Saguaro Astronomy Club

Sacnews

Issue 277 April 2000

Inside this issue:

Pierre-Yves Schwaar

May 14, 1946 - March 6, 2000

Pierre Schwaar, long time SAC member and telescope maker, passed away on Monday March 6, 2000, after a long battle with spinal meningitis. He was also diagnosed with Lymphoma. Pierre passed quietly and peacefully. He is survived by his sisters Fabienne Audette and Corrine Flokos and his parents, Pierre G. & Elizabeth Schwaar. Memorial services were held March 11th.

Pierre's passing will create a void in the world of amateur astronomy and to those who had the pleasure of knowing him. The Saguaro Astronomy Club sends it's deepest sympathies to Pierre's family.

Photo Courtesy of Sam Herchak

In Gratitude to Pierre

Thank you to a friend and buddy
Who makes telescopes for a living.
Thank you for the kid-sized base and scope you built for Amy
And the thousand “ahhhs” it drew from other kids as she showed them the moon for the first time.
Thank you designing a kit that allowed Liz to stand on the stage at Stellafane
And receive recognition that sparked a hundred other young girls to build telescopes.
Thank you for the night you patiently taught me how to collimate my scope
And a thousand nights of sharper images that resulted.

Thank you for the times you dropped by when we were busy
And you grabbed a paintbrush or screwdriver and helped.
Thank you for the ceiling fan that never wobbled after you helped install it
And the family frustration you saved us by jumping in.
Thank you for rushing over to lift a fallen scope base off my smashed toe
And profusely apologizing for not anticipating *my* klutziness.
Thank you for a hundred hours in my garage
Teaching and guiding and helping us make yet another tweak to some scope.

Thank you for a hundred cups of shared tea
When the conversation was even more soothing than the tea.
Thank you for bags of shared pecan sandies
And stories that were even nuttier than the cookies.
Thank you for sliding down the slide with the kids
And making them laugh at how silly our friend Pierre could be.
Thank you for jokes and puns that made us groan
And reminded us of the wit that never paused.

Thank you for the times you stopped by with your latest videos and slides
Of eclipses, of star parties and thunderstorms we missed.
Thank you for the time you stood at your scope all night long
Time-lapse videotaping Jupiter and capturing an entire Jovian Day in one night.
Thank you for the evenings searching the western horizon
And the record you set for the earliest glimpse of the tiniest moon.
Thank you for these records and for a thousand other ways
You reminded us how perseverance and dedication mean more than money.

Thank you for a billion stars and galaxies you brought closer to our eyes
Your telescopes revealed tiny points of lights as wonders of the universe.
Thank you for ten thousand stunning images of the night sky
Embedded in our brains from the telescopes you built.
Thank you for opening up the skies above our heads
And showing us how beautiful our nights can be.
Thank you stopping by our home for a few minutes
And staying in our lives for twenty years.

With love and appreciation,
Dan, Donna, Liz and Amy Ward

Memories of Pierre

My favorite Pierre stories involve two excellent sets of optics that he had created.

The first is the binocular chair. Pierre had brought it up to a site far from the lights of Phoenix and set it up for all to use. This innovative observing platform has the observer sit in a comfortable chair, tilted back toward the sky. Two 8-inch f/4.5 reflectors are positioned over the shoulders of the occupant and the eyepieces are aligned for best viewing angle. Then the chair's occupant is handed the control box and you are ready for a ride to the stars. As the electric motor rotates the chair and you move the twin telescopes up and down, it seems that you are just observing with naked eyes at a fascinating portion of the Milky Way. Move the scopes some and another section of Our Galaxy swims into view. The effect is mesmerizing.

As we joked about how to get someone out of the chair so that the line to use it would get shorter, Pierre grinned like a Cheshire cat. He was obviously joyous at the reception this device was receiving from the people using it. Like a little child, he kept asking, "So, you really like it?" After many positive responses I believe that it really sunk it that this was a fascinating device for viewing the sky.

