

# Saguaro Astronomy Club

Metro Phoenix, Arizona

## SACNEWS



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## Grasslands Observatory

by Jack Jones

Dark of the moon, Mitch Stanley, a new SAC member, and I were invited to Grasslands Observatory near Tucson to meet astronomer James McGaha and talk about Mitch's experience of seeing the "Phoenix Lights" through his 10-inch Schwaar reflector. On March 13, Mitch was in his backyard checking things out and at 65 power caught a V-shaped formation of airplanes slowly creeping across the sky over Scottsdale. He quickly moved on to other things, since he'd already seen way too many airplanes since getting the scope a year ago. He had no idea what a big foo-farrah would develop in the coming months after this one sighting, but that's another story.

Grasslands Observatory is located about 60 miles southeast of Jim McGaha's house in the Sabino Canyon suburbs of Tucson just south of a little town called Sonoita in the Santa Rita mountain range at 5000 feet. I've never gotten to 5000 feet so quickly in a car from a major metropolitan area, but starting from Tucson's 2400 feet sure helps! The observatory houses a two-ton 24-inch reflector under a roll-off roof. A warming room housing a computer and library is adjacent. After dinner in Sonoita, the three of us arrived about 10 PM, and Jim had the scope ready minutes after unlocking the doors. As the roof rolled back, it seemed to take the heat of the day with it and a cool breeze came over. He would have been even quicker setting up but the telescope was outfitted for CCD work and he had to convert to observing mode for us amateurs.

The equatorial fork mount of the scope is built like a battleship and uses Byers gears driving a truss-pole tube. The 24-inch  $f/5.02$  mirror is ground to  $1/24$ th wave. The telescope uses a home-brew digital setting circle readout that has an object-centering indicator and even an opinion of how good the object being viewed is. Large engraved 22-inch circles are present on the axes but no longer used.

Mitch had brought his 10-inch scope along (they're inseparable) and acquired our first object of the evening, a stationary grouping of faint strobe lights near the horizon to the south. Mitch and I stared and stared, using different powers on his 10-inch telescope, and the unidentified

## Quick Calendar

**SAC End-of-Year Party**  
Susan Pritchard's Home, See Page 7  
**7:30 PM, Friday, December 14**  
*Yes, a Friday!*

**SAC Star Party**  
Buckeye Hills Recreation Area  
**Saturday, December 27**

## Magazine & Membership Renewals Due

See Note on Page 6

object just would not move. "No, my friends," says Jim, who is also a nationally known UFO debunker, "that's one of the tethered Aerostat drug blimps. Remember, we are about thirty miles from the Mexican border." Oh, yeah, that's right.

We were soon joined by astrophotographer Phil Farnum, also of Tucson, who brought his Miyauchi 20X100 binoculars on a nice cantilever mount. We were set for observing! He explained his travails with snooty Fujinon US distributors, and how he finally gave up on them and got the \$6000 Miyauchis. There are only six in the country at this time.

This was a great darksky site with only a little light

## SAC Officers

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DIM MOMENTS  
IN  
**AMATEUR  
ASTRONOMY**

by Paul Dickson

SPENDING  
10 MINUTES  
GALAXY  
HOPPING IN  
VIRGO

...ONLY TO  
BUMP  
THE  
TELESCOPE

cone from Tucson. We hunted through the Sagittarius and Scutum star clouds and everything we saw was pretty. The field was completely flat and gave the black wallpaper illusion I had seen only once before in Rick Rotramel's excellent Parks 11X80s.

Jim had asked us to bring a list of what we wanted to observe, so his first question was "Well what do you want to look at?" He was hoping to catch us off-guard, I believe, but I was ready with my NGCView Observing Log, and called out "NGC 4565 for starters" and then rattled off several other NGC objects. He was not to catch us flat-footed at a time like this.

The low power range for a scope this size is around 150X, so we had to get used to rather large images! We also had to get used to climbing a 12-foot step ladder to take a look through the scope. The 4565 edge-on galaxy showed a dark rift all along its length. I felt it my duty

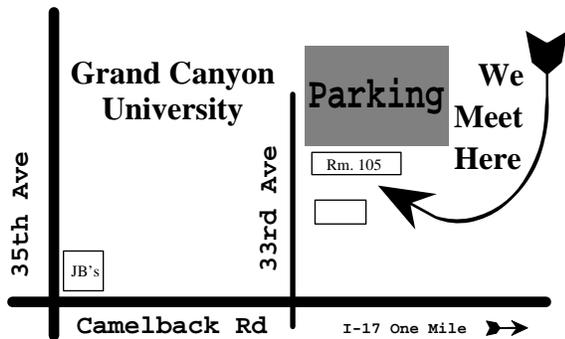
to point out the many supernovas (not!) all along it.

We shuttled back and forth from the binoculars to the 10-inch to the big scope for quite a while. Mitch is looking at M13 and I asked him if he could see the often overlooked little galaxy NGC 6207 in the same field 1/2 degree to the northeast. Jim says "Ah, but there is another in that field," and sure enough, in the big scope with averted vision, a tiny edge-on 15th magnitude galaxy is floating between the two!

Jim is partial to planetaries and had printed out an odd planetary earlier at his house with Megastar. It's called Abell 70 or PK38-25.1 (Uranometria p. 298) in Aquila. His CCD image shows an edge-on galaxy perched like a straw hat on top of a ring planetary. I thought the image was a trick of superposition, but through the scope now, I see both are visible (14.3p). The 19th magnitude center star is not! I must try this object in my 10" since

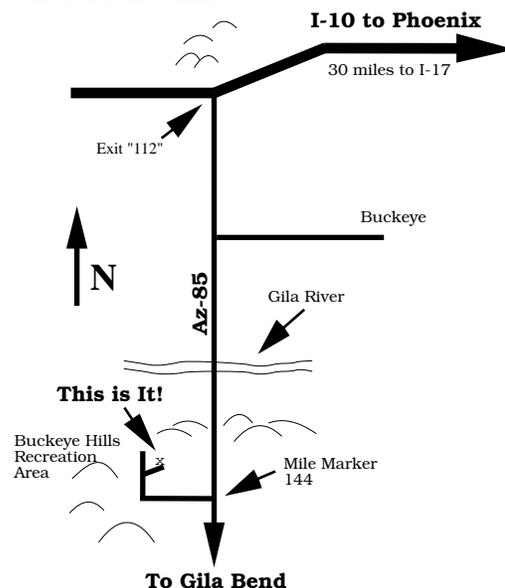
## Directions to SAC Events

**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.



I now have the advantage of knowing what it looks like.

We pick up the planetary theme and look at one after the other. NGC 6445, the Little Gem in Sagittarius, is a square planetary, definitely bipolar, but I still don't know why it's called that, perhaps because of its topaz shape. A short hop gets us from the Little Gem to the Little Ghost, NGC 6369 in Ophiuchus, and again I'm wondering about the name. This one shows a splotch on the northern edge and a faint central star. NGC 6818 is a blue donut with a hazy center. NGC 6210 in Hercules is an even bluer disk with a star in the middle. NGC 7009, the Saturn Nebula, shows very thin wisps sticking out on either side of its greenish oval.

A 9 mm Nagler gives 340 power, and M27, the Dumbbell Nebula, is a giant hourglass that I've never seen visibly so large. The hourglass is actually laid on top of an entire circle and I spend a whole bunch of time on this one. Photos of the Dumbbell show nebulosity in the gaps, but no photograph ever showed me the entire circle like actually viewing it does.

It is just a matter of perspective whether a planetary looks like an hourglass, a ring, or linked circles. Jim says all planetaries are bipolar. This is probably due to the circumstances under which they are created. There is always some spin involved in the final collapsing and puffing out of the gas cloud. If the Universe had a theme, it would be rotation about a center.

We decided to end the evening with a look at the M57 Ring Nebula, and Saturn. M57 was cavernous. At 340 power it filled the eyepiece field with a huge center surrounded by thick filamentary traces. The central star was continuously visible even in the poor seeing. Saturn showed a bright equatorial region and a darker surface extending to the poles. The very difficult Keeler gap (a.k.a.

Encke's division) was seeable at the very tips of the rings, but it took patience waiting on the high ladder for the seeing to untwist itself. The eye is superior to the camera here and can catch much detail in these fleeting moments — this division has been detected by many but (according to Dickinson & Dyer) has never been photographed from Earth.

Jim buttoned up the telescope at 2:30 AM and we made it on down the mountain after a solid four hours of observing. No matter how long I stay, I always feel I leave the best part of the night behind whenever I leave under a still-dark sky.

## Getting Started Care and Feeding of Equatorial Mounts by Wil Milan

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This is the second installment of a two-part series on equatorial mounts. The first part ("The Selection and Breeding of Equatorial Mounts") discussed what equatorial mounts are, how they work, and the different types commonly available. In this installment we'll discuss how to use an equatorial mount and how to get the most from one.

### Transportation

Equatorial mounts usually consist of several major components. The primary component is the equatorial

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## Comet Comments

by Don Machholz

(916) 346-8963 CC232.TXT November 9, 1997  
<http://members.aol.com/cometcom/index.html>  
DonM353259@aol.com

1995 O1 (Hale-Bopp)					
Date	RA-2000-Dec	Elong	Sky	Mag	
11-28	07h35.1m	-59°29'	90°	M	7.2
12-03	07h25.5m	-60°46'	91°	M	7.3
12-08	07h14.9m	-61°52'	91°	M	7.4
12-13	07h03.3m	-62°46'	92°	M	7.5
12-18	06h50.9m	-63°29'	92°	M	7.6
12-23	06h38.1m	-64°00'	92°	M	7.6
12-28	06h25.1m	-64°19'	92°	E	7.7
01-02	06h12.3m	-64°26'	92°	E	7.8
01-07	06h00.1m	-64°23'	92°	E	7.9
01-12	05h48.6m	-64°09'	92°	E	8.0

One faint comet has recently been discovered; it was found by Jeff Larson using the Spacewatch equipment at Kitt Peak. It is not expected to become bright. Mean-

while the SOHO satellite picked up two more sungrazer comets falling into the sun.

Several comets are visible to us these nights. **Comet Hale-Bopp** is quite far south, many Northern Hemisphere observers have had their last view of this great comet. **Comet Meunier-Dupouy** remains in the north. **Periodic Comet Hartley 2** crosses the Milky Way in the evening sky while the beautiful **Comet Utsunomiya** passes further north. **Periodic Comet Temple-Tuttle**, responsible for the Leonids Meteor Shower each November, returns after a 33-year absence. Its brightness curve may not be as steep as shown in the ephemeris below

**Comet Hunting Notes:** Since January 1975, 48 different individuals have visually discovered comets that now carry their names. What countries do they live in? Twenty-three are in Japan, nine reside in the USA, with four in Australia. Other countries represented are the old USSR, Canada, England, South Africa, Philippines, Italy, New Zealand and Norway. The most discovery events occurred in Japan (33) followed by the USA (30) and Australia (19).

head—the part containing the shafts, motors, and gears. On a fork-type equatorial this includes the forks and drive base, and these generally remain together with the scope as one unit. Fork mounts usually also have a “wedge,” a large angled bracket which goes between the drive base and the tripod. On a German equatorial it’s a bit more complex because typically there is also a counterweight shaft, counterweights, and often a platform which mates the equatorial head to the scope. In addition to the major components there are usually power and control cables, a hand controller, and assorted other small components.

What all this means is that to transport an equatorial mount you should consider some kind of case which keeps everything together. Some mounts have factory-made transport cases available, but if not you should customize a case to hold all the components you need to use your equatorial mount. A small picnic cooler with foam inserts will do very well. Be sure to make provision for a battery or spare batteries, as appropriate for your mount.

However you transport your mount, before you take

the mount into the field you should practice setting it up in your back yard. The worst way to learn about setting up an equatorial mount is in the middle of nowhere, in the dark, and on rough ground where any little part or screw you drop disappears.

### Setup and alignment

Once the mount is on site and set up it’s time to align it. On an equatorial mount “alignment” means to align the mount’s polar axis with the Earth’s axis. Some mounts make this extremely simple: They have a “polar alignment scope,” a tiny telescope which is built into the polar shaft itself. If your equatorial mount has a polar alignment scope then you need only follow the manufacturer’s instructions on how to set the polar scope for proper alignment (it varies from brand to brand), aim the scope at Polaris, and you’re done.

If your mount does not have a polar alignment scope then alignment is a bit trickier, and the type of alignment you do depends on what kind of use you have in mind. If you’re only going to be doing visual observing then align-

*Continued from previous page...*

C/1997 J2 (Meunier-Dupouy)					
Date	RA-2000-Dec	Elong	Sky	Mag	
11-28	17h55.6m	+48°34'	73°	E	11.7
12-03	18h09.4m	+47°22'	73°	E	11.7
12-08	18h22.8m	+46°11'	71°	E	11.7
12-13	18h35.9m	+45°01'	70°	E	11.6
12-18	18h48.6m	+43°53'	69°	E	11.6
12-23	19h00.9m	+42°47'	67°	E	11.6
12-28	19h12.9m	+41°43'	66°	E	11.6
01-02	19h24.4m	+40°42'	64°	E	11.6
01-07	19h35.6m	+39°45'	62°	E	11.6
01-12	19h46.4m	+38°51'	61°	E	11.6

103P/Hartley 2					
Date	RA-2000-Dec	Elong	Sky	Mag	
11-28	20h59.2m	-09°27'	69°	E	8.4
12-03	21h18.1m	-09°29'	68°	E	8.2
12-08	21h38.2m	-09°25'	68°	E	8.1
12-13	21h59.4m	-09°14'	68°	E	8.0
12-18	22h21.7m	-08°56'	68°	E	7.9
12-23	22h45.1m	-08°31'	68°	E	7.8
12-28	23h09.4m	-07°58'	69°	E	7.8
01-02	23h34.5m	-07°17'	70°	E	7.9
01-07	00h00.2m	-06°29'	71°	E	7.9
01-12	00h26.2m	-05°33'	72°	E	8.0

C/1997 T1 (Utsunomiya)					
Date	RA-2000-Dec	Elong	Sky	Mag	
11-28	18h47.1m	+15°42'	52°	E	10.3
12-03	18h46.7m	+13°22'	48°	E	10.5
12-08	18h46.6m	+11°19'	43°	E	10.6
12-13	18h46.8m	+09°30'	39°	E	10.6
12-18	18h47.1m	+07°54'	35°	E	10.7
12-23	18h47.5m	+06°27'	32°	E	10.8
12-28	18h48.0m	+05°09'	29°	E	10.9
01-02	18h48.5m	+03°58'	27°	M	11.0
01-07	18h49.0m	+02°52'	26°	M	11.1
01-12	18h49.4m	+01°52'	26°	M	11.2

55P/Tempel-Tuttle					
Date	RA-2000-Dec	Elong	Sky	Mag	
11-28	12h29.0m	+14°26'	66°	M	17.3
12-03	12h31.4m	+15°16'	71°	M	16.7
12-08	12h33.6m	+16°23'	76°	M	16.1
12-13	12h35.6m	+17°53'	81°	M	15.5
12-18	12h37.1m	+19°57'	86°	M	14.8
12-23	12h38.0m	+22°51'	92°	M	14.0
12-28	12h37.9m	+27°03'	98°	M	13.2
01-02	12h35.9m	+33°30'	105°	M	12.3
01-07	12h29.5m	+43°59'	113°	M	11.4
01-12	12h06.3m	+61°34'	119°	M	10.4

### Orbital Elements

Object:	Hale-Bopp	Meunier-Dupouy	Hartley 2	Utsunomiya	Tempel-Tuttle
Peri Date:	1997 04 01.1370	1998 03 10.4365	1997 12 22.0242	1997 12 10.0570	1998 02 28.1034
Peri Dist:	0.914008 AU	3.051015 AU	1.031725 AU	1.359850 AU	0.976639
Arg/Peri (2000)	130.5787°	122.6755°	180.7240°	095.8952°	172.4930
Asc Node (2000)	282.4653°	148.8429°	219.9547°	053.7059°	235.2568
Incl (2000):	089.4268°	091.2731°	013.6191°	127.9898°	162.4861
Eccentricity:	0.995085	1.000760	0.700391	1.0	0.905507
Orbital Period:	~2500 years	Long Period	6.39 years	Long Period(?)	33.23 years
Reference:	MPC 30738	MPC 30738	MPC 29880	MPC 30738	MPC 30244
Epoch:	1997 12 18	1998 03 08	1997 12 18	1997 10 10	1997 12 18
Absol Mag/“n”:	-1.0/4.0	4.0/4.0	8.0/6.0	7.8/4.0	10.0/10.0

ment is not critical; just do a rough alignment by pointing the polar shaft as closely as you can to Polaris and leave it at that. It won't be perfectly aligned, but it'll probably be close enough that the clock drive will keep objects in the field of view as you observe.

If you're going to do astrophotography then a very precise alignment is required else star images will be trailed during long exposures. A very careful job of alignment with a polar alignment scope (if your mount has one) may be sufficient, but the best method of precise alignment is what is known as "the drift method."

### **The drift method**

The drift method is a trial-and-error procedure in which you make an alignment adjustment, watch what effect that has on alignment, and make another adjustment accordingly. Through that process you can successively minimize the alignment error until the alignment is as close to perfect as it can get. The drift alignment takes a little time and is a bit tedious, but it results in the most accurate alignment possible. Here's how it's done:

Start by pointing the polar axis to Polaris "by eye" as closely as possible, then turn on the clock drive. Next point the scope straight up, then slightly south until the scope is pointing 90 degrees from the pole. (This is a declination of 0 degrees, which is the celestial equator.) Now insert a crosshair eyepiece and center the crosshairs on a nearby star. Once the star is centered in the crosshairs let the clock motor drive the scope for a few minutes unattended.

