

Saguaro Astronomy Club

Metro Phoenix, Arizona

SACNEWS



May 1997 — Issue #244

v4.28

How to Stay Awake Past Your Bed Time

by David Priest

It's three in the morning and you have just completed another night of observing, stowed the equipment, and you are climbing into your car to drive home. You may realize, through common sense and experience, that the drive will be rough in terms of remaining awake and alert, so you do a few things as you slowly roll down the drive: take a sip from your 8th cup of coffee tonight, turn on the radio, roll down the windows for a little breeze. And if you are fortunate enough to have fellow observers riding with you, the understanding is that he/she will watch to make sure you don't doze off at the wheel. Ten miles later, it's a bit cold in the hill country so you roll up that window. Your friend is now staring at the road with his eyes blinking slowly and his mouth hanging open. The radio plays soothing music, the road flows quietly by. You are in big trouble.

Most single vehicle highway fatalities are now believed to be sleep related and occur between 3 AM and 8:30 AM. The biological clock is chemically programmed to induce sleep in the evening and is running the "sleep" program at "full blast" at three in the morning. It has been scientifically proven that human vigilance is at its 24 hour low at around 3 AM local time. History bears witness to this fact in that Chernobyl, Three Mile Island, the Exxon Valdez, and those statistical peaks in traffic accidents all involved decision making and a lack of vigilance at around 3 AM or later. Add to the situation that 5 to 15% of the population has a sleep problem and thus may struggle with maintaining alertness day and night. Furthermore, 5% of the middle aged male population suffers from sleep apnea and physically cannot remain alert behind the wheel at 3 AM.

Well, you get the picture.

What is needed for the astronomy buff who tempts fate on the highway at 3 AM is a two part strategy. First you must minimally assess your current sleep/wake state of being by measuring your overall level of sleepiness in

Quick Calendar

SAC Star Party
Buckeye Hills Recreation Area
Saturday, May 3

Public Star Party
Thunderbird Park, 59th Ave, North of Beardsley
1 mile north of AZ 202
7:30-10 PM, Sunday, May 10

SAC Meeting
7:30 PM, Friday, May 16

SAC Deep-Sky Meeting
7:30 PM, Thursday, May 22

SAC 20th Anniversary Banquet
Bud Brown's Barn, \$20 (See Page 6)
7 PM, Friday, May 30

SAC Star Party
Buckeye Hills Recreation Area
Saturday, May 31

very general terms. And secondly, you need a plan to minimize the risk of falling to sleep during that fateful window of risk: the late night (or early morning) drive home. Before proceeding with this discussion, I need to emphasize that if you suspect that you or someone you are concerned about has a problem with sleep and/or remaining awake

SAC Officers

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DIM MOMENTS
IN
**AMATEUR
ASTRONOMY**
by Paul Dickson

NEEDING
A
FLASHLIGHT

TO FIND
THE
FLASHLIGHT

and alert, a physician should be consulted. Sleep disorders are serious physical disorders which can cause other health problems including high blood pressure, heart attacks and strokes, not to mention accidents on the job or behind the wheel. Your physician has a variety of treatments and techniques for improving your quality of life by allowing you to get a good night's sleep.

To get an idea as to just how sleepy a person may feel, sleep labs use a very brief questionnaire known as the Epworth Sleepiness Scale. People compensate for general levels of fatigue on a daily basis, so this questionnaire is limited and in fact may be inaccurate, depending on your subjective bias while responding to the questions. I am including this questionnaire to allow you to get an impression of your own levels of alertness or fatigue. Sleep labs use many additional tests and diagnostic procedures to properly assess a person's quality and quantity of sleep.

