Saguaro Astronomy Club

Metro Phoenix, Arizona

SACNEWS

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An Astronomical Odyssey

by Steve Coe

It all started with a visit by an old friend. Tom Clark and I had met once, at Riverside, but we had corresponded for many years. Tom and his wife, Jeannie were making their way out West to visit some of the scenic parks near the Four Corners area. Traveling in their motor home, Tom called to say he would like to drop by for a visit with myself and my wife, Linda, for a couple of days. We could have dinner and maybe go out and observe if the weather was good. I told Tom that I would be between semesters and that because I had no classes to teach we would have time to do all of those fun things. It sounded so innocent.

Tom and Jeannie arrived at my home in Phoenix on a Thursday and we looked at each others astronomical scrapbooks and exchanged chit-chat until Linda got home from work. A short trip to our favorite Italian restaurant

A 36" f/5 Newtonian is going to stick way up in the air regardless of how it is constructed.

and we all enjoyed an excellent meal and fun company. Once we returned home Linda was off to bed to rest for tomorrow's work and the three of us decided to make a short trip out of town for some observing. Fortunately, my wife was generous, as always, about this spur-of-the-moment observing session. I had no idea how much I was soon to test her sense of generosity.

So, we hop into The Clark's motorhome and make our way out to a spot which is about one hour out of town. I try to help with setting up the $10''$ $f/5.6$ Dobsonian, but you know how it is with someone else's telescope; you might be thinking you are helping, but you probably aren't. Once we are dark adapted, I see that it is a pretty good evening and we start to observe some old favorites. The Double Cluster is very nice using the 35mm Panoptic eyepiece, lots of lovely chains of stars, with several of them orange or yellow in color. Dark lanes in the Andromeda Galaxy are easily seen and adding the UHC filter to the big eyepiece makes the North America Nebula stand out very nicely. I point the scope to NGC 7789, a rich open cluster in Cassiopeia and put in the 12mm for higher power. There are 120 stars resolved, with beautiful dark lanes winding in among them. Jeannie noticed that the exact center of the cluster has a small dark area obscuring it.

Because Tom and Jeannie have been on the road for a long day, we decide to tear down around midnight and make our way back to my house. I hear the entire tale

Quick Calendar

SAC Meeting
Speaker: Dr. Jeff Hester, HST's View of M-16
7:30 PM, Friday, January 5

SAC Deep Sky Meeting
November and December *What's Up* Columns
7:30, Thursday, January 11

SAC Star Party
Buckeye Hills Recreation Area
Saturday, January 20

Membership Renewals are Due

Please Check Your Mailing Label

SAC Officers

Area Code (602)

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as we drive back into town of how they dropped off their 36″ telescope at a star party in Texas and are going back to observe from this site near the McDonald Observatory. Tom says there will be several other 36 inchers there along with a bunch of 20 and 24 inch scopes. At this point he decides to see if I am as crazy as I seem and says "why don't you come along with us to Texas; lots of BIG scopes?" I just couldn't come up with a good reason to say no, so I took him up on his offer. Expecting my wife to faint, or throw a fit, or both, I was delighted to hear her say "you guys have a great time, call when you get there." Ain't love grand.

Well, a quick pack up in the morning and the three of us are in the motorhome and on our way. The first stop is a desert site that my astronomy group, the Saguaro Astronomy Club, has been using for years. This flat spot in the desert is 120 miles from Phoenix and has excellent skies. By the time it gets near dark on Friday night, two other observers, Bill Anderson and Jay Leblanc, have arrived and are set up. Venus is orange above the sunset, Mars and Jupiter also gather over the setting sun and mark the ecliptic.

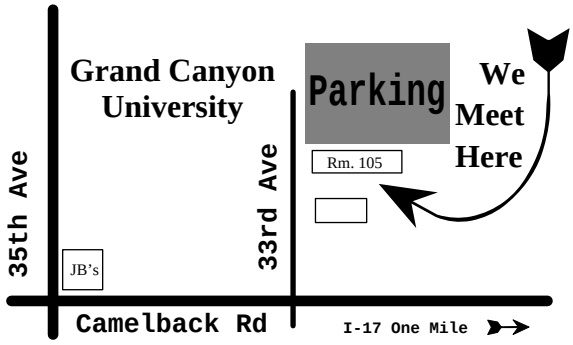
Comet Hale-Bopp was discovered in the Southwest so it seems obvious to check it out first. With the 10″ and a 16mm eyepiece it is pretty bright, pretty large and much brighter in the middle with a blazing core. The comet grows in size with averted vision. Tom's 20X80 binoculars will show the comet, but just barely against the Sagittarius Milky Way. Using Jay's 17.5″ and a 12mm eyepiece shows a bright coma that is not centered on the core. The coma displays three layers of condensation.

As we swing the scope around to a variety of objects, I realize that if all goes well I will be observing these deep sky goodies in a much larger piece of glass on Sunday night. That is certainly an exciting prospect. Seeing as how Jeannie is the deep sky observer and Tom is the telescope builder, Jeannie and I spend a fun evening observing old favorites and trying different magnifications on a fine Arizona night. In the desert during the month of October we can observe all night wearing a light jacket, always a fun time of year. We look at M 71 in Sagitta, this very compact cluster shows 26 stars in an arrowhead shape, with a background on fuzz that is un-resolved stars seen in a 9mm eyepiece. The Dumbbell nebula displays an "apple core" shape and 5 stars involved in a light gray-green mist. NGC 253 in Sculptor is very nice using a 16mm eyepiece, it shows off lots of knots and dark lanes across a very silvery set of arms in this galaxy. Tom is tired enough to go to bed before midnight so that he can drive the next day.

