

Saguaro Astronomy Club

Metro Phoenix, Arizona

SACNEWS



June 1995 — Issue #221

v5.18

Partly Cloudy Sentinel

by Steve Coe

Well, the Sentinel Star Party did not wind up with the best of conditions, but we still had fun. The clouds came and went all weekend, however, at the peak, there were still 45 telescopes at the site and the B.S. was at least as thick as the cloud deck.

Myself, A.J. Crayon and Bob Erdmann got out of Phoenix around 4:00 on Friday and stopped in Gila Bend for gas and ice. We pulled into the site at 6:30 and we were telescopes 18, 19 and 20 as we arrived. I had a flash of intuition and predicted these numbers exactly correctly while we were chatting on the CB radio while driving. Why I can't I do that for the lottery?

Kevin Gill, Pierre Schwaar, Dale Burlingham, Jim Stevens and Leka and John, along with several other folks were setup under partly cloudy skies, hoping for a clearing at sunset. A beautiful set of 20" binoculars were ready to go, the owner's name was Rick, but I missed a last name. Several of the people were from California and had made the long drive in hopes of seeing Arizona skies at their best.

We wound up with some sucker holes in the clouds for several hours and I go to use Kevin Gill's 20" with a brand new Sky Commander electronic setting circles attached. This is all the encouragement I need to go to a set of these circles as soon as I can finance the purchase. They consistently put objects into a 15 arc min field of view and the set up is easy and convenient. Great Stuff.

It cleared off fairly nicely at 1:00 AM, I rated the sky at 4/10 for seeing and 5/10 for transparency for a few hours. A.J. and I did some double stars and red stars in Lyra for 2 1/2 hours until the clouds closed in and we climbed into our vehicles and went to sleep.

The next day was the usual 95 degree, 10 percent humidity day that one has to put up with at Sentinel in the Spring. We spent hours talking about a wide variety of subjects: other star parties, computers, Compuserve, eyepieces and of course: are those @#%&%@!! clouds

Quick Calendar

SAC Board Meeting
Pierre Schwaar's House
7 PM, Monday, June 5

Spica Graze
Just north of Gila Bend
On-site: 10:00 PM, Thursday, June 8
Graze: 12:03 AM, Friday, June 9

SAC Meeting
Speaker: Dr. Peter Wehinger from ASU
7:30 PM, Friday, June 9

Grand Canyon Star Party
South Rim of the Grand Canyon
June 17-24

SAC Star Party
Buckeye Hills Recreation Area
Saturday, June 24

going to go away.

Paul Knauth and I were so impressed with the Sky Commander we are looking to see how one will attach to our telescopes.

As Saturday progresses, more and more folks arrive in the hope that the sky will clear. Actually, I think many of them came to chat and have some fun with kindred souls.

An hour after sunset, it seems that my naked anti-cloud dance may have worked, because it started to clear out quite a bit. Kevin was nice enough to help me try out his 27mm and 35mm Panoptics in my 13", in a effort to

SAC Officers

President	Bob Gardner	274-5046
Vice President	Susan V. Pritchard	934-7496
Treasurer	Adam Sunshine	780-1386
Secretary	A.J. Crayon	938-3277
Properties	Pierre Schwaar	265-5533
SACNEWS Editor	Paul Dickson	862-4678
Public Events	Rich Walker	997-0711

determine which eyepiece I would like to purchase. After a great view on a poor night of M 101, M 37, M 48 and NGC 4565, I concluded that I want both eyepieces. Now, I just need to convince a loan company in town.

Next to me, Pierre and Dick Jacobsen are testing his brand new 16" f/4.8 which Pierre completed last month. It showed great views of M 81-82, NGC 3242 at 300X and M65-66. It is always fun to see a new scope provide joy for its' new owner.

However, by 11:00 it is obvious that a large run of clouds is streaming over the horizon. This will shut down the observing for several hours. I decide to return to my wife, bed and shower (not in that order).

So, it was fun and we had a wide variety of folks and scopes come from all over. It was fun to meet several of the Compuserve gang in person.

