

# Saguaro Astronomy Club

Metro Phoenix, Arizona

## *SACNEWS*



August 1996 — Issue #235

v7.15

## Adventures in Sky-Shooting from Arizona

by Chris Schur

It is well known that Arizona skies are some of the clearest and darkest skies in the continental United States. The generally dry climate, sites away from the influence of city lights, and sheer number of cloudless evenings makes the state a Mecca for both professional and amateur astronomers alike. For the astrophotographer, Arizona offers the amateur the opportunity to produce shots unparalleled anywhere in the world.

On a good evening in the lower deserts the sky can be so dark that a blanket of stars overhead seems so close that you feel like you could reach out and touch them. But even better skies lie in the northern mountainous areas of the state, where the extremely dark skies are complimented with over mile high elevations and unbelievable transparency. It is here in the northern mountains that the astrophotographer is at home, their hypered films and equipment then yielding the best performance possible.

Our journey up to the mountain sites begins by loading our trucks and cars up with all the essentials for a long nights stay up in the cool high elevations. Even in the summer, the temperatures can drop into the thirties by the morning so careful planning is essential. A small group of about ten of us meets at the site, well prepared for the dark sky show that is about to unfold. As darkness falls, and equipment readied, the earth's shadow is boldly rising in the east appearing as a deep navy blue band with a pinkish top sharply accented against the darkening cobalt blue sky. Already the Milkyway can be seen in the East at the same time as the bright dome of twilight from the setting sun in the west.

Even an hour after sunset, the Milkyway is blazing forth with and intensity unparalleled anywhere else. This is the time to bring out the hypered films from the cold storage and running down the lists of photo subjects. This is also the time for sharing a cup of coffee with friends,

### Quick Calendar

#### SAC Meeting

Speaker: Ed Vega and Max Bray

7:30 PM, Friday, July 26

#### SAC Star Party

Buckeye Hills Recreation Area

Saturday, August 10

#### Perseid Meteor Shower

Tortilla Flat, Dugas or Sentinel

Sunday, August 11

#### SAC Meeting

7:30 PM, Friday, August 30

and discussing the nights endeavors.

Ninety minutes after sundown the real show begins. Red LED flashlights are a must at this point, because the light tan ground is so dark, as to be nearly invisible. In March, the evening Zodiacal light is so brilliant as to far out-shine the brightest parts of the Milkyway. Its eerie bluish green light casts diffuse shadows of your hands on light telescope tubes and the sandy soil.

Summer Skies. In this season the Sagittarius and Scorpius Milkyway is awesome! It too casts easy shadows on light colored surfaces, and isn't just bright, its BLAZING. Intense mottling of both bright and dark nebula are

### SAC Officers

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

- 1) TELESCOPE
- 2) STAR CHARTS
- 3) CAR KEYS

ITEMS TO HAVE  
AT A STAR  
PARTY OUTSIDE  
YOUR LOCKED  
CAR

very apparent to the naked eye. The center of our galaxy beams brightly nearly halfway up into the sky, jammed with thousands upon thousands of stars crowding from the horizon all the way to the zenith.

The feet, body and neck of the giant dark constellation of the “EMU” can be seen on the southern horizon. This constellation was named by the Australian Aborigines after its shape that resembled a huge flightless bird the size of an ostrich that lives in the remote parts of that continent. The “head” of the EMU is the Coal sack in Crux, which is just below our horizon here in Arizona. The northernmost star in Crux, Gamma Crucis can however be seen from southern Arizona if the horizon is unobstructed.

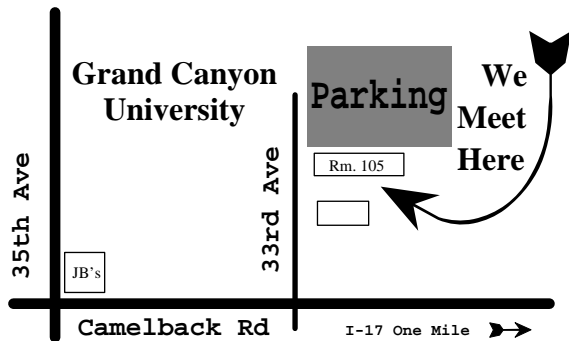
Located near the neck of the EMU, the Norma star cloud can be seen. About the size of the Sagittarius star cloud and nearly as bright, this showpiece just skirts our

southernmost horizon. Scanning this part of the sky with big binoculars is an awesome experience, the region being filled with dense star groupings, tangled dark nebula, and unusual emission objects.

The scorpion rides high in the southern sky. Dominating the Milkyway in this region is M7. Seen with the naked eye as an intense brightening in the rich surrounding star clouds, closer examination will reveal that that dozens of stars can also be seen resolved without optical aid giving it a coarse, sandy appearance. Sagittarius is no less exciting to the naked eye. A rich frothy steam emerges from the constellations teapot shapes spout, leading up to a dark hole in the Milkyway here which contains both the lagoon and Trifid nebula. Although both can be clearly seen, only the lagoon betrays its nebulous character to the eye appearing as an elongated island in a sea of dark nebulosity. Extending into Ophiuchus and Aquila,

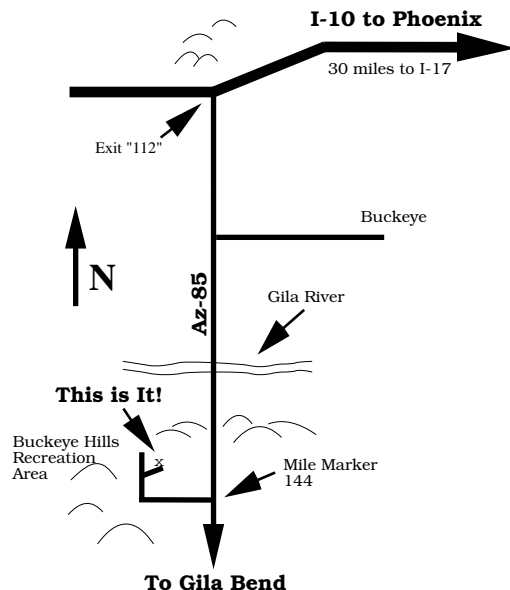
## Directions to SAC Events

**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.



the Milkyway becomes even more complex. Dominating this part of the sky is the awesome "Galactic Dark Horse." Formed by the Pipe Nebula and surrounding dark nebulosities, this huge object near theta Ophiuchi is usually considered as a severe test of sky darkness in many field night sites. Here it is seen in its entirety, The main body projecting a head and four thin legs.

This part of the MilkyWay also has a unique structure known to Arizona skygazers as the "Off-ramp". Extending southwestward from Aquila's west side is an apparent detached portion of the Milkyway that dominates this part of the sky. Extending for perhaps ten to 15 degrees, this bright offshoot of the Milkyway is a jumping off point for many attractive deep sky objects in this region.

The fall skies are no less spectacular. The entire northern sky is dominated by a huge wedge shaped wall of stars connecting Polaris to Cassiopeia. the vertex of the

wedge is at Polaris itself, and the 30 degree wedge extends full of stars to the great "W" of the queen herself. Until you've seen Cassiopeia from the northern mountains of Arizona, you haven't seen it in its full glory. Never anywhere else have I seen such richness of detail in the classic "W" or "M" shape. The entire constellation is literally covered with a dark web-work of dark nebula, crisscrossing the Milkyway which flows through this area. Scanning this region with a pair of 7x50 binoculars is a sight you will never forget, bright star chains and dark starless lanes cover the entire region.

Further south we find a large and bright ovoid nebulosity hanging in the dark void. It has been said that 2 to 3 degrees of length can be seen in the Andromeda Galaxy on a good night. In the mountains of Arizona, 4 to 5 degrees can be glimpsed with a good pair of 7x50 binoculars.

# Comet Comments

by Don Machholz

(916) 346-8963 CC216.TXT July 8, 1996  
DonM353259@aol.com

C/1996 N1 (Brewington)					
Date	RA-2000-Dec	Elong	Sky	Mag	
07-21	12h23.6m +19°57'	61°	E	9.3	
07-26	12h38.8m +24°22'	59°	E	9.2	
07-31	12h54.2m +28°35'	58°	E	9.2	
08-05	13h09.7m +32°34'	58°	E	9.2	
08-10	13h25.5m +36°19'	58°	E	9.3	
08-15	13h41.8m +39°49'	59°	E	9.4	
08-20	13h58.8m +43°04'	60°	E	9.5	
08-25	14h16.9m +46°04'	62°	E	9.7	
08-30	14h36.5m +48°49'	64°	E	9.9	
09-04	14h58.1m +51°18'	67°	E	10.0	
09-09	15h22.1m +53°30'	70°	E	10.2	

**Comet C/1996 N1 (Brewington):** Howard Brewington discovered this, his fifth comet, on the evening of July 3 from his home in Cloudcroft, New Mexico. Using his 8" reflector, which is mounted on top of his 16" reflector, he visually swept up this comet some 702 search hours (and nearly four years) after his fourth find. This is the longest that Brewington has searched for a comet, his previous four finds took a total of 725 hours.

