



East Valley Astronomy Club

May 1998

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Scottsdale, Arizona

Backyard Observing: Wonders of the Moon

Silvio Jaconelli, EVAC

This is another article on an occasional series dealing with observing from your back yard, aimed primarily at relatively inexperienced observers (like me!). This one deals with the Moon—a prime target for observers for those two weeks when deep sky work is not possible due to the sky glow from...the Moon! May has been a wonderful month for lunar observing—the seeing has been better than usual, and the transparency on some nights has been excellent. So grab a lunar map, set up your telescope and have fun!

EQUIPMENT: I use my $f/7.6$ in preference to my $f/4.4$ scope. I find that the higher focal ratio does two things—the image quality is better (all other things being equal, good quality higher focal ratio mirrors are easier to build than short focal ratio mirrors) and the longer focal length permits the very high magnifications required for lunar observing.

APERTURE: To quote Tom Polakis, “aperture is everything.” Larger apertures will give better resolution than smaller apertures, essential for seeing minute details (for example, craters less than one mile wide). For this article, I used a 10" aperture scope. To illustrate the trade off between aperture and focal ratio, I put a 4" off-axis aperture mask on my scope, converting the 10" $f/7.6$ scope into a 4" $f/19$ scope. The image did get steadier at $f/19$, but many tiny craterlets and rilles simply vanished! To repeat, aperture is everything!

FILTERS: I have experimented with both color filters and neutral filters, and I have come to the conclusion that the unfiltered views suit my style better. To cut down on glare, I simply use the Don Wrigley technique of boosting the magnification to 300x! 10" of aperture can easily handle 300x (there's that aperture thing again!).

SEEING: I have found the best seeing (steadiness) to be during the earlier part of the evening. By 10 pm, images begin to get shaky (maybe that's because by 10 pm the Moon is above my roof!!). The air is steady also just before twilight, but I find that the contrast is poor at that time—maybe because my pupils are not dilated then due to the ambient daylight.

MOON: The best views will be found along the lunar terminator—where the Moon's night side meets the day side. This is where you will find the longest shadows, and it is long shadows that will give you the best perceptions of depth. There is not much to see when the Moon is full.

GETTING ORIENTED: I like to get oriented by first using a low power, (say 50x) wide field eyepiece to scout the objects that I will be studying; after 10 minutes of this, I will move up to an intermediate power (say 90x) to further refine my scouting. Then I start the serious observing, switching between 160x and 300x. A Moon map of some sort is essential. Also remember that South is where the major craters are situated, and East is the sunlit portion when the Moon is waxing.

EVAC & Other Events: 1998

	Mtng	Local	DS	Other
Jan	14	17	24	
Feb	11	21	28	
Mar	11	21*	28*	21: EVAC Cookout* 28: Messier Marathon*
Apr	8	18	25*	19-26: Texas Star Party 25: Sentinel Star Gaze*
May	13	16	23	2: Astronomy Day 22-25: Riverside TMC
June	10	20	27	13-20: Grand Canyon SP 27-28: Universe '98 24-25: Stellafane
July	8	18	25	
Aug	12	15	22	
Sep	9	12	19	11-13: Astrofest 18-19: N AZ Star Party
Oct	14	10	17*	17: All-AZ Star Party*
Nov	11	14	21	
Dec	9	12	19	

Day 9: Two Days After First Quarter

This is a typical observing session. I am starting from the southern part of the terminator working north.

The first object is Clavius, a 225 km walled plain, located 60° south of the lunar equator; it is easily identified by an arc of 5 large craters on its floor, the largest of which is Rutherford. Rutherford is 50 km wide, and is thus a fully fledged crater in its own right! The floor of Clavius is peppered with many small craterlets, but these can sometimes be difficult to see when the lunar libration is not favorable.

Tycho is the next object—it is 44° south and is 90 km wide. Tycho has rough sharp terraced walls and a well formed central peak; the wall terracing occurs when the inner parts of the wall collapse into the crater, just like a terrestrial landslide. Tycho is an exception to the "don't observe at full Moon" rule, because at that time it displays the most extensive and brightest ray system on the Moon, some of which extend a quarter of the way across the lunar face—these rays show up spectacularly on my 20x100 binoculars. A few notes of interest about Tycho—Surveyor 7 landed close to the northern rim, and it was in Tycho that the monolith in the movie '2001: A Space Odyssey' was first discovered by mankind.

