



# Sacnews

Volume 25 Issue 5

May 2001

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## Reflections: March Madness

By Rick Tejera

For the past two years, I've delved into the astronomical version of March Madness: The Messier Marathon. My first outing two years ago showed that this bit of lunacy is actually easier than it would seem, since I bagged 94 objects. Not bad for a first timer. Last year, I was among the optimists who were rewarded with clear skies after an iffy afternoon. I got 95 objects. This year I was determined to hit 100, and I felt if I could get M74, I had a good shot at the Holy Grail of 110.

You could hear the excitement mount as M30 was hunted down.

As the Marathon approached I got a call from Randy and Grace Ocheltree, who were interested in running their first marathon. We quickly figured out that we live within a mile of each other and made arrangements to convoy down. Later in the week I contacted Dave Steiner who also lives nearby, and thus was born the "Arrowhead Ranch Contingent". We set out in convoy about 3:00 p. m. and arrived at the site about 5:15, Plenty of time to set up, catch a bite to eat and socialize a bit before the fun.

Some high cirrus clouds in the west gave cause for concern regarding the evening twilight objects, but they followed Steve Coe, who left early, home. We arrived too late to see the airplane try to land at the site. Apparently his technique was less than good in taildraggers and he ground-looped. Fortunately no one was hurt and he got some assistance in fixing what amounted to a flat tire and took off again, none the worse for the wear. We all set up right near Thad Roboson, Joe Goss, Jack "Messier" Jones, and Jen "The Pest" Keller. Marshall Dailey, Joe Macke, and AJ Crayon were also nearby. If you're gonna spend the night out in the dessert, these are some nice folks to be with.

Soon the sun set and it was time to get busy. Never having gotten M74, this was my first quest. Since I drive a dob, I have to rely on creative telrad hopping to find it in twilight. A week's preparation went o this one object! I noticed on Skymap that

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The Arrowhead Ranch Contingent:  
From L to R: Rick Tejera, Randy Ocheltree, Grace Ocheltree and Dave Steiner.

*(Continued from page 1)*

a line drawn straight from Saturn to Venus would pass right through M74, which was just 16 degrees above Venus. Conveniently 4 telrad circles. My plan was to put the scope to that position then look for Eta Picium, and then hop from there, trying to match the field stars. Then I'd try to coax this dim galaxy into view. After about ½ an hour, I still hadn't found it, so I decided to move on and try again. Though others around me found M77 difficult, I located and identified it quite readily, I quickly moved on to M33, M31 & co., and then got M34 & M76.

By now twilight was making it's last gasp to brighten the sky & the zodiacal light was still reaching up to the Pleiades. Venus had set by now but Alpha Aquarii and Beta Aquarii were now visible to point the way to M74. Using the star-hop charts in Harvard Pennington's "Year Round Messier Marathon Field Guide", affectionately called the "Red Book", I finally located Eta Picium. Moving up from there, I finally got the star field I was looking for. M74 finally presented itself as a slight brightening when the telescope was jiggled. AJ kindly confirmed this. Since he's the coordinator, I took M74 to the bank!

After patting myself on the back for getting the evenings twilight objects, I settled into a relaxed routine up to but not including the dreaded Virgo Cluster. Dave and Randy occasionally asked for my help in identifying objects they had yet to see, and I was glad to help. Seems like not too long ago, I was the novice asking everyone for help, now people are asking me. Somehow, this doesn't seem right, but I take it as a compliment and hope I'm as much help to them as folks like Steve, AJ, Joe, Tom Polakis, and Rich Walker were to me.

I got ready to attack Virgo about 11:00. A quick snack and some hot tea to perk me up and there were no more excuses. I started at the eastern end, hopping from Vindemiatrix to M59 & M60, I galaxy hopped up to M88 & M89 via M58, M89 & M90. I then went back down to M58 and worked west to M84 via M87 & M86. The hop up to M98, M99 & M100 was bit far. I kept getting lost, so I retreated to the friendly confines of Denebola in Leo and worked myself east from there. After a couple of tries, I finally found them and confirmed them by checking Dave's scope, since he had Goto, I could compare the view in his scope with the eyepiece charts I had made up.