An early orbit calculation shows the comet to be approaching a perihelion distance of 0.92 AU on Aug. 3.

Comet Brewington should remain in our evening sky for the next two months, moving north and dimming slowly.

**Comet Hale-Bopp** and **Periodic Comet Kopff** remain in the summer Milky Way. Comet Hale-Bopp continues to brighten as expected, which is good news to cometeers everywhere.

1995 O1 (Hale-Bopp)					
Date	RA-2000-Dec	Elong	Sky	Mag	
07-21	18h26.0m -09°55'	154°	E	5.9	
07-26	18h18.9m -09°26'	149°	E	5.8	
07-31	18h12.0m -08°59'	142°	E	5.7	
08-05	18h05.5m -08°32'	136°	E	5.7	
08-10	17h59.4m -08°07'	130°	E	5.6	
08-15	17h53.8m -07°44'	124°	E	5.5	
08-20	17h48.7m -07°21'	118°	E	5.5	
08-25	17h44.2m -07°01'	113°	E	5.4	
08-30	17h40.3m -06°41'	107°	E	5.4	
09-04	17h37.0m -06°23'	102°	E	5.3	
09-09	17h34.4m -06°06'	96°	E	5.3	

22P/Kopff					
Date	RA-2000-Dec	Elong	Sky	Mag	
07-21	19h23.8m -20°45'	171°	E	7.1	
07-26	19h24.8m -21°25'	166°	E	7.2	
07-31	19h26.2m -22°03'	162°	E	7.3	
08-05	19h28.2m -22°36'	157°	E	7.4	
08-10	19h30.8m -23°05'	153°	E	7.6	
08-15	19h34.2m -23°30'	149°	E	7.8	
08-20	19h38.2m -23°49'	145°	E	8.0	
08-25	19h42.9m -24°02'	141°	E	8.2	
08-30	19h48.3m -24°10'	138°	E	8.4	
09-04	19h54.2m -24°13'	134°	E	8.6	
09-09	20h00.7m -24°11'	131°	E	8.9	

## Orbital Elements

Object:	Hale-Bopp	Kopff	Brewington
Peri Date:	1997 04 01.14561	1996 07 02.19980	1996 08 03.418
Peri Dist:	0.9140971 AU	1.5795617 AU	0.92309 AU
Arg/Peri (2000)	130.59227°	162.83487°	044.120°
Asc Node (2000)	282.47087°	120.91329°	235.119°
Incl (2000):	089.42807°	004.72143°	051.672°
Eccentricity:	0.9950784	0.5440739	1.0
Orbital Period:	3000 yrs.	6.45 yrs.	Long period?
Reference:	MPC 26879 (3-26)	MPC 22032 (1991)	IAU Cir. 6430

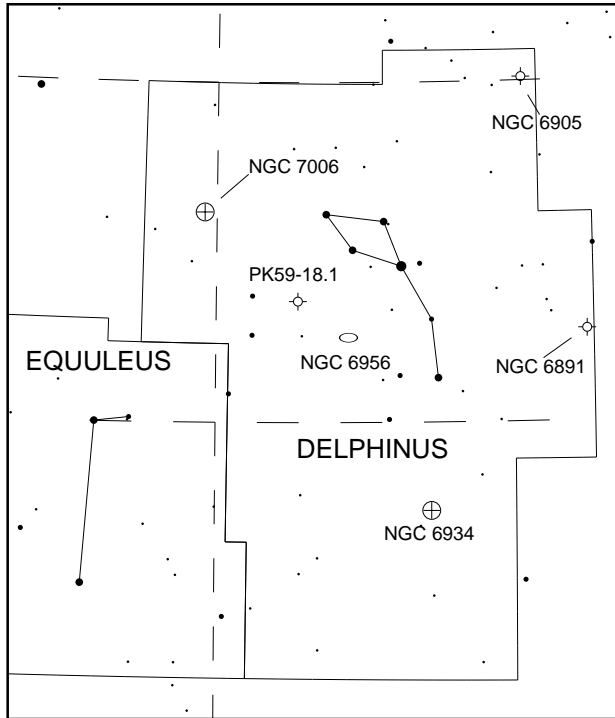
# What's Up

by Steve Coe

Delphinus

August 1996

I would like to take a moment to tell you what writing this column has provided me over the years. Obviously, I get practice writing about astronomy and that is certainly the reason that I have been fortunate enough to have articles published in a variety of magazines. The ego boost of being recognized when at an



astronomical get-together is no small thing, either. I will be the first, or at least the second, to say that having my ego boosted is a grand feeling. For myself, this organized presentation of what I have seen at the eyepiece has allowed me to stay on track when it comes to using my telescope and observing carefully, so as not to make any large errors in "What's Up." So, thank you for allowing me to practice on you. Thanks for the time you have taken to read and use these materials. As always, if you have a favorite deep sky goodie that I should see, get me over to your scope and let's have a look. So, for this month, let's have a look at Flipper frolics in the Milky Way, the constellation of Delphinus.

**NGC 6891** is bright, pretty small and somewhat elongated at 100X in the 13" telescope. It is a little difficult to find in a rich Milky Way field at 20 hr 15.2 min +12 42. The 11th magnitude central star of this planetary comes and goes with the seeing at 270X. It

is very nice aqua or blue-green in both the 13" and my old 18" f/6 Dobsonian.

**NGC 6905** is bright, pretty large, elongated 1.5 X 1, central star is easy at 100X. Moving up to 270X with a Barlow lens reveals that the east and west sides are brighter than the rest of the nebula. This planetary is pale green at all powers. I have heard NGC 6905 called the "Blue flash nebula" but I have never seen blue in this object. Look for color in this nebula at 20 22.4 +20 06.

**NGC 6934** is a nice globular cluster. I see it as bright, pretty large, much compressed, round and has a much, much brighter middle at 100X. It can be seen in the 11 X 80 finder or 10 X 50 binoculars at 20 34.2 +07 24. This is the type of object that responds with a much better view on a clear, transparent night. On a night I rated 6/10 for seeing and transparency, down on the floor on the desert near the Organ Pipe Cactus National Forest, I could only resolve 3 stars with a mottled core at 165X. At the same power on a beautiful night in the Red Rock country near Selena at 5000 ft., this globular sparkled with 40 stars resolved, 6 of them in the core area. This distant globular is very grainy at all powers in the 13" Newtonian scope. This is the kind of observation to postpone until those rare 9/10 evenings when stars twinkle very little and the Milky Way blazes overhead.

**NGC 6956** is a little galaxy beside the Milky Way at 20 44.0 +12 30. I saw it as pretty faint, small, very little elongated 1.2 X 1 in PA 90, very little brighter middle at 150X. There is a nice double star involved on the east side; it is 11th and 13th mag, separation about 8 arcseconds in a PA of 90 degrees.

**NGC 7006** is pretty bright, pretty small, round, very bright middle and very compressed at 100X. This very distant globular is one of the most mottled objects I have ever seen in the 13" at 180X. This extremely grainy globular has only shown me stars on its' face one time. Using my old 18" f/6 at 210X, I saw 3 stars superimposed on the surface of NGC 7006. One was held steady, the other two appeared and disappeared with the seeing. This was on a night I rated 8/10 for transparency and 7/10 for seeing. While viewing this deep space wanderer, think of the view of Our Galaxy you would be seeing from a planet in this cluster at 180,000 light years away. It is located at 21 01.5 +16 11.

**PK59-18.1** is also Abell 72, a planetary nebula. I saw it as extremely faint, pretty large, irregularly round at 100X. There are two stars involved within the nebulosity and a 9th mag star on the western edge. This object could not be seen on a good night without a filter in the eyepiece. Choosing between the Oxygen III and the UHC, the O III seems to do the best job on bringing out some contrast in this dim nebula. Averted vision helps this object stand out as well. There is a narrow dark lane on the north side. If you are looking for a challenge this one is at 20 50.1 +13 34, good luck.