After a few minutes check the eyepiece and see which way the star has drifted in the crosshairs. If the star has drifted north (meaning you have to nudge the scope to the north to re-center it in the crosshairs), that indicates the polar axis is too far west and needs to be adjusted to the east. Conversely, if the star drifted south then you should move the polar axis to the west. Don't make large adjustments; each time make a small adjustment, center the star in the crosshairs again, let the clock motor drive the scope for a few more minutes, and check again for drift. Continue checking and adjusting until the scope will track for at least 15 minutes without noticeable drift.

Next, rotate the mount in right ascension until it points near the eastern horizon. Again center the crosshairs on a star and allow the clock motor to drive the scope for a few minutes, then check it for drift. If the star has drifted to the north then adjust the polar axis to point lower in the sky; if the star drifts south raise the polar axis to point higher. Continue adjusting and checking until again there is no drift for at least 15 minutes. — then you're done.

The drift alignment procedure is indeed a bit tedious and its workings can seem a bit mysterious, but it does work. If you find the geometry of the drift method a bit puzzling, don't worry about it; just write down or memorize which way to adjust and you'll find that it works. You may want to write down the instructions (or cut out the paragraphs above) and paste them inside your eyepiece

box or scope case. The procedure may be a bit awkward at first, but after a few times through you'll find that it's much easier.

### **Learning more**

Once you're familiar with how to set up your mount and scope and know how to do a proper polar alignment you're ready to make full use of your equatorial mount. To do visual observing there's really not much more to know about using an equatorial mount, but for astrophotography there are other skills to acquire, such as guiding. For more information on the nitty-gritty of astrophotography see Michael Covington's excellent "Astrophotography for the Amateur" or Dyer and Dickinson's "The Backyard Astronomer's Guide."

### **End of this series**

This is the last of my year-long series of "Getting Started" articles. There's more that could be written, of course, but all the basics have been covered and for more in-depth information I recommend one of the many books available for budding astronomers. The best of these I can recommend is Terence Dickinson's "Nightwatch," an excellent all-around introduction to amateur astronomy. A more in-depth introduction is the aforementioned "The Backyard Astronomer's Guide" by Alan Dyer and Terence Dickinson.

In future months I will be contributing articles of a more general nature on a variety of topics. But reaching out to beginning astronomers is as always near and dear to my heart, and if you have any suggestions on topics to be covered I'd love to hear from you. Feel free to drop me a line by E-mail (E-mail address: [wmilan@airdigital.com](mailto:wmilan@airdigital.com)) or call me at (602) 996-8827.

Clear skies, and enjoy God's creation.

## **Bits and Pieces**

### **Minutes from the November Meeting**

The November meeting was called to order at 7:30 by Gerry Rattley.

Guests were asked to introduce themselves. We had 5 people stand up and say hello.

Regina Lawless gave the treasurers report. Her LAST report!!

Paul Dickson brought copies of Herschel 400 book. He also had the Messier book and the SAC 110 Best.

A.J.Crayon talked about the Deep Sky Meeting at the McGrath's house. The constellations to be talked about were Cepheus and Lacerta. He also mentioned the Messier Marathon which will be March 28, 1998. AJ also talked about the SAC tee shirts for only \$12. Buy one now as a stocking stuffer.

Jack Jones discussed the planetarium at the Arizona Science Center. It has a 60' dome which is huge. It looks like we will be able to hold an event 1 or 2 times a year at the science center.

# Fuzzy Spot

by Ken Reeves

Eridanus/Fornax December 1997

Eridanus is a constellation that really reminds me of its name. The rambling river starts near the feet of Orion, makes a big loop west near Cetus, loops back east around Fornax, and finally disappears below the southern horizon between Horologium and Phoenix.