So, it is Saturday morning and we are motoring on to Kitt Peak Observatory, near Tucson. After a fun hike around and a peek at several of the scopes that cover this Southern Arizona mountaintop, we are on our way to Texas. After passing the time sleeping (I know I will need it), listening to tapes, and chatting, we arrive in West Texas. A gentle climb into the hills and suddenly there are white domes on a distant mountaintop. Pulling into the parking lot of the visitor's center at McDonald Observatory, I am amazed to see a variety of large aperture

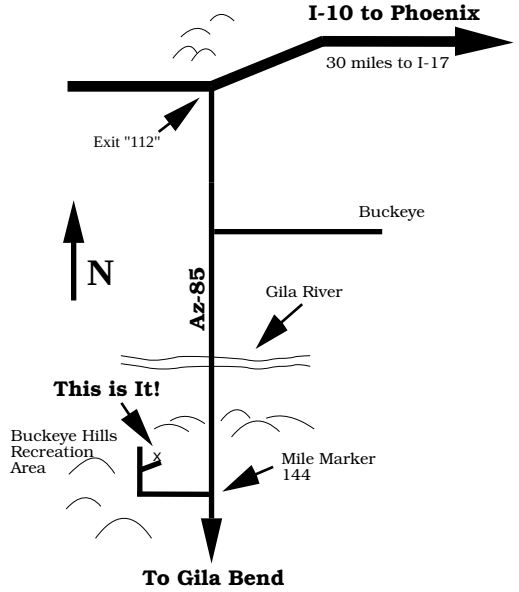
Directions to SAC Events

SAC General Meetings 7:30 PM at Grand Canyon University, Fleming Building, Room 105 — 1 mile west of Interstate 17 on Camelback Rd., north on 33rd Ave., second building on the right.



SAC Deep Sky Subgroup Meeting at John & Tom McGrath's, 11239 N. 75th St., Scottsdale, 998–4661 — Scottsdale Rd. north, Cholla St. east to 75th St., southeast corner.

SAC Star Parties at Buckeye Hills Recreation Area Interstate 10 west to Exit 112 (30 miles west of Interstate 17), then south for 10.5 miles, right at entrance to recreation area, one-half mile, on the right. No water and only pit toilets. Please arrive before sunset; allow one hour from central Phoenix.



telescopes. These astronomical artillery pieces are indeed the "big guns" in observational astronomy.

After a few minutes chatting with old acquaintances and meeting some new ones, we get to work assembling Tom and Jeannie's "Yard Scope." Regardless of Tom's clever play on words, this is one huge telescope. A 36″ $f/5$ Newtonian is going to stick way up in the air regardless of how it is constructed. The 12 foot ladder it takes to reach the viewing position weighs over 100 pounds. I have transcended the world of the "one-man" telescope. However, once the Leviathan is assembled, I am fascinated by how smoothly it moves.

As twilight becomes complete darkness, we keep waiting for the breeze to subside, but it never completely disappears. Occasionally, the wind will really kick up and blow one of the large scopes around to face a direction which the observers had not wished to look. Even though the breeze was irritating, the transparency was very good and I rated the night 8 out of 10 for transparency, 6 out of 10 for seeing. All in all, a very nice night.

Once it got dark, we started to search for Comet Schwassmann-Wachmann 3. It is just coming out from around the Sun and it is sporting a nice tail and bright coma. A few minutes with binoculars are we've found it. Putting the comet in the 36″ with a 35mm Panoptic eyepiece really shows off plenty of detail. The tail is 3 degrees long and half a degree wide, the dust tail has a bright spike down the middle. This thin ion tail is distinctly blue in color with the big scope. The comet is obviously close to Earth, because in the time it takes four people to look, the comet has moved past a wide double star in the field of view. Trying a little more power with a 27mm shows

Comet Comments

by Don Machholz

(916) 346-8963 CC209.TXT December 6, 1995

122P/de Vico

Date	RA-2000-Dec		Elong	Sky	Mag
12–24	17h37.9m	+18°30′	43°	M	11.2
12–29	17h46.1m	+17°59′	43°	M	11.4
01–03	17h53.7m	+17°35′	43°	M	11.7
01–08	18h00.6m	+17°17′	44°	M	12.0
01–13	18h06.9m	+17°05′	45°	M	12.2
01–18	18h12.5m	+16°58′	46°	M	12.4
01–23	18h17.8m	+16°56′	47°	M	12.6
01–28	18h22.7m	+16°59′	49°	M	12.8

73P/Schwassmann-Wachmann 3

Date	RA-2000-Dec		Elong	Sky	Mag
12–24	22h07.8m	−21°04′	55°	E	9.1
12–29	22h23.3m	−19°26′	54°	E	9.3
01–03	22h37.8m	−17°48′	53°	E	9.6
01–08	22h51.5m	−16°13′	52°	E	9.8
01–13	23h04.5m	−14°39′	50°	E	10.0
01–18	23h16.9m	−13°07′	48°	E	10.2
01–23	23h28.8m	−11°38′	46°	E	10.7
01–28	23h40.1m	−10°11′	45°	E	11.2
02–02	23h51.1m	−08°47′	43°	E	11.6
02–07	00h01.6m	−07°25′	40°	E	12.1

Most of our comets are fading, but Comet 45P/Honda-Mrkos-Pajdusakova brightens in our evening sky. Early next year it approaches to within 20 million miles of us. Meanwhile, Comet Hale-Bopp is presently behind the sun, it will emerge in February. This is its first and last conjunction with the sun. With a high inclination orbit, the comet will remain visible from earth through the end of this decade. The Northern Hemisphere of the Earth will be favored from April 1996 through April 1997, otherwise the Southern Hemisphere has the better seat. Incidently, on January 3 the Earth passes closest to the orbital path of the comet, we'll be 11 million miles inside its orbit. No meteor shower is expected, but one never nows.