Moving to 22° south, we come to the Straight Wall, a 200 km line with a westward sloping gradient of about 7°; it is this westward slope that makes the line look dark when the Moon is waxing and the Sun is in the East; when the Moon is waning, the slope line catches the full force of the Sun's rays coming in from the West and it now shows up as a very BRIGHT line—one could argue that the Straight Wall is schizophrenic in nature! Also in this vicinity, just 20 km off to the West, is crater Birt at 17 km in diameter. 7 km wide crater Birt A is right on its rim, giving a diamond ring appearance to this duo. And then just 10 km further to the West is Rima Birt, a 50 km long rille. If you want to test your 'scope's resolution, see if you can spot the two TINY craters (Birt E and Birt F) one each at either side of the rille. What an interesting area of the Moon!

Moving just another 10° further north takes us to crater Davy which together with crater Davy A (15 km wide) forms another 'diamond ring'. Another test of your telescope's resolution is to spot the crater chain that starts 25 km east of Davy and runs east for 50 km or so; there are about 15 craterlets in this chain, none any bigger than 3 km. They look like a string of pearls, and was probably created by the impact of a comet (similar to Shoemaker-Levy of Jupiter fame). The impacting body probably broke up into pieces prior to

striking the surface and slammed into the Moon piece after piece in rapid succession.

We now cross over to the northern hemisphere to 22° north—here we find the start of the Appenines, the largest and sharpest looking mountain range on the Moon. This range is 600 km long, with peaks exceeding 15,000 feet in height, higher than Humphrey's Peak in Northern Arizona. It is actually part of the southern wall of Mare Imbrium.

At the northern tip of this range and a few hundred kilometers west is the very prominent crater Archimedes. 80 km wide with obvious terraced walls, this crater is known as a "flooded crater" because of the lava that upwelled after the initial meteor impact flooding the interior of the crater and solidifying to give it a very dark, glassy, look. Here is another test of your telescope's resolution—can you spot the 4 or 5 craterlets on the floor of Archimedes?

Moving on to 45° north, we arrive at another mountain range—the Alps. These are part of the north-east wall of Mare Imbrium, with peaks reaching only 16,000 feet in height. To the south lies crater Cassini, a flat crater 60 km wide with two very prominent craters on its floor—17 km and 8 km wide. Towards the northern end of this range is the very obvious Alpine Valley, a dagger-like opening that runs to the north-east cutting the mountain range into two components. There is a very difficult rille running along the bottom of this valley—I have never been able to spot it before I wrote this article, but I am sure that I saw glimpses of it on my last visit to this area—a tribute to the steadiness of the air in the valley this May.

Finally, moving to 52° North and imbedded in the most northern part of the Alps is the 100 km wide flooded plain Plato, one of the darkest craters on the Moon. There are two other notable features here—the triangular contour on the west wall that is really a massive rock slide covering 10° of the crater rim, and the four small craters on the floor of the crater, ranging from 1.7 to 2.2 km in diameter—yet another test of your telescope's resolving power.

A post-script to the observing session that formed the basis of this article—I also saw an Iridium flare around 9 pm; there is a website that tells where and when to look for these. And then, as a tribute to the air's steadiness, I wanted to show my daughter Lucia some double stars. I pointed my telescope at Castor and at Gamma Virginis, and I have never split them so effortlessly and cleanly as I did on May 4th (If only Epsilon Lyrae had been visible!). What a great night of observing!

May/June 1998

All Times MST

"From staid Polaris cast a glance,"
"Twill guide, rectangular from these
Or lead a line from two bright stars,
The same prolonged thrice ten degrees,

to beauteous Lyra's lines,
to where Arcturus shines:
in Ursa's tail the last,
will on that gem be cast."