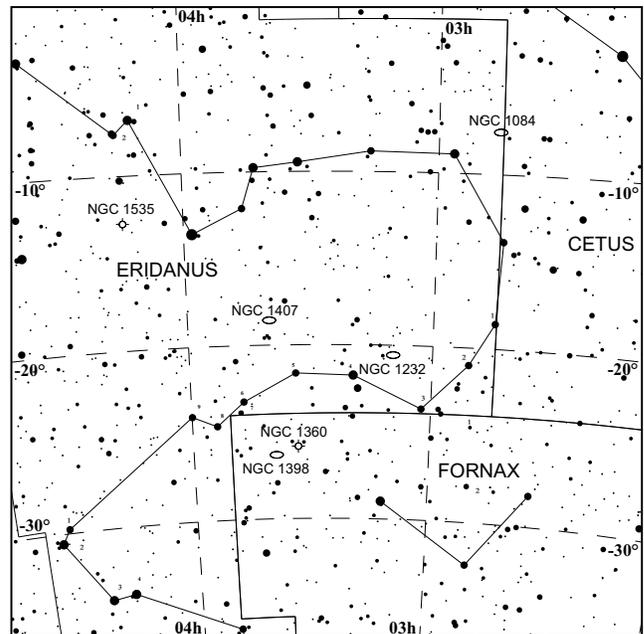
In this column, I am going to cover the northern part of the constellation, which is where the Herschel 400 and Best NGC objects are. I'm also going to dip slightly into Fornax for a few objects. Don't expect the objects to jump out at you in this area of the sky. Mainly galaxies reside here, and none of these are show pieces. Observing these lesser object not only helps you hone your observing and star-hopping skills, it will make you appreciate the major objects in the sky, and actually will help you observe more detail in such objects.

With this column, I have complete my first year. I hope you have enjoyed reading and observing from this column as much as I have enjoyed writing it. Once again, please let me know of any comments or suggestion you may have.

**NGC 1084** (02h45.9 -07°35) This galaxy sits right on the border with Cetus. At 70X it is seen as fairly bright, somewhat elongated NE/SW, pretty bright in the middle with no nucleus, and a fainter halo. Averted vision makes it grow a little. At 170X, the middle is still fairly bright and somewhat mottled.

**NGC 1232** (03h09.7 -20°34) This is what I call a BARF object (big and real faint). At 100X it is pretty

faint, pretty large, slightly brighter in middle, but no nucleus seen. 2 stars are involved and there is another star to E. According to Uranometria, there is supposed to be galaxy **NGC 1232A** between the star on the E and 1232, but I was unable to see it.



**NGC 1407** (03h40.1 -18°34) This Herschel 400 galaxy is fairly bright, somewhat small, round, with a much brighter middle and an occasional non-stellar nucleus. Use averted vision to help make the halo come out a little better. Take a look to the SW, and you will also find galaxy **NGC 1400** which adds a nice touch to this observation.

*Continued on next page...*

We held other nominations for the officers and the officers are as follows:

President — Paul Dickson

Vice President — Gerry Rattley

Treasurer — Jack Jones

Properties Director — Adam Sunshine

Secretary — Ken Reeves (Thanks Ken)

The vote was held and it was unanimous for the above slate.

We also discussed the Christmas party. The date was moved to Dec. 12. It will be at Susan Pritchard's house. Steve Coe talked about the novice group meeting at Buckeye Hills on Nov. 22. He also talked about the 2 shadows on Jupiter from 2 of its moons.

For show and tell AJ Crayon showed us slides of using Kodak Elite II. He had the film pushed 1.5 stops. He bracketed the pictures to see which was best. Nice job with the pictures, AJ!

At the break we had 40 people in attendance.

After the break, our main speaker was Dr. Paul Scowen from ASU who talked about using the Hubble

Space Telescope. He explained about what they are doing and why they are doing it. Great talk on the nebulae that you are working on and thanks for the wonderful slides.

The meeting was adjourned and 15 people continued the discussions at JB's.

—David Fredericksen, SAC Secretary

## Magazine & Membership Renewals Due

The end of the year is nearly here and it is time to renew your subscriptions and your membership. As a club member you will get a discounted subscription rate to *Astronomy Magazine* and *Sky & Telescope*. These subscriptions must be sent in as blocks of five, so it's best to subscribe now with everyone else rather than risking you subscription running out when you subscribe at another time of year. *Sky & Telescope* is \$27 for a year and *Astronomy* is \$20.

Your SAC membership is based on the calendar year.

*Continued from previous page...*

**NGC 1535** (04h14.2 -12°44) If you are looking for something other than galaxies, here is a planetary nebula. At 100X, it is pretty bright, fairly small, and pretty even. Neither averted vision nor the UHC filter helps much. I cranked the magnification all the way up to 240X, and, other than spreading it out, there wasn't much difference seen.