C/1995 Q1 (Bradfield)

Date	RA-2000-Dec		Elong	Sky	Mag
12–24	02h25.1m	+69°24′	124°	E	11.1
12–29	02h09.2m	+65°36′	121°	E	11.4
01–03	02h00.4m	+62°14′	118°	E	11.7
01–08	01h55.6m	+59°15′	114°	E	12.0
01–13	01h53.4m	+56°39′	110°	E	12.2
01–18	01h53.0m	+54°24′	106°	E	12.5
01–23	01h53.7m	+52°28′	102°	E	12.7
01–28	01h55.4m	+50°47′	98°	E	13.0

45P/Honda-Mrkos-Pajdusakova

Date	RA-2000-Dec		Elong	Sky	Mag
12–24	20h24.2m	−21°30′	32°	E	7.4
12–29	20h29.5m	−20°35′	28°	E	7.0
01–03	20h28.1m	−19°43′	23°	E	7.0
01–08	20h18.4m	−18°49′	16°	E	7.1
01–13	19h59.4m	−17°44′	07°	E	7.4
01–18	19h29.6m	−16°10′	08°	M	7.8
01–23	18h47.4m	−13°39′	23°	M	8.1
01–28	17h51.7m	−09°36′	42°	M	8.5
01–02	16h44.1m	−03°50′	64°	M	8.9
02–07	15h32.1m	+02°46′	88°	M	9.6

Orbital Elements

Object:	de Vico	Bradfield	Schwassmann-Wachmann 3	Honda-Mrkos-Pajdusakova
Peri Date:	1995 10 06.02	1995 08 31.42	1995 09 22.76	1995 12 25.93
Peri Dist:	0.6589 AU	0.4364 AU	0.9328 AU	0.5319 AU
Arg/Peri (2000)	012.973°	331.163°	198.776°	326.061°
Asc Node (2000)	079.612°	178.052°	069.947°	089.167°
Incl (2000):	085.391°	147.393°	011.423°	004.250°
Eccentricity:	0.9627370	0.9980457	0.694799	0.824302
Orbital Period:	74.36 yrs	approx 3337 yrs	5.34 yrs	5.27 yrs
Reference:	MPC 25715	MPC 25714	IAU Catalog	MPC 20124

some bright knots of material coming off the nucleus of the comet so that the core is somewhat elongated. Finally, a comet that looks like a comet.

We start to explore the Summer Milky Way with the 36″ and I find that many of my old favorites show new detail. M 22 is a spectacular ball of stars in the 27mm Panoptic, there are several dark markings within 5 arc minutes of the central core and three different groupings of 10 to 12 stars form "clusters within the cluster." M 17 really shows off with a 20mm and a UHC filter. There are 17 stars within the luminous nebula and many dark lanes cut the nebula into sections. There is as much fine detail as I can see in a photo from Burnham's Handbook.

The Ring Nebula in Lyra received a lot of observing time and deserved it. With a 16mm eyepiece, it is medium green and the star which is just outside the Ring is easy. I can hold the bluish central star steady about 20 percent of the time. Many years ago John Herschel mentioned that the central hole is not dark, but resembles "gauze over a hoop" because of nebulosity within the Ring. The effect is obvious in either the 16mm or 12mm eyepieces and in moments of good seeing I can detect the fingers of nebulosity that point inward toward the central star.

Several old favorites are truly spectacular in the big mirror. M 71 and NGC 7789 show three times as many stars as I could see in the 10″. NGC 253 is obviously a spiral galaxy and has a tiny core with a myriad of dark and bright markings that define the swirling arms. NGC 6888 is the Crescent Nebula in Cygnus, with the 20mm and a UHC filter its curved "C" shape covers the entire field of view, with a knot of 8 stars involved on the top side of the nebula.

During the day I had some time to chat with Larry Mitchell, another owner of a 36″ $f/5$. Larry is very knowledgeable and an was nice enough to complement me on some previous articles I had written. My ego is large enough to want to spend some time observing with someone who compliments my writing, so I made my way over to visit with Larry.

To my amazement Larry Mitchell's 36″ is pointed at the Cartwheel Galaxy. This interactive system was recently imaged by the Hubble Space Telescope and shows where one galaxy has passed through another. Using a 14mm eyepiece on this small, faint galaxy pair, one of the galaxies is much smaller than the other and the larger galaxy is certainly annular in shape. It takes some averted vision, but the configuration seen in the Hubble shot is certainly visible. This is obviously the kind of object I would nev er consider trying to find in my 13″ $f/5.6$, even on the best of Arizona nights.