The other observing session with Pierre was an excellent night, with just the two of us at Sentinel. Pierre had brought out the 20-inch scope and we had a great two-night marathon of deep sky observing. I had some time in between teaching semesters and Pierre said that he wanted to get out of town, so we packed up the telescopes and headed for the desert. It turned out to be a spectacular two nights. Both evenings were clear and steady. Every once in a while Pierre would call me over to the big 20-inch telescope to observe some of the galaxy groups we both enjoyed observing. A field of tiny specks that are distant galaxies all bunched together does get you thinking about the scale and majesty of The Universe.

During the day, we talked about the best telescope designs, new films for astrophotography, his results on videotaping the Moon and planets and if God designed everything first or just let it happen. I am not certain that we resolved any of those major subjects, but I do remember it being a fun discussion.

As I write this, I believe that Pierre is among those fascinating groups of faraway galaxies and enjoying a new view of the sky he loved so much.

Steve Coe
Proud owner of a Pierre Schwaar 13" f/5.6 telescope.

Being a relativley new member of SAC, I didn't have the fortune to know Pierre as long as most of you. I do consider myself lucky to have had what little time I did. I always looked forward to show and tell when Pierre came in with something. It seems to me most people remember him as a craftsman of optics of a quality that Meade and Celstron could only dream of, but to me he was an innovator as well. I've been part of BBS discussions on videotaping through a telescope. Every time, all the self appointed experts on-line, said it can't be done. Seems no one told that to Pierre. His video's of the planets and eclipses were quite stunning in that he did what everyone else said couldn't be done. If only he had the time to refine his techniques, who knows what he would've accomplished. He inspired me to learn more about astronomy and convinced me that I could indeed grind my own mirror. I regret that I'll have to learn from someone else. Reste en Paix, Mon Ami

Rick Tejera, Editor, SACnews

Ed note: For those who did not know, there was an article on Pierre's life in the Friday March 10th edition of the Arizona Republic. For information on obtaining a reprint , contact The Arizona Republic back copy dept. at 602-444-8017. Also, an article about Pierre and his telescope making appeared in the Smithsonian Magazine in the December 1998 Issue. Go to http://www.smithsonianmag.com/smithsonian/issues98/dec98/stars.html for an abstract of the article and information on obtaining back issues

Over the next several months I'd like to invite any one who has a special memory of Pierre to share it with the rest of us. I will run as many as I can as space permits. You can e-mail me your submissions in either ASCII text or any version of Microsoft word. If you don't have access to e-mail then send it snail-mail to my address listed on the back page of this newsletter. Pictures should be sent as a JPEG file.

Fuzzy Spot, Corvus

By Ken Reeves

Corvus, the crow or raven, is a prominent grouping of 4 stars almost forming a square and sitting along the spine of Hydra. Legend has it that Apollo sent the crow along with a cup (Crater) to get pure water for a sacrifice to Jupiter. But the bird came upon a fig tree and delayed in it's branched until the figs ripened so he could have a snack. The crow brought the water serpent along with the cup back to Apollo, blaming the serpent for the delay. Apollo was not fooled and for punishment placed the crow, cup, and serpent in the sky, never allowing the crow to dip his beak in the cooling waters of the cup. This is the reason for the crows harsh, parched sound.

Corvus sits on the southern fringe of the Virgo cluster of galaxies, and therefore is rich in galaxies, although most of them are faint. Along with the galaxies, there is a nice planetary nebula we will be looking at as well as a pretty asterism of stars.

NGC 4027 (11h59.6 -19 15): We start this month with a galaxy, which I saw at 100X as somewhat large, very faint, and elongated 2.5:1 N/S. The extremely faint halo slightly brightens up to the middle in which there is no nucleus. Unlike most galaxies, the middle is only slightly brighter. The W side may be cut off indicating a possible dark lane. There are stars to the N and NE, and a fainter star to the S.

NGC 4038 (12h01.9 -18 51): along with NCG 4039 form the Ringtail Galaxy pair. I considered this pair as interesting, very unusual, quite nice, somewhat faint, and pretty large overall with 4038 being the brighter of the two. They form a `U' shape opening to the W, using averted vision makes the opening really shows up. Both galaxies are elongated 2:1, connecting on the E, with both about the same size. There are stars to the N and S. It is a spectacular pair of galaxies.