So here I am halfway through the night and the two main obstacles over and done with and still working on a perfect score. Talk about motivation! With the sky now void of objects I haven't bagged, it was time to take a rest. I sat in the car and tried to nod off for a bit, but

couldn't, so I took a walk and socialized a bit. Everyone I spoke with was excited about his or her prospects for a perfect score. You could feel the excitement building. It sure seemed to be not a matter of if, but rather who and when.

I got back to Gert and started looking for the morning objects. I quickly realized that I had forgotten about M85 in Coma Berenices. It was inconveniently located in the dob-hole near the zenith. Never the less, I was able to pick it up pretty easily. The rest of the morning hours were spent picking objects up as they rose. Kinda felt like I was shooting fish in a barrel. Ophiuchus and Scorpius went pretty quickly, as did Cygnus, Sagitta, and Vulpecula. Scutum and Serpens quickly followed and then the home stretch: Sagittarius. By 4:00 I had gotten my goal of 100 but by now 110 was the plan. I methodically worked through SGR from north to south, trying to give the more southerly objects time to rise up out of the muck. As I went to get M55, I realized that Dave's truck was in the way and would stay that way for a while. So I did an AJ and just picked up and moved to a better vantage-point. It took a bit of doing but I got M55. Next on to M75. This, to me, is the biggest pain in the catalogue as there is nothing near it to guide you. Particularly when your main guide is a telrad. Try as I might I just could not locate M75. The same for M72 & M73. I just could not find them. I was sure wishing I had an EQ mount, so at least I could try to find them by sweeping in RA after setting the Dec, but.... By this time those with eq mount's or goto's were getting excited as they had 109 and were waiting for M30 to rear it's head over the horizon. You could hear the excitement mount as M30 was hunted down. Finally, out of a brief moment of silence, "I GOT IT" the voice clearly had an Indiana accent to it. My good friend Joe Goss was the first to nail M30. The rest of the folks nearby quickly followed him. Dave Fredericksen became the first person to officially complete a marathon twice. Thad Robosson completed his first marathon with a perfect score. Ken Reeves and AJ finished their first perfect marathons using large aperture dob's, Ken without setting circles!

As for myself, I finished with 106. Better than I had imagined, but still a bit disappointing getting so close only to miss by 4. Still I consider the night a success and offer my congratulations to those who finished.

As twilight began to light up the morning sky, Dave and I enjoyed breakfast, cooked up on my new camp stove, and talked about the amazing evening that was ending. Final tally for the Arrowhead Ranch Contingent was 106 for me, Dave got 108 and Randy & Grace picked up 91. In all, preliminary tally had over 20 getting perfect 110's.

*(Continued on page 8)*

# Astronomy 101

## Makin' A List, Checkin' It Twice

Beginning astronomers often find the most difficult part of the hobby is knowing what to look for. Even with a good star atlas, the new astronomer has trouble picking appropriate targets to point his/her telescope to. The key to maximizing your observing time is to prepare an observing list before heading out to dark skies. This is easy enough to do that it should become as much a part of your pre-observing routine as loading the telescope in the car.

A good observing list should accomplish several things:

1. It should list objects within the reach of your telescope.
2. It should list objects that will be visible during your observing session.
3. It should present objects in some sort of logical order of observation.

First thing you'll need is some kind of catalogue of objects, from which you'll choose your targets based on the above criteria. Where can you get such a catalogue? Right at our club's website. The SAC database is the most complete listing of Deep sky objects available to amateur astronomers. Once downloaded into either excel or access (or similar programs), it offers the opportunity to sift through the many deep sky objects to find objects meeting our criteria.

How do we do this, you ask. I'll use an example to explain. First thing to do is to get an idea of what part of the sky is visible. In our example we'll presume it to be a nice mid winter evening. Given that we know that Orion will be prominent, so we decide to see what we can find there.