Larry moves to a favorite of his, NGC 7026 in Cygnus. Using an 11mm Nagler, this bizarre nebula shows two curved arcs of bright nebulosity with a thin line of dark sky in between. We can see no "central" star, but the size of the nebulosity doubles with averted vision. The next NGC object, 7027 is also strange. There is a central rectangular section of bright nebulosity which also grows much larger with averted vision. A very thin dark lane cuts the rounded rectangle into 60/40 sections. What is most bizarre is the star embedded within the nebula. It is at the edge of the nebula, not even near the center. Also, it is deep enough within the nebulosity that the star has taken on the luminous green of the nebula. It is rare to see a star so obviously green.

M 33 in Triangulum shows the amount of detail I have seen in photos from the 48 inch Schmidt camera this is using a 27mm Panoptic eyepiece, it is un-drawable. The curved arms are filled with bright spots from the core to the tips of the spiral arms. I counted 20 bright knots in the arm which I saw as "up." In a large telescope you can see the difference between Population I and Population II areas. The core is smooth and light yellow, whereas the arms are splotchy and bluish. Amazing!

Stephan's Quintet in the 36″ with the 14mm eyepiece is easily the best view of this compact galaxy group I have ever seen. There is mottling in the arms of the two spiral galaxies and the two close galaxies are easily split. The large face on galaxy has a bright knot in the arm nearest the tight double galaxy. No averted vision is needed to acquire or split the galaxies in this group of five.

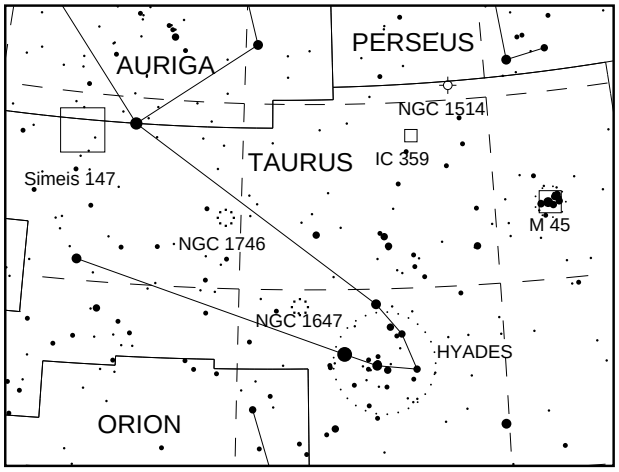
After collapsing into bed at sunrise, we sleep until noon and spend some time at the well-stocked visitors center at McDonald Observatory. Lots of great astronomical knickknacks to help you spend any loose change. A trip into the town of Ft. Davis finds us at the drugstore soda fountain, where I enjoyed a terrific hot fudge sundae,

What's Up

by Steve Coe

Taurus **January 1996**

The constellation of the Bull is easily recognized because of the fact that it is composed of two, large, bright open clusters. I have no doubt that this constellation was one of the first to be created because it is so obvious. The Pleiades and the Hyades have enough bright stars within a small area to be spotted even deep in the light pollution of Phoenix. Let's spend a little time with some other objects within the borders of Taurus and then move on to those big star clusters.



NGC 1514 is pretty bright, pretty large, round with a central star of about 10th mag, the star is obvious in the 13″ at 150X without a filter. Going to 220X and putting in the UHC filter makes a big difference in the view of this object. There are several dark markings and I noticed that the nebulosity does not touch the central star. This nice planetary nebula convinced William Herschel that there are truly nebulous objects in the sky. Until that observation, it was generally believed that all the fuzzy objects were just compressed clusters of many faint stars. Herschel called it "a star with an atmosphere" see for yourself at 4 hr 9.2 min and +30 47.

NGC 1647 is bright, very large, not compressed, pretty rich, 52 stars counted at 60X in a 13″. This big, scattered group is more obviously a cluster in the 11X80 finder than it is in the main scope. This huge cluster is at 4 hr 46 min and +19 04.

NGC 1746 is bright, very large, somewhat rich, not compressed, 60 stars counted at 60X. This group takes up the entire one degree field with several clumps of stars in the eyepiece. Using the 11X80 finder, I counted 14 stars. It is at 5 hr 03.6 min and +23 49.

IC 359 is a challenging nebula, located at 4 hr 19 min and +28 12. In the 13″ at 100X it is very faint, small and fan-shaped with a 12th magnitude star at the southern tip. The UHC filter does not help with this somewhat comet-shaped nebula. It is not marked on Uranometria and the given catalog size is 15′X10′, I saw it as more like 3′X2′.

Sh2–240 or **Simeis 147** is very faint, extremely large, filamentary, it is more noticeable in some places, but it is never easy. I used a 24.5mm Super Wide eyepiece with a UHC filter to be able to see it at all. This is at Sentinel, an excellent site about 120 miles from Phoenix at a dark location in the Arizona desert. I remember calling this faint, wispy nebula "the Veil in a 2 inch scope," you can see if you agree by looking at 05 hr 39.1 min and +28 00.