Epworth Sleepiness Scale

How likely are you to doze off or fall asleep in the following situations in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you have not done some of these things recently, try to work out how they would have affected you. Use the following scale to choose the most appropriate number for each situation:

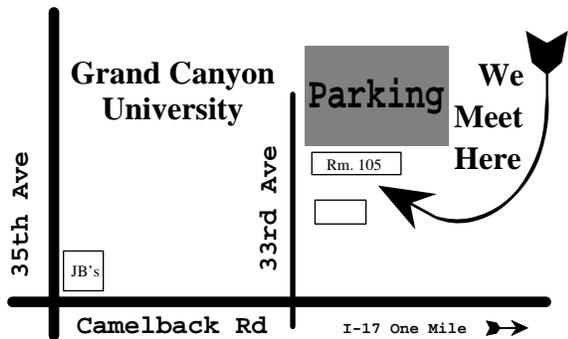
- 0 = **Would never doze**
- 1 = **Slight chance of dozing**
- 2 = **Moderate chance of dozing**
- 3 = **High chance of dozing**

SCORE SITUATION

_____ Sitting and reading

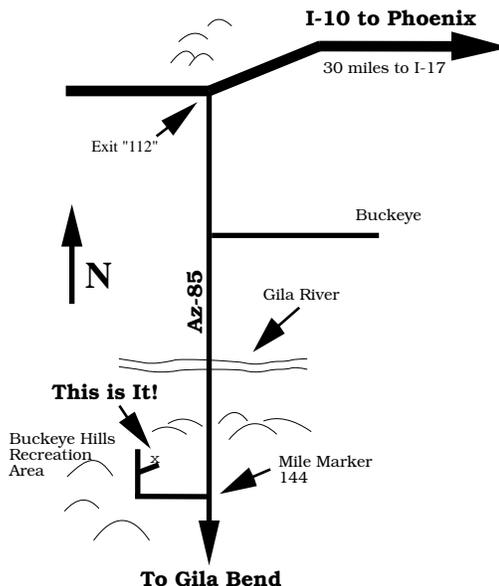
**Directions to
SAC Events**

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.



- _____ Watching TV
- _____ Sitting inactive in a public place
(e.g. a theater or meeting)
- _____ As a passenger in a car for an hour
without a break
- _____ Lying down to rest in the afternoon
when circumstances permit
- _____ Sitting and talking to someone
- _____ Sitting quietly after lunch without alcohol
- _____ In a car, while stopped for a few minutes
in traffic
- _____ TOTAL

The medical community has many opinions about the finer points of scoring this test. In general, if you score 10 or higher, you need to talk to your doctor. If you are up around 17 to 24, you need to pick up the phone and make that appointment right now. You are an accident waiting to happen.

Now lets cut to the chase. What can a person do to wake up for the drive home? First, if you have a sleep disorder, you are not going to succeed. The deck is stacked against you. However, if you are a low scorer on the test, lets look at the not so obvious strategies.

Our biological clocks are set by exposure to bright light. Our brain takes it's cue as to how to adjust the circadian rhythm by exposure to sunlight. Bright morning sunlight is best, and in northern latitudes where weather and the polar axis tilt result in less sunlight in the winter,

Comet Comments

by Don Machholz

(916) 346-8963 CC225.TXT April 6, 1997
DonM353259@aol.com

Periodic Comet Tempel-Tuttle (P/1997 E1 = 55P) was recovered on March 4 by Karen Meech, et al, using the Keck II 10-M reflector in Hawaii. This comet is responsible for the Leonid meteor shower which occurs every November. It should be visible in amateurs' scopes late this year, passing 0.36 AU from us early next year. By then it will be visible in binoculars in the northern polar region.

1995 O1 (Hale-Bopp)					
Date	RA-2000-Dec	Elong	Sky	Mag	
05-02	04h44.2m	+25°23'	31°	E	-0.4
05-07	04h59.2m	+22°25'	29°	E	-0.1
05-12	05h12.4m	+19°38'	28°	E	0.1
05-17	05h24.3m	+17°02'	26°	E	0.4
05-22	05h35.1m	+14°35'	24°	E	0.7
05-27	05h45.1m	+12°17'	23°	E	0.9
06-01	05h54.4m	+10°05'	22°	E	1.2
06-06	06h03.2m	+07°59'	22°	E	1.5
06-11	06h11.5m	+05°58'	22°	E	1.7
06-16	06h19.4m	+04°00'	22°	E	1.9

46P/Wirtanen					
Date	RA-2000-Dec	Elong	Sky	Mag	
05-02	06h02.5m	+29°54'	49°	E	11.5
05-07	06h25.7m	+30°14'	49°	E	11.7
05-12	06h48.4m	+30°18'	50°	E	12.0
05-17	07h10.4m	+30°08'	50°	E	12.2
05-22	07h31.6m	+29°46'	49°	E	12.4
05-27	07h52.0m	+29°13'	49°	E	12.7
06-01	08h11.4m	+28°31'	49°	E	12.9
06-06	08h29.9m	+27°41'	48°	E	13.2
06-11	08h47.5m	+26°45'	48°	E	13.4

Comet Hale-Bopp will be leaving the evening sky in early May as it moves south of the sun. Southern Hemisphere observers will have some difficulty seeing it until it re-appears in their morning sky in July. It also moves south of the ecliptic, where it will remain for the next 2400 years. This will be the last view most Northern Hemisphere observers will have of the comet, although those in mid-Northern latitudes will be able to see it again this October and again in February 1998. More about that then.

81P/Wild 2					
Date	RA-2000-Dec	Elong	Sky	Mag	
05-02	09h15.7m	+18°50'	94°	E	10.3
05-07	09h27.4m	+18°02'	92°	E	10.4
05-12	09h39.5m	+17°10'	90°	E	10.4
05-17	09h51.8m	+16°13'	88°	E	10.5
05-22	10h04.3m	+15°11'	87°	E	10.6
05-27	10h16.9m	+14°05'	85°	E	10.6
06-01	10h29.6m	+12°55'	84°	E	10.7
06-06	10h42.3m	+11°43'	82°	E	10.8
06-11	10h55.0m	+10°27'	81°	E	10.9

Orbital Elements

Object:	Hale-Bopp	P/Wirtanen	P/Wild 2
Peri Date:	1997 04 01.13453	1997 03 14.14299	1997 05 06.62789
Peri Dist:	0.9141030 AU	1.0637469 AU	1.5826156 AU
Arg/Peri (2000)	130.59083°	356.34322°	041.77000°
Asc Node (2000)	282.47069°	082.20387°	136.15458°
Incl (2000):	089.42936°	011.72255°	003.24276°
Eccentricity:	0.9950969	0.6567490	0.5402220
Orbital Period:	~2400 years	5.46 years	6.39 years
Reference:	MPC 28052	MPC 27080	MPC 28272
Epoch:	1997 03 13	1997 03 13	1997 04 22
Absol Mag/"n":	-1.5/4.0	9.0/6.0	7.0/6.0

Seasonal Affect Disorder (SAD) strikes many people with increased levels of depression and fatigue. The treatment for SAD includes prescribed doses of bright light from FDA approved therapeutic light units. If you are minimizing your exposure to bright sunlight as you drive west to the observation site, you may want to delay your dark adaptation strategy until your arrival. This shouldn't however, prevent you from using appropriate eye protection for safe driving into the glare of the sun.

The other factor in bright light therapy is that a blast of bright light may serve to reset the clock a bit, thus allowing the brain to delay the inducement of drowsiness. In other words, a half hour or so of bright light before driving home may help wake you up. Medical bright lights are calibrated to deliver a prescribed amount (Lux) for a set time. Although no specific frequency has been isolated, most units deliver a wide band such as plant lights similar to sunlight, but minus the harmful ultraviolet range. It is generally felt that any bright white light will help the brain maintain alertness by suppressing the production of melatonin. Melatonin is produced by your brain to induce drowsiness and sleep. When your retina sees bright light, it signals the pineal gland via the visual cortex, to suppress the production of melatonin.

A nap can't hurt. You should try for adequate sleep the night before your observation night, with a recharge nap the afternoon of your observation, especially if you are fatigued.

Diet is an effective means of avoiding sleepiness, and a high protein intake as opposed to a sugar intake is helpful as a part of your strategy. A candy bar may be a quick pick me up for some people, but the metabolic let down will catch up with you rather quickly.

Another aspect of diet involves your caffeine intake. That cup of coffee packs much more whollup if you aren't a coffee hound to begin with. If you can do without coffee until the drive home, or with less coffee during the day, all the better. Less caffeine intake in general means more caffeine effect when you need it. So save the big blast of coffee for the drive home, when it will do the most good.

