line of folks cued up to look in a 2.8" telescope!

The 2008 meeting dates were announced: January 18th, Feb.22, March 21, April 18, May 23, June 20, July 18, Aug. 15, Sept. 12, Oct 17, & Nov 14th. There will be some overlap with East Valley Astronomy Club's 2nd Friday of the month meeting giving opportunities to pool resources to get an out of state lecturer or two.

We held nominations for next year's offices:

Steve Dodder for President

Jennifer Polakis for Vice President

AJ Crayon for Secretary

??? for Treasurer

Jack Jones for Properties Director

Steve Coe discussed moving the Sentinel Schwaar Star Gaze from the current site at Sentinel to the Hovatter Rd Site. SAC has used Sentinel since 1986. Hovatter site

is a closer, easier drive with skies just as dark as Sentinel. The telescope maker and amateur astronomer Pierre Schwaar (May 14, 1946--March 6, 2000) became the namesake of this event after his untimely death in 2000. There has been some discussion regarding whether we should name a star party for Pierre that is being held at a place he may not have observed at. For what it's worth, I feel Pierre would've chosen the closer easier drive as well. We'll just need to change the name of the event, maybe to "The Pierre Schwaar Star Gaze" so we don't limit ourselves to one observing area.

Show and tells: Jack Jones showed photos of his recent trip to Chabot Space and Science Center in Oakland CA detailing its 125 years of operation. Lynn Blackburn showed brand new shots of Comet Holmes.

Our guest speaker was Dr. Philip A. Pinto from Steward Observatory with a wonderful lecture on the up and coming LSST-Large Synoptic Survey Telescope. This scope which expects to see first light in 2012 will survey the visible sky every 3 nights downloading 30 terabytes of non-proprietary information available for public use on Google Sky so folks like us can zoom down to 28th magnitude. It will also focus on science goals like dark matter/dark energy, search for NEO's and Kuiper Belt objects and map the structure of our Milky Way and other galaxies. It needs community input so go to www.lsst.org and let your voice be heard.

Twenty three of us astro-starved amateur astronomers met up at JB's for Comet Holmes Burgers, Milkyway Shakes, and some mysterious dark matter served on the Blue Plate Special.

Elections For 2008 Officers

As per our Constitution, the process to elect officers for 2008 was begun in October and concluded at the November meeting. The October meeting saw the following nominations:

President: Steve Dodder

Vice President: Jennifer Polakis

Secretary: A.J. Crayon

Treasurer: None

Properties: Jack Jones

The nominations were opened again at the November meeting. No further nominations for President, Vice

President, Secretary & Properties were made. A vote was taken to accept the slate as is, with the position of Treasurer vacant (Paul Dickson, the current treasurer would remain in position until a successor was found). The vote was unanimous. After the break, Charlie Whiting was nominated for Treasurer and since there were no other nominee's a vote was taken to accept Charlie as Treasurer, again the vote was unanimous. So we have a full slate of officers for 2008.

Congratulations to the incoming board, I have every confidence the club is in good hands

Holiday Party

When: December 15th, 2007 @ 1900 (7:00p.m.)

Where: Tom & Jenn Polakis Home

Address: 121 W Alameda, Tempe, AZ

POT LUCK: Please bring a dish for all to share.



<u>Mile</u>	<u>Instruction</u>	<u>For</u>	<u>Toward</u>
0.0	From the I-10/I-17 Merge	0.7 mi	I-10 / Tucson
0.7	Merge onto I-10 [US-60]	5.1 mi	
5.8	At exit 155, keep LEFT onto US-60 Hov Ln	0.6 mi	US-60 HOV
6.4	Keep STRAIGHT onto Ramp	0.1 mi	
6.5	Road name changes to US-60 [Superstition Fwy]	0.9 mi	
7.5	At exit 173, keep RIGHT onto Ramp	0.2 mi	Mill Ave
7.7	Turn LEFT (North) onto S Mill Ave	1.0 mi	
8.7	Turn LEFT (West) onto W Alameda Dr	0.1 mi	
8.8	Arrive Tom & Jenn Polakis [121 W Alameda Dr, Tempe, AZ 85282]		

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 Only
 \$10.50 Nametag for members, Pinned Clasp
 \$12.50 Nametag for members, Magnetic Clasp (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
 Astronomy \$60.00 for 2 Years

Please Print

Make Check Payable to : SAC

Name: _____

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

Address: _____

**SAC Treasurer
 c/o Paul Dickson
 7714 N 36th Ave
 Phoenix, AZ 85051-6401**

City: _____ St: _____ Zip: _____

Phone: _____

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

E-Mail: _____

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 you prefer a printed copy.

- Please send me a hard Copy of the newsletter

SAGUARO ASTRONOMY CLUB

December 2007

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Glendale, AZ 85308-9117

Phone: 623-572-0713

Email: newsletter@saguaroastr.org



Videmus Stellae



SAC Schedule of Events 2008

SAC Meetings

January 18th, 2008	July 18th, 2008
February 22nd, 2008	August 15th, 2008
March 21st, 2008	September 12th, 2008
April 18th, 2008	October 17th, 2008
May 23rd, 2008	November 14th, 2008
June 20th, 2008	Holiday Party, TBA

Future Planning

April 5th, 2008	All Arizona Messier Marathon
May 30th-June 1st, 2008	5 Mile Meadow Star Party
November 28th-30th, 2007	Pierre Schwaar Star-gaze

SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise	Site
Jan 5th, 2008	1737	1905	0608	A
Feb 2nd, 2008	1824	1929	0507	S
Mar 1st, 2008	1829	1952	0346	S
Apr 26th, 2008	1911	2042	0100	S
May 3rd, 2008	1915	2049	0401	A
Jun 28th, 2008	1945	2130	0142	C
Jul 26th, 2008	1935	2113	0021	C
Aug 23rd, 2008	1903	2033	2303	C
Sep 27th, 2008	1815	1938	0455	S
Oct 25th, 2008	1747	1910	0432	S
Nov 22nd, 2008	1726	1853	0331	S
Dec 120th, 2008	1730	1859	0128	S

S= Saddle Mountain; C= Cherry Road; A=Antennas