M 45 is also **Melotte 22**, either way this cluster is best known as **The Pleiades**. I have observed this striking Winter star group with every type of optical aid and the naked eye. Since I have been able to hold 12 stars steady with just the naked eye, you know any optical aid will bring out lots of great detail. Two observations really stand out. The best view I have ever had in a telescope was with Rich Walker's 8″ $f/4.5$ Rich Field Telescope (get it!). Anyway, at 30X The Seven Sisters were awash in nebulosity and several lovely chains of stars within the group were easily traced beyond the brightest members, out into dark space. The nebula within this cluster is brightest surrounding Merope, using the 13″ at 100X, it appeared wedge shaped and has the star Merope at the tip. From a dark site any optical aid will show a glow around Merope, the smallest I have used is a pair of 8 X 25 binoculars. Now, on to my favorite device for viewing The Pleiades; BIG binoculars. Using Rick Rotrammel's large binoculars (20X80's, I think) and the steady stand he purchased on a Riverside discount, The Pleiades are spectacular. Many of the beautiful, curved chains of stars are easy to spot and the nebulosity looks like frost on a windowpane. There is something available when you are viewing the Universe with both eyes that doesn't happen with just one eye.

The Hyades are also **Mel 25**. They are extremely bright, extremely large, not compressed at 30X in the 8″ $f/4.5$ RFT. This huge cluster does not quite fit in any telescope I have ever used. My best view of the Hyades is in my 10X50 binoculars. There is a nice wide pair on one side of the "V" and several more pairs are evident in any telescope. The Hyades is one of those places in the sky where it is just plain fun to put a widest field eyepiece in the scope and scan the entire area. There are lots of asterisms and binary stars to delight the casual scanning eye.

trying to build up my strength for the night's observing.

The breeze has slackened somewhat after darkness falls and I realize that I am going to have another great night under the stars. On this night I decide to walk around the observing area and meet with some of the other observers enjoying this great night in the high desert.

Bob Luffel from Colorado has his 25″ $f/5$ set up next to Tom and Jeannie's 36″, he is looking a variety of objects, but I particularly remember NGC 6905 Delphinus. This planetary is very light green and the central star is

obvious with a 12mm eyepiece, the effect I remember most vividly is that the disk has "polar caps," bright curved areas that are on either side of the core. It is fascinating to look at an object I know well in my 13″ and see new detail in an old friend.

Tony and Daphne Hallas have their 24″ on the Trifid Nebula, the dark lanes which give this object its name are immediately seen with a 27mm Panoptic and an UHC filter. There are 23 stars embedded within the nebulosity, including the bright double star HN 20, with is easily split. Every color photograph of this object has shown two sections, one red, one blue. Even though I could not see the colors, there was a different "sheen" or texture to the this combination reflection and emission nebula. Again, I am seeing for myself differences in physical characteristics of astronomical objects, absolutely amazing!

Clyde Bone has a nifty 24″ Mersenne-Naysmith reflector that allows the user to sit comfortably while viewing the heavens, nice work Clyde. The view of M 13 in this scope is fascinating, the stars are excellent points and there are hundreds of them. Also, the observer can relax comfortably seated and observe.

David Kreige is one of the organizers of the Ultimate Star Party and he has brought a very nice 25″ scope. He and I spend some time hunting globulars within the Fornax Dwarf Galaxy. None of them are easy with a 12mm eyepiece, but we manage to spot three of these faint star clusters within another galaxy in the Local Group. Two are almost within the same field of view, the third is very low surface brightness and not brighter in the middle.

After a morning's sleep, we get cleaned up for a group picture and then a very good tour of the Hobby-Eberly Telescope, which is under construction at McDonald Observatory. Then we all pile into vehicles and descend upon the Limpia Inn in Ft. Davis for a big dinner and astrochat. A warning is in order, however; watch out for the squash at the Limpia Inn, lots of jalapenos, ouch. Thanks to John Hudek for organizing the entire thing, it all went smoothly for organized anarchy.

The last of the three nights I got to spend at the Ultimate Star Party was very good in the fact that the breeze finally calmed down. However, the sky was somewhat brighter because a few clouds drifted across the sky and the humidity rose. But, still a great evening, which I rated 9 out of 10 for transparency at the beginning of the night and 7/10 as the evening progressed.

We could all tell that this was going to be the last really good night from the weather report, so we tried to pack in lots of good observing. Jeannie, Tom and I spent several hours looking at planetary nebulae in the Summer Milky Way and then moved on to some really great observations of showpieces.

I will wrap up the observations with a fabulous one, the Veil. Using the 27mm and an O III filter in the 36″, this classic object is amazing in the complexity of its detail. The three-dimensional aspect of the braided twists within the nebulosity is startling, it looks like the glowing output of a taffy pull machine. Some sections are mottled, some are smooth and have small pieces of nebula all around the bright strands of gas and dust. Stars of a wide variety of magnitudes are involved within the nebula. I tell Tom that this is the very best view of any object I have ever seen in any telescope. Obviously a memorable night.

So, what have I learned about Big Telescopes?

1. They can see color and fine detail in objects which I cannot see in smaller scopes.

2. A 36″ telescope is definitely NOT a one person telescope, it demands at least two folks to setup and use, three or four is better.

3. Modern eyepieces can yield a pretty wide field of view in big scopes; large enough to take in some showpieces. Obviously, some huge objects are not going to fit, but more of the Orion Nebula or the Veil was seen in the 35mm Panoptic than I thought it would.

4. Computerized setting circles make a real difference, trying to star hop a scope that is 10 feet tall and weighs half a ton is a pain.