I am presuming that the database has been downloaded into excel. If you use something else, just substitute the appropriate procedures. First we'll set the constellation filter to ORI; this will show that there are 120 objects in Orion. We now decide that we don't want to look for dark nebulae yet so we now filter the "type"

field to exclude DRKNB nebulae. This gets the list down to 113 objects. Based on our experience with pour telescope, we know the realistic magnitude limit is 12. We now filter the "MAG" field to "Less than or equal to 12". This will get the list down to 26 objects. We are now at a reasonable number objects to observe I one session and can be assured that the object selected can be observed with our equipment. Essentially what we did was to tell the database to show us all objects except dark nebulae in Orion, brighter than or equal to Mag. 12. You can certainly adjust your filter settings to get the objects you want. If you're working on a specific observing program, you can use the BCHM field to filter out objects not in the list you're observing.

The next step is to order the list. Use the sorting function to do this. I usually sort by Constellation, Right Ascension (ascending), Declination (Ascending). This will give a listing of objects from west to east, which will help you get the ones about to set first and have you work back towards the stuff that'll be up a while.

Believe me when I tell you this is easier than it sounds. Your time at the observing field will be much more organized with a list like this as you'll know in advance what to look for. You can also study your atlases before heading out to get an idea of how to star hop to your targets.

If you have any questions on using the database for generating observing lists, feel free to e-mail me and I'll be happy to discuss the details.

There are several computer programs that will help you create your observing lists. NGCview by Rainman Software and Skymap Pro by Chris Marriott are two that I use. They basically automate the process for you. They also offer logging functions so you can keep track of your observations (remember last month?).

Till Next time, Clear Skies.

# Fuzzy Spot, Crater

## By Ken Reeves

This month, I'm going to concentrate on some galaxies in the western portion of Ursa Major. This constellation is the third largest in the sky, only Hydra and Virgo are larger. Its size, combined with its location on the fringe of the Virgo Cluster, makes for many galaxies to be seen. This is one of my favorite spring constellations to observe, it seems that the variety of galaxies is better here than in Virgo although that's probably my imagination.

In addition to all the galaxies, there is a great planetary nebula (M-97, the owl nebula) and a number of nice double stars. Since I'm not covering any of the Messier Objects here (they were covered last year), there is an obvious omission of M-81 and M-82.

All of these observations were made with the 10" F4.5 scope.

**NGC 2681 (08h53.6 +51 18):** I observed this object as a little bright, somewhat small, with a slightly brighter middle, and a much brighter non-stellar nucleus. There are 4 stars close by, three of which are involved, which makes the noted possible elongation WNW/ESE uncertain. The halo is quite faint, use averted vision to bring it out. The star on the far ESE end is not involved, but is a double.

**NGC 2742 (09h07.6 +60 29):** This galaxy is pretty faint (much fainter than NGC 2768), pretty small, very slightly brighter in the middle, and with no nucleus seen. It is a little elongated E/W about 1.5:1. There is a nice triangle of faint stars to the S and a bright star, which does interfere slightly. Averted vision is almost needed to see this galaxy.

**NGC 2768 (09h11.5 +60 03):** Much more obvious than NGC 2742, this galaxy is pretty small, somewhat bright, and brightens up to the middle which contains an occasional non-stellar nucleus. It is elongated about 2:1 ENE/WSW, and by using averted vision, I suspected a little mottling in the halo. The star on the ENE side just touches the halo with averted vision, and there are brighter stars on the N and W.

**NGC 2787 (09h19.3 +69 13):** This galaxy is pretty small, a little bright, much brighter middle, and has a non-stellar nucleus that comes and goes. The galaxy is elongated N/S, with the middle being more elongated than the halo. Using averted vision helps extend halo and shows a faint star involved to the S.

**NGC 2841 (09h22.0 +50 59):** Here is a nice edge-on galaxy, very bright, pretty big, and much brighter in the

middle with an occasional non-stellar nucleus. It is extremely elongated NNW/SSE. There is a very nice star on tip of halo on the NNW end. Using averted vision makes the halo stand out a little and reveals some mottling. A very spectacular galaxy in a nice field of stars.

**NGC 2976 (09h47.3 +67 55):** This is a galaxy that kind of grew on me. It is somewhat large, pretty faint, and very slightly brighter towards the middle. The elongation is about 2:1 E/W, and there may be some mottling going on. On the S is a star right on the edge of the halo, but other than this, not many stars are nearby.

**NGC 2985 (09h32.4 +57 29):** This interesting galaxy is somewhat bright, somewhat small, slightly brighter middle, and contains a bright stellar nucleus. Averted vision helps only slightly. The shape is round with some detail noted in halo, with a spiral structure in suspected.