At the zenith, the Cygnus Milkyway blazes with a brilliance I have seen nowhere else. Not just a shimmering pale band, the Milkyway here is an opalescent band of light, studded with thousands of both bright and faint stars. Up in the high altitude areas of the state, a group

of us once noted that this part of the sky is so bright that when it rises over the distant hills and trees, it can be mistaken for the onset of dawn. Indeed, at one especially dark site up on the Mogollon rim one midnight, as the Cygnus Milkyway rose, large numbers of birds started

waking up in the surrounding trees carrying on like the onset of dawn was approaching. They quieted down when they realized a few hours later that it was still night.

The water jar of Aquarius rides high in the southern sky. Some 20 degrees to its south lies the Helix Nebula. There are rumors that some of the club members have spotted this elusive planetary with the unaided eye, but I have never been able to. Either way, it is a very rewarding object for 7x50 binoculars, its large angular size apparent even at this low power.

The dominant constellation on the southern horizon is Grus. Well known for its challenging galaxy groupings, the constellation to the eye resembles a pint size Cygnus flying upward from the southern sky. Alpha and Beta Grucis are quite bright, and resemble their counterparts in Centaurus, which is unfortunately below our horizons here a few degrees.

## The Perseids are Coming! The Perseids are Coming!

by Paul Dickson

If you're talking about meteors, then the shower to talk about is the Perseids. This year, the moon will factor very little into observing the shower with the shower occurring just 2 days before the new moon. The only two things likely to affect observing this meteor shower are the weather and having to work that Monday morning. Since the latter is controllable (somewhat), that leaves the former.

So where should you go to observe this meteor shower? The simple answer: wherever its clear. Since the radiant (the location in the sky where the meteors appear to come from) is in the northeast, the best place would be either East or North of Phoenix. If you could ignore the weather, both Dugas Meadow or Tortilla Flat would be good sites. But July through September is the time of Arizona's monsoon weather. With the likelihood

of thunderstorms at higher elevations a near certainty, a better site would be west and south of Phoenix, as far west and south as you can get. This means that Sentinel would be a better alternative.

Sentinel would have some minor problems for observing the Perseids. First, it's hot. And second, Phoenix is to the northeast of the site. The latter problem is really minor since you wouldn't really see much looking directly at the radiant.

When is the meteor shower? The Perseids have had two observed maxima since 1990. The first will occur late Sunday afternoon on August 11. Since at sunset, the sky

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### The second maximum is expected around 3 AM on August 12.

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directly overhead is looking back along the Earth's orbital path, there is little chance of seeing any Perseids. Only as the time gets closer to dawn and the sky turns toward the direction the Earth is moving, will the Perseids become more prominent.

The second maximum is expected around 3 AM on August 12. Predictions for this maximum range from 3 AM to 10 AM. I'm hoping for 3 AM. Much later and the meteors will be lost in daylight.

In the last four years I have gone out to observe the Perseids twice (the other years other plans or the moon interfered too much to go). Both times were at Tortilla Flat. The first time, the Arizona weather had miraculously dried out and we saw a doubling in the number of meteors each hour until moon-rise. The second time I gambled with the thunderstorms and lost. Numerous meteors were seen through "sucker-holes," but the sky never had more than small holes for 15 minutes periods. Those of us at the site spent much of the time looking back down on Canyon Lake, watching the lightning and timing the interval of the thunder as the storm continued on to Mesa.

So unless the eastern horizon is very clear when you leave your house late Sunday afternoon, your best bet would be to go to Sentinel. From downtown Phoenix,

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## '98 Eclipse Cruise — by Steve Coe

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.

Dugas Meadow and Tortilla Flat are virtually equal distant, while Sentinel is about 25 miles further.

There should be maps available at the July club meeting if you don't already know where these sites are located.

## Bits and Pieces

### Minutes from the June Meeting

Gerry tried to start the meeting at 7:30, but the swap-meet feeding frenzy had begun. Guests were asked to introduce themselves and to sign the guest-book for the next club newsletter. Three guests introduced themselves.

The Grand Canyon Star Party was talked about and the South Rim was the usual craziness, but the North Rim was beautiful.

Regina Lawless gave the Treasurer's Report. She recognized Paul Dickson for his effort to bring money to the club by selling the *SAC's 110 Best of the NGC*.

A.J. Crayon talked about the upcoming Deep Sky Meeting on July 11. The constellations will be Centaurus and Ophiuchus. Paul Dickson talked about the SAC book he put together. He sent some copies to Dan Ward to sell for us. There is an award for completing the project.

