

Saguaro Astronomy Club

Metro Phoenix, Arizona

SACNEWS



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The Tasco Caper

by Jack Jones

It occurred to me the other night, as Mars sat up there looking back at me and I contemplated lugging Big Boy out of the workshop and setting it all up to have a peek: What do I really know about those little light-weight cheap refractors except what the authoritative sources have told me? Why don't I just pay a quick visit to someplace that loves returned goods, like say, Service Merchandise, and pick up one of those little portable wonders. And then after I "buy" one and play with it and brand it totally defective, just take it back and exchange it for another one, and do that over and over about 8-10 times or so and see what I can see, so to speak? Will I not I come across a good one using my star testing technique? No skin off my nose, right? A fun endeavor, hey? Mr. Bright Idea strikes again! OK, I'm gonna do it!

Thing is, what if I get lucky and stumble across a really good one? They don't make the optics bad on purpose, you know. If a good company makes a bad one every now and then, why can't a bad company make a good one now and then? They won't even know it, will they? In which case, I get \$2000 worth of optics for \$200!

The First Step

Well, part of the mission is accomplished. Last night I stopped by Service Merchandise and did a little shopping. I picked out a nice Tasco named 851TR. It is a 60mm scope with a 900mm focal length. They had a real nice display set up of about eight "telescopes". Actually, it was a rather comical display of astronomical pulchritude before me there. There were Jasons, Tascos, and Bushnells, all put together in a variety of inventive ways, and now in mostly abused and neglected condition. The reflectors had the finders in backwards, a refractor hung crookedly from its alt-az mount (and collapsed when I touched it), one had its controls pointing toward the objective end. Pathos.

I settled on the Tasco 851TR, with equatorial mount, two eyepieces, a star diagonal, a Barlow, a sun projection screen and dual slow-motion controls. Wow, it had everything, and only \$150! Plus, it was red! Why do they

Quick Calendar

SAC Meeting

Speaker: Dr. Peter Wehinger, *Comets!*

7:30 PM, Friday, April 5

1996 Sentinel Star Gaze

Sentinel, Arizona

Saturday, April 13

Public Star Party

Thunderbird Park

Saturday, April 27

See You at Sentinel

say get stuffy old binoculars as a first introduction to Astronomy? These things are exciting, just like a racecar, with nifty controls and accessories to play with! (My first revelation?)

It wasn't as hard to buy one as I thought it was going to be. Much easier than say, buying a Playboy from the girl at the Circle-K. I was there right before closing so there weren't that many people around and actually the odds of meeting someone knowledgeable enough to laugh was very small. I was wearing an orange armband that said "Tester/Reviewer" though, just in case. :-)

I opened the box, but it looks like a real pain to put together: hadn't thought of that. I will repack it in pris-

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

SEARCHING FOR
THAT NEW
'PERFECT'
OBSERVING
SITE...

...AND HAVING
TO
HITCHHIKE
HOME.

tine good order when I'm done — that's the least I can do. (I'll have to do complete teardowns, of course.) Love the package art — Saturn, galaxies, comets, the Horsehead. And of course, 450 POWER in big letters. Looks like a winner!

Mechanical Check-out

After buying the telescope from Service Merchandise, I paused for reflection on my grand plan. I need to think big here. Why take this one back first for the exchange? Why not get another one and then take the worst one back with all my numerous complaints attached? Why not even buy maybe 6 or 7 of them and then give back the bad ones and pick up more, like in some kind of big draw poker game? Service Merchandise does have a liberal return policy, right? It's also 90-days-Same-as-Cash, right? I'm buying from a computer, right? Then I would only have

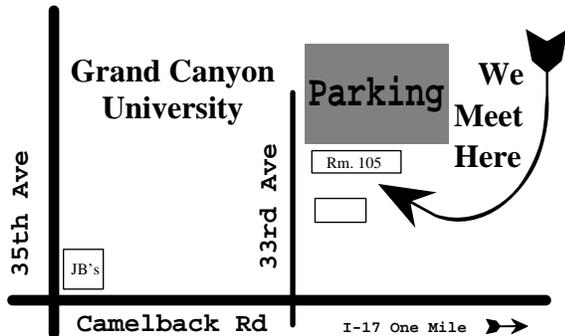
to put one mount together and just switch optic tubes and accessories in myriad combinations to find the very best of the best. I could do it serially, but it would take more time.

Well, practicality overrules me. When I try to order more than one, the computer says 'stock depleted'. Are they really out or is there limiting going on? I'll know next time. So now I have two scopes. That's enough for some serious testing, and I guess I really don't want to get stuck with a bunch of Tascos if they do freak in Camera/Electronics and call the Manager on me.

The Tasco 851TR is a 900mm (36") focal length, 60mm (2.4"), rack and pinion focusing refractor. It comes with 20mm and 4mm .965 eyepieces and a 2x Barlow, giving 45, 90, 225, and 450 power. Other accessories are a focussing 5x24 finder (stopped down to 12mm) w/cross-

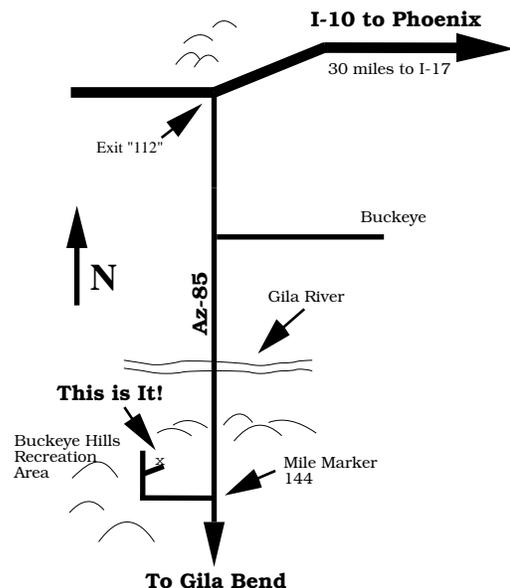
**Directions to
SAC Events**

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.



hairs, a star diagonal, a sun projection screen, a wooden extendable tripod, an accessory tray, a removable dew cap, and an equatorial mount with dual slow-motion controls, setting circles, and counterweight. Also included are a large manual and a moon map. Not bad for \$150. And it's RED and comes in a shiny box. Very good looking and enough goodies to keep the budding scientist busy for many many moons. The perfect gift for the young astronomer, you bet!