**NGC 3077 (10h03.3 +68 44):** A companion to M-81 and M-82, this galaxy is pretty bright, somewhat small, and brightens up steadily to the middle, which contains a bright stellar nucleus. It is round and very smooth with no texture seen at all. It's not too bad of a galaxy if you don't compare this to M-81 and M-82.

**NGC 3079 (10h04.3 +60 08):** This is another edge-on galaxy, seen as pretty large, somewhat bright, with a slightly brighter middle which bulges slightly, and is extremely elongated NW/SE. It sits just outside of a triangle of stars. The SW side drops off quite rapidly, indicating a possible dust lane. Using averted vision extends the halo quite a bit and shows some possible mottling. Galaxy NGC 3073 is suspected as a round faint blob to the SW.

**NGC 3184 (10h18.3 +41 25):** The last object of the month is very large, pretty faint, and brightens up slightly to the middle with a possible nucleus. I didn't note the elongation, but I did note some mottling. There is a star involved and there is a bright star to the W, which is best kept out of the field of view. This galaxy is best described as weird.

### Herschel 400 Objects

2681, 2742, 2768, 2787, 2841, 2950, 2976, 2985, 3034, 3077, 3079, 3184, 3198, 3310, 3556, 3610, 3613, 3619, 3931, 3665, 3675, 3726, 3729, 3813, 3877, 3893, 3898, 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



## Seeing Double

By Thad Robosson  
M40, The Littlest Messier

Every astronomy buff knows about the spectacular Messier objects. The vast shimmering stars of M 45, the tight knot of light that is M 13, the smoke ring-like M 57. But way down at the bottom of the list of favorite Messier objects resides puny little M 40. Merely just 2 single stars, it is literally half the object that M 73 is. To go even further, it's not even a real double, but an optical look-alike. It is so obscure that most modern star charts and atlases don't even label it. Tirion's Sky Atlas 2000 didn't bother to plot it. Uranometria shows a symbol for a double star there, but no label to show it as a Messier object. The Millennium Star Atlas actually labels it, but with such a wide separation, it's not even marked as a double star. So as one ponders this object, the overwhelming thought surely is... "What was Messier thinking?!"

M 40 is, in actuality, an optical double star with a listed separation of 50.1" and a PA of 83\*. Its' components are moderately faint, magnitudes 9.6 and 9.9 respectively, and both are seen as white. The WDS listing labels it WNC 4, with the first measure being in 1863. There is no cluster, grouping or nebulosity present. Historically, there is even some confusion as to M 40's definitive location in the sky, with 4 different positions given over time. So what gives? Did he have too much French Wine before observing that night? Did he misinterpret the coordinates? Some simple digging brought up an answer.



The Unimposing M40

Messier's main goal in listing his now famous objects was to avoid confusing them with comets in future observations. Apparently, he wasn't just looking for comets and logging the objects as he came across them, but actively searching out possible comet look-alikes. He

took to older catalogs looking for objects that may trip him up on future comet hunts. One of the catalogs he went to was Hevelius' "Prodromus Astronomiae". In this catalog, he found #1496, which Hevelius believed to be nebulous. Messier looked for this "nebulous" object in 1764 and noted... "I found by means of this position, two stars, very near each other and of equal brightness, about 9<sup>th</sup> mag., placed at the beginning of

the tail of the Great Bear...One can hardly distinguish them in an ordinary refractor of 6 feet...It is presumed that Hevelius mistook these two stars for a nebula."\* (There is a faint mag. 12.5 galaxy nearby, but it certainly wasn't seen by Messier, and very likely went unnoticed by Hevelius.) Nevertheless, Messier included the object in his catalog as M 40.

So, the next time you're going through the Messier catalog and come across this object, you can be assured that Messier's thoughts were with him that night as he was tracking down an object that wasn't.

\* "The Messier Album". By John H. Mallas and Evered Kremier. Copyright 1978, Sky Publishing Corp., Pg. 93.