Rich Walker talked about the public star party at Reach 11. The weather was absolutely great, with clear skies and pleasant temperatures. We had about 75 people show up and about 20 telescopes. Jim Crisman told us that he helped get Ashley McDermott honored by having a minor planet named after him.

Steve Coe introduced several members who showed their slides from Riverside. Chris Schur also had some slides he shot from Payson. He was experimenting with color photography. Steve Coe talked about the "I can't make it to Grand Canyon" Star Party. We had about 50 people and 30 telescopes that night. A very nice evening.

After the slide and video show there were about 42 people in attendance.

We finished up the evening trying to sell off everything everybody bought.

Afterwards we made our way over to JB's for more fun.

—David Fredericksen, SAC Secretary

### 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.

### Passing of a Club Member

Adam Sunshine forwarded the notice of the passing of Al Thurston on Sunday, July 14. He was 67.

## Answers to Puzzle #2

by Paul Dickson

CLAP C CB LUV CALM COT GO A PACE SPEC
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Gerry Rattley claims to have solved this, but I haven't seen his answers yet.

Each line referred to a constellation, with each letter referring to the first letter of a bordering constellation. The puzzle was to figure out what constellation shares all of its borders with the given constellations.

**CLAP C = Cassiopeia.**

Cepheus, Lacreta, Andromeda, Perseus, Camelopardalis.

**CB LUV = Coma Berenices.**

Canes Venatici, Boötes, Leo, Ursa Major, Virgo.

**CALM COT = Gemini.**

Cancer, Auriga, Lynx, Monoceros, Canis Minor, Orion, Taurus.

**GO A PACE = Taurus.**

Gemini, Orion, Aries, Perseus, Aries, Cetus, Eridanus.

**SPEC = Fornax.**

Sculptor, Phoenix, Eridanus, Cetus.

### SACNEWS Web Page

SAC's presence on the Internet has grown another increment in the past month. There are now web pages for SAC's newsletter and for the book *SAC's 110 Best of the NGC* on the Internet. These aren't yet widely known yet, as we are waiting until there is a Home Page for SAC before generally publishing these links.

The links are:

<http://www.primenet.com/~dickson/sacnews.html>

<http://www.seds.org/pub/info/newsletters/sacnews/html/sac.110.best.ngc.html>

Maybe, by the time you read this, the SAC Home Page will reside at:

<http://www.primenet.com/~dickson/sac.html>

If you would like to see EVAC's Home Page:

<http://www.indirect.com/www/~polakis/evac/evac.html>

There's also PAS's Home Page:

<http://www.netzone.com/~ranger/pas/pastime.htm>

### July Club Speaker

The speaker at the July 26th meeting will be Ed Vega and Max Bray of the Vega-Bray Observatory near Tucson. They will speak about the facilities at the observatory and a bed and breakfast associated with the observatory.

# August 1996

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     All Times are Mountain Standard Time                 </div>				Mercury within 1° of Regulus  1	<b>TAAA Meeting</b> (Tucson)  2	3
4	Last Quarter Moon 10:26 P.M. 5	6	7	8	Sun enters Leo 10 P.M. 9	<b>SAC Star Party</b> Buckeye Hills (members&guests) 10
Perseid Meteors (primary shower) Peak: 5 P.M. Z.H.R. 200-400 11	Perseid Meteors (secondary shower) Peak: 3 A.M. Z.H.R. 100 12	Tomorrow New Moon 12:35 A.M. 13	<b>EVAC Meeting</b> (SCC: Rm. PS172) 14	15	16	17
18	Venus at greatest elongation 45.8° (morning) 19	Tomorrow Mercury at greatest elongation 27.4° (evening) 20	First Quarter Moon 8:38 P.M. 21	22	23	24
25	26	27	Full Moon 10:53 A.M. 28	29	<b>SAC Meeting</b> Grand Canyon University, Fleming Rm. 105 30	31

## 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 Pub-

lishing 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.....\$27.00 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

### Inside:

- SAC Meeting — July 26
- Adventures in Sky-Shooting from Arizona by Chris Schur
- Dim Moments by Paul Dickson
- Comet Comments by Don Machholz
- What's Up by Steve Coe
- SACNEWS Puzzle #2 Answers by Paul Dickson
- '98 Eclipse Cruise
- The Perseids are Coming! The Perseids are Coming! by Paul Dickson
- SAC Meeting — August 30