Here are a few nearby objects in Fornax:

**NGC 1360** (03h33.3 -25°51) Here is another planetary nebula. Unlike NGC 1535 in Eridanus, this one is very large, pretty bright, and elongated 2:1 NE/SW. There is a very bright star in the middle which I'm not sure if it is the central star or a foreground star.

Please make an effort to get your renewal into the treasurer before the end of the year. In 1998, Jack Jones will be our new treasurer. It will be a great help to him to not have to keep track of a large number of late subscribers will make his job a lot easier. Dues are \$28 for individuals and \$42 for families (one newsletter).

Your last newsletter will be the December issue unless you renew before January. As of the November club meeting, barely over **33%** of the club has renewed their memberships. **Have you?**

The form to fill-out is at the top of the back page.

Forty-five copies of the Royal Astronomical Society of Canada's *1998 Observer's Handbook* have been ordered. They will hopefully arrive by the December Party. For those of you who ordered Guy Ottwell's *1998 Astronomical Calendar*, they too have been ordered and should be available.

## An Update on Milan Moiston Theory by Wil Milan

The announcement of Milan Moiston Theory (MMT) was greeted with glee by astronomers everywhere because it explains so well why clouds always seem to form over new telescopes, why dark-moon nights are usually overcast, and many other phenomena. However, it also left many with a sense of despair because it seemed there was nothing one could do about it. But there may now be cause for hope.

After much intensive research, the Moiston United Research Cooperative (MURC, a group funded by expected Nobel prize money) has developed a device which provides complete protection from moistons on any telescope. It is a plastic cap which completely covers the aperture, thereby providing 100% protection from moistons. However, early users have complained that the full-aperture, completely opaque cap seems to degrade the optical performance of the telescope (it seems to affect

I didn't notice any color in this object as is seen in some planetaries. Using the UHC filter really brings this object out, and shows that it brightens slightly towards middle.

**NGC 1398** (03h38.9 -26°20) Somewhat large and pretty bright, this galaxy has a very much brighter middle, non-stellar nucleus, and a faint, round halo. Averted vision doesn't help much here. Although I didn't note it, my drawing shows a nice star field around this object.

### Herschel 400 Objects

1084, 1407, 1535

### SAC's 110 Best of the NGC Objects

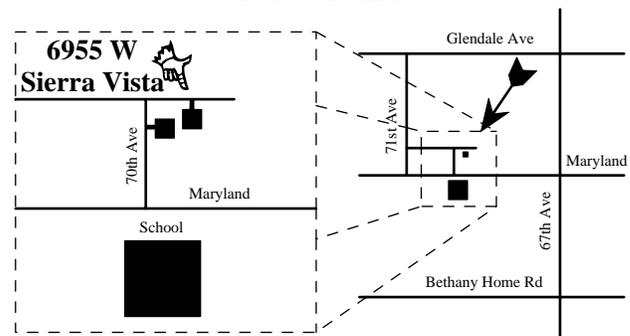
1232, 1535

the light-gathering in particular) so work is proceeding apace on an improved model.

Stay tuned for further developments.

## 1997 SAC Party

Chanukah, Christmas, Winter Solstice  
Do We Really Need a Reason to Party  
New Years



**Note: This Year the Party is Friday Night**

This year the SAC Party will be held at Susan Pritchard's house, at 7:30 PM on **Friday**, December 12. Susan's address is 6955 W. Sierra Vista Drive. Anyone needing help with directions or wishing to help setup should contact Susan at 934-7496.

As usual, the party will be a Pot-Luck with SAC providing the soft drinks.

Regina Lawless says that if *1998 Observer's Handbooks* have arrived they will be available for \$12.

1997 and 1998 SAC Officers are asked to arrive at 7 PM for a brief meeting.

## 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.

# Novice Group Meeting Clearly a Success

by Steve Coe

The Novice Group Meeting at the Buckeye Star Party was obviously a success. A short talk in twilight was followed by an observing session of a variety of astronomical showpieces. I counted 42 people at the twilight talk, followed by a question and answer session. Approximately 12 telescopes were set up by SAC members to provide the Novice Group with an opportunity to observe and learn about the sky. As the sky darkened the cloud cover started to dissipate, as it often does in Arizona. The planets are the obvious target in twilight and we started with Venus and Jupiter, seeing a lovely crescent Venus and the Galilean Satellites of Jupiter. As the Milky Way appeared, we viewed the Ring Nebula, the Coathanger cluster and the globular cluster M2 in a variety of telescopes.