-Admiral Smyth

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10 ^{May} Mother's Day	11  Full Moon 7:29 am	12 Mars at Conjunction Mercury 1° S of Saturn	13 EVAC Mtng 7:30 pm at SCC	14 Yesterday: Sun enters Taurus	15 N. de la Caille, b. 1713	16 EVAC Local Star Party
17 N. Lockyer, b. 1835	18  Last Quarter 9:36 pm	19	20 Moon approaches Jupiter	21	22 Moon approaches Venus & Saturn Riverside TMC	23 EVAC Deep Sky Star Party Moon 1.7° S of Saturn
24 Moon 2.7° S of Mercury	25 Memorial Day  New Moon*	26 Young Moon visible *12:34 pm	27 Venus & Saturn 1.7° apart and approaching	28 Pluto at Opposition	29 Venus & Saturn closest at 1.5° apart	30
31 Moon near Regulus	1 ^{June}  First Quarter 6:45 pm	2	3 Palomar 200- inch telescope dedicated, 1948	4 Moon passes N of Spica	5	6
7	8 Moon lies NE of Crown of Scorpius	9  Full Moon 9:20 pm	10 EVAC Mtng 7:30 pm at SCC	11 Yesterday: Mercury at Superior Conjunction	12	13 Pioneer 10 spacecraft leaves solar system, 1983

Morning Planet Procession

M. Aaron McNeely, Editor

With the exception of Pluto, which reaches opposition on May 28, and a good evening apparition of Mercury for July, the evening sky will be curiously devoid of planets for most of summer. Jupiter and Saturn will achieve opposition and officially enter the evening sky in September and October respectively.

May mornings will present Jupiter and Venus receding from their spectacular April conjunction. On Sunday morning, May 10, a lovely pattern of four morning planets will lie suspended above the east horizon—Jupiter, Venus, Mercury, and Saturn all in a long line. Mercury will exchange places with Saturn as it passes 1° from the ringed-planet on the morning of May 12. The Moon enters the arrangement beginning on the May 20 as a thick, waning crescent lying west of Jupiter. The Moon approaches Venus on May 22, lies south of Saturn on May 23, and passes below Mercury on May 24! Also during this period, Venus has been moving away from Jupiter and towards Saturn, the two planets lie 0.5° apart on May 29.

May 1998							June 1998						
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
					1	2		1	2	3	4	5	6
3	4	5	6	7	8	9	7	8	9	10	11	12	13
10	11	12	13	14	15	16	14	15	16	17	18	19	20
17	18	19	20	21	22	23	21	22	23	24	25	26	27
24	25	26	27	28	29	30	28	29	30				
31													

Lunar Almanac: 1998				
	FQ	Full	LQ	New
Jan	5	12	20	27
Feb	3	11	19	26
Mar	5	12	21	27
Apr	3	11	19	26
May	3	11	18	25
June	1	9	17	23
July	1	9	16	23
	31			
	Full	LQ	New	FQ
Aug	7	14	21	30
Sep	6	12	20	28
Oct	5	12	20	28
Nov	3	10	18	26
Dec	3	10	18	26

Midnight Culminations

Date	Constellation	Star
13 May	Ursa Minor	Kochab
19 May	Corona Borealis	Alphecca
24 May	Draco	Thuban
3 June	Scorpius	Antares
6 June	Serpens	Unukalhai
10 June	Ara	
11 June	Ophiuchus	Rasalhague
13 June	Hercules	Rasalgethi

Midnight culmination marks the time of the greatest visibility of an object or constellation, they are at "opposition" with respect to the Sun.

In Astronomical History

May 10-31

May 15, 1713: Nicholas de la Caille, b.

May 17, 1835: Norman Lockyer, b.

May 20, 1773: Paris newspaper predicts date as the end of the world due to comet collision, misinterpretation of work by astronomer Lalande. Incident prompted Voltaire to write essay "Letter on the Alleged Comet."

May 29, 1919: Einstein's theory of General Relativity was first tested during A. S. Eddington's solar eclipse expedition to Principe Island, Africa.

June 1-13

June 1, 1888: Dedication of Lick Observatory.

June 3, 1696: Edmund Halley presents predictions of Comet Halley's periodic nature to Royal Society of London.

June 3, 1948: Dedication of Palomar 200-inch telescope.

June 8, 1625: Giovanni Cassini, b.

June 8, 1918: Appearance of Nova Aquilae, the brightest nova to appear at that time since Kepler's Star in 1604.