# May 2001

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	31		

## Schedule of Events for May 2001

<b>May 4th</b>	<b>SAC General Meeting at Grand Canyon University, 1930, Speaker TBA</b>
<b>May 7th</b>	Full Moon at 1353 mst
<b>May 14th</b>	Pierre Schwaar, Master telescope maker, astrophotographer and SAC Member born in 1946
<b>May 14th</b>	Skylab is launched in 1973
<b>May 15th</b>	Moom at last quarter at 1011 mst
<b>May 17th</b>	Sir Joseph Norman Lockyer born in 1836. Discovered that solar Prominences can be observed spectrosopically.
<b>May 19th</b>	<b>SAC Star party at Flat Iron Mountain, Sunset 1928, Ast twilight ends 2106, Moonrise 0410.</b>
<b>May 23rd</b>	Moon is New at 0246 mst
<b>May 25th-28th</b>	<b>Riverside Telescope Makers Conference. For more information go to: <a href="http://www.rtmc-inc.org/">http://www.rtmc-inc.org/</a></b>
<b>May 29th</b>	Moon at First Quarter 2209 mst

## Future Planning

<b>April 21-22</b>	<b>2001 Sentinel Schwaar Star Gaze, See map page 10 for directions</b>
<b>April 28</b>	<b>Astronomy Day Public Observing Session at Thunderbird Park in Glendale. Contact Adam Sunshine for details.</b>
<b>June 16-25</b>	<b>Grand Canyon Star Party</b>

## Bits & Pieces

### Minutes from the March 9th 2001 General Meeting

#### By A.J. Crayon

The president Jack Jones opened the meeting at approximately 7:30 p.m. MST and as always requested new visitors to introduce themselves upon which six did so. After this all of the officers were introduced to the entire gathering.

Peggy Kain gave the treasurer's report and indicated the total of checking and savings accounts were \$5407.71. Our rent for use of Grand Canyon University was paid up for another six months.

Peggy also discussed an interview with one of John Holmquist's descendants. It is this gentleman's astronomy equipment that was donated to SAC to help advance the understanding of the universe in which we live. See her article on page 1 in the April 2001 issue of the newsletter.

A private pay per view star party, in Carefree, was agreed to for Monday, April 16th for a Lutheran organization. More details will be available at the next SAC meeting.

Rick Tejera discussed the electronic distribution of the newsletter. Members wishing to receive the newsletter this way will be required to have a copy of Adobe Acrobat Reader, a public domain program. However those members wishing to continue receiving their printed newsletter via USPS will be able to continue to do so. Some of the advantages of the electronic versions are earlier delivery and color pictures.

Rick calculated that if there was 60% participation our costs would break even after a short six to nine months. He is also preparing a mailing for everyone who receives the newsletter to respond on the mode of delivery.

An announcement about the selling out of the Astronomical Journal and those members wanting a copy

will have to wait until another printing or have their monies returned.

Jack Jones, Messier Marathon assistant, began a discussion of the upcoming All Arizona Messier Marathon. The Messier Marathon coordinator AJ Crayon completed it. With the weather having cleared it is anticipated that a large crowd of people will show up the have an enjoyable time.

Steve Coe discussed his new e-mail address, after having many difficulties with others it is hoped that this one, stevecoe@ngcic.com, will last for a much longer time. He also discussed two upcoming events. The next SAC Star Party at Flat Iron will be a novice discussion and cover finders, star charts and constellation identification. The other event discussed was the upcoming Sentinel Star Gaze on April 20th and 21st. See details elsewhere in SAC newsletter for more information.

Adam Sunshine discussed SAC's recognition of National Astronomy Day. That will be on Saturday, April 28th at Thunderbird Park. Steve Coe will have maps and directions available at the next meeting.

Thad Robosson, the ATM chair, discussed the first meeting that was attended by about eight people. Other topics discussed were web site content, mirror blanks and meeting dates and times.

Thad began the Show-n-Tell with a sono-tube, purchased at Home Depot. The inside was covered with contact paper, painted in flat black and presto - - a telescope tube!!

Steve Dodder continued the Show-n-Tell with a variety of piggyback pictures of the eclipse and deep sky objects.

*(Continued on page 9)*

*(Continued from page 2)*

Pretty amazing when you consider that worldwide only 4 (including 2 from SAC) had previously accomplished the feat.