Let's test it to pieces. It sure passes the fun-to-play-with test, that's for sure, with those long slo-mo controls. They work well with no slippage when the axis thumb-screws are tightened. A lot better than Big Boy (This will be the comparison scope, a 10" Meade Starfinder equatorial reflector.) The manual says to balance the scope. This is impossible. The declination cannot be adjusted at all — no adjustable counterweight along the tube. The RA axis has a counterweight but is way too stiff to find balance. Loosening the axis involves going into the shop and dismantling the mount to get to the 17mm RA axis bolt. Both axes are stiff and do not move freely probably on purpose so beginners don't go banging the tube around while learning about equatorial mounts. It balances quite nicely in RA when properly adjusted, but the dec will

have to be left a little stiff so the scope will stay where it's pointed.

The focuser is stiff too, but works very smoothly when loosened up a little. Too much play in the tube though; image shifts when focusing in and out. Back to the shop and tear it down to get to the problem. There is a metal tensioning strip in the draw tube to press against the focuser and take up the slack. Bending it out to increase the tension improves focussing greatly.

These drills will have to be performed on all the telescopes. I wonder what the optics will show? All I need now is a clear night.

The Optics

The Tasco 851TR has a focal length of 900mm (36") and a coated air-spaced achromatic objective of 60mm (2.4"), giving a focal ratio of f/15. Eyepiece powers are then 45x for the 20mm and 225x for the 4mm eyepiece. Adding the Barlow doubles these powers. Using 2.36" as the aperture, we get for power (X), exit pupil (EP), apparent field (APF), actual field (ACF), and power per inch:

FL	X	EP (mm)	APF°	ACF°	X//
20	45/90	1.3	30	.67	20/40
4	225/450	.3	30	.13	100/200

Comet Comments

by Don Machholz

(916) 346-8963 CC212.WPS March 8, 1996
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Five comets are visible in our skies this month. One — **Comet Hyakutake (C/1996 B2)** — is the brightest comet in twenty years! In late March it passes near the earth. As it continues in toward the sun it will remain a naked-eye object, sporting what should be a fairly bright tail in the evening sky. By mid-April it will be low in the western sky after sunset. Two tables below give positions for the comet, one for every five days and one for every half-day. The positions are for Universal Time. Observers in the United States searching for the comet on the evening of, for example, March 22, will find it near the position given for March 23.0, or even slightly later. The same table also gives the Position Angle of the tail if it points directly away from the sun. This is represented by degrees, with north equaling 360°, east is 90°, south is 180°, etc. Finally I give the distance from the earth in millions of miles.

The first **Comet Hyakutake (1995 Y1)** remains in the morning sky while **Comet Szezepanski** fades in the evening sky. **Periodic Comet Kopff** brightens in the southern morning sky, it nears **Comet Hale-Bopp** in June.

I have just finished writing an 82-page book for those wishing to make the most of Comet Hale-Bopp's visit to

our skies. Containing 64 maps and 21 figures, it prepares both the beginner and the seasoned astronomer for the comet. Entitled "An Observer's Guide to Comet Hale-Bopp," it is available by sending \$12.00 plus \$2.00 shipping and handling to MakeWood Products, P.O. Box 1716, CA. 95713. For First Class Mail the S&H total's \$3; for overseas Air Mail it is \$6. Phone orders, using a credit card, are accepted at (916) 346-8963.

C/1995 Y1 (Hyakutake)					
Date	RA-2000-Dec	Elong	Sky	Mag	
03-18	20h43.1m +21°07'	51°	M	8.8	
03-23	21h03.1m +23°20'	50°	M	9.0	
03-28	21h21.9m +25°17'	51°	M	9.2	
04-02	21h39.5m +26°58'	50°	M	9.4	
04-07	21h55.9m +28°27'	49°	M	9.6	
04-12	22h11.3m +29°44'	49°	M	9.9	
04-17	22h25.6m +30°53'	50°	M	10.1	
04-22	22h38.8m +31°53'	50°	M	10.3	
04-27	22h51.1m +32°47'	51°	M	10.5	
05-02	23h02.5m +33°35'	52°	M	10.7	
05-07	23h13.1m +34°18'	53°	M	10.9	

C/1996 B1 (Szezepanski)					
Date	RA-2000-Dec	Elong	Sky	Mag	
03-18	09h55.9m +08°53'	150°	E	8.3	
03-23	09h43.7m +03°27'	143°	E	8.6	
03-28	09h34.7m -01°08'	137°	E	8.9	
04-02	09h28.3m -04°55'	131°	E	9.2	
04-07	09h24.1m -08°04'	125°	E	9.5	
04-12	09h21.6m -10°43'	121°	E	9.8	
04-17	09h20.7m -12°56'	116°	E	10.0	
04-22	09h21.0m -14°51'	112°	E	10.3	
04-27	09h22.3m -16°31'	109°	E	10.6	
05-02	09h24.5m -17°59'	106°	E	10.8	
05-07	09h27.5m -19°19'	102°	E	11.1	

Continued on next page...

EP, APF, and ACF are worse with the Barlow, but the acceptable eye relief is maintained.

What do we have with these dismal fields and exit pupils? A spotting scope being passed off as a piece of astronomical wizardry and wonderment? I don't want to comment on the light gathering power of this telescope. I'm only concerned with testing the quality of the optics. Charles Messier himself used some pretty dismal telescopes himself and found 19 comets. Anyway, let's not jump to conclusions just looking at some figures on paper. We want to use the experimental method and actual observation?