NGC 4361 (12h24.5 -18 48): We take a break from galaxies to look at a nice planetary in Corvus. My old notes are sparse, but I remember this as a very nice object. At 100X, it is very large (for a planetary), bright, and contains a nice bright center which fades out evenly. The UHC filter doesn't help much. My final note is "Very round", I guess if it was any more round, it would be extremely round!

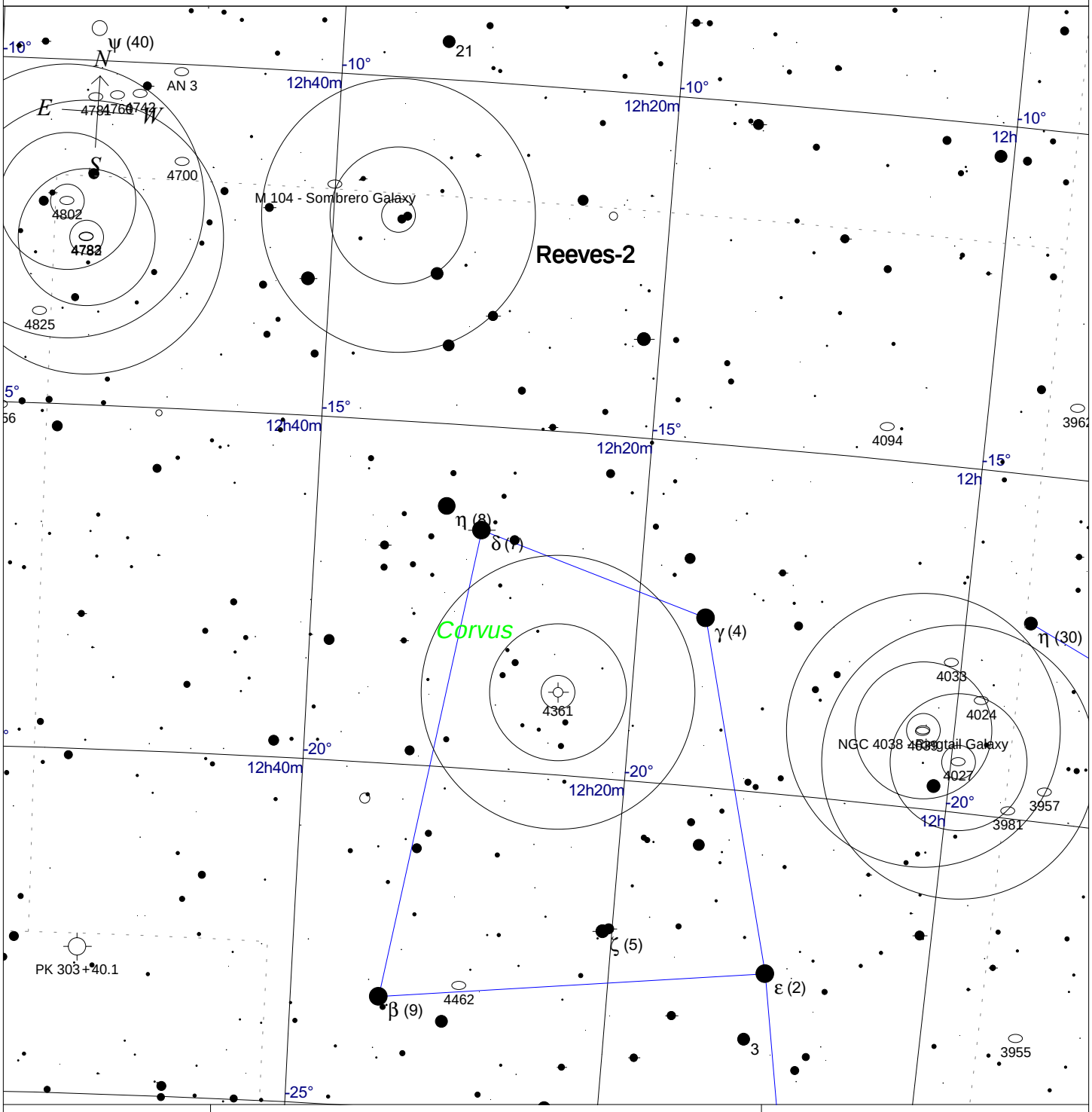
NGC 4782/4783 (12h54.6 -12 34): These interacting galaxies were observed in the 20" scope at 180X. I noted them as a pair of galaxies, somewhat faint, somewhat small, and interacting, with each galaxy appearing round, but the pair forming an elongated figure 8 sort of shape oriented more or less N/S. Each one has a slightly brighter middle and an occasional stellar nucleus.