Therefore, let's do it again next year. April 13, 1996 will be the official Sentinel, Arizona Star Party date. A late moonrise will give time to view the Summer Milky Way late and the usual Spring galaxy fest early in the night. See you there.

Bits and Pieces

Minutes of the April 20 Board meeting

The meeting was called to order upon the Secretary's arrival at 7:06 pm. Also in attendance were Bob Gardner, Pierre Schwaar, Paul Dickson and Adam Sunshine.

The reason for the meeting was to discuss the declining membership and financial condition of SAC.

Among topics discussed were visitors, a club project, new observing sites, advertising, beginners and newsletter costs.

The club is not active enough in spending time with visitors that are interested in astronomy either at club meetings or star parties. We need to spend more time chatting with visitors and less time in cliques.

A club project was discussed but nothing long term, like mirror grinding or telescope making seemed attractive at this time.

It was stated that some people do not attend club star parties because they are too far out of town and/or do not contain restroom facilities. In addition the Buckeye Hills site is not as usable as in the past, hence a new site should be located. Two new sites were discussed; one on the east side and one on the west side of the White Tank Mountains. Pierre volunteered to investigate the site on the east side of the mountains, it allegedly has restroom facilities and could be used two to four times a year. AJ volunteered himself and Steve Coe to investigate the site on the west side of the mountains; one that had already been under investigation.

Other sites discussed but not getting much favor were one west of Lake Pleasant and the McDowell Mountains.

SAC needs to advertise our existence at public star parties in addition to local telescope outlets; ie, Astronomy Shoppe. Although this is done to a certain extent, we should do this more aggressively.

It has been some time since a beginners session has been held. Perhaps, like TAAA, we can have a 30 minute session before the regular meeting about topics for those starting out. Also plan special topics to be covered at club star parties.

Pierre, again, volunteered to shop around to find a printer that would do the newsletter at a lower cost. Adam volunteered to investigate bulk rate mailing companies that may be used for out newsletter distribution.

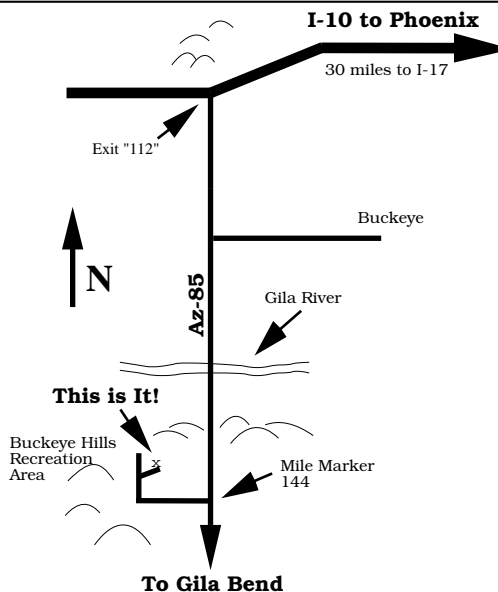
If substantial savings can be had with lower printing costs and mailing then the 1996 dues may only need to be

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 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.

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.



\$25.00 per annum.

Another Board Meeting will be held on Monday, June 5th at Pierre Schwaar's house, beginning at 7:00pm. Interested members are invited to attend. By this time the newsletter printing and mailing costs will be better understood.

—A.J. Crayon, SAC Secretary

SAC Board Meeting

Monday, June 5

The next SAC board meeting is scheduled for Monday, June 5 at 7 PM at Pierre Schwaar's house. Some of the items currently planned for the agenda are the dues increase, beginners' events, and new star party locations.

If you want your opinion heard please attend. This meeting, like all board meetings, is open to SAC members.

Minutes of the May Meeting

Upon opening the meeting, our President requested visitors to introduce themselves. Three volunteered to do so.

AJ Crayon gave a Deep Sky Group report announcing that at the next meeting the Herschel 400 Coordinator for the Astronomical League would be in town and was expected to attend.

Jerry Rattley discussed the up coming lunar grazing occultation.

Comet Comments

by Don Machholz

(916) 346-8963 CC202.TXT May 8, 1995

Periodic Comet d'Arrest brightens in our morning sky as it approaches perihelion on July 27. Meanwhile, the faint Comet Chiron remains in our evening sky.

You might have recently heard about the Kuiper Belt, a band of material in orbit around our sun near the orbit of Neptune. A couple of dozen such objects have already

velop cometary features. A question arises: How many objects are there in the Kuiper Belt?

According to IAU Circular 6163, the Hubble Space Telescope conducted a limited search for objects in the Kuiper Belt. The test covered a small section of sky, four square arc-minutes in size. The limiting magnitude was

95P/Chiron

Date	RA-2000-Dec	Elong	Sky	Mag
05-23	11h17.3m +00°18'	109°	E	15.7
05-28	11h17.6m +00°20'	104°	E	15.7
06-02	11h18.2m +00°21'	99°	E	15.7
06-07	11h18.8m +00°21'	95°	E	15.8
06-12	11h19.7m +00°19'	90°	E	15.8
06-17	11h20.7m +00°16'	85°	E	15.8
06-22	11h21.9m +00°13'	81°	E	15.9
06-27	11h23.2m +00°08'	77°	E	15.9
07-02	11h24.6m +00°02'	72°	E	15.9
07-07	11h26.2m -00°05'	68°	E	15.9

6P/d'Arrest

Date	RA-2000-Dec	Elong	Sky	Mag
05-23	20h23.0m +08°02'	109°	M	12.1
05-28	20h34.8m +08°39'	110°	M	11.8
06-02	20h47.0m +09°09'	112°	M	11.5
06-07	20h59.4m +09°31'	113°	M	11.2
06-12	21h12.2m +09°44'	114°	M	10.9
06-17	21h25.3m +09°45'	116°	M	10.6
06-22	21h38.8m +09°31'	117°	M	10.4
06-27	21h52.7m +09°01'	119°	M	10.2
07-02	22h06.8m +08°12'	121°	M	9.9
07-07	22h21.3m +07°01'	123°	M	9.7

been discovered from earth, they are at about magnitude 22. This translates to a diameter of about 100 km. While many consider them to be comets rather than minor planets, their orbits seem to be rather circular and it seems unlikely that they will approach close to the sun and de-

velop cometary features. A question arises: How many objects are there in the Kuiper Belt? According to IAU Circular 6163, the Hubble Space Telescope conducted a limited search for objects in the Kuiper Belt. The test covered a small section of sky, four square arc-minutes in size. The limiting magnitude was 28, about the brightness of the nucleus of Halley's Comet at that distance. Thirty-four images were recorded over two days last August, they were stacked after the galaxies and stars were removed. Of the many objects remaining, statistical studies were done to determine which "spots" matched up with objects in a typical Kuiper Belt orbit. Some 244 objects were found in such paths, compared to only 185 in a "control" group. The result: "If our 59 excess candidates are indeed real members of the Kuiper Belt, there must be about 60,000 such objects per square degree, or at least a total of 100 million comets brighter than our limiting magnitude in the restricted ranged of orbits similar to the ones studied here."

6P/d'Arrest	Orbital Elements	95P/Chiron
1995 July 27.26197	Perihelion Date	1996 Feb. 14.75375
1.34587 AU	Perihelion	8.439422 AU
178.0504°	Argument of Perihelion	339.55286°
138.9874°	Ascending Node	209.38540°
019.5232°	Inclination	006.92994°
0.6140404	Eccentricity	0.3831118
6.51 years	Period	50.73 years
MPC 20122	Source of 2000 Elements	MPC 22797

Grand Canyon Star Party

The Tucson Amateur Astronomy Association (TAAA) has been going to the canyon in the June dark-of-the-moon for what has to be one of the largest public star parties.

The objective of the star party is to maintain an astronomical presence there for two weekends and the week in between. The first year, in 1991, there were seven TAAA members spread out thinly, but there were enthusiastic crowds. The star party has grown every year.

The dates for 1995 are June 17–24, and if you are interested in attending and want a real bed to sleep in, you haven't a moment to lose. June is the Grand Canyon National Park's busiest time, and it is never too early to book a room. Most hotels fill up 3–4 months in advance so you need to act now. Camping is a different story, as sites are available days before your visit. Refer to the phone list below for hotels and camping. The TAAA charges no

registration fee — just take care of a place to stay and let us know you are coming (you need to sign liability waivers for TAAA and the National Park Service.)

Housing: For reservations at any of the motels or lodges at the South Rim or for Trailer Village (Camping trailers or RV's) call Fred Harvey Inc. at (602) 638-2401 **as soon as you make your plans!** Expect long telephone waits while making your reservations.

If you can tolerate a 7 mile drive, you can also try the following motels at Tusayan (all area code 602): Squire Inn 638-3515, Moqui Lodge 638-2424, Quality Inn 638-2673, Red Feather Inn 638-2414, 7 Mile Lodge 638-2291.

Camping: To make reservations for campsites at the regular rates (\$10 per night,) call MISTIX at 1-800-365-2267, no more than 8 weeks ahead.

For questions concerning the Grand Canyon Star Party, please call or write to me at: **1122 E. Greenlee Pl., Tucson, AZ, 85719**, home phone (602) 293-2855 or E-mail to ketelsen@as.arizona.edu.

President Gardner briefly discussed a public star party in Sedona on June 2nd. If interested, see him for more details.

For Show-n-tell Pierre Schwaar showed some slides from years gone by. They included sun, moon, young moon, Venus near inferior conjunction, comet West and many splendors of the deep sky.

Pierre Schwaar has found a new printer for our splendid Newsletter. It will be done at a big savings which will result in a not so big increase in dues. To discuss this farther, a Board of Directors Meeting has been scheduled for June 5th at 7:00 PM MST at Pierre's house. Interested members are invited to attend.

At break time there were 31 members present.

After the break, our Vice President Susan Pritchard introduced the evenings speaker, Peter Manly. Peter is a long time astronomer, one time SAC member and President. His very interesting talk was on airborne astronomy.

After the meeting another meeting was convened at the corner restaurant for more discussion of advance topics on astronomy, computers and nothing.

Arizona's High Power Rocket Launch

July 1 – 3

No Impulse limit Waiver to 28,000 ft
\$5 per person per day

The Flagstaff launch site is located 22 miles north of Flagstaff on Highway 89. Exit highway one mile north of Wupatki National Monument's north entrance, at Hank's Trading Post. Stay to left, approximately 2.9 miles to launch site. Lodging is available in Flagstaff.

For more information, contact SAC member Jerry Belcher at 938-2932.

June SAC Meeting

The speaker for the June meeting will be Dr. Peter Wehinger. He will talk about a telescope for ASU's students.

Update on the June Spica Graze

by Gerry Rattley

This will be the last article about this spectacular graze before the event. This is the final graze/occultation of Spica in this current series. It occurs on Thursday evening, Friday morning, June 8–9, 1995 at 12:11.5 MST. This is the central graze time at Gila Bend. For each station, graze events will begin from one to three minutes before this time and last until one to three minutes after. The length of the graze depends on how deep your station is into the lunar profile.

Our graze expedition will go to the old Highway north out of Gila Bend. This highway intersects Hwy-85 on the east end of Gila Bend just west of the overpass that cuts south to I-8. There is a sign there pointing you to Arlington. The graze line goes across this highway about 5 miles north of that intersection (Hwy-85 and the old highway) and you will find Gerry Rattley in this area on Thursday evening, June 8.

If you've been out to the SAC's star parties at Buckeye Hills Rec. Area, you can plan your time past there to Gila Bend as an additional 30 minutes. The Buckeye Hills site is about an hour out of Phoenix. Plan to be at the graze site by about 10 to 10:30 PM, but no later than 11:00 PM. You'll need at least an hour to get your station assignment, find your station and get your equipment set up and running.