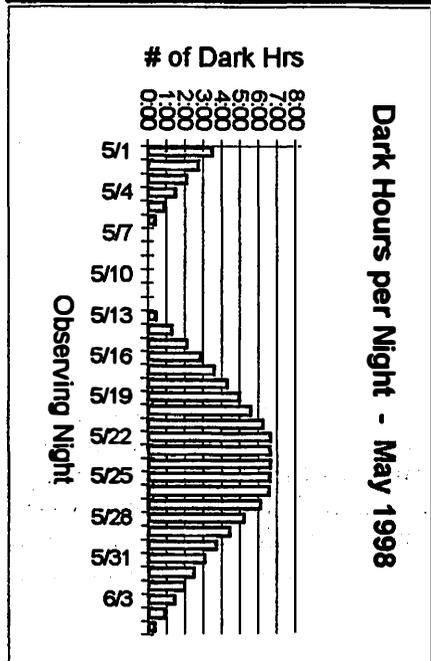
June 9, 1812: Johann Galle, b.

June 13, 1983: Pioneer 10 leaves solar system to travel in interstellar space

Dark of the Moon Table -- May 1998

OBSERVING NIGHT	START OF DARK		END OF DARK		TOTAL DARK	OBSERVING NIGHT	START OF DARK		END OF DARK		TOTAL DARK
	FRISAT	SUNMON	FRISAT	SUNMON			FRISAT	SUNMON	FRISAT	SUNMON	
5/13	5/2 12:37 AM	5/3 1:20 AM	5/2 4:07 AM	5/3 4:08 AM	3:30	TUESWED	5/19 8:02 PM	5/20 1:59 AM	4:57		
5/14	5/4 1:58 AM	5/4 4:06 AM	5/3 4:08 AM	5/4 4:06 AM	2:48	WEDTHURS	5/20 8:03 PM	5/21 2:38 AM	5:35		
5/15	5/5 2:34 AM	5/5 4:04 AM	5/4 4:06 AM	5/5 4:04 AM	2:08	THURSFRI	5/21 8:04 PM	5/22 3:18 AM	6:14		
5/16	5/6 3:07 AM	5/6 4:02 AM	5/5 4:04 AM	5/6 4:02 AM	1:30	FRISAT	5/22 8:05 PM	5/23 3:45 AM	6:40		
5/17	5/7 3:39 AM	5/7 4:01 AM	5/6 4:02 AM	5/7 4:01 AM	0:55	SUNMON	5/23 8:06 PM	5/24 3:44 AM	6:38		
5/18	none	none	none	none	0:22	MONTUES	5/25 8:08 PM	5/26 3:42 AM	6:33		
5/19	5/18 8:01 PM	5/19 1:18 AM	5/18 8:01 PM	5/19 1:18 AM	4:17	TUESWED	5/26 8:08 PM	5/27 3:42 AM	6:34		
						WEDTHURS	5/27 8:09 PM	5/28 3:41 AM	6:08		
						THURSFRI	5/28 8:09 PM	5/29 3:40 AM	5:12		
						FRISAT	5/28 10:28 PM	5/29 3:40 AM	4:25		
						SUNMON	5/29 11:15 PM	5/31 3:39 AM	3:42		
						MONTUES	5/30 11:57 PM	5/31 3:39 AM	3:42		
						TUESWED	5/31 12:34 AM	6/2 3:38 AM	2:30		
						WEDTHURS	6/1 12:34 AM	6/2 3:38 AM	1:58		
						THURSFRI	6/2 1:09 AM	6/3 3:37 AM	1:35		
						FRISAT	6/2 1:40 AM	6/3 3:37 AM	0:20		
						SUNMON	6/3 1:40 AM	6/3 3:36 AM	0:20		
						MONTUES	6/3 1:40 AM	6/3 3:36 AM	0:20		
						TUESWED	6/4 2:12 AM	6/5 3:36 AM	0:20		
						WEDTHURS	6/5 2:44 AM	6/5 3:36 AM	0:20		
						THURSFRI	6/5 2:44 AM	6/5 3:36 AM	0:20		
						FRISAT	6/6 3:16 AM	6/6 3:36 AM	0:20		

EOT = End of Astronomical Twilight MR = Moonrise SOT = Start of Twilight MS = Moonset NOTE: Applies to Phoenix area (4th Std Time) Bernie Sanden 5/88



The Moon

H. P. Lovecraft

Of all the heavenly bodies there is none nearer to us than the moon, nor do we possess as intimate a relation with any other planet as we do with this little globe, only 2162 miles in diameter, that revolves around us every month.

The exact period of the moon's revolution is 27d. 7h. 43m. 11s., a short time, although the motion of the earth itself around the sun makes this appear much longer, so the apparent or "synodic" revolution occupies 29d. 12h. 44m. 3s. As the moon travels around the earth it apparently undergoes great changes of form, called "phases", due to the different positions in which we see the moon with respect to the sun. These phases vary in figure from a thin crescent to a full circle, and a complete set is called a "lunation". A lunation occupies one synodic revolution.

Once every month the moon is too near the sun to be seen, and sometimes, when moving exactly in the plane of the earth's orbit, it eclipses the great orb of day by passing over his face. When the moon is in line with the earth and the sun, whether or not eclipsing the latter, it is said to be "new" or in the "change". It will then not be visible for two days. When this time has elapsed, the moon can be seen in the west as a slender crescent, with horns pointing east, setting about two hours before the sun. The next night the crescent is larger, and the time of setting is about an hour later. Thus it progresses, each night adding a little to the crescent, and about an hour to the time of setting, until, five days after its first appearance, the moon shews a half circle of light, and sets about midnight. It is then said to be in the "First Quarter". From then on, the illuminated portion becomes more and more convex (or "gibbous", as it is called) until, seven days after the first quarter, our satellite rises at sunset in the east, a complete circle of light. This is "Full Moon". The next day the side that has hitherto always been a perfect semi-circle begins to diminish, and in another week the moon is again half full, the illuminated side now being that which was invisible on the previous occasion. This phase is called the "Last Quarter", and the moon rises about midnight. The next few days are spent in the diminution of the edge that was straight in the last quarter, until, five days after, the moon is again a narrow crescent, this time in the east, rising two hours before day break, with horns pointed westward. The following day it is invisible, not to be seen again until it has passed the sun, and begun a new lunation.

Besides eclipsing the sun, the moon is often eclipsed itself. This can occur only at the full, where, if in the

plane of earth's orbit, it will of course encounter its shadow.

When the moon passes between the earth and a star or planet, that phenomenon is called an "occultation". Sometimes when the moon is young, not only the crescent is visible, but the entire disc, illuminated by a faint reddish light. This is the brilliancy reflected from the earth, for it must be understood that on the moon, our world shines like a brilliant orb, in fact, appears much the same as our satellite does to us, except that it is thirteen times larger. The reason that this "earth-light" disappears as the moon waxes is, that the earth, to a lunar observer, would undergo phases, being full at new moon, and new at full moon.

As our satellite makes but one rotation on its axis during a revolution, it invariably turns the same face to the earth, so, from the side seen by us, our world would appear immutably fixed in the heavens, while the other side might never receive its light.

The apparent size of the moon, as seen with the naked eye, has always been a point of dispute, some saying its diameter to be about an inch, while still more compare it to a foot; yet it is a fact that the entire disc may be covered with a lead pencil held at arm's length. In angular measure the moon's apparent diameter is 31 degrees and 24 minutes.

Another curious thing connected with the moon as seen with the unassisted eye is the phenomenon known as the "horizontal moon". This refers to the enlarged appearance of our satellite when rising or setting. Many theories concerning this have been advanced, and it has been demonstrated that the disc should even appear smaller; indeed, a telescope at once dispels the illusion, for which as yet no satisfactory reason has been advanced.

We now come to a point where we seemingly must contradict some statements previously made, for I now assert that more than half of the moon is visible to earth. However, the amount in excess of the half is very small, and due to several conditions which, taken collectively, are called "librations". To understand these, we must know that the moon describes not a circle, but an ellipse or oval around the earth, being sometimes 252,830 miles away, while on other occasions its distance is but 221,520 m. When nearest the earth it is said to be in "perigee", and when farthest, in "apogee". The average is about 240,000 miles. There is an imaginary line in the heavens on which all the planets are supposed to travel, called the "ecliptic", but as a matter of fact, most of them deviate considerably from it. This discrepancy is called "inclination to the ecliptic". The moon's inclination amounts to nearly 5 degrees and 9 minutes. Now these

two facts, ellipticity of orbit and inclination to the ecliptic, are the major causes of libration; the first enabling us to see around our satellite in easterly and westerly directions, while the latter reveals lands above the north, and below the south.