5. A good ladder is essential. I prefer half-steps that some folks had inserted between the major rungs of their

'98 Eclipse Cruise — by Steve Coe

I am just gathering some info on a cruise to the Feb. 26, 1998 total solar eclipse. We are looking at the possibility of either chartering our own ship, probably from Holland American Line, leaving San Juan Puerto Rico, with a stop at St. Thomas, plus another stop and then on to Aruba for the eclipse on that Thursday. This depends on the amount of hurricane damage to St. Thomas. and so all that can be said right now is that there will be two stops in route to Aruba.

Whatever the scenario, a deposit of $500 will be needed to confirm and hold your space on the cruise. With the total amount due by Dec. 1, 1997. The complete cruise package will range from $1850 to $3500 per person, this includes air fare from your departure city to San Juan. The category and location of your cabin on the ship will determine the price.

So, our travel agent for this rendezvous with darkness at noon is **Barbara Philips** at Regency Travel in Scottsdale, Arizona. She is not an astronomer, but is learning by being around me for several hours. Barbara can certainly answer any questions you might have concerning the cruise ships or accommodations. You may reach her at **(602) 596–6787**, or **(800) 796–8024** outside AZ.

I know this seems very distant, but putting a group of this size together requires advance planning. I have no doubt that a winter eclipse in the Caribbean will attract large numbers of observers, so get on the phone to Barbara if you are interested in sailing with us.

ladders. I first time I started to climb a shaky ladder in the dark, I knew it was not going to work for me.

6. Towing a trailer to hold the Leviathan is a smart way to go, lots of trailers dotted the parking lot of the Ultimate Star Party.

7. These big scopes are not as clumsy at high power as I thought they would be. During the times the wind was calm, using a 9mm eyepiece was not as tough as I suspected it would be. I got some excellent views at 500X in an un-driven scope.

8. Big scope users want their big scopes. When we were on our way to Texas and having a great night in the Arizona desert, Tom bemoaned the fact that he was under clear skies and did not have his Big Scope available.

9. I want one. Many years ago I built several scopes around my old 17.5″ Coulter mirror set. That's me on the cover of *Telescope Making #26*. However, 10 years have made a big difference in the technology available to someone who wants to construct a large scope. Easy to use truss clamps, electronic setting circles, alt-az drive mechanisms and better star charts have simplified the ease of use of a scope built around a big piece of glass. So, I think I will start a savings account.

Well, I started out in this hobby to be an astronomical tourist and I certainly was that. This amazing, extended weekend provided me with a chance to get some superior views of Our Universe. As always, I also got a chance to spend time with a lot of fun people. It was so great that the bus ride from Van Horne, Texas back to Phoenix, Arizona with two year old twins on board didn't even bother me.

Newsletter Deadline

Mail items for Such-a-Deal at least two weeks before the end of the month. Articles that need to be published in a timely fashion must be submitted or the newsletter editor notified of the article at least 6 weeks before month they are published. Items arriving too late for an issue will be included in the next newsletter.

Bits and Pieces

Minutes of the December Board Meeting

Board Meeting at Susan Pritchard's house: Out with the old and in with the new. Old: Bob Gardner, Susan Pritchard, Adam Sunshine, AJ Crayon and Paul Dickson. New: Steve Coe, Regina Lawless, Adam Sunshine and Paul Dickson.

Steve Coe discussed the idea of a club picnic/star party maybe around September 21. The picnic would take place on a first quarter moon. Members with their families and friends can get together, eat and still look through some telescopes. The site suggested was the park at Usery Pass Road and Bush Highway. Also, the EVAC club would be invited too.

The treasurers discussed changing signatures for the bank account.

Club Meeting, annual Christmas Party at Susan Pritchard's very nicely decorated house. After a long absence from monthly meetings Bob Dahl turned up dressed

Universal Time and Date of Total Lunar Occultations for Phoenix (33.5° Lat., 112.0°W Long.)

Date	Time[1]	Time[2]	Mag	Star Information		PH	PA[1]	PA[2]	PS	Elong	MAL	MAZ	SAL	SAZ
01/08	05:39:50	05:39:01	4.3	ZC1341	(α Cnc)	RD	232	234	84	209	37	100	-63	287
01/31	08:53:11	08:47:37	4.7	ZC0832	(119 Tau)	DD	032	049	75	136	29	274	-68	49
02/02	11:58:20	11:58:39	3.7	ZC1106	(λ Gem)	DD	103	110	88	159	10	284	-30	91
02/26	07:34:47	07:31:40	4.8	ZC0653	(δ^2 Tau)	DD	021	038	51	92	10	285	-66	356
03/30	02:45:42	02:45:20	4.3	ZC1341	(α Cnc)	DD	118	124	70	126	64	140	-13	284
06/04	10:23:47	10:23:52	4.0	ZC2826	(ρ Sgr)	RD	245	252	77	222	39	188	-20	44
06/07	09:38:17	09:37:45	4.3	ZC3269	(θ Aqr)	RD	267	272	55	260	31	125	-25	34
06/11	10:07:15		4.5	ZC0257	(o Psc)	RD	301		30	307	9	84	-22	40
06/20	03:36:48	03:37:08	4.3	ZC1341	(α Cnc)	DD	126	135	26	48	19	273	-11	308
07/29	05:40:03	05:39:45	4.0	ZC2826	(ρ Sqr)	DD	076	073	92	165	39	168	-31	328
08/11	11:16:36		3.7	ZC1106	(λ Gem)	RD	216		18	328	8	75	-18	57
08/22	05:04:32	05:04:52	4.3	ZC2271	(θ Lib)	DD	063	056	51	92	17	236	-33	316
10/22		08:56:43	4.3	ZC3269	(θ Aqr)	DD		064	71	128	5	258	-57	53
11/04	08:59:36	08:59:08	3.8	ZC1428	(o Leo)	RD	303	308	41	286	16	88	-59	60

NOTES:

Subtract 7 hours for correct Mountain Standard Time and Day.