I would encourage anyone interested in astronomy to come out for this event. You don't have to time it, just watching can be fun (both the graze itself as well as the timing efforts.)

You'll need some optics. Tripod mounted binoculars will work, but I don't recommend holding the binoculars by hand (you can do this, but not for timing.) It's too easy for the Moon to slip out of the field of view at the critical moment and miss seeing an event. A camcorder can be

used but I am not an expert on this method. Call Gene Lucas, 837-3718, for instruction, hints and tips about this technique if you haven't done this before. Any kind of telescope will be OK for this graze as long as it's not shaky. A Dobsonian should probably be used as a fairly low power unless it moves smoothly and firmly and you are used to tracking objects with it at medium powers. A driven scope can be used at medium power. You won't need higher powers for this event. You can use a neutral density or polarizing filter to knock down the lunar glare if you wish.

If you wish to take timings for this graze, the most popular method is with a WWV radio and a portable tape recorder. The other popular method is with video and you'll have to discuss this method with Gene Lucas. Video is the superior method and has many advantages over visual observing: timings are more accurate, you don't have to pay close attention to the image, and a permanent record is secured—just to name a few.

If you're timing this visually you can still get useful data. Start your tape recorder and WWV radio about 10 to 15 minutes before the graze. Check them out for a minute or two to be sure they're working. Be at your eyepiece observing Spica as it crawls into the Moon (actually the Moon is creeping up on Spica) between 5 and 10 minutes before the central graze time.

Spica will eventually "pop" out as it goes behind the Moon. It may come back on and go off again several more times as it passes behind lunar mountains and peeks out of lunar valleys until it finally comes back out for good. Call "out", "in", "flash", "blink", "D", "R" or whatever you will remember meaning as events occur. Strive to react as quickly as you can see something happen. Sometimes people are "dumb-struck" when such a bright star "pops" out or back on and just mentally freeze. Try not to do this. Say something. Anything! If events are slow you can comment on what's happening as the graze progresses. Sometimes events occur so fast you have a panic scene. Do the best you can and make comets on the tape as soon after as you can. You won't remember much the next day, so say it as it happens! Continue observing until about 5 to 7 minutes past central graze time, even if you haven't seen an event for a couple of minutes. If you quit too early you might miss the tip of a high mountain peak. Nothing will happen past the 5 minute mark though.

Be sure to note when you start observing continuously and when you stop. Just say "start observing" and

"stop observing" on your tape. These times are part of the data set for your station. I usually start and stop on a WWV minute mark for ease of data reduction later.

If the WWV signal is weak before the graze, start your tape 15 to 20 early and play with the radio for 5 to 10 minutes to try to get a minute mark or two on the tape. Leave the tape running at this point until you can get another minute mark or two on the tape after the graze is over. Let WWV run free during the graze, the signal may clear up. If you have good radio reception during the graze, be thankful, and just let it run in the background. I set my radio about the same distance from my tape recorder as my voice is so that the two don't interfere with each other.

I use a card table next to my scope to set my radio and tape recorder. I can reach out and pick up the radio if the signal is weak without taking my eye from the eyepiece. Don't knock the radio on the ground though. You can use a step ladder, a tail gate or anything else you can set your stuff on.

I won't go into how to reduce your data from the tape yet. Concentrate on getting the data on the tape for now. You can get help reducing your tape later.

Gene Lucas and I will take care of your position data: longitude, latitude and elevation. All you have to do is find the station we assign you and set up on our marker (an orange road cone with a letter of the alphabet on it—each station is a different letter.)

The information in the previous newsletter is still valid. The *Sky & Telescope* article in the June issue is on page 72-73. If you stay in Phoenix, you can view and/or time a long occultation. Use the *S&T* article to work out your rough disappearance and reappearance times if you choose to do this.

If you have questions, want to get more information or want to get your name on the sign-up list, you can call me, Gerry Rattley at (602) 892-5698 or Gene Lucas at (602) 837-3718.

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.

For Sale—Eyepiece, 32mm Meade Plössl, Series 4000, 1.25", \$95. Call Jack Jones 944-5488.