Repacking your equipment is probably a good workout, but some additional exercise before climbing into the car will be helpful as well. Heavy exercise before bedtime can delay sleepiness, but in this case, you only have time for a moment or two of standing in place stretching and exercise to "get the blood flowing."

The last variable you can control is the temperature of the vehicle you are in. Avoid a warm cozy ride as this may result in a drowsy drive. Cool night air may serve to add to the environmental stimulation so necessary in remaining alert at the wheel.

Finally, good sleep hygiene seven days a week, except for your one night of staying up till 4 AM to commune with the universe, is very conducive to getting home safely from your observing site. You should try for good sleep on every other night, to minimize the adverse affects of your wild night of unbridled astronomy.

A Few Rules for Good Sleep Hygiene

Avoid naps if you are trying to improve sleep at night. Because some naps are very beneficial in dealing with certain sleep disorders, you may need to touch base with your physician.

Try to awaken at the same time each morning. Try not to sleep late on weekends. (Sounds nuts doesn't it?) Too much sleep can disrupt the next night's sleep period.

Do not drink alcohol before bedtime. Your metabolic processes will cause the later hours of sleep in the night to become fragmented.

If you wake up in the middle of the night, avoid exposure to bright light.

Avoid caffeine in the afternoon and evening. If you are having trouble sleeping, avoid caffeine after 10 AM.

When you wake up in the morning, try to get a 30 minute dose of sunlight within 30 minutes of your arising from bed.

Exercise moderately each day. Another good reason to consult your physician first.

Avoid strenuous exercise after 6 PM.

Other than light reading or bonding with your significant other, the bed room should be reserved for sleep.

I've tried to touch very briefly on the main points that apply to your unique challenges in pursuing astronomy, as they apply to sleep. However, Sleep Disorders are a prevalent problem in our society today. If you have concerns in this area, I again urge you to consult with your physician. If you would like additional information about Sleep Disorders, feel free to call me at work. David Priest at the Sleep Center of South Texas (210-615-2323) or E-mail: dpriest@texas.net.

Sentinel Cloud Gaze **by Steve Coe**

Well, the Sentinel Star Gaze did not turn out for the best this year. The strong storm that dumped 2 feet of snow on Flagstaff just kept bringing in clouds from the south and we only had short periods when the clouds would part of a while to allow some observing.

Comet Hale-Bopp showed itself for a short while and even under poor conditions was impressive. On Saturday there were 22 scopes set up by about 30 hopeful observers. It is always impressive to see the human spirit looking for the best. As the wind and clouds did not seem to dissipate, I decided to pack up and make my way back to Phoenix around 11:00. A lot of people know that this site is excellent when it is at its best, hopefully it will show off the great skies Sentinel is known for next year.

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.

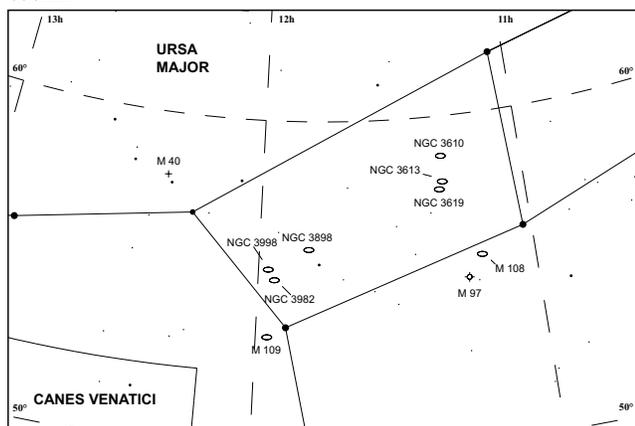
Fuzzy Spot

by Ken Reeves

Ursa Major

May 1997

Ursa Major is probably the first constellation most people learn to recognize (with the possible exception of Orion). The famous asterism, the Big Dipper, is recognizable both in name and form to almost everyone. According to Patrick Moore in *Exploring the Night Sky with Binoculars* (Cambridge University Press), this asterism is also known as the Plough and King Charles' Wain.



Ursa Major contains a whopping 46 of the Herschel 400 objects (second only to Virgo) and 10 of the *SAC's 110 Best of the NGC Objects* (the leader in this catalog). Obviously I can't fit all of them in one column (they probably wouldn't fit in one newsletter), so I am going to cover the objects in the "bowl" of the dipper (the list at the end is the entire constellation). This area is scattered with galaxies, *Sky Atlas 2000* contains 13 galaxies, *Uranometria 2000.0* shows 50 galaxies, and the *SAC Deep Sky Database* shows 51 galaxies plus a galaxy cluster!

NGC 3610 (09h24.3 +34°32) This galaxy is not too big, has a very very bright middle, but the halo is pretty faint. It is round and contains a stellar nucleus. There are dim stars to the W and SSE, and a bright star to the NE.

NGC 3613 (10h36.3 +37°20) I saw this galaxy as pretty bright, somewhat small, elongated E/W, a brighter middle which is also elongated E/W, and no nucleus. There is a nice pattern of 4 stars around this

galaxy, with the two brighter one on the N and S, and the fainter ones on the NW and SW. A second very faint galaxy was suspected to the E, but this turned out to be just averted imagination.

NGC 3619 (10h43.5 +24°55) This galaxy is pretty small, not very bright, but has a bright middle with a possible stellar nucleus. Averted vision really helps bring out the halo which is round. This object does not take magnification very well, and was almost lost at 140X.

NGC 3898 (10h49.8 +32°59) This galaxy is situated SE of a string of 3 stars. It is pretty bright, somewhat large, much brighter in the middle with a non-stellar nucleus, possibly elongated E/W. The halo is pretty large and extended, averted vision helps in viewing it. An occasional star was seen to the W of the nucleus, and a star just E of the halo was noted. West of the three bright stars, galaxy **NGC 3888** was noted.

NGC 3982 (10h51.3 +27°59) This is one of 4 galaxies visible in a single low power field of view (the others are **3972**, **3998**, and **3990**). This is the second brightest of the 4, and is somewhat bright, somewhat small, possible slight elongation E/W, and a bright middle. The galaxy forms the apex of an isosceles triangle with two stars to the S.

NGC 3998 (10h52.5 +36°37) This galaxy is the brightest of the group of 4 (see 3982). It is pretty bright, pretty small, definitely round with a very bright middle. The halo is pretty faint, and averted vision doesn't help that much. This galaxy along with 3 other stars form a nice trapezoid pattern, and another faint star makes it a nice "Cassiopeia" shape. Upon closer examination of this faint star, I noticed it was slightly fuzzy. This turned out to be NGC 3990, the fourth galaxy of the group. It is always nice to stumble across an unexpected object like this, and this discovery made this the most interesting observation in the bowl of the Big Dipper.

Herschel 400 Objects

2681, 2742, 2768, 2787, 2841, 2950, 2976, 2985
3034, 3077, 3079, 3184, 3198, 3310, 3556, 3610
3613, 3619, 3631, 3665, 3675, 3726, 3729, 3813
3877, 3893, 3898, 3938, 3941, 3945, 3949, 3953
3982, 3992, 3998, 4026, 4036, 4041, 4051, 4085
4088, 4102, 5322, 5473, 5474, 5631

SAC's 110 Best of the NGC Objects

2841, 3077, 3079, 3184, 3675, 3877
3941, 4026, 4088, 4605

Bits and Pieces

Minutes from the March Meeting

The meeting was called to order at 7:30 pm by Adam Sunshine.

Visitors were asked to sign the guest book. We had 3 guests introduce themselves.

Regina Lawless gave the treasurers report.

A.J. Crayon talked about the 20th Anniversary shirts that we have on hand. The shirts are \$12 each, so if you want one, talk to A.J. The Deep Sky Group will meet on March 27th. They will discuss Gemini and Monoceros.

A.J. said that normally he had the Messier Awards on the meeting afterward. Unfortunately, he had many things going on, so he would hand out the awards next

meeting. A.J. had an award for the SAC's 110 Best of the NGC for Paul Dickson.

Rich Walker talked about our public star party at Thunderbird Park. We hope the clouds go away. It was announced in the Arizona Republic, on the radio, and on TV. Oh boy!!! On May 10th we will be back at Thunderbird Park for our normal public star party. On April 17th, there is a star party at Discovery School and there is another one on the same night.

Jack Jones told about the Edmund Scientific catalog that is advertising some light absorbing black material that could be used on the telescope.

For our Show and Tell, we had Regina Lawless show her slides of the comet from 4 Peaks. Nice job, Regina.

Steve Coe talked about our 20th Anniversary banquet at Bud Browns Barn. Send your money and information to Regina. We'll see you there.

At the break, we had 44 people at the meeting.

After the break, Steve Coe and Chris Schur gave a talk about comets. Steve discussed comets in general from Charles Messier to Comet Bennett. Chris talked about comets in a little more detail starting with Comet Levy-Rudenko in 1984 and finishing with Comet Hyakutake. Very informational talk. Thanks Steve and Chris!!

We met over at JB's for more astronomical discussions.

—David Fredericksen, SAC Secretary

Cruise to '98 Eclipse

Steve Coe

As many of you know, there is an excellent solar eclipse on Feb. 26, 1998 near the Caribbean island of Aruba. Princess Cruises is planning a week long cruise into the path of the eclipse and you can join in with the Arizona eclipse chasers. **There are only 2.5 double occupancy cabins remaining** and they will go quickly on the sparkling new ship, Dawn Princess.

A deposit of \$200 will be required to confirm and hold your space on the cruise, with the total amount due by Nov. 1, 1997.

Welcome Aboard agency is holding three cabin types: 8 are BB category, which are outside/balcony cabins @ \$2,172 per person; 1 is F category, which is an inside cabin @ \$1,846 per person; 6 are JJ category, which are inside cabins @ \$1,712 per person.

This price includes round trip air fare to and from San Juan, Puerto Rico and all applicable port taxes for stops in St. Thomas, Dominica, Grenada and Caracus.

Our travel agent for this darkness at noon rendezvous is Biff Treston at Welcome Aboard in Scottsdale, Arizona. He is not an astronomer, but is learning by being around me for several hours. Biff can certainly answer any questions you might have concerning the cruise ships or accommodations. You may reach him at 946-5333 during the day, or 486-2819 at home; speak to Biff or Hymie.

I know that 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 Biff or Hymie if you are interested in sailing to an eclipse.

Being an active Arizona astronomer for 20 years, I know for a fact that there are lots of interesting, exciting, knowledgeable and fun-loving folks around here. That is really the motivating factor about trying to get this together, an opportunity to meet and spend some time with a fun bunch under the Moon's shadow!

An Astronomical Banquet

Celebrating 20 Years of the
Saguaro Astronomy Club

On Friday, May 30th there will be a dinner banquet to celebrate the 20th year since the formation of the Saguaro Astronomy Club. The party is from 7 P.M. to 12 at Bud Brown's Barn, 909 E. Northern Avenue in Phoenix. It is east of 7th Street and Northern, just over the canal, watch for the sign on the right (south) side. The good news is that we will have the place all to ourselves, the place will be full of astronomers.

Several large tables will be set up to show off lots of photos of astronomical events, folks and scopes, deep sky astrophotography and anything else that could help celebrate all the fun that SAC has generated over the years. Those photos need to come from the participants, so bring that box or album of shots along to the party. A slide projector and video tape machine will provide the party goers an opportunity to show off their best images from 20 years of fun. With all the great photography, video and drawings that Arizona astronomers have generated, here is a great opportunity to be creative with your presentation. Arizona's largest astronomical show and tell, sounds like lots of fun.

The Anniversary Committee is trying to contact any past members of SAC who might wish to attend. So, if you know the whereabouts of folks who would be interested in coming to this celebration of 20 years of SAC, please let them know.

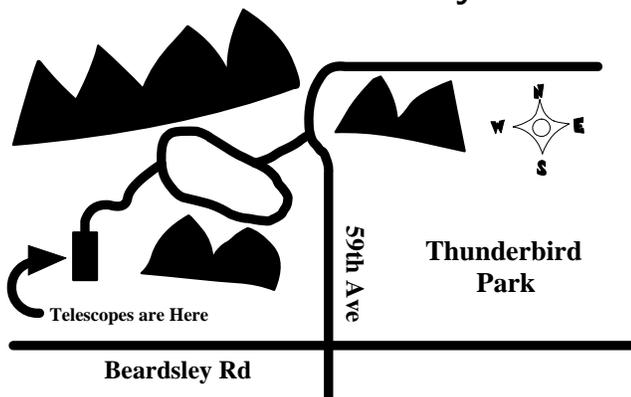
The banquet will cost \$20 per person and there will be a cash bar available. There are two meals to choose from: A 10 oz. Top Sirloin Steak or BBQ Chicken. All meals come with salad, bread, coffee or tea and dessert of either "double barrel" chocolate brownie or Arizona lemon cake. Hors d'oeuvres of salsa and chips will be served before dinner.

Please give your check to Dave Fredericksen at a SAC meeting or send it to her at: 6222 W Desert Hills Dr., Glendale, AZ 85304.

May 1997

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> All Times are Mountain Standard Time </div>				PAS Meeting Brophy Prep. Physics Lab 1	TAAA Meeting (Tucson) 2	SAC Star Party Buckeye Hills (members&guests) 3
4	5	New Moon 1:48 P.M. 6	7	8	<div style="border: 1px solid black; padding: 5px;"> Public Star Party Saturday Evening, May 10 Thunderbird Park 59th Ave. North of AZ 202 </div>	
11	12	Sun enters Taurus 3 P.M. 13	EVAC Meeting (SCC: Rm. PS172) 14	Yesterday First Quarter Moon 3:56 A.M. 15	SAC Meeting Grand Canyon University, Fleming Rm. 105 16	17
<div style="border: 1px solid black; padding: 5px;"> May 4 – May 11 Texas Star Party May 23 – May 25 Riverside Telescope Makers' Conference (RTMC) </div>		19	Tomorrow Mercury at greatest elongation 25° (morning) 21	SAC Deep-Sky Meeting 7:30 P.M. 22	Yesterday Full Moon 2:15 A.M. 23	24
Pluto at opposition 25	Memorial Day 26	27	28	Last Quarter Moon 12:52 A.M. 29	Astronomical Banquet \$20 (See page 6) Bud Brown's Barn 30	SAC Star Party Buckeye Hills (members&guests) 31

Public Star Party



Thunderbird Park, Saturday, May 10
 Sunset: 7:20 PM

There will be another Sky Viewing Session for the public on Saturday, May 10th at Thunderbird Park in Glendale. The park is on 59th Avenue, 1 mile north of Beardsley Road. The public session will start at 7:30 PM.

Some of the astronomical attractions available: Mars will be up, Comet Hale-Bopp is still in the evening sky, and more. So, please show up by 7:00 and let's get a wide variety of telescopes setup and ready to go by the time our guests arrive.

The last public session at this park, less than 2 months ago, had a turn-out between 600 and a 1000 people. It's possibly to have another large crowd. **With this possibility in mind, we'll need every telescope out there once again.**

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:

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 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.

1997 SAC Meetings

Jan. 24
Feb. 21
Mar. 21
Apr. 25
May 16
Jun. 20
Jul. 18
Aug. 22
Sep. 19
Oct. 17
Nov. 14
Dec. 13 Party

1997 SAC Star Parties

Date	Sunset	Moonrise
Jan. 4	5:37PM	3:50AM
Feb. 1	6:03PM	2:35AM
Mar. 1	6:28PM	1:23AM
May 31	7:34PM	3:01AM
Jun. 28	7:44PM	1:43AM
Jul. 26	7:34PM	12:25AM
Aug. 30	6:58PM	4:56AM
Sep. 27	6:20PM	3:46AM
Oct. 25	5:46PM	3:33AM
Nov. 22	5:25PM	1:18AM
Dec. 27	5:31PM	6:22AM

SACNEWS

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

Stamp

First Class Mail

Inside:

- How to Stay Awake Past Your Bed Time
by David Priest
- Dim Moments by Paul Dickson
- Comet Comments by Don Machholz
- Sentinel Cloud Gaze by Steve Coe
- Fuzzy Spot by Ken Reeves

SAC Meeting — May 16

SAC Deep-Sky Meeting — May 22

Astronomical Banquet — May 30