Finally it looks like we will have some clear skies this evening. Wow! Look at that horsehead. It shows up quite nicely and well-defined at 45x. It is hard to hold it in the field of view however. Actually I'm looking in the neighbor's corral across the way. Gee, I can't wait till it gets dark.

I have three telescopes now, all set up and pointed at Sirius. Service Merchandise's entire stock of their best telescopes is sitting in my backyard. Shall they be referred

to as Huey, Dewey, etc. or Moe, Larry, etc.? Vote. The 3 Stooges have it. Good Grief, I own a telescope named Larry.

Well, Moe is disqualified. I have never seen square diffraction rings. How odd. Loosening up the objective retaining collar does not help. I trace the anomaly to the inner objective lens. Is that the flint one or the crown one?

The flint, I believe. We also have cross-type astigmatism with the rings pushed to one side (a small collimation problem.) Goodbye, Moe! Let's skip over U-no-who (for personal reasons) and check out Curly.

Wow! Instant good seeing! I have never seen Sirius as anything but a boiling blob in Big Boy (a 10" Meade Starfinder equatorial reflector that is being used for comparison.) Here at 90x I have a tiny planet-like solid disk and 2 wavering short concentric-arc segmented circles. On the Pickering scale, this seeing rates a 6 or 7, beating the previous best of 1-2 in the Meade! Sirius does not dazzle my eye like in the 10", though, even at the low power.

Well, on Curly we have diffraction rings that are

Continued from previous page...

1995 O1 (Hale-Bopp)					
Date	RA-2000-Dec	Elong	Sky	Mag	
03-18	19h38.2m	-20°36'	65°	M	8.6
03-23	19h40.0m	-20°15'	69°	M	8.5
03-28	19h41.6m	-19°54'	74°	M	8.4
04-02	19h42.9m	-19°33'	78°	M	8.3
04-07	19h44.0m	-19°11'	83°	M	8.2
04-12	19h44.7m	-18°48'	88°	M	8.1
04-17	19h45.0m	-18°26'	93°	M	8.0
04-22	19h45.1m	-18°03'	97°	M	7.9
04-27	19h44.7m	-17°40'	102°	M	7.8
05-02	19h43.8m	-17°16'	107°	M	7.7
05-07	19h42.6m	-16°52'	112°	M	7.5

C/1996 B2 (Hyakutake)					
Date	RA-2000-Dec	Elong	Sky	Mag	
03-18	14h54.7m	-07°38'	134°	M	3.4
03-23	14h48.0m	+22°40'	135°	M	1.4
03-28	04h04.5m	+78°43'	80°	E	1.1
04-02	03h11.3m	+51°58'	56°	E	2.1
04-07	03h05.2m	+43°27'	45°	E	2.5
04-12	03h00.6m	+39°02'	37°	E	2.5
04-17	02h55.0m	+35°47'	30°	E	2.1
04-22	02h47.4m	+32°29'	23°	E	1.3
04-27	02h37.0m	+27°59'	15°	E	0.1
05-02	02h25.9m	+20°52'	6°	E	-0.3
05-07	02h21.7m	+12°19'	10°	M	0.8

22P/Kopff					
Date	RA-2000-Dec	Elong	Sky	Mag	
03-18	17h07.1m	-16°52'	100°	M	11.0
03-23	17h17.0m	-16°54'	103°	M	10.7
03-28	17h26.8m	-16°55'	106°	M	10.5
04-02	17h36.4m	-16°53'	108°	M	10.2
04-07	17h45.9m	-16°49'	111°	M	10.0
04-12	17h55.2m	-16°43'	113°	M	9.7
02-17	18h04.3m	-16°36'	116°	M	9.5
02-22	18h13.0m	-16°28'	119°	M	9.2
03-27	18h21.5m	-16°19'	122°	M	8.7
03-02	18h29.5m	-16°10'	125°	M	8.5
03-07	18h37.2m	-16°02'	127°	M	8.3

C/1996 B2 (Hyakutake) Every half-day					
Date (00UT)	RA-2000-Dec	PA	Dist.		
03-22.0	14h50.6m	+12°27'	255°		3.4
03-22.5	14h49.5m	+17°09'	250°		1.4
03-23.0	14h48.0m	+22°40'	244°		1.1
04-23.5	14h46.2m	+29°06'	237°		2.1
04-24.0	14h43.7m	+36°30'	231°		2.5
04-24.5	14h40.2m	+44°48'	225°		2.4
02-25.0	14h35.1m	+53°46'	220°		7.9
02-25.5	14h26.9m	+62°59'	214°		7.3
03-26.0	14h11.4m	+71°58'	209°		6.6
03-26.5	13h32.8m	+80°09'	198°		5.8
03-27.0	10h34.5m	+86°12'	153°		4.7
03-27.5	05h11.4m	+83°54'	72°		4.7
03-28.0	04h04.5m	+78°43'	55°		4.7

Orbital Elements

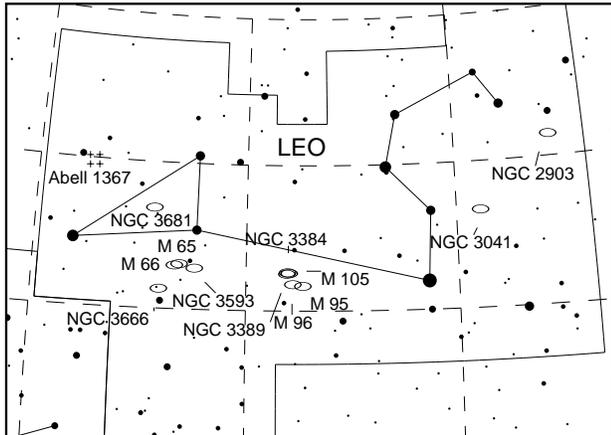
Object:	Hyakutake (95Y1)	Szczepanski	Hyakutake (96B2)	Hale-Bopp	Kopff
Peri Date:	1996 02 24.28973	1996 02 06.89903	1996 05 01.40305	1997 04 01.12081	1996 07 02.19980
Peri Dist:	1.054576 AU	1.4486192 AU	0.23014060 AU	0.9141160 AU	1.5795617 AU
Arg/Peri (2000)	046.35126°	151.27225°	130.18992°	130.58985°	162.83487°
Asc Node (2000)	195.75924°	345.44413°	188.05114°	282.47097°	120.91329°
Incl (2000):	054.46584°	051.90616°	124.90012°	089.42765°	004.72143°
Eccentricity:	1.0	0.9899357	0.9998449	0.9951019	0.5440739
Orbital Period:	Long Period	1727 yrs.	57,000 yrs.	3000 yrs.	6.45 yrs.
Reference:	MPC 26543	MPEC 1996-C02 (2-26)	MPC 26724 (02-27)	MPC 26723 (2-24)	MPC 22032 (1991)

What's Up by Steve Coe

Leo

April 1996

Leo is another of those constellations that seems to be a bottomless pit. Several of the Spring constellations are so full of galaxies that even after several



good nights in Leo, Virgo or Ursa Major, there are still plenty of objects to observe. The same is true of open clusters in Cassiopeia, Sagittarius or Puppis. But these constellations do contain lots of great objects and it is fun to keep looking. I noticed as I looked through my notes for Leo that lots of my observations are with Dave Fredericksen's 12.5" f/6 on several nights we went out together while I was waiting for Pierre to complete my 13". Thanks for sharing, David.

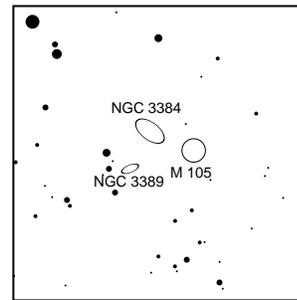
NGC 2903 is one of the best non-Messier galaxies. It is easy in my 10x50 binocs or a large finder scope. At 175X in the 12.5" f/6 this galaxy is bright and is mottled across the face with a much brighter core. There is a bright spot about 4 arc minutes from the core. It is at 9 hr 32.2 min and +21 30.

NGC 3041 is pretty faint, large, irregularly round, very gradually little brighter in the middle at 150X. This very mottled galaxy has an 11th mag star involved on the south side and two other 13th mag stars involved in the galaxy.

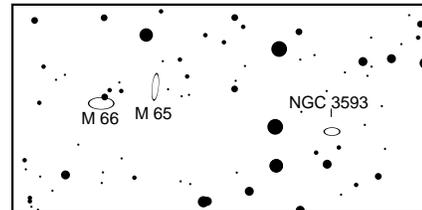
NGC 3379 (M 105) is bright, large, elongated and has a much brighter, almost stellar, core in the 12.5" f/6 at 120X. It has two companions, which are the next two objects.

NGC 3384 is pretty faint, Large, somewhat elongated and does not have a brighter middle in the 12.5".

NGC 3389 is pretty bright, Large, has a brighter middle and is elongated in the same PA as M 105 in the 12.5" f/6 at 120X.



NGC 3593 is pretty bright, pretty large, elongated and has a much brighter middle. What is bizarre about this galaxy is that at 200X in the 12.5", the core is elongated 2X1. I don't remember seeing an elongated nucleus in a galaxy before.



NGC 3666 Pretty faint, large, much elongated 2.5 X 1 in PA 90, bright middle at 150X. This is a nice edge-on galaxy.

NGC 3681 has several companion galaxies, one of which is 3686. I see four galaxies in a 35' field at 100X in the 12.5". One is pretty bright, pretty large, round and has a much brighter core. I have assumed that is 3681 and centered the drawing on it. The other three in the field are faint, small and do not have a brighter core.

Abell 1367 is one of the galaxy clusters noted by George Abell's landmark work with the POSS. Many of these clusters are very faint and distant but some can be picked out with an amateur scope at a dark site.

In the 12.5" at 135X, with a 30' field, I can pick out one pretty faint galaxy with 4 very faint companions. They are so dim that turning on the red light to draw them makes them disappear for about 30 seconds until my night vision returns. There are 10 other galaxies within one degree of this field. These are some of the toughest objects I have ever managed to pick out in 10 years of observing. If you are looking for a challenge, Abell 1367 will provide one.

what, stirrup-shaped? Mouse-holes? Croquet wickets? Outside of focus, we have beautiful purple diffraction 'rings' surrounded by a lovely lime-colored outer ring. Very pretty to look at compared to the bland pale-blue of the colorless reflector. The 'train-tunnel' rings are concentric, indicating good collimation.

Looks like Larry comes off best. Diffraction rings outside of focus are the roundest of all but still with 4 very rounded corners. This is the closest we're going to get to a circle, folks. The purple and green rings are concentric, showing no zones. Inside of focus there is only a yellow-green color to all the rings and they have gotten

quite mushy with the outer ring totally on fire, signalling spherical aberration (same on the other scopes).

Switching to a Meade 13.8mm SWA (65x) we see a very smooth ring system outside of focus but still with the overall colors, shape, and defects. This eyepiece is held up to the focuser by hand (it won't focus with the star diagonal or Barlow in). The Ronchi test shows straight lines at all attitudes. Just how insensitive is this test anyway? (They say it's only for gross errors when figuring; they are right.)

OK, we're ready to check out some Messier Objects. The Orion Nebula looks like it always does in a small telescope: not all there. At 45x the trapezium is easy to see in the wedge-shaped nebulosity. Go to Sigma Orionis, a favorite multi-star system, in which I always see two quads in the 10". It doesn't look familiar at all, just a triple star. I'm not judging light-gathering power or resolution here, I remind myself.

M 1, where are you? Using my finding trick, 1 degree NW of Taurus's southern horn-tip, I can't find it. Oh well.

Let's evaluate these shiny silver setting circles. Shiny is right. When my red LED light hits the RA circle, it glares and I can barely read the numbers. I like to use setting circles on large open areas because I get lost with no jump-stars around.

Let's try to find open clusters M 35 and M 36, 37, and 38 in empty Auriga, always a troublesome bunch to find and sort out. The RA pointer always seems to be hiding under the telescope and it's a pain to read with the slo-mo controls in the way. The Declination is extremely coarse. Well, it's a shutout. I can't find a single Open Cluster with these circles. I'm thinking "toy" here. I do find M 36 and M 38 though by fishing around for a while. Not a good choice for the Messier Marathon, we can conclude!

The Tasco's extendable wooden tripod is too short for a refractor. This height may be OK for a youngster, but a larger person will spend most of the time in a chair or on his knees. My Meade 10" now seems to me like the Observatory Model—the massive mount and precision circles always nail each object in Auriga right on,

The 1996 Sentinel Star Gaze

April 13, 1996

This is the fifth annual Sentinel Star Gaze, sponsored by SAC's Deep Sky Group. Sentinel is a remote site situated between Gila Bend and Yuma (about 100 miles southwest of Phoenix) making for a very dark sky. On the day of the event sunset is just after 7 PM, with twilight ending at 8:30. Those staying the entire night can expect the Moon to rise at 4 AM, twilight starting at 4:40, and sunrise at 6:04 AM. For those of you with computers, the Sentinel site is at 32° 49.7' North by 113° 12' West, at 625 feet above sea level.

Although this is officially a one night event, frequently observers get a head-start by arriving the night before, to get an extra night of observing.

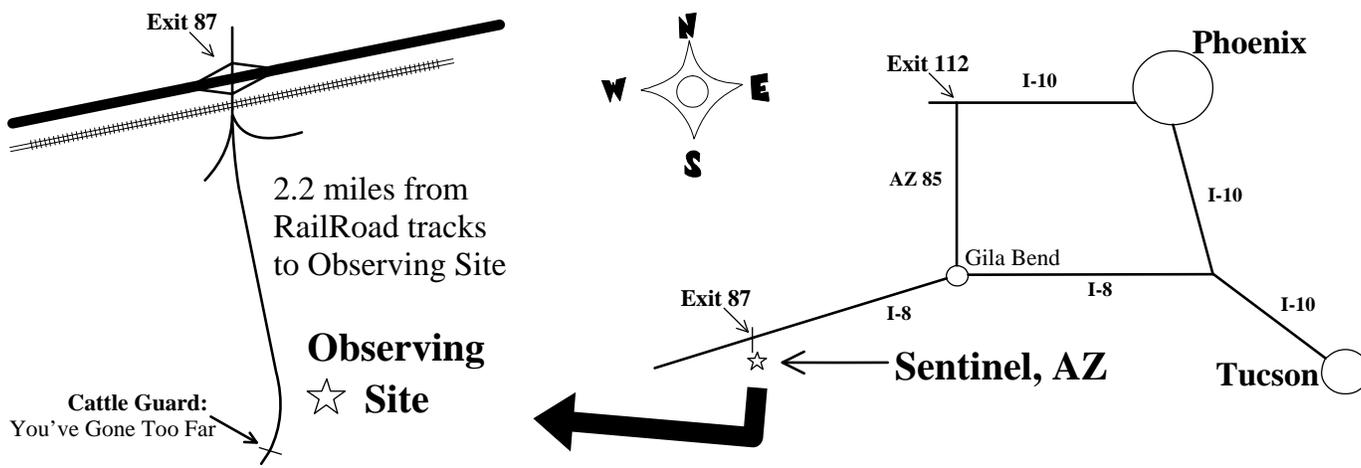
Sentinel is a good two hours drive southwest from down-town Phoenix. Please try to arrive before sunset. A Port-a-Pottie will be provided, but there are no other

facilities. Expect cold weather and hungry flying insects during twilight — let's hope we get neither.

For more information, contact Steve Coe at 789-7786 or via E-mail: 74040@compuserve.com.

Star Party Etiquette

1. **Do Not Litter!** If you bring it with you, please take it when you leave.
2. **No White Lights after Dark!** Use only dim red lights after sundown.
3. **Park Based on Your Observing Plan. Plan Your Departure.** Park facing towards the exit to avoid using your backup lights.
4. **Bring Observers Only.** Please leave small children and pets at home.
5. **Keep Noise to a Minimum.**



Such-A-Deal

SUCH-A-DEAL is a place to advertise equipment, supplies, and services related to amateur astronomy. This is a free service for SAC members and friends. SAC is not responsible for the quality of advertised items or services. All insertions must be submitted in writing.

For Sale — Celestron Super Polaris 21001, six inch reflector. Excellent condition; used only 4–5 times. Includes accessories; extra eyepieces. Asking \$600. Phone 345–2308.

For Sale — *Sky & Telescope* back issues, January 1952 to present complete plus scattered issues back into the 1930s. *Astronomy* magazine complete from August, 1973 (premiere issue) to present. Will accept best offer. All magazines stored in banker's boxes in good condition. Call Pete Manly at 966–3920 or contact via Internet at petemanly@bix.com.

bang-bang-bang. Its threshold of usability does become apparent though in populous areas, like the galaxies in Leo and Virgo. A good after-market item here would be a nice big dec circle, wouldn't it! I'll have to patent that idea tomorrow.

What about Mars, you say? I see a tiny yellow-orange disk at 225x (100x per inch!). The disk is totally featureless; I can't even IMAGINE seeing anything there: must be a dust storm, haha! The Moon looks really neat at waning gibbous (as it should in the small scope) with lots of big craters; a long mountain range or rill near the center stands out at 450x (200x/inch!).

Conclusion

Quality control seems very high at Tasco (an importer). They made absolutely no mistakes. The 3 scopes and all accessories worked well and were completely indistinguishable from each other (except for the objectives — they each had their own optical signature). The Meade, on the other hand, at delivery had numerous problems and defects, missing parts, fit and finish, etc.

The theory now is that Tasco's suppliers, et al, go to the big buyers' conventions or the big optics distributors once a year, and buy lenses in bulk. Those lenses have already been graded at the factory by bored technicians with expensive instruments. It's just like at the mineral and curio shop: "You can have one of these gems on this shelf for the price noted, or pull some out of that barrel there marked DIME/DOZEN."

For myself, I believe I will return all the telescopes (NOT the Meade) and use my 10x50 binoculars for low power work and portability. But what binoculars do not offer the new amateur astronomer are the higher powers which are necessary for some essential observations, and there also seems to be no 'connectivity' or whatever you want to call it, with the sky, that manipulating a telescope gives you. (Caution, sound-bite coming up) You can't substitute waving binoculars around for the quintessential experience of arching a mounted telescope across the night sky and zeroing in on an object, holding it in view with micrometer adjustments (or gentle nudging — for you dobsonian owners) until you have examined it enough at various magnifications so that you are satisfied with what you have seen. (Hey, not bad, but too long for the 5

o'clock news.)

For the minimal investment that should be made when getting into a new hobby, I would recommend this telescope as an excellent introduction to astronomy for the very young beginning observer. This is how most of us started out anyway, and look at us now!

Grand Canyon Star Party '96

South and North Rim
June 8–15

Observing conditions are excellent. The nearest town, Flagstaff — population 45,000, is 80 miles away, while Las Vegas and Phoenix are both about 170 air miles away making for very dark skies. Elevation at the South Rim is about 7,000 feet with the North about 8,000 feet. Seeing conditions are usually very good with the exception of very still nights when pockets of cold air move through slowly disrupting the seeing. Early June is Arizona's clearest time. We have not had a night lost to clouds in over three years!

If you need a room to stay in, you had best start NOW. Even in March you will likely have to search around for a room. If you can stand the 7 mile drive to Tusayan, there are also a number of motels there. Campsites are generally available a day or two ahead of time (\$10/night). RV parking with a full hookup is available in Trailer Village (\$17/night). Again, early reservations are advised.

If you need further information, or to let us know you would like to volunteer by bringing a telescope, PLEASE let us know at the address below. The space in the observing field is limited and we need to know how many folks we have coming that are bringing scopes. Be sure to have some housing plans before you let us know you are coming!

For **South Rim information**, write: Dean Ketelsen, 1122 East Greenlee Pl., Tucson, AZ 85719, (520) 293–2855 ketelsen@as.arizona.edu

For **North Rim information**, write: Deloy Pierce, P.O. Box 674, Farmington, UT, (801) 451-8215

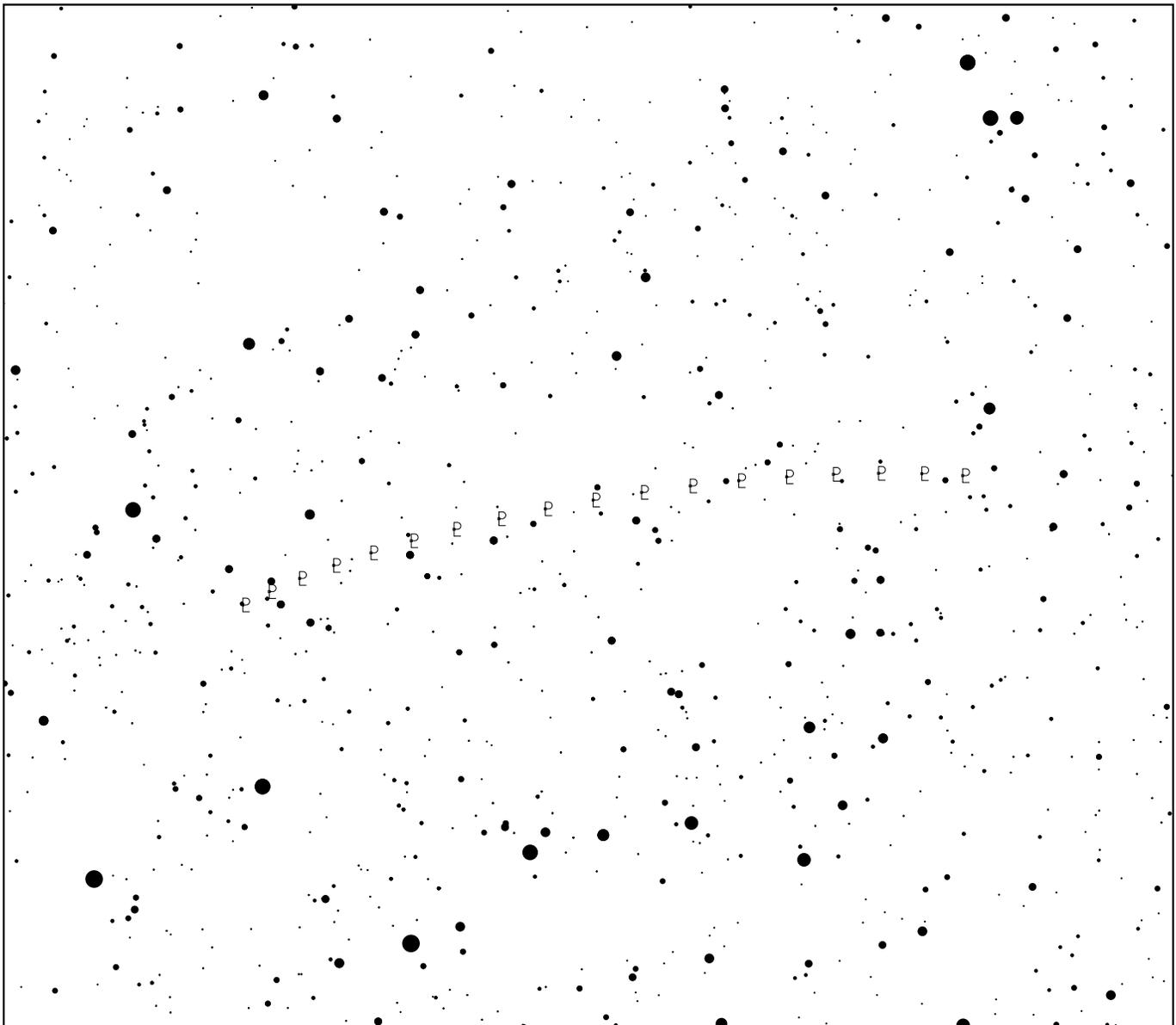
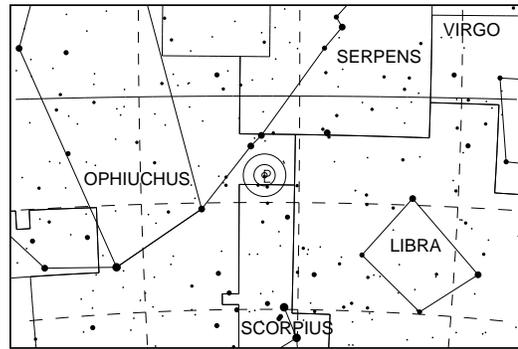
South Rim Lodging: (all area code 520) All rim lodging or Trailer Village (Fred Harvey, Inc) 638–2401 Campsites (MISTIX — no more than 8 weeks in advance) (800) 365–2267. Housing in Tusayan (7 miles south of Grand Canyon): Squire Inn 638–2681, Moqui Lodge 638–2424, Quality Inn 638–2673, Red Feather Lodge 638–2414, and Seven Mile Lodge 638–2291.