What's Up

by Steve Coe

June 1995

Coma Berenices

Coma Berenices is one of the constellations that was added "later" by cutting off the Lion's tail. What used to be the tuft at the end of Leo's tail has become the Hair of Berenice. The most obvious object in this area is the Coma Star Cluster, an extremely large cluster that is best in binoculars. I can count 32 members in my 10X50 binocs, the scope does not help much, there are few fill in stars. However, it is not stars that offer the real show in this part of the sky, but galaxies. Because looking in this area is straight out of the Milky Way, little gets in the way of the Coma-Virgo Galaxy Cluster. This huge area contain swarms of galaxies external to Our Galaxy. But, let's not start with the obvious:

NGC 4147 is bright, pretty large, round, and has a bright middle at 165X in my 13" Newtonian. This is a nice globular cluster to break up all these galaxies it is at 12 hr 10.1 and +18 33. Using 165X, I can resolve five stars here on a 6/10 night.

NGC 4162 is at 12 hr 11.9 and +24 07. It is pretty bright, pretty large, elongated 2X1 in PA 25, and is brighter in the middle at 100X. There are two stars on either side oriented E-W, one star is 10th the other 12th magnitude.

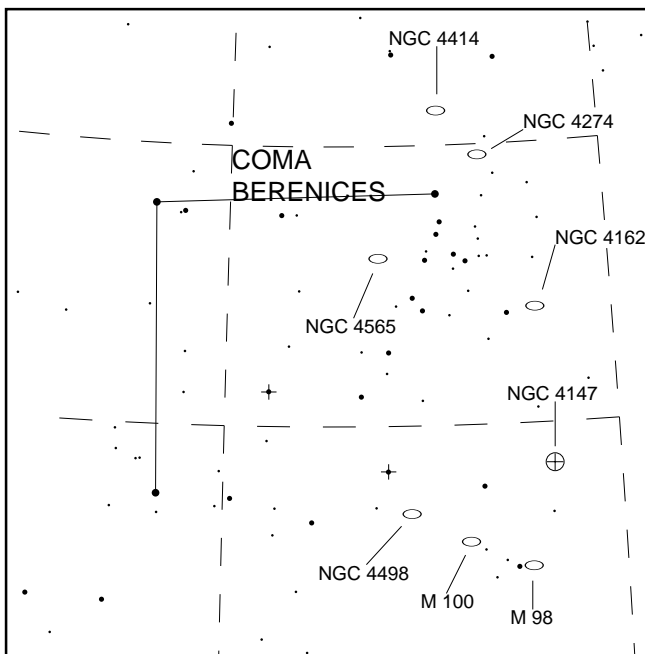
Messier 98 is also **NGC 4192**. I see it as pretty bright, large, very elongated, and somewhat brighter in the middle at 135X. It has a companion to the south that is faint, small and somewhat elongated. This is one of the few galaxies in the Coma-Virgo area that does not show a red shift in its spectrum. It is at 12 hr 13.8 and +14 54.

NGC 4274 is bright, pretty large, much elongated, brighter middle at 100X. This nice galaxy has three companions in the 40' field of my old 20mm Erfle. The brightest of the three is 4278. At 12hr 19.8, +29 37.

M 100 is also **NGC 4321**. This beautiful galaxy is bright, large, round and much brighter middle at 100X. It is immediately obvious that this is a big face-on galaxy. I see it as a small version of M33. This is a faint, elongated companion galaxy in a 40' field. The repaired Hubble Space Telescope took a magnificent image of this object as one of the images to prove it was repaired correctly. This amazing image shows very fine detail in the core of this beautiful whirling galaxy. It is located at 12 hr 22.9 and +15 49.

NGC 4414 is pretty bright, pretty large, elongated 3X1 and much brighter in the middle at 100X. Going up to 165X, the stellar core comes and goes with the seeing. This nice spindle is at 12 hr 26.4 and +31 13.