Although, as has been said before, the moon's path does not coincide with the ecliptic, it nevertheless intersects that line at two points, called "nodes". These nodes do not always occupy the same places on the ecliptic, but have a retrograde motion occupying 18y. 21d. 21h. 22m. 46s. This period was used by the ancients for predicting eclipses, and was called the "Saros".

The moon is much smaller than the earth, its diameter being about 1/4, its volume 1/49, mass 1/81, density 3/5, apparent disc 1/13, and gravity 1/7. The decreased gravity would cause an object weighing 7lb. on the earth to weigh but one of the moon, yet the force is sufficient to attract the waters of the earth and cause the phenomena known as tides. A striking illustration of the moon's levity as compared with the earth lies in the fact that their balancing point, or centre of gravity, is about 1000 miles below the surface of our world. It has been previously stated that the moon rises and sets about an hour later every day, but we must now make an exception to this. At the full moon nearest the autumnal equinox our satellite is observed to rise at nearly the same time for several nights. This is caused by its presence in that part of its course which makes the smallest angle with the horizon. The name "Harvest Moon" has been applied to this state of affairs. At the following full moon the same phenomenon takes place on a smaller scale. This is the "Hunter's Moon".

To the naked eye, the moon appears to be covered with dark spots, to which imagination gives the form of men and animals, but the telescope shews a very different sight. The entire surface is seen to be covered with mountain ranges, and pitted with ring-shaped formations. These last often have small central peaks, and are thought to be extinct volcanoes, or "craters", as they are called. Any good field or spy glass will shew these, but to study them in detail a good astronomical telescope is required. In a small glass the moon looks very much like the earth, the dark spots resembling seas, etc.; indeed, when such instruments were the only available, our satellite was thought to be inhabited, so all formations were named terrestrially, and for lack of a better nomenclature the appellations exist unchanged upon the present time.

Until the latter part of the nineteenth century science has believed the moon to be dead, but the researches of Prof. Pickering tend to establish the belief that our satellite possesses a thin atmosphere, low vegetation, hoar frost, and the last stages of volcanism.

In conclusion, I will give a few directions to those desirous of study in the moon. Before commencing, learn some simple lunar map by heart, so as to be familiar with what you are about to see, then procure one of the \$1.00 telescopes, which are advertised in the magazines, as they will shew all the larger craters. Do not try to see the mountains at full moon, for the direct rays of the sun obscure them. The best time to observe such things is when they are on the "terminator", or division between the light and dark sides of the lunar disc. The writer confidently believes that there is no pursuit more interesting than the study of the moon, so all are urged to devote themselves to this branch of knowledge, for in the history of the world some of the most recondite facts have been brought to light by the first efforts of an amateur. (19 October 1906)

This article is one of a series of astronomy articles written by a 16-year old amateur astronomer named H. P. Lovecraft. Lovecraft went on to become a celebrated writer of horror and science fiction. Many of Lovecraft's astronomy writings were reprinted in a 1976 compilation published by the Necronomicon Press ([HTTP://WWW.NECROPRESS.COM](http://www.necropress.com)). Reprinted with permission.

El Niño and Highway Litter

Sam Herchak, EVAC

Fourteen EVAC members recently completed a research project on how El Niño affects roadside litter. We conveniently chose the mile along US Highway 60 that the Club "adopted" for cleanups. Having found much less trash than usual, we came up with two possible explanations. One is that people didn't want to destroy through littering all of the beautiful greenery and wildflowers along the road. The second and more likely is that all the beer bottles and cans are hidden from view and will greet us in the fall when the flowers are gone!