NGC 4802 (12h55.8 -12 03): The last galaxy of the month was also observed in the 20" scope as somewhat small and somewhat faint. The galaxy contains a pretty bright star involved to the ESE, which interferes enough to make the shape undeterminable. There is a slightly brighter middle and a somewhat faint stellar nucleus. An even brighter star is positioned to the WNW. The view is very nice with the star involved.

Reeves-2 (12h35.7 -12 01): I'm really not being conceited, but I could find no designation for this prominent asterism of 6 stars. It is found while star-hopping to the Sombrero Galaxy in Virgo. It is a nice asterism of 6 stars, with 3 bright stars in a triangle surrounding three fainter stars in the center, which form a triangle pointing the opposite direction.

Herschel 400 Objects
4027, 4038, 4361
SAC's 110 Best of the NGC Objects
4361

Fuzzy Spot
Corvus



STARS		SYMBOLS			
<4	>9	Multiple star	Dark nebula	Radio source
5		Variable star	Globular cluster	X-ray source
6		Comet	Open cluster	Other object
7		Galaxy	Planetary nebula	
8		Bright nebula	Quasar	

Stellar Limiting Magnitude 9.0
Deep Sky 12

Local Time: 23:23:43 9-Apr-2000 UTC: 06:23:43 10-Apr-2000 Sidereal Time: 12:08:20
Location: 33° 16' 1" N 112° 37' 59" W RA: 12h25m54s Dec: -16° 48' Field: 16.0° Julian Day: 2451644.7665

COMET COMMENTS FOR MARCH 2000

By Don Machholz

Images from the solar-observing SOHO satellite have been searched for comets recently, yielding many comets. The LINEAR and the CATALINA programs found a few comets too. Meanwhile, Comet LINEAR (1999 S4) is at magnitude 13, if it stays on this magnitude curve it should reach the brightness of the Andromeda Galaxy in July.

SOHO images five comets during Feb. 3-9. Three more were found a few weeks later. Searching through the SOHO archives brought out ten more comets. These 18 comets were found by T. Lovejoy, D. Biesecker, M Meyer, M. Oates, D. Lewis, K Cernis, M. Boschet, T. Harincar, D. Lewis and K. Schenk. Discoverers who found these comets on these SOHO images do not get their name on the comets, nor are they eligible for the Wilson Comet award since they were not using amateur equipment.

The LINEAR and CATALINA search programs found four comets, all of them were first thought to be asteroids until further investigation found they were tiny comets. Three showed tails from 10 to 16 arcseconds. One was declared a comet based upon it showing a "soft" image, "slightly larger than star images" through a 72-inch telescope with a CCD. Many LINEAR comets are first thought to be asteroids.

COMET HUNTING NOTES: Unlike the LINEAR comets, visually-found comets show a definite size. The average comet found visually by amateurs is about three arcminutes in size. They range from two to ten arcminutes.

Photo of the moon taken May 5th, 1998 by Alan G .Toleman from his backyard near Camelback & 36th St. Alan's set up is shown above. It is a modified Meade 10" f/4.5 with the Primary Mirror refigured by Galaxy Optics to 1/16 wave. He used an Olympus OM-1n Camera with mechanical mirror lock-up an Olympus Vari-magni finder set at 2.5x. This was Alan's first attempt at astrophotography. Not a bad shot from the heart of Aurora Phoniecia.

April 2000

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

Schedule of Events for April 2000

April 1st **All Arizona Messier Marathon, Arizona City, Contact AJ Crayon for details: acrayon@primenet .com**

April 3rd Hermann Carl Vogel born, Recognized the existance of spectroscopic binaries.

April 4th New moon

April 6th Mars and Jupiter in conjunction, 1.1 deg apart, Moon passes near Mars, Jupiter and Saturn

April 11th First quarter moon

April 12th Yuri Gagarin becomes the first man in space abord Vostok 1 in 1961

April 14th **SAC General Meeting. 1930 at Grand Canyon University. Guest speaker : Dr. David Burstein, The current state of cosmology.**

April 16th Mars and Saturn in conjunction. 2 deg. Apart.

April 18th Full Moon

April 20th **Deep Sky Group Meeting**: The McGrath house, Contact AJ Crayon for more details: acrayon@primenet.com

April 22nd **SAC Star party at Flat Iron :Sunset 1907, Ast twilight: 2036, Moonrise 2350**

April 26th Third quarter moon

April 29th **Sentinel Star Gaze: Sentinel, Arizona, Sunset : b1912, Ast. Twilight ends: 2043, Moonrise: 0352, Phase .181**

Apr. 27-30 **International Dark Sky Association annual Meeting. For more info see their website: www.darksky.org**

Reflections

My Last Night at Buckeye
26 February 2000
By Steve Coe

Everyone who attended this star party knew that tonight will probably be the last evening that SAC would hold a viewing session at the Buckeye Hills Recreation Area. So, after 17 years of observing the sky from this park, it is time to move on to darker skies. However, the Buckeye site deserved one last tribute and we decided to give it one.

In the early 1980's the club used an observing site that was north of town, thanks to the generosity of the late George Fessler. However, this meant that the best part of the Summer Milky Way passed through the light dome of metropolitan Phoenix. With that in mind, Dave Fredericksen, A.J. Crayon and myself started searching for a spot that had darker southern skies. After some time studying a map, we concluded that the road to Gila Bend might provide that location. Once we saw the familiar brown sign that marks the entrance to the park, we knew that we had found the right place. We have used several different locations within the park, but we always referred to it as "Buckeye".

My earliest notes from the park are for June 8th, 1983. I was observing clusters and nebulae in Scorpius to use for an observing column in the SAC newsletter. The telescope was my 17.5" Dobsonian with a Coulter mirror, a homemade tube assembly and alt-az mount. Antares was split in twilight at 300X and the companion star was light blue. M4 was glorious, this famous globular was easily resolved at 100X and many lovely chains of stars wrapped around an elongated core. NGC 6259 was a real suprise, this open cluster was bright, large, very rich in stars and reminded me of NGC 7789 in Cassiopeia. There were several dark lanes cutting through the cluster.

On this night I stopped off at Curt Taylor's house and we have loaded up his new 6" f/6 Maksutov-Newtonian scope and we are ready to go. A.J. leads the way as we chat on the CB radio and make our way out to the site. We are the first to arrive, but quickly Rick Tejera, Jennifer Keller, Ken Reeves, Mathew and Mike Robinson all show up and start setting up telescopes. I know that I forgot several other folks who arrived later and I am sorry for not getting your names.

As the sky darkens we see Jupiter in the twilight and it is showing off lots of excellent detail. Looping festoons curve away from the North Equatorial Belt and several white spots are seen in the Southern Eq. Belt. The sublime beauty of Saturn is easy with the sharp imaging available with this scope. Seeing Cassini's Division is a "piece of cake" at 100X using my Meade 8.8mm UWA eyepiece. Three faint moons surround Saturn and the ball of the planet has several differing textures across its face.

