



Sacnews

Issue 282

September 2000

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Thoughtful Donation Kick-starts the SAC ATM Subgroup

By Thad Robosson

Several weeks ago, a thoughtful person contacted Peggy Kain about a "telescope" that had been left behind by the previous inhabitants of her home. As it turns out, the "telescope" was actually several boxes of telescope pieces that the donator's sister was getting ready to throw away. Among the items found were several mirrors, a couple of 6", a couple of 8", a 10", many diagonals of various sizes, a pair of not quite complete EQ heads, a pier for one of them, a couple of tubes, a complete 4" 'scope, and other assorted pieces. It is in conjunction of this donation that I would like to announce the formation of the SAC Amateur Telescope Maker's Subgroup. The subgroup will be responsible for completing the assembly of the donation, and is in need of 2 things...

1) Donations of extra parts, primarily tubes, piers/tripods, focusers, and mount assemblies. This doesn't have to be the best gear, and we'll take anything that you may want to give, even if it's broken. The parts you give, no matter how used, may be just what we need to complete another 'scope for use at a public star party and get others interested in astronomy.

2) People who are willing to help with this wonderful project. I know most of you have very little to no time to give, but if you have a talent/knowledge that can be tapped into by the subgroup, please let us know. Your guidance/expertise could allow others to finish up a 'scope or two. There is plenty to do, and a lot can be done with a little extra time and some basic tools.

The subgroup will also be a great resource for club members who are in need of 'scope repairs, wish to learn about making/modifying/upgrading telescopes, want to make some of the accessories that you see at the star parties, or just like to tinker in general. If you can help with donations, care to contribute some elbow grease, or have some skills that we can tap into if the need arises, please contact me, Thad Robosson at tmrob@primenet.com, or call me at 602-265-7760 (keep trying, you'll get me eventually...).

(Ed Note: You may be wondering who our benefactor is. Peggy Kain is working on an article about the folks who made this donation. More to come....Rick)

Fight the Light!!!

Attend the First GPIDA Light Pollution Symposium.

Friday Aug 25th

See Page 8 for Details

Astronomy 101

By Rick Tejera

How to Win Friends and Influence People

It seems that most folks attending their first star party tend to do something that goes against Star Party etiquette. Not that this is intentional, but rather, who knew??? Every now and then it's a good idea to review this subject, lest you find pictures of your self with a red circle and line through it.

The primary goal of star party etiquette is to maintain a dark observing environment. Secondary to that, but just as important is to ensure that everyone has fun. Here are some reminders:

Plan your arrival: Try to get to the site BEFORE sunset. This not only allows you time to set up in daylight but keeps you from blinding everyone as you enter the site. If you must arrive after dark, Please remember to douse the lights BEFORE reaching the site.

Darken the vehicle: Before setting out, look for light sources on your wheels. Automakers have this thing that light is good. While this may hold for traffic safety, it sucks for astronomy. Possible sources of light are the dome light, trunk lights glove compartment lights (you just can't imagine how bright these will be at a dark sky site till one goes off and people start yelling at you). Turn off or remove all offending lights and you'll be popular in no time. The scourge of astronomy has been the infiltration of DRL'S (daytime running lights). These obnoxious buggers came to us courtesy of Canada where they have been mandatory for quite a few years. Basically they are low power headlights that are on all the time. Turning off the parking brake usually triggers them. On my car, I can just lower the brake handle and still move the car without turning

them on, but it ain't easy. My solution is to drape a red towel over the lights when I arrive at the site. This obscures them enough that they are not a problem. Reverse lights are a pain as well. Try to set up in such a way that you don't have to back up on leaving the site, And remember not to leave the car in reverse if it is a standard shift or you'll get a very bright surprise upon starting the car.

Plan your departure: If you can't stay for the duration and have to leave early, plan to set up near the exit facing out (see above). Before you start up to leave, ask if anyone is shooting pictures and let everyone know your going. Invariably some stray light will find it's way from your car, no matter how hard you try, so it's a good idea to warn people so they can look away. Don't go till you're sure no one is going to be disturbed by your departure.

Plan your stay: try to have all your gear set up and organized before it gets dark. This will help cut down on searches using your red light. If you use a laptop for observing assistance make sure you have a red filter over the screen, even if your application has a night vision mode, as there will be some stray light from the borders of the screen. Before it gets dark get the lay of the area around the observing site. Sounds kinda silly but, should nature call you don't want to be traipsing about in the brush looking for an appropriate spot in the dark. You could step in a hole or something equally embarrassing and hurt your self.

Also consider the environment. Do not litter. If you carry it in, carry it out. Keep our observing area clean for all to enjoy.

Quiet Please: Star parties are for observing and appreciating the wonders of the sky. Most

(Continued on page 4)

On a Light Polluted Night

By Rick Tejera

The Urban Observing Program

If you've been wondering what to do with your telescope during the week, or if you don't have the time to get out to dark sky sites to observe, the Deep Sky group has an answer to your problem, The Urban Observing Program. Put together by the Deep Sky Group, this observing program includes 100 objects that can be observed from light polluted skies. The observer must also choose 10 more objects at his/her discretion, bringing the total number of objects observed to 110. The rules for this observing program are simple: Observe all 110 objects from a site where the Milky Way is NOT visible. Observations of objects from dark sky sites would not count toward this program. As usual, record the date, time and location of the observation, Telescope and power used, sky conditions and a brief description of the object. Turn in your observations to AJ Crayon and you will receive a plaque denoting your achievement for mounting on your telescope.

The Urban list covers the most of the visible sky and will keep you busy for at least a year. There are 43 open clusters, 24 double stars, 12 globular clusters, 8 planetary nebulae, 5 variable stars, 5 galaxies and 3 emission nebulae. Messier objects account for 35 objects on the list, so you probably have probably seen a good chunk of this list already. The most southern object is M7 in Scorpius and the dimmest is NGC 1535 in Eridanus at mag. 10.4. Perseus leads the list with 10 objects followed by Cassiopea with 8 and Cygnus and Monoceros with 6 each.

The list should soon be available for download on our website: www.saguaroastro.org or through A.J. Crayon. You no longer have an excuse not to observe, so get out in the backyard and go for it.

The complete list is given in chart form on pages 10 and 11. It is sorted by constellation. Remember you have to pick the last 10 objects yourself! Have Fun!!

Spread the Word About Light Pollution

With the upcoming light pollution Symposium almost upon us (see pages 8-9), your chance to help spread the word about light pollution has arrived with it. Jennifer Keller has arranged to have T-Shirts available for sale. The T-shirt is black and has the satellite image of North America at night showing all the light domes on the front, with the caption "Lights On". The Back has a picture of the Milky Way and the caption "Lights Off". We were able to obtain these shirts courtesy of Mark Klosinski of the Roper Mountain Astronomers, a South Caro-

lina Based astronomy club. The shirts cost \$12.00 each of which \$2.00 is a donation to the International Dark Sky Association. It is a very attractive shirt and wearing it will help IDA continue their work of preserving the night sky.

If you would like a shirt, contact Jennifer Keller at: Kellerjt@WellsