



Sacnews

Issue 284

November 2000

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Reflections

The 2000 Northern Arizona Star Party

By Steve Coe

I had business to attend to on Friday evening, so I arrived at the Northern Arizona Star Party on Saturday morning. Immediately, someone told of the wind blowing the night before and how I had missed a pretty poor night of observing. After a nice lunch from the staff at the Rock and Cross Ranch, I gave a short talk on dark nebulae and answered some questions about the black spots in

Our Galaxy. I had a table set up and did manage to sell some of my new books to folks attending the star party. A few of the purchasers of "Observing the Deep Sky" asked me to autograph their brand new copy. I wondered aloud if they thought my signature would raise or lower the eventual worth of the book. Most were nice enough not to answer.

(Continued on page 2)



The Attendees of the 2000 Northern Arizona Star Party pose at the entrance to the Rock & Cross Ranch. SAC was represented by Steve Coe, AJ Crayon Diane Hope, Tom Polakis, Aaron McNeely, Jennifer Keller, Jack Jones, Thad Robosson and Rick Tejera

(Continued from page 1)

There was an excellent talk by David Healy on "Murphy's Law and astrophotography"--he actually had the courage to show off his mistakes. After David's slide show I took a much-needed nap in preparation for the night's observing.

After putting on a layer of clothes to protect against the chill of being a mile in altitude, I walked up to the observing field. Tom Polakis and Diane Hope are observing some objects in Scorpius and Scutum. I point out to Diane that two of the more prominent dark nebulae from the talk are in good viewing position and we look at the Pipe Nebula in Ophiuchus using binoculars. It can be seen naked eye and there is much detail in the binos.

In Tom's 20 inch, at nearly 300X, NGC 40 in Cepheus is a planetary nebula with lots of easy detail. The bright rim of this nebula gives it a spiral structure and we discuss how the forms and shapes of the Universe seem to repeat themselves. This planetary is also quite mottled, an unusual texture for a planetary nebula.

I meander over toward the telescope that will impress me the most as the evening progresses. It is an 8 1/2 inch f/6 Maksutov-Newtonian that was made by Peter Cerevolo, a master optician. Mike, the owner of this fine instrument, is making his way through objects in Vulpecula and we enjoy several nice open clusters before spending some time with the Dumbbell Nebula. This bright planetary shows

lots of excellent detail at 200X, there are 8 stars involved and much of the faint outer nebulosity can be seen with averted vision.

However, as the evening gets later and the planets get farther above the horizon, that is the time this fine telescope really impressed me. Using a 5mm University Optics Plossl eyepiece and a 2.4X Dakin Barlow lens on Saturn was a really "WOW!" experience. The crepe ring, a very low contrast feature on the inside edge of the main ring system, can easily be seen where it crosses the ball of Saturn. Cassini's Division in the rings is unmistakable and in the moments of best seeing I can just discern three spokes. These are very elusive shadowy gray markings that are shadows on the bright "A" ring. All in all, a very memorable view of one of the most beautiful objects in the sky.

Well, about this time the wind starts to pick up again and folks start to make their way off the observing field. I decide that I have also pushed myself far enough without sleep and return to my bunkhouse. AJ, Rick, Thad and I drive back into the Valley, a fun chat on the CB radios make the trip much more delightful.

Overall, I would certainly attend the NASP in the future. The only detracting feature I know about is that the lights from the trucks on the road do swing across the observing field and are distracting. Fortunately, this does not happen often. The food, the talks and the observing all add up to lots of fun.

Astronomy 101

Hey Man, I'm Wired

By Rick Tejera

Now that I've got you wondering about the title of this month's installment, no it isn't a tribute to Cheech & Chong; we're going to talk about computers in astronomy. I think I'll talk mostly about planetarium & charting programs, but I'll touch on some other uses & topics too.

For the budding amateur astronomer the choices in charting software can be quite confusing. Among the things to consider are level of sophistication, ease of use and cost. Lets take things one at a time.

Most commercial planetarium software is pretty well loaded with bells & whistles. All will show the sky or any portion thereof at any particular time and date from any location on earth you might want. The key to making an educated decision is what features beyond the basics the software has that you would use. If you're a dob driver, automatic telescope control is probably not high on your list of must-haves. The ability to plot Telrad circles most likely would be, though. Read the advertisements & reviews in the magazines to get an idea of each products capabilities. If you have web access, check out their web site. If there is demo version available try it. Ask around who's using what and why. Some programs come in levels of sophistication allowing you to purchase only the features you need. The one that comes to mind here is The Sky, By Software Bisque. Others pack all the features you think you'd ever use at the expense of database completeness. You may be able to add external catalogues to these programs, however, so the trade off may be worth the savings in cost.

There are several planetarium programs available on the web as freeware or shareware. Once again the level of sophistication varies

from very complete to bare bones. The goods news is you can't go wrong on the cost. If you don't like it, delete it and try something else. One word of caution on freeware & shareware: Support may be very limited to non-existent. Be prepared to work through problems on your own.

No matter how sophisticated a program is, if you can't figure out how to use it, you'll get nothing but frustration. Fortunately most of the software I've seen is pretty intuitive, but then I haven't seen it all. Look for software that uses the kind of interface you're use to, whether it be drop down menus or point and click access. I use Skymap Pro By Chris Marriott and found that I was manipulating the charts with ease within about 10 minutes, 5 of which was going through the tutorial. The interface and icon pretty much tell you what your about to do.

Lets face it, like anything else you will get what you pay for. The higher your budget, the more capable a program you'll get. There is some really good freeware out there though, so don't count that out, especially if you are on a limited budget, these programs could be a good stop-gap measure till you have a little extra in the kitty. I'll list some of the more popular programs at the end of this article.

So what else can you use your computer for?? Most of us with web access, can find a lot of good information on the web. Some of it may be more fun to know kind of stuff than really necessary but hey, this is supposed be fun, remember. Our website has many links to interesting and useful astronomy related sites. Check it out at www.saguaroastro.org. Keep up with the latest advances in equipment by

(Continued on page 8)

Fuzzy Spot, Cepheus

By Ken Reeves

Cepheus is a large, though not very prominent, north circumpolar constellation. The house shape is obvious once you see it even though it is lying on its side during this season.

Cepheus is most famous for its delta star, which is the prototype for Cepheid variables. These variable stars are useful as "standard candles" for determining distances as the intrinsic brightness of the star is related to its period. Also in Cepheus is the beautiful red star, Mu, which is also known as Herschel's Garnet Star.

Sitting in the Autumn Milky Way, this constellation abounds with open clusters. All other types of objects are found here with the exception of globular clusters.

NGC 40 (00h13.0 +72 32): We start this month with a planetary nebula. At 140X it is somewhat small, somewhat bright, and contains a very bright central star. Using the UHC filter brings out the nebula, and may show some elongation E/W with dark spots on the N and S. Using averted vision makes it more pronounced.

NGC 188 (00h44.4 +85 20): This is one of the oldest open clusters in our Milky Way visible in amateur equipment. At 70X, it is easy to find, somewhat faint, and fairly condensed. There are 3 layers of stars with a count of about 40 stars over a granular haze.

NGC 6939 (20 31.4 +60 38): Another open cluster, this one is somewhat faint and pretty big. The brightest stars form a "V" shape with a string of 5 stars on SW side and a lot of haze in background, which I suspect, is the light of unresolved stars. A total of about 20 stars were seen over a lot of granular haze, with many stars popping out when averted vision was used.

NGC 6946 (20h34.8 +60 09): This galaxy is on the Cygnus/Cepheus border. I like to include it in Cepheus because it forms a nice pair with NGC 6939. It is very large, pretty faint with a slightly brighter center, which fades smoothly into the halo. Using averted vision makes the halo stand out a little. I suspected seeing a counter-clockwise spiral structure.

NGC 7129 (21h41.3 +66 06): This open cluster/nebula object was seen as a grouping of 4 bright stars with some additional fainter star. A fairly faint nebulosity was seen around the stars. Using the UHC filter does not help bring out the nebulosity at all.

NGC 7142 (21h45.9 +65 48): This nicely shaped open cluster is fairly large, somewhat faint with 2 levels of stars over some haze which resolves a little when averted vision is used. There are 2 bright stars to W and a bright star to the N. I counted 35 stars using direct vision.

NGC 7160 (21h53.7 +62 36): Here we have another open cluster, very bright, pretty small, and pretty poor. There is a bright double star colored white and blue/white with about 15-20 fainter stars around the double. I saw a total of 25 stars in 3 levels. Using averted vision doesn't bring out many more stars. There is a bright star to W.

NGC 7380 (22h47.0 +58 06): This triangular shaped open cluster is pretty bright and pretty big. Sitting in a nice field of stars, I counted 25 stars and by using averted vision, many more popped out. There is a bright star on SW end with faint companion and a nice double star off of the same point of the triangle. Finally, there is another bright star some distance out from the double.

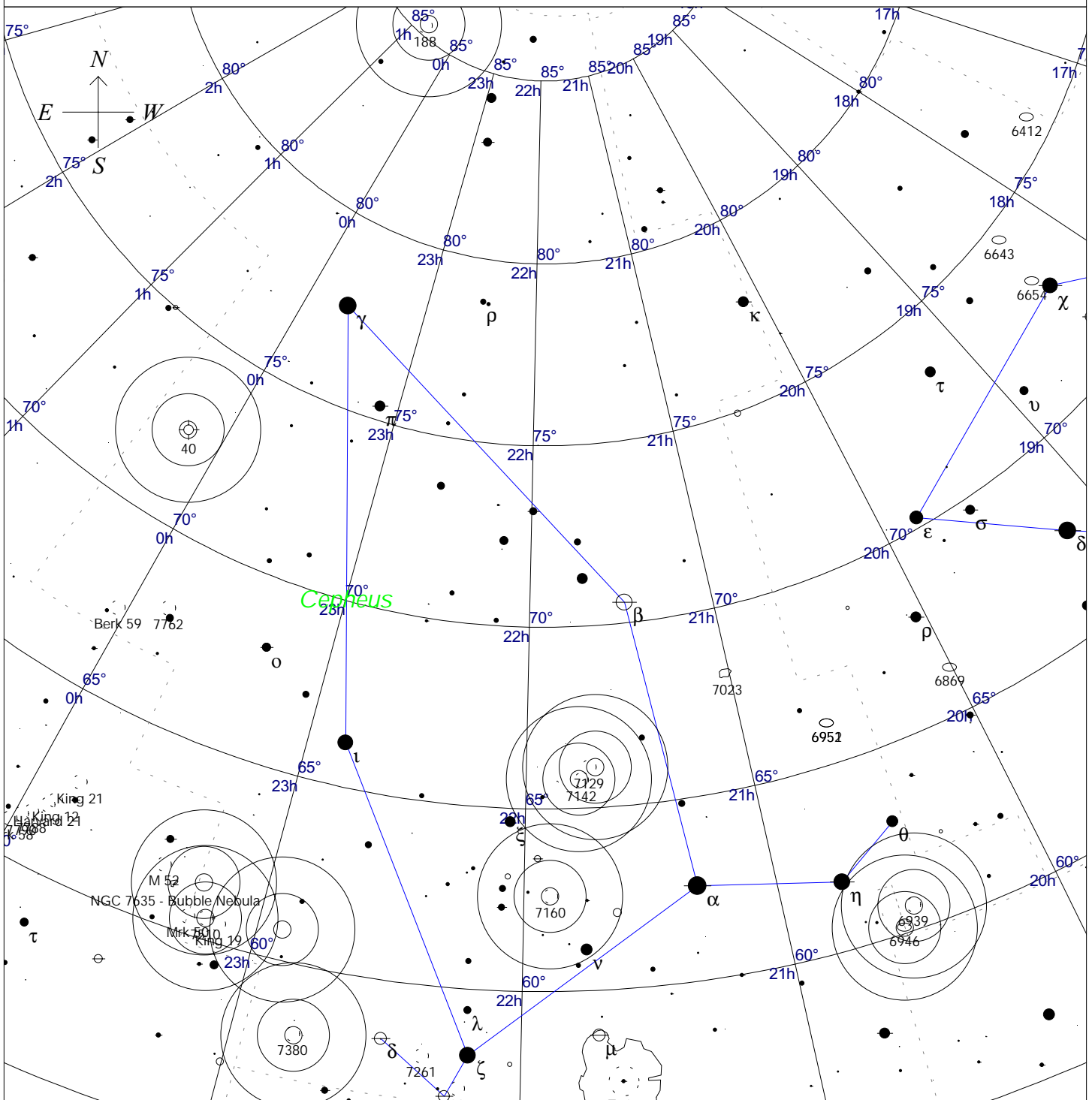
NGC 7419 (22h54.3 +60 50): Somewhat faint, somewhat small, pretty poor, and a little condensed describes this open cluster as seen in the 20" scope. It is elongated WNW/ESE, contains about 20 stars in 2 levels with some possible granular haze. There is a bright star nearby which interferes slightly.

NGC 7510 (23h11.5 +60 34): This is a nice cluster, another one that is triangular in shape. It is pretty bright, somewhat rich, and somewhat small. There are 3 levels of stars with 14 stars counted over some haze. Using averted vision resolves a few more stars. There is a bright star on ENE end with 2 trails of stars leading away from bright star to the SW.

NGC 7538 (23h14.2 +61 29): The last object is a faint nebula. I observed it in the 20" scope using an O-III filter as fairly bright, somewhat large, elongated slightly E/W 2:1, and with 3 stars involved. With direct vision, the nebula is fairly even, fading out evenly from the stars. Using averted vision brings out a small amount of detail and a tad bit of mottling.

Herschel 400 Objects
40, 6939, 6946, 7142, 7160, 7380, 7510
SAC's 110 Best of the NGC Objects
40, 6939, 6946, 7129

Fuzzy Spot Cepheus



STARS

- <3
- 3.5
- 4
- 4.5
- 5
- 5.5
- 6
- >6.5

SYMBOLS

- Multiple star
- Variable star
- ☄ Comet
- ☉ Galaxy
- Bright nebula
- ☉ Dark nebula
- ⊕ Globular cluster
- Open cluster
- ☉ Planetary nebula
- ☉ Quasar
- △ Radio source
- × X-ray source
- Other object

Herschel 400 Objects: 40, 6939, 6946, 7142, 7160, 7510
SAC'S 110 Best of the NGC Objects: 40, 6939, 6946, 7129

Local Time: 15:54:58 10-Oct-2000

UTC: 22:54:58 10-Oct-2000

Sidereal Time: 16:43:03

Location: 33° 39' 56" N 112° 49' 10" WRA: 21h55m00s Dec: +72° 01' Field: 30.0°

Julian Day: 2451828.4548

Seeing Double

By Thad Robboson

If you take any comprehensive list of double stars, such as the Washington Double Star Catalog, or even the list in Sky Catalog 2000.0, vol. 2, you will find an absolutely staggering number of doubles. Even more staggering is that so few people are responsible for finding this incredibly large number of pairs. Here is a brief synopsis of some of the pioneers of double star work.

Friedrich Georg Wilhelm Struve...(STF in the catalogs) (1793 to 1864). After attending the University of Dorpat and publishing his initial work, "Catalogus 795 Stellarum Duplicium", he obtained a 9.6-inch Fraunhofer refractor (the largest in the world at the time) and began his colossal survey. In a bit more than 2 years, he and his 2 assistants completed 10,448 measures of 3,112 pairs. 2,343 of these were new discoveries. The results of this work proved to be the foundation for many others doubles observers to build upon.

Sir Frederick William Herschel...(H in the catalogs.) (1738-1822). Sir Herschel first started observing close, unequal pairs to hopefully obtain a value for measuring stellar parallax and quickly obtained a list of 269 pairs, of which only 42 had been previously discovered. After some time, he had concluded that the changes in measures of these pairs were not from parallax, but from the orbital ele-

ments. For the first time, this proved that the Newtonian laws stood fast outside our solar system.

Thomas Henry Espinall Compton Espin...(Es, ES in the catalogs) (1858-1934). First known for his discoveries of 3,800 red stars, he later went on to re-examine the B.D. Catalog, and made a catalog of 2,575 new pairs, most of these being wider.

Sherburne Wesley Burnham...(BU in the catalogs) (1838-1921). Burnham started out as a clerk for the US circuit court with an avid interest in double stars. His work as an amateur received notice, and he found that he was welcome at many of the major observatories, namely Lick and Yerkes. Except for 4 years on staff at Lick, his work was amateur, and contributed 1,274 new pairs, some of which are pairs with the shortest orbital periods. It is interesting to note that most of his new discoveries were due to his keen eyesight, as at the time, most astronomers felt that nearly all the doubles had already been found.

Of course, these are but a few of the key people in double star astronomy, but they certainly contributed a significant amount. A quick stroll through Sky Catalog 2000, vol. 2 proves over and over that these men left an impression that will last indefinitely.

November 2000

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Schedule of Events for November 2000

Nov. 3rd	Taurid Meteor Shower Peaks
Nov. 4th	Moon at First Quarter, 0027 mst
Nov. 9th	Surveyor 6 lands on the moon in 1967 in Sinus Medii
Nov. 10th	SAC General Meeting at Grand Canyon University, 1900. Final nominations and election of officers for the year 2001, Guest Speaker, Chris Schur on CCD Imaging, Don't Miss this one!
Nov. 11th	Full Moon at 1415 mst
Nov. 15th	Mercury at greatest western elongation (19 Deg)
Nov. 15th	William Herschel born in 1738
Nov. 18th	SAC Star Party at Flat Iron Mountain site. Sunset 1727, Ast twilight ends 1853, Moonrise at 0039
Nov. 18th	Moon at Third Quarter, 0824 mst
Nov 19th	Saturn at opposition.
Nov. 25th	New Moon at 1611 MST, Thanksgiving Star party at Sentinel
Nov. 27th	Jupiter at opposition

(Continued from page 3)

browsing the sites of manufacturers. Astronomy Bulletin boards are a great way to get questions answered and keep up with what others are up to. The web is a wonderful place for astronomers.

Been working on that Messier Award?? Keep your observations organized by using your computer. You can simply use a word processor to type your observations in or use a dedicated observing log program like NGCview. The latest version of Skymap has a built in observing log, one stop shopping there. These programs will help keep track of what you've seen, what you haven't seen and what you want to see. I'll bet AJ would appreciate the neat notes too!

I'd be remiss if I didn't mention the SAC database. Over the years Steve Coe, AJ Crayon and many others in the club have compiled a VERY complete database of deep sky objects. Several commercial and shareware charting programs use this database for their applications. You can get it free on our web site. Once you've extracted it to a database manager or spreadsheet you can manipulate the data to form observing lists, find out how many galaxies there are in Virgo, and any number of other things. A lot of work went into this and it's yours for the asking, so why not take advantage of it.

Commercial Planetarium Software (in no particular order):

Prices are based on what I've seen in ads. No Guarantee as to the accuracy of prices is made here.

Skymap Pro by Chris Marriot
\$89.00-99.00 (V7 due to be released in November)

The Sky By Software Bisque
\$120.00-250.00 depending on level
Starry Night

\$110.00-190.00 depending on version

Guide By Project Pluto \$89.00

Freeware

HN Sky- uses the SAC database and can utilize several different stellar catalogues. <http://ourworld.compuserve.com/homepages/hankleijn/astronom.htm>

Starcalc- easy to use, but deep-sky database very limited to Messiers and brightest NGC's.

To find out more about what's available point your browser to:

<http://www.open.hr/space/space/programs.htm>. This is a very complete listing of Commercial, shareware and freeware. You should be able to find a program that will suit your needs & budget.

Holiday Party

The Sac Holiday party is scheduled for Saturday, December 9th 2000. A.J. Crayon has graciously agreed to host this years gala. Details on the time and directions were not available at press-time, but will be in the December issue, due at the November meeting. Keep your eyes open for more information, and plan on getting together to celebrate the holiday spirit with the Crayon's.



Elections are Coming

October marks the time of year when we must begin the process of nominations for next years officers. Per our Constitution, we are required to hold nominations in October and November with the final vote after close of nominations in November. The offices up for election are: President; Vice President; Secretary; Treasurer; and Properties. Current officers may run for re-election only if they have served only one term. They may however run for a different office.

This year will see the departure of Steve Coe as Vice President and Jennifer Keller as Secretary. Eligible for reelection are President Jack Jones, Treasurer Dr. Peggy Kain and Properties Adam Sunshine.

If you think you could contribute to the growth and betterment of the Club, please step up and run for office. If you know of anyone you think would want to run please nominate them.

Remember, You only get out of the club what you put in. We have had a great year and have started on the road to some really great opportunities for the club, including, a budding relationship with the Arizona Science Center and the newly formed GPIDA. Also look for the Amateur Telescope Makers Sub Group to take off next year. You can help keep the club moving forward in the new millennium!!

Sentinel and the New Moon

Are you like most people and can't look a turkey in the eye by the Saturday after Thanksgiving? Just the mention of turkey sends you running from the room screaming NO MORE, NO MORE!? Well keep on running out to your vehicle and head to Sentinel on Saturday, November 25th. There will be an informal star party that night, which just happens to be new moon. This will be a good time to start work on the winter constellations and bid good-bye to the late summer and fall constellations. The Gods of celestial motion are going to be good to us that night: Sunset @ 1727, Moon Set @ 1737, Astronomical Twilight ends @ 1854 and begins anew @ 0547 followed by Sunrise @

0713. Add to this the fact Jupiter and Saturn will both be visible all night as they have only recently reached opposition and we have the makings of a really nice night.

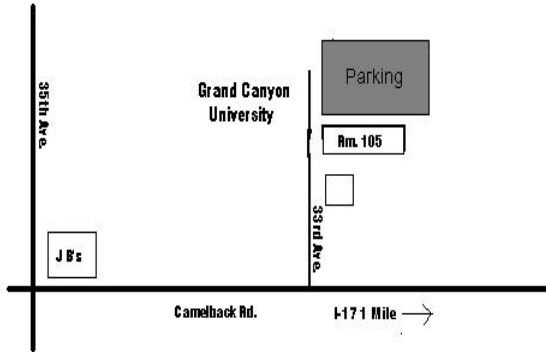
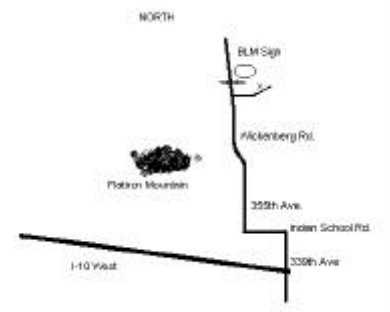
Directions to Sentinel are included on page 10 of this issue. If you've never been to Sentinel, plan to leave Phoenix by 1500 as it is a two hour drive from the I17-I10 stack.

We are looking for volunteers to do the naked astronomer cloud repellent dance. By unanimous decision Steve Coe is exempt from this duty!!! Hope to see you there.

SAC Meeting and Observing Sites

7:30 p.m. at Grand Canyon University, Fleming Building, Room 105: 1 mile west of I-17 on Camelback Rd., North on 33rd Ave., Second building on the right.

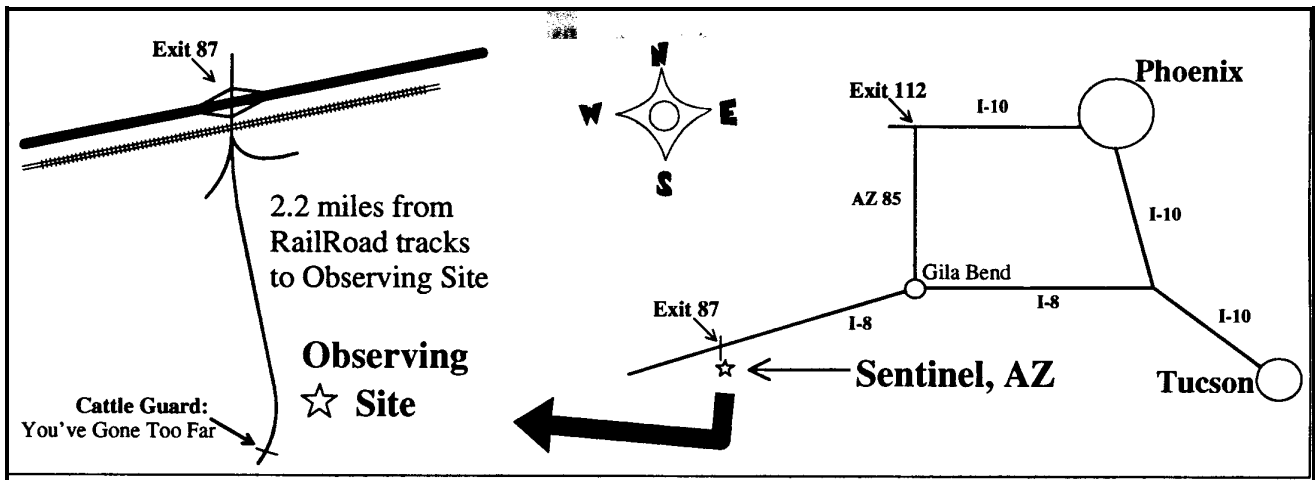
Flatiron Star Parties



Eagle Eye Star Parties



Sentinel Star Parties



SAC Membership Services Membership

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

\$ 28.00	Individual Membership
\$ 42.00	Family Membership (one newsletter)
\$100.00	Business Membership (includes advertising)
\$ 14.00	Newsletter only
\$ 4.00	Nametag for Members

Subscription Services

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.

\$ 30.00/yr	Sky & Telescope
\$ 29.00/yr	Astronomy

Please Print

Name: _____

Address: _____

Phone: _____

E-mail: _____

Make Checks Payable to SAC

Mail Completed form to:

Peggy Kain
SAC Treasurer
P.O. Box 30424
Phoenix AZ 85046-0424

It's That Time of Year Again

As the last year of the millenium comes to a close, it is time to renew membership dues. All memberships come due at the end of the year. Renew now and avoid the rush. Please send your remittance to the good Dr. Peggy Kain at the address above or see her at any regular meeting.

One word of note. It seems that last year the wording on the membership form was incom-

plete regarding pro-rating of dues. Dues are pro-rated only for NEW members. If you are a current member you cannot pay in March and receive a 25% pro rated discount. You must pay the full years dues. Also, newsletters will be sent to members until February unless dues are received by then.

So don't miss out on next years activities. Get your renewal in now.

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Videmus Stellae

[www. Saguaroastro.org](http://www.Saguaroastro.org)

SAC Schedule of Events

SAC Meetings

January 21, 2000	July 14, 2000
Feb 18, 2000	August 11, 2000
March 17, 2000	September 15, 2000
April 14, 2000	October 13, 2000
May 19, 2000	November 10, 2000
Jun 16, 2000	December 9, 2000 (Holiday Party)

Deep Sky Group Meetings

February 24, 2000	August 17, 2000
April 20, 2000	October 19, 2000
June 22, 2000	December 14, 2000

SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise
1/29	1759	1924	0245
2/26	1824	1947	0131
3/25	1846	2010	2320
4/22	1907	2036	2350
5/27	1932	2111	0224
6/24	1944	2126	0056
7/22	1937	2114	2329
8/19	1911	2040	2204
9/23	1825	1948	0244
10/21	1750	1912	0141
11/18	1727	1853	0039
12/16	1725	1854	2336