After packing up, AJ and I convoyed home and enjoyed

some nice conversation on the CB's. Seemed to me, we mostly rode back quietly except for speeding driver alerts, after all the evening spoke for itself.

*(Ed. Note : Look for AJ's Report and final results from the 2001 Messier Marathon in the June Issue.)*

*(Continued from page 8)*

Dean Ketelsen discussed the upcoming 11th Annual Grand Canyon Star Party. This is a great public star party for people from all over the world. The originator of this star party, John Dobson, is expected to be in attendance this year. For more information Dean can be reached via e-mail at "ketelsen@as.arizona.edu".

After a short break the Vice President Diane Hope introduced the main speaker, Wil Milan. As a member of

SAC, an astrophotographer and author Wil didn't need much of an introduction. However his graduate studies work at the University of Swinburne; Melbourne, Australia did! Wil discussed a Very Long Base Line Astronomy project requiring radio telescopes all around planet earth.

AJ Crayon  
Secretary

## Board of Directors Meeting March 9, 2001

The Board of Directors meeting started an hour before the regular meeting.

A progress report of the Messier Marathon was given by AJ Crayon. Essentially, with the ordering of the port-a-jon all the planning was completed. Next was to wait for the marathon to begin!

Rick Tejera reported the membership list and mailing lists were as up to date as possible.

Peggy Kain spoke about the Gifts Committee. It has become apparent that the \$700.00 in astronomy parts is not a large enough sum to consider SAC incorporation. The sums have to be larger, much larger. But this shouldn't stop us from attempting to continue, only on a smaller size.

The desired field trip to Discovery Park is still on hold, waiting the 2001 schedule.

A tour of the Mirror Lab is being schedule with either Rik Hil or Roger Angel for either September 29th or October 27th. The final date is to be determined after discussion with Rik and or Roger.

The prospects of SAC purchasing a video projector have been dropped, as the cost is prohibitive, very prohibitive.

The decision for incorporating SAC has also been dropped, as there is too much work for the small return.

In order to discuss the electronic newsletter topics Rick Tejera passed out information about current newsletter costs and projections on electronic distribution. Considering the cost of transition, about \$300.00, the break-even point with 60% participation is nine months and with 80% participation the break-even point is six months. There will also be the option to continue receiving the printed version via USPS. The advantages of receiving the newsletter electronically will be more timely delivery than via USPS and the availability of color pictures!

AJ Crayon  
Secretary

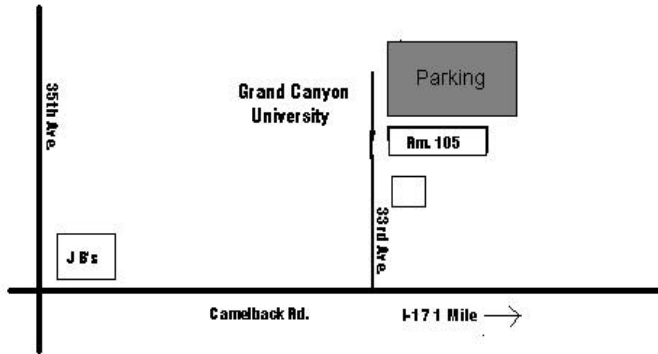


*Glen Nishimoto readies his telescope for the Messier Marathon. (Photo Courtesy of Sam Herchack)*

# SAC Meeting and Observing Sites

## General Meetings

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.



## Sentinel Schwaar Star Gaze

This years Sentinel Schwaar Star gaze will be held April 20-21 at the Sentinel observing sight. To get there take I-10 west to exit 112; SR 85. Take SR85 south 30 miles through Gila bend to I-8 westbound. Stay on I-8 for 29 miles to exit 87; Sentinel. There is a lighted tower at the exit. Turn left and go under the over pass and continue straight ahead. Cross the railroad tracks and take the dirt road 2.2 miles to the site (see map below).