By now the ringed planet Saturn was up nicely and in clear sky. I know that us oldtimers say that the newbies need to see Saturn, a spectacular sight in any good telescope. Actually, I just think it is an excuse to look ourselves. That lovely ball and ring are stunning. As we pointed the telescope armada in that direction, I wondered how many other telescopes on the Earth are being pointed at this beautiful planet.

As the night progressed, we viewed The Double Cluster, Pleiades and Orion in a wide variety of scopes and magnifications. All-in-all an excellent night, for a day that was quite cloudy at 3:00 PM. As the observing progressed we chatted about a variety of subjects: eyepieces, finderscopes, star charts, keeping warm, brands of scopes and accessories, places to observe and "did you see that meteor behind you?"

A BIG "thank you" to all who participated. Both those who are looking to find out more about astronomy as a hobby and those who are happy to provide that information need to get together for the Novice Group to continue to be a success. Clear Skies to us all.

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# December 1997

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				<b>PAS Meeting</b> Brophy Prep. Physics Lab	<b>TAAA Meeting</b> (Tucson)	First Quarter Moon 2:32 A.M.
	1	2	3	4	5	6
	Edwin Hubble born 1889	Moon occults Saturn 12 A.M.	<b>EVAC Meeting</b> (SCC: Rm. PS172)	Saturday Moon occults Aldebaran 10 P.M.	<b>SAC Party</b> (See Page 7)	Geminid Meteors Peak: ?? A.M. Z.H.R.: 100 !
7	8	9	10	11	12	13
Yesterday Full Moon 7:37 P.M.		Tomorrow Sun enters Sagittarius 10 P.M.	Mercury at inferior conjunction (moves into morning sky)			
14	15	16	17	18	19	20
Winter Solstice 1:05 P.M.	Yesterday Last Quarter Moon 2:44 P.M.		Venus, Mars, and Uranus are within a 3° circle in evening sky			<b>SAC Star Party</b> Buckeye Hills (members&guests)
21	22	23	24	25	26	27
	New Moon 9:56 A.M.			All Times are Mountain Standard Time		
28	29	30	31			

## Magazines & Discounts

Club members may subscribe to astronomical magazines at reduced rates through the club Treasurer. See the Member Services Form on the back page of this newsletter. Furthermore, club members are encouraged to align their subscriptions with the Jan.–Dec. calendar year. This eases the burden both on the Treasurer and the Publisher by permitting a single Group Renewal to be placed in the autumn for the upcoming calendar year.

Those members who experience problems with their subscriptions to *Astronomy* magazine may call Kalmbach Publishing Customer Service at (800) 446-5489.

Those members who experience problems with their subscriptions to *Sky & Telescope* magazine may call Sky

Publishing at (800) 253-0245.

Besides the club discount on *Sky & Telescope* magazine, Sky Publishing offers club members a 10% discount on all other Sky publications. This means books, star atlases, observing aids, Spotlight prints, videos, globes, computer software, and more.

Club members who subscribe to *Sky & Telescope* through the Club Discount Plan may order Sky publications directly, at the above toll-free number, without going through the club Treasurer. Simply mention the Club Discount Plan and give the Saguaro Astronomy Club name to receive the discount. Sky Publishing will check their records to verify that you are eligible to receive the discount.

# 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.....\$27.00 for one year
- Astronomy.....\$20.00 for one year

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

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

Jack Jones  
SAC Treasurer  
2313 W Sierra  
Phoenix AZ 85029

## 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 the same week of the month. The same is true of the club's star parties. Star parties at Buckeye Hills Recreation Area are mostly held on the Saturday of the third quarter moon.

**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. See inside for a map to the meeting location.

### 1998 SAC Meetings

Jan. 9  
Feb. 13  
Mar. 13  
Apr. 10  
May 8  
Jun. 12  
Jul. 10  
Aug. 7  
Sep. 11  
Oct. 2  
Nov. 6  
Dec. 5 Party

### 1998 SAC Star Parties

Date	Sunset	Moonrise
Jan. 17	5:46PM	10:41PM
Feb. 21	6:18PM	3:40AM
Mar. 21	6:39PM	2:23AM
Apr. 18	6:59PM	1:08AM
May 16	7:19PM	11:54AM
Jun. 20	7:37PM	3:27AM
Jul. 16	7:34PM	2:10AM
Aug. 15	7:12PM	12:57AM
Sep. 12	6:37PM	11:45PM
Oct. 10	6:00PM	10:32AM
Nov. 14	5:27PM	3:48AM

## SACNEWS

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

Stamp

First Class Mail

### Inside:

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**SAC Party — Friday, December 12**  
**SAC Star Party — December 27**