Time[1]= Hrs:Min:Sec (Std Sta NM)

Time[2]= Hrs:Min:Sec (Std Sta LA)

PH = Phenomenon, i.e. RD = (R)eappearance on (D)ark Limb

PA[1] = Position Angle of star from north point of moon (90=East) (NM Std Sta)

PA[2] = Position Angle of star from north point of moon (90=East) (LA Std Sta)

PS = Percent Sunlit

Elong = Elongation of moon from sun (180 = full; 270 = 3rd Qtr)

MAL = Moon Altitude in degrees (90 = directly overhead)

MAZ = Moon Azimuth (90 = East)

SAL; SAZ = Sun Altitude; Azimuth

Blanks = Not Listed at Standard Station

Compiled by Brian K. Vorndam, for more info call him at (520) 726–3151.

nicely. John and Tom McGrath showed up — separately!

To use NGC terms there was a very, extremely large amount of food and drink to be had by all. We did.

We are also happy to report that some members even showed up with their spouses. Much astronomy and astronomical computing was discussed during the evening. By evenings end approximately 22 people showed up to enjoy the festivities.

—*A.J. Crayon, SAC Secretary*

Deep Sky Meeting

The Deep Sky Group is a Special Interest Group made up of people who like to discuss observing and observing techniques. They particularly like to observe objects out past the Orrt Cloud that's why they're called the Deep Sky Group. The type of objects include stars, nebula and galaxies.

If you are interested in sharing your observations, or are interested in observing techniques, then by all means come join in. The meetings are held at John McGrath's house every other month; directions are found on page 2 of this newsletter.

Consider this to be an invitation to this meeting. This meeting is OPEN to all SAC members. All you have to bring is an interest in what objects look like when view through a telescope. Follow the directions to the McGrath's.

For the January Deep Sky Meeting we will discuss the objects in Steve Coe's *What's Up* column for November and December. If you have new or old observations, bring them along. If you have no observations and want to know about observing, then come along.

No Leonid Storm Last Year

by Paul Dickson

The title sort of gives away the conclusion of this article, but quite a bit occurred during the night.

It was the last minute when I decided to go out and observe the Leonids on Friday, November 17. At noontime, I started sending out E-mail to find out who would be going out to watch the Leonid meteor shower. The first response I got was from Robert Kerwin, but not a site. An hour later I got E-mail from Sam Herchak that a group was going out to Vekol Road to observe. At 3 PM I left work to start preparing for the night.

It was 5 PM before I hit I-17, heading south. Rush Hour, it took me 45 minute to get to I-10 and Maricopa Road — a journey typically taking 20 minutes. There after, traffic was light.

Since this was my first time down to the Vekol Road site, most of the road was new. The road was mostly two-lane divided highway, but there were sections that were one-lane each way. Road construction for second roadway was evident. After passing Maricopa, there was the Ak-Chin Casino beside the road.

As I was driving south, I could see Mars, Venus, and Jupiter setting in the western sky. I was late and twilight was just over by the time I arrived at Vekol Road.

At the site were Tom Polakis, Pierre Schwaar, Frank Honer, and Sam Herchak. A pretty good turnout for a Friday night. Tom had his new 20″ scope out. The view through it was great. The view of the Veil Nebula was even better than what I've seen in most pictures. In the pictures I've looked at since, all of them had annoying foreground stars which were not apparent through the eyepiece. You could move the scope from the east side of the Veil to the west side, with the center part being very obvious.

This image of G1, or Mayall II, is from the SkyView digitized sky atlas found on the Internet at http://skyview.gsfc.nasa.gov/. It is found by entering "mayall ii" for the coordinates.

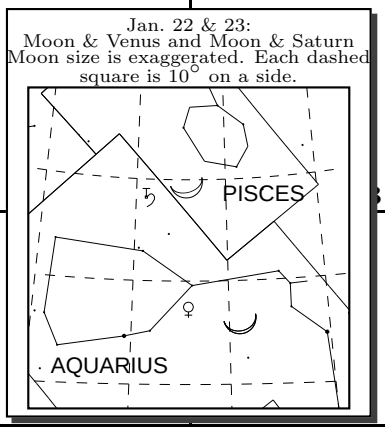
Later that night, Sam and I located a globular cluster in the Andromeda Galaxy (M-31). The globular, G1 or Mayall II, was slightly difficult to locate, but using a 27mm Panoptic eyepiece on Sam's 13″ $f/4.5$ scope made star hopping a piece-of-cake. After locating G1, we had to switch quickly to a high power eyepiece to view the globular. Several times we lost the object during the switch either from taking too long — and the object drifting away — or from bumping the scope. But in the end, we both could definitely see the globular. The finder charts for G1 are in the November 1995 issue of *Sky & Telescope*.