North Rim Lodging — (801) 586–7686 North Rim Camping (MISTIX — no more than 8 weeks in advance) (800) 365–2267.

Viewing Pluto

by Paul Dickson

It is approaching that time of the year when Pluto is closest to the Earth and thus at its brightest. To the right is a coarse finder chart, with a much more detailed chart given below. The detailed chart compares favorably the one given in the **1996 Observer's Handbook**.



Pluto Positions

Pluto is approaching its brightest in late May when it's at opposition. To help you look for Pluto I generated this star map with the position of Pluto using the program Deep Sace. Unfortunately the program doesn't allow

labeling of solar system objects. The time for the first position on the left is 9 PM MST on April 1, 1996. Each position is 5 days further along. On April 1, Pluto is at 16h14.0m +01°02'.

Bits and Pieces

Coming Events

Star Parties

Sentinel Star Gaze	Apr. 13
Texas Star Party	May 12-19
RTMC	May 24-26
Grand Canyon	Jun. 8-15

Public Star Parties

Thunderbird Park	Apr. 27
Reach 11	Jun. 22

Minutes from the March Meeting

Gerry Rattley opened the March meeting at 7:30.

Gerry told the guests to sign the guest book to receive their newsletter. He asked for any guests to introduce themselves, but none of them did.

Regina Lawless read the treasurers report.

Rich Walker talked about the public star parties. There will be one on April 27th at Thunderbird Park. There will also be one on June 8 at Reach 11 Park. There will be a star party at Black Mountain School in Cave Creek. The date will be March 20.

A.J. Crayon talked about the Deep Sky Meeting at the McGrath's house on March 14. He also discussed the Messier Marathon on March 16. There were some interesting ideas as to how to "mark" the facilities at the site.

Gerry discussed all of the different newsletters and adds for astronomy equipment.

Steve Coe discussed observing a satellite called the Tether. He said it really zooms across the sky in the southwest. He also talked about comet Hyakutake in Libra, which is very bright even though it is still far away.

Pierre Schwaar showed us a video using his new imaging tube. The video was of the object called the Tether. Nice images, Pierre.

At the break there were 46 people.

Steve introduced our main speaker, Kim Poor who is a space artist. He showed us a portfolio of the artists that are featured at Novagraphics. Absolutely fantastic.

We adjourned to JB's.

—David Fredericksen, SAC Secretary

Just to throw in some statistics, 46 people is about 2/3 of our membership, if you exclude newsletter-only subscriptions. Did any of you look around to remember any new faces? — Paul Dickson

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.

April Meeting Theme: Comets

The theme for this month's meeting will be comets, past and present. Please bring in your photos, slides, and/or drawings to the April SAC meeting.

Swap Meet at June Meeting

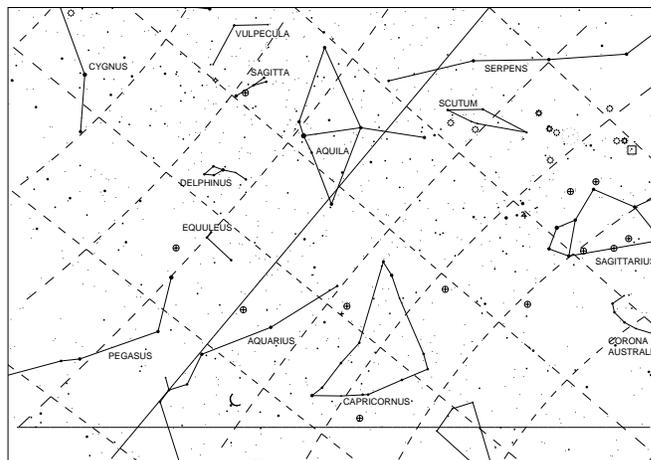
There is a swap meet scheduled at the June SAC meeting. If you have astronomical stuff lying around, no longer of interest to you, bring it to the meeting. Maybe you can sell or trade it with someone else.