NGC 4498 is located at 12 hr 31.7 and +16 51. It is faint, pretty large, little elongated and much brighter in the middle at 100X. The NGC description says BIN which I assumed to mean binary nucleus. Therefore I tried 200X with the Barlow to see if the core is double. The seeing was 6/10 so my view was not conclusive, however the core did appear elongated at high power. I will try and observe this galaxy again in better seeing to try and "split the core".



NGC 4565 is one of my favorite objects in the sky. It is very bright, very large, extremely elongated 10X1, and very bright in the middle at 135X. There is a beautiful dark lane that stretches from end to end of this spectacular edge-on galaxy. The dark stripe is easy to spot at a good site, it can be held with direct vision. At 200X some fine detail within the dark lane is visible in moments of good seeing at my best sites in the mountains of northern Arizona. It has always looked like the classic flying saucer. At a SAC star party someone called it "God's Frisbee." If you have never seen this beauty, you have a treat waiting at: 12hr 36.3 and +25 59.

Double Stars in Coma Berenices.

24 Comae is a beautiful double star, it is easily split at 100X and shows a nice, bright yellow and blue pair. This springtime Alberio is at: 12hr 35.1 and +18 23.

35 Comae is easily split at 100X, the intriguing thing is that this pair appears yellow and purple! This is one of the few doubles I have ever seen with a purple star, look for yourself and see if you agree. You can try it out at: 12hr 53.3, +21 14.

June 1995

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
All Times are Mountain Standard Time			June 1: Jupiter at opposition (moves into evening sky)	PAS Meeting Brophy Prep. Physics Lab	TAAA Meeting (Tucson)	
				1	2	3
Mercury at inferior conjunction with the Sun (moves into morning sky)	SAC Board Meeting 7 PM Pierre Schwaar's House	First Quarter Moon 3:25 A.M.	Tomorrow Giovanni Cassini born 1625	Tonight 6/9 12:04 A.M. Lunar Grazing Occultation of Spica	SAC Meeting Grand Canyon University, Fleming Rm. 105	
4	5	6	7	8	9	10
	Full Moon 9:03 A.M.		EVAC Meeting (SCC: Rm. PS172)			Mercury 1.1°N of Aldebaran (morning)
11	12	13	14	15	16	17
Mercury 3.6°S of Venus (morning)	Last Quarter Moon 3:00 P.M.		Summer Solstice 1:36 PM Sun enters Gemini 4 P.M.	Grand Canyon Star Party June 17-24		SAC Star Party Buckeye Hills (members&guests)
18	19	20	21	22	23	24
	Charles Messier born 1730	New Moon 5:50 P.M.		Mercury at greatest elongation 22° (morning)		
25	26	27	28	29	30	

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 pro-rated as follows: Jan - Mar 100%, Apr - Jun 75%, Jul - Sep 50%, Oct - Dec 25%.

- \$20.....Individual Membership
- \$30.....Family Membership (one newsletter)
- \$100.....Business Membership (includes advertising)
- \$4.....Nametag for members
- \$10.....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 treasurer to renew your subscription.

- Sky & Telescope.....\$20.00 for one year
- Astronomy.....\$18.00 for one year

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

Make checks payable to SAC.
Mail the completed form to:
Adam Sunshine
SAC Treasurer
20401 N 30th Drive,
Phoenix AZ 85027

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.

1995 SAC Meetings

Jan. 13
Feb. 10
Mar. 17
Apr. 14
May 12
Jun. 9
Jul. 14
Aug. 4
Sep. 8
Oct. 6
Nov. 3
Dec. 9 Party

1995 SAC Star Parties

Date	Sunset	Moonrise
Jan. 28	5:56pm	5:15am
Feb. 25	6:22pm	4:00am
Mar. 25	6:41pm	2:50am
Apr. 22	7:05pm	1:30am
May 20	7:26pm	12:10am
Jun. 24	7:42pm	3:00am
Jul. 22	7:36pm	1:40am
Aug. 19	7:11pm	12:20am
Sep. 23	6:24pm	5:15am
Nov. 18	5:25pm	2:40am
Dec. 16	5:23pm	1:25am

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

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