Seriously, the vegetation was so lush (often waist high), that it was hard to spot objects on the ground below, even snakes—thankfully we didn't encounter any. But several members did enjoy the "treasure" hunt. Don Wrigley found a total of 32 cents, but couldn't decide whether to donate it to the Club or put it toward his retirement fund. Pedro and Diana Jané found four complete boxes of Roadkill Helper (no kidding), so if they invite you to dinner.... And my trash cohort Silvio Jaconelli has a new philosophy on life, after seeing the coolie-cup that said "eat healthy, exercise, and die anyway!"

I want to thank all the participants below for their support. We finished at 9:45 am and headed for the

Village Inn Restaurant in Apache Junction for breakfast/lunch. The food was great as was the hospitality (thanks to EVAC member Randy Peterson who runs the place). The whole morning was a great way to meet the new members and catch up with the old ones. Hope to see you at the next Adopt-A-Highway cleanup in the fall.

EVAC Spring Adopt-A-Highway Participants

Silvio Jaconelli
Diana Jané
Pedro Jané
Bob Kearney
Jane Kearney
John Quintero
Jon Sargeant

Mike Sargeant
Jack Schroeder
Kathy Woodford
Don Wrigley
Art Zarkos
Pat Wagaman????

EVAC Meeting Highlights

Don Wrigley, Secretary
April 8, 1998

The meeting was called to order by President Sheri Cahn at 7:43 PM. Officers and board members were introduced and guests and new members were asked to introduce themselves. There were 55 members and guests present. Sheri announced the upcoming events and explained that she still had not heard from the Arizona Science Center regarding the Astronomy Day events, so she would have a sign-up sheet available and would contact those who signed up if and when she heard from the Science Center. There were no show and tell speakers that night but the guest speaker was fellow EVAC member Tom Polakis, who talked about his recent work with CCD imaging. Tom explained that while film can still produce a more pleasing image, the CCD is superior to film in terms of getting scientific information. The two main uses of CCD's are astrometry and photometry, and they enable the amateur to do deep sky work from the back yard. Tom showed slides of his semi-permanently mounted Astrophysics equatorial mount which supports the 13 inch telescope used to make the images. Tom uses a laptop computer and digital setting circles to aim the scope within 5 arc minutes of the intended target. The equatorial mount is accurate enough that Tom was able to get unguided images of objects such as asteroids, variable stars, supernovas in faint galaxies, and comet Hale-Bopp with its "shock waves". For guided photos he uses an autoguider to take remarkable images of M1, Hubble's Variable Nebula (NGC 2261), M76 (the little dumbbell), the barred spiral NGC 1365, the globular cluster NGC 2419 (the Intergalactic Wanderer), and a host of other objects. Tom revealed that he is imaging stars fainter than 18th magnitude, a feat that seems quite remarkable considering that he lives in downtown

Tempe! Couple this with the fact that he is making deep sky images with the nearly full moon and it comes to no surprise that many of us present will begin saving our pennies for CCD equipment! The meeting ended at 9:35 PM, with refreshments being served.

EVAC Board of Director's Meeting April 17, 1998

Held at Bernie Sanden's home, the Board discussed the following:

Astronomy Day: The Board canceled the star party. We have been unable to contact Ryan Wyatt, the director of the Arizona Science Center.

All-Arizona Star Party: The Board decided to evaluate Picacho Peak State Park as an alternative site for the star party.

IDA Membership: The Board decided to join the International Dark-Sky Association at the society rate of \$100 per year.

Next Board Meeting: Friday, August 28 at Bernie Sanden's home.

May's Guest Speaker

Our guest speaker for the May meeting will be Steve Coe of the Saguaro Astronomy Club. Steve has been an Arizona amateur astronomer for 22 years and teaches electronics at DeVry Institute. His topic will be meteor showers with emphasis upon the upcoming Leonid shower.

For Sale

12-inch Newtonian telescope: Equatorial mount and metal pier, originally mounted in cement; 2.25-inch polar shaft with counterweight; Sheet metal tube assembly; 5 eyepieces. Price negotiable. *Contact Bill Roehr—520/474-8108.*

Editor's Corner

M. Aaron McNeely, Editor
AMCNEELY@PRIMENET.COM

I would like to thank Mark Michaud of the Necronomicon Press for permission to reprint the H.P. Lovecraft material, and also the following EVAC members for their help and contributions: Kathy Doyle, Sam Herchak, Silvio Jaconelli, Tom Polakis, Bill Smith, Kathy Woodford, and Don Wrigley. Stay cool.

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East Valley Astronomy Club

Membership Form

Please complete the information on the form and return to the address below along with a check payable to EVAC for the appropriate dues amount. See below:

Kathy Woodford, EVAC Treasurer
PO Box 213
Apache Junction, AZ 85217
Call: 857-3438 evenings

Enclosed:

- ___ \$20 annual
- ___ \$15 April -Dec.
- ___ \$10 July - Dec.
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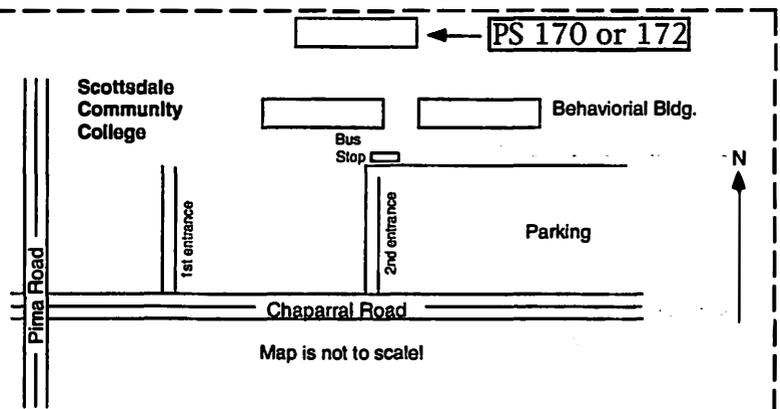
How did you hear about the East Valley Astronomy Club? _____

Major area(s) of interest:

- General observing
- Lunar observing
- Planetary observing
- Telescope Making
- Astrophotography
- Deep Sky
- CCD/Computer
- Other _____

CLIP AND SAVE

Monthly business meetings
are on the 2nd Wednesday of
each month at 7:30pm.



85226-1443

- CCD Astronomy
 - El Niño and Adopt-A-Highway
 - Lovcraft's "The Moon"
 - Morning Planets
 - Observing the Moon
- Contents:**

Valued member since 3/16/97
 Next EVAC Meeting — May 13 7:30 pm



East Valley Astronomy Club
 M. Aaron McNeely, Editor
 4402 North 36th Street, #22
 Phoenix, AZ 85018



East Valley Astronomy Club—1998

Scottsdale, Arizona

EVAC Homepage—[HTTP://WWW.GOODNET.COM/~RKERWIN/EVAC/EVAC.HTML](http://www.goodnet.com/~rkerwin/evac/evac.html)

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MEMBERSHIP & SUBSCRIPTIONS: \$20 per year, renewed in December. Reduced rates to *Sky & Telescope* and *Astronomy* available. Contact Kathy Woodford, P.O. Box 213, Apache Junction, AZ 85217, 602/857-3438. Email—ARIZ.KAT@JUNO.COM

CLUB MEETINGS: Second Wednesday of every month at the Scottsdale Community College, 7:30 pm. Normally Room PS 170 or 172 in the Physical Sciences Building. See map below.

NEWSLETTER: Mailed out the week before the monthly Club meeting. Send contributions to M. Aaron McNeely, 4402 North 36th Street, #22, Phoenix, AZ 85018, 602/954-3971. Email—AMCNEELY@PRIMENET.COM

ADDRESS CHANGES: Contact Bill Smith, 1663 South Sycamore, Mesa, AZ 85202, 602/831-1520. Email—BSMITHAZ@AOL.COM

EVAC LIBRARY: The library contains a good assortment of books, downloaded imagery, and helpful guides. Contact Enrico Alvarez for complete details, 602/837-0486.

BOOK DISCOUNTS: Great savings through Kalmbach and Sky Publishing. Contact Don Wrigley, 423 West 5th Avenue, Apache Junction, AZ, 602/982-2428. Email—DONWRIG@JUNO.COM

EVAC PARTY LINE: Let other members know in advance if you plan to attend a scheduled observing session. Contact Robert Kerwin, 602/837-3971. Email—P24493@EMAIL.MOT.COM