The 1996 Messier Marathon at a Glance

by Paul Dickson

Well the 1996 All-Arizona Messier Marathon has come and gone. It was a lot of frustrating, tedious work, but I saw one more object than my one and only previous marathon two years ago. My new highest total is 107 objects in one night. If it had not been for cirrus clouds, I could have easily had 109 objects. I'll have to plan for next year's event very carefully.

Although my total for the night was 107 out of 110 objects, it was only the fourth highest total for the night. That's right. Someone saw all 110 objects.



The morning sky (5:35 AM) at the end of the Messier Marathon. The view is 100 degrees by 70 degrees.

The marathon was WELL attended. According to A.J. Crayon, the event's coordinator, there were 65 telescopes setup for the event. That was 58 scopes counted when darkness started arriving, and seven more late arrivals (assuming one telescope per vehicle) after the count was completed. Tom Bopp, co-discoverer of Comet Hale-Bopp, was setup less than 100 feet from me on the field. We even had one person visiting from Boston, complete with a Bostonian accent and telescope.

The weather was near-perfect, considering it had rained all day Wednesday and Thursday morning. At the time of my Saturday afternoon arrival, there were only

a few mud holes on the road to the site—easily driven around.

When darkness fell, the skies were clear. Yet later, after midnight, thin high-level cirrus clouds started moving from the northwest. By 4:30, there were high-level cirrus clouds in the Tucson sky-glow. This made finding objects using a Telrad very difficult. Those using setting circles, were not as affected.

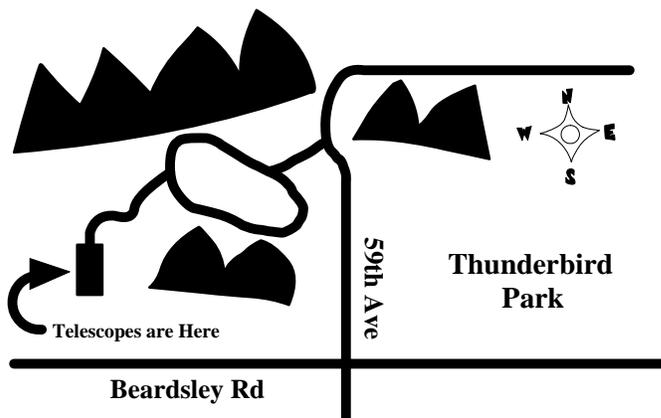
For myself, I did fairly well, considering the fact that I was using an 8" torture device. On my telescope, the Telrad is 135 degrees from my eyepiece, so when my scope is pointed at the horizon, my eyepiece is at 45 degrees. When I look at objects near the horizon, I usually turn the tube over, placing the Telrad on the bottom of the tube. However, I was having problems finding very low objects, the telescope's stand would block the Telrad's view. So I placed the tube so that the Telrad was on top and the eyepiece was pointing at 45 degrees downward. So each of the last objects I viewed, I had to bend over and turn my head and look up at the eyepiece. I did this for the last 40 Messier objects. Of course, for the last objects I did this far more than two or three times each. I did not realize how badly I strained my back until I had driven as far as Arizona City and stretched my leg to press the brake pedal. My back had rested enough by then to really make itself felt.

Comet Hyakutake was quite obvious during the morning hours. A faint tail could even be seen with the naked-eye. Surprisingly, two days later from my driveway in northwest Phoenix, I could see it even better.

I'm already anxious for next year. I'll be a little more prepared for clouds in the morning sky. I might even have an equatorial mount for my scope next year. Looking at the calendar, the event next year might be on March 8 or April 5. I'm not sure of the site though. The site we used this time was further south than in previous years. This put the Tucson sky-glow directly to the east, right where the last objects were rising, putting people who star hopped at a distinct disadvantage.

Official results will be in next month's newsletter.

Public Star Party Thunderbird Park April 27, 7:30



'98 Eclipse Cruise

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

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

The category and location of your cabin on the ship will determine the price.

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

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

April 1996

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Wednesday, Apr. 3: Lunar Eclipse ends 5 min. after Phoenix Moonrise Venus near Pleiades (evening)		Full Moon 5:09 P.M.	PAS Meeting Brophy Prep. Physics Lab	SAC Meeting Grand Canyon University, Fleming Rm. 105	
	1	2	3	4	5	6
Daylight-Savings Time starts in U.S. but not in Arizona 7		Tomorrow Last Quarter Moon 4:37 P.M. 9	EVAC Meeting (SCC: Rm. PS172) 10			Sentinel Star Gaze Sentinel, AZ. 13
			New Moon 3:51 P.M. 17	Asteroid Pallas at opposition Mag. 8.2 18	Yesterday Sun enters Aries 6 A.M. 19	Astronomy Day Crescent Moon in Hyades 6 P.M. 20
Lyrid Meteors Peak: 1 P.M. Z.H.R. 15-20 21	Mercury at greatest elongation 20.2° (evening) 22			First Quarter Moon 1:42 P.M. 25		Public Star Party Thunderbird Park 27
28	29	30	All Times are Mountain Standard Time			

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.....\$24.00 for one year
- Astronomy.....\$20.00 for one year

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

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

Regina Lawless
SAC Treasurer
5808 E Turquoise,
Scottsdale AZ 85253

SAC and SAC Meetings

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

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

1996 SAC Meetings

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

1996 SAC Star Parties

Date	Sunset	Moonrise
Jan. 20	5:48pm	8:50am
Feb. 10	6:08pm	12:10am
Mar. 16	6:36pm	5:16am
Apr. 13	7:02pm	4:00am
May 11	7:16pm	2:34am
Jun. 8	7:33pm	1:15am
Jul. 6	7:43pm	11:57pm
Aug. 10	7:16pm	4:46am
Sep. 7	6:43pm	2:26am
Oct. 5	6:06pm	1:11am
Nov. 2	5:35pm	11:54pm
Dec. 7	5:21pm	5:02am

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

SACNEWS

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

Stamp

First Class Mail

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