After midnight we finally started seeing Leonid meteors. It was about this time that I finally took my scope out of my trunk and put it on its base. Sam allowed me to borrow his 27mm Panoptic eyepiece, primarily so he could see how wide of field the eyepiece had in my 8″ $f/4.5$ scope. With my scope being an 8″, it was the smallest scope at the site, so I was a little reluctant to get it out. But the wide view of the Orion Nebula was spectacular.

With the 27mm Panoptic in my scope I pulled out my observing list of the "110 Best of the NGC" and did about a half dozen objects or more.

During the night I took sky photos with my camera

January 1996

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		Mercury at greatest elongation 19.5° (evening) **2**	Quadrantid Meteors Peak: 10 P.M. Z.H.R. 60–200 **3**	**PAS Meeting** Brophy Prep. Physics Lab **4**	**SAC Meeting** Grand Canyon University, Fleming Rm. 105 **5**	Yesterday Full Moon 1:52 P.M. **6**
7	**8**	**9**	**EVAC Meeting** (SCC: Rm. PS172) **10**	**SAC Deep Sky Meeting** 7:30 P.M. **11**	**12**	Last Quarter Moon 1:47 P.M. **13**
14	**15**	Neptune at conjunction with Sun **16**	Friday Sun enters Capricornus 10 P.M. **17**	Mercury at inferior conjunction (moves into morning sky) **18**	Tomorrow New Moon 5:52 A.M. **19**	**SAC Star Party** Buckeye Hills (members&guests) **20**
Uranus at conjunction with Sun **21**			**24**	**25**	**26**	First Quarter Moon 4:13 A.M. **27**
28			**31**	All Times are Mountain Standard Time		

sitting on a tripod. I used up the roll of 24 pictures of Royal Gold 1000 about a hour after moonrise. I basically took pictures of constellations, with exposures of 1 and 2 minutes. The photo I took of the moon and the site that was 15 seconds long turned out too. The stars in it went down to 7.5 to 8th magnitude.

In nearly all photos, the shortest exposures turned out the best. I think I'll drag out my barn-door tracker and take some more pictures with less star trailing.

At 5:30 AM, there was a fireball that lit the sky. I happened to be looking the other way — at the ground naturally — when it occurred. It was far brighter than the moon light. By the time I turned around, there were still several glowing pieces falling toward the ground just west of south from the site. If we had another sighting from another direction, we might be able to locate some meteorites. The meteor's train persisted for more than 10 minutes. It started as a vertical smoke trail, but the winds high up turn it horizontally.

At 5:40, the meteor's train was forgotten as the Space Shuttle and Mir few overhead. The spacecraft had already separated and were moving quickly along the same orbit.

About 10 minutes after the spacecraft disappeared, morning twilight had obviously started. I packed up everything and headed back to Phoenix. The first rays of the just risen sun reached me at Ray Road and I-10.

Overall, there was no meteor storm during the night. The Leonids were active, about one every 2 minutes after midnight, but nothing spectacular.

Saguaro Astronomy Club Member Services Form

Membership

Memberships are for the calendar year and are prorated as follows: Jan - Mar 100%, Apr - Jun 75%, Jul - Sep 50%, Oct - Dec 25%.

- ❑ $28.....Individual Membership
- ❑ $42.....Family Membership (one newsletter)
- ❑ $100.....Business Membership (includes advertising)
- ❑ $4.....Nametag for members
- ❑ $14.....Newsletter Only

Subscriptions

The following magazines are available to members. Subscribe or renew by paying the club treasurer. You will receive the discounted club rate only by allowing the club treasurer to renew your subscription.

Sky & Telescope.....$24.00 for one year ❑

Astronomy.....$20.00 for one year ❑

Write your name, address, and phone number in the space below.

Make checks payable to SAC. Mail the completed form to:

Regina Lawless
SAC Treasurer
5808 E Turquoise,
Scottsdale AZ 85253

SAC and SAC Meetings

Saguaro Astronomy Club (SAC) was formed in 1977 to promote fellowship and the exchange of scientific information among its members — amateur astronomers. SAC meets monthly for both general meetings and star parties, and regularly conducts and supports public programs on astronomy.

SAC meetings are usually held on the Friday nearest the full moon. This means that over the course of the year, meetings are not held on same week of the month. The same is true of the club's star parties. Star parties at Buckeye Hills are mostly held on the Saturday of the third quarter moon.

1996 SAC Meetings
Jan. 5
Feb. 2
Mar. 8
Apr. 5
May 3
May 31
Jun. 28
Jul. 26
Aug. 30
Sep. 27
Oct. 25
Nov. 22
Dec. 14 Party

1996 SAC Star Parties		
Date	Sunset	Moonrise
Jan. 20	5:48pm	8:50am
Feb. 17	6:14pm	6:40am
Mar. 16	6:36pm	5:16am
Apr. 13	6:56pm	3:54am
May 11	7:16pm	2:34am
Jun. 8	7:33pm	1:15am
Jul. 13	7:36pm	4:50am
Aug. 10	7:16pm	4:46am
Sep. 7	6:43pm	2:26am
Oct. 5	6:06pm	1:11am
Nov. 9	5:30pm	6:17am
Dec. 7	5:21pm	5:02am

SAC General Meetings 7:30 PM at Grand Canyon University, Fleming Building, Room 105 — one mile west of Interstate 17 on Camelback Rd., north on 33rd Ave., second building on the right.

SACNEWS
c/o Paul Dickson
7714 N 36th Avenue
Phoenix AZ 85051

Stamp

First Class Mail