Once the sky is truly dark, the Zodiacal Light is obvious to the west and the Winter Milky Way is pretty easy to see. It would seem that Buckeye wants us to have a nice evening for our last night. Sliding my 35mm Panoptic eyepiece into the 6 inch provides a very wide field and the Pleiades really show off with this combination. There are 40 stars resolved and all the major bright stars have nebulosity surrounding them. A really "WOW!" view. The Rosette Nebula really stands out with the UHC filter installed. The nebula does not quite com-

(Continued on page 9)

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pletely surround the star cluster in the middle of this thick horseshoe of nebulosity. Going to M35 is really a treat. At 70X it is bright, large, somewhat compressed and rich. I counted 35 stars in the NW quadrant for a total of 140 stars resolved. There are several lovely curved chains of stars and four members are seen as yellow.

During a rest break we chat about how the sky has deteriorated this near to Phoenix. We also talked about the irony of modern technology furnishing us with all these great telescopes and then lighting up the sky so that they are difficult to use to their greatest potential. To quote the Moody Blues: "Isn't Life Strange?"

We remembered many fun nights from here. There are several nights in my observing notes that displayed superior seeing from Buckeye. Before the lights surrounded this location, I have seen many a faint, fuzzy and distant nebula from this little patch of ground. When the Saguaro Astronomy Club first started using this park as a star party location, the Milky Way was bright and wide overhead. As the years past the population of central Arizona doubled and those people decided they needed lights to chase away the darkness. If only more of them knew what they were missing.

All too soon it is time to leave. We dismantle the scope and slide it into the bed of the truck for the journey back onto well-lit streets. As I look forward to the new-found darker location near Flatiron Mountain, I also realize that I will miss the little park near Buckeye, Arizona. Many is the night I marveled at the Universe from this spot in the desert.

Jones' Hexagon

By Jack Jones

Gauging a dark sky is a necessary endeavor in finding the quality of observing one can expect for the coming night. I use Jones' Hexagon, an eye-catching asterism (star pattern) of my own devise, to quickly check if it has become dark enough to commence serious observing, and also to find out just how good a supposed dark sky site really is.

Take a look at Polaris. It is a second magnitude star; that is, it is magnitude 2.0 (according to my MegaStar 4.0 software star atlas). It is directly north and serves as our pole star, or North Star. It is a member of the constellation Ursa Minor, a 'minor' constellation always above the horizon, made up of seven chief stars, all of them less bright than Polaris. The seven stars form an asterism that most stargazers recognize as the Little Dipper, with Polaris serving as the end star of the handle.

Only one of these stars besides Polaris, or a (alpha) Ursae Minoris, is of interest to us here, and that is 4.4 magnitude d (delta) Ursa Minoris, the next star along the handle of the Little Dipper from Polaris. It forms a triangle around Polaris with two other stars, 4.3 magnitude SAO 181, and 5.1 magnitude SAO 1168. This triangle, easily seen at any out-of-town venue, is a test of a good urban sky, and a reason to be proud of your backyard if you can see it. These three stars make up points one, three, and five of Jones' Hexagon.

The real test of a dark sky site, however, is to see the other triangle of stars, a quite dimmer one in juxtaposition to the relatively bright tri-

(Continued on page 10)

Training for The "Other March Madness"

By Rick Tejera

Mention March Madness to most people and they think of basketball, me, I think of the Messier Marathon. This will be my second marathon and with a bit of luck I hope to pass 100 (last year I got 95). Last year I would've been ecstatic to get 50, so no one was happier than me at my final count. I've spoken to a few people who have yet to try a Messier Marathon and this is directed at them and anyone else who thinks they don't know enough about the hobby to participate.

First, let me say, if you don't participate because you don't think you'll do well, let me remind you, you won't get better without practice. Second, running a marathon is easier than you think, trust me, I was pleasantly surprised. The hard part is the preparation. Here are some things I learned the hard way last year. Hopefully all you first-timers can benefit from my experience.

- ★ Make sure you are well rested before the marathon, fatigue will be your worst enemy, not lack of knowledge.
- ★ Dress warm and in layers. It'll get pretty cold over the course of the night. Have enough layers to add as the temperature drops to stay comfortable.
- ★ Eat well before leaving and have some kind of snack or food to munch on during the course of the night. Nothing can kill motivation like hunger.
- ★ Have a water bottle and some hot beverage, like coffee or tea, to fight the chill.
- ★ Have some kind of comfortable refuge to grab a nap. Contrary to what most people think, there are a few spots where you can grab some shut-eye. Don't forget an alarm to remind you to get back at it!
- ★ Have a plan of attack. Study your charts and references well beforehand. I use Harvard Pennington's "Year Round Messier Marathon" and Mallas and Kremier's "Messier Album". They helped tremendously in identifying the targets.
- ★ Keep a positive attitude and remember you're out there to have some fun. You'll be surprised at how many you'll get and how much more of the sky you'll learn. I know I was.

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angle, and making up points two, four, and six of Jones' Hexagon. The faint stars of this dimmer triangle are, clockwise from d Ursae Minoris: 5.3 magnitude SAO 3721, 5.9 magnitude SAO 623, and 6.3 magnitude SAO 2010, the dimmest of the six.

At your dark sky site and with dark-adapted eyes, try to make out all six points of the hexagon in an approximately six-degree wide circle around Polaris. With practice, and familiarity, it can quickly and easily be glanced right away at a good site as soon as you look in the general direction of Polaris.

If you glimpse the hexagon, try one tenth of a magnitude more and check l (lambda) Ursae Minoris, halfway between stars a and d at magnitude 6.4. The real test of a site (and your eyes!) for all practical purposes, would be close to 7th magnitude, such as SAO 3904, the 6.9 magnitude star directly between SAO 181 and 3721. But if you can see Jones' hexagon, you have some good observing ahead of you!

SAC Membership Services

Membership

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

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

Subscription Services

The following magazines are available to members. Subscribe or renew by paying the club treasurer. You will receive the discounted club rate only by allowing the club treasurer to renew your subscription.

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

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Make Checks Payable to SAC
Mail Completed form to:

Peggy Kain
SAC Treasurer
4030 E Windrose Dr
Phoenix AZ 85032-7435

Universal Time & Date of Lunar Occultations from Phoenix

Submitted by Brian Vorndam

Date	Time (1)	Time (2)	Mag	Star Info	PH	PA1	PA2	PS	ELG	MA	MAZ	SAL	SAZ
15-Jun		10:56:54	4.9	ZC2361 Chi OPH	DD		68	94	169	7	243	-14	49
14-Jul	3:28:38	3:27:25	4.9	ZC2547 58 OPH	DD	138	154	88	158	27	145	-10	304
28-Jul	10:18:59		4.6	ZC0894 Chi1 ORI	RD	218		22	320	5	68	-24	43
8-Aug		7:00:53	4.3	ZC2271 The LIB	DD		124	59	106	6	246	-40	350
21-Aug	11:15:26	11:15:52	4.4	ZC0405 Mu Ceti	RD	201	219	61	251	64	147	-20	60
8-Sep	2:38:00	2:36:34	5	ZC2747 NU1 SGR	DD	117	121	66	120	34	171	-12	285
19-Sep		13:20:42	3.9	ZC0648 Del TAU	RD		231	61	250	66	235	1	89
13-Nov	1:53:18		4.2	ZC0658 68 TAU	RD	348		89	200	5	71	-18	260
13-Nov	1:59:06		4.2	ZC0658 68 TAU	RD	335		89	200	6	72	-19	261
14-Nov	6:19:11	6:18:19	3	ZC0847 Zet TAU	DB	62	49	79	218	47	94	-71	319
14-Nov	7:29:36	7:29:30	3	ZC0847 Zet TAU	RD	267	279	79	218	61	107	-74	16
13-Dec	7:03:50	7:03:48	3.5	ZC1110 Del GEM	RD	221	231	81	214	59	102	-79	339

Subtract 7 hours for MST,; Mag-Brightness of star,;PH-Phenomenon, ie (R) Reappearance on (D) dark limb.; PA-Position angle from north point on moon.;PS-% sunlit.;ELG elongation of moon from sun (180 full).; MA– moon altitude (90=Directly overhead).; MAZ Moon Azimuth (90= East).; SAL, SAZ= Sun Altitude , Azimuth

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SAC Schedule of Events

SAC Meetings

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

Deep Sky Group Meetings

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

SAC Star Parties

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