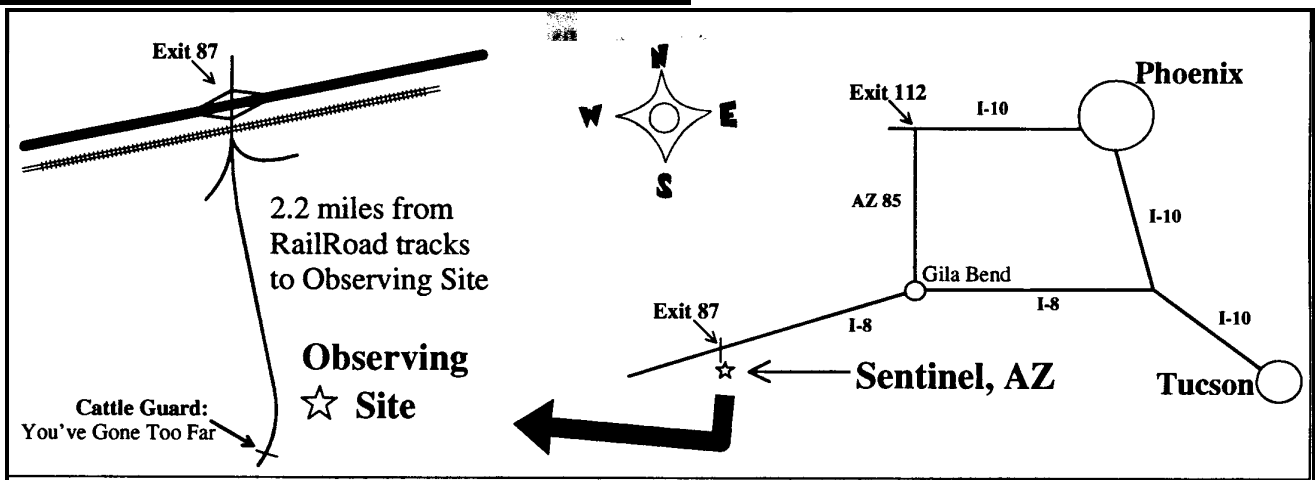
## Flatiron Star Parties



Head west on I-10 to the 339th Ave exit (exit 103). Turn North (right) and go two miles to Indian School Rd. Turn West (left) on Indian School and go 1 mile to 355th Ave. Turn North (right). This will turn into Wickenburg Rd. Follow this road for about 12 miles. Just after mile marker 12 you will go through Jackrabbit wash and pass a cattle guard sign. There is a dirt road just after the sign, marked by white painted rocks. Turn on to this road and follow it about .9 miles. Just after you pass through a wash, you'll see the field on your left. If you hit the cattle guard, or the dirt road your on is next to a fence, you've missed the correct road. Go back and look for the white rocks. (see detail map above).

### Sun & Moon Data

	SunSet	Twilight ends	Twilight Begins	Moon-rise	Sunrise
Apr. 20	1906	2035	0424	0510	0553
Apr. 21	1907	2036	0423	0540	0552



## SAC Membership Services Membership

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

\$ 28.00	Individual Membership
\$ 42.00	Family Membership (one newsletter)
\$100.00	Business Membership (includes advertising)
\$ 14.00	Newsletter only
\$ 6.00	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



*An unexpected visitor to the Messier Marathon: This homebuilt Kitfox landed at the Marathon field to see what was going on. Unfortunately he groundlooped after trying to avoid a bush. No one was hurt, and after fixing his tire with some help from a few marathoners he flew off. (Photo Courtesy of Sam Herchack)*

# SAGUARO ASTRONOMY CLUB

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*Videmus Stellae*

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## SAC Schedule of Events

### SAC Meetings

January 12, 2001	July 6, 2001
Feb 9, 2001	August 3, 2001
March 9, 2001	September 28, 2001
April 6, 2001	October 26, 2001
May 4, 2001	November 30, 2001
Jun 8, 2001	December :TBA (Holiday Party)

### Deep Sky Group Meetings

February 15, 2001	August 9, 2001
April 12, 2001	November 1, 2001
June 14, 2001	

### SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise
1/20	1751	1918	0525
2/17	1818	1941	0431
3/17	1841	2004	0258
4/14	1902	2029	0139
5/19	1928	2106	0410
6/16	1944	2127	0239
7/14	1943	2123	0109
8/11	1922	2053	2341
9/15	1837	2001	0513
10/13	1800	1933	0401
11/10	1731	1857	0254
12/8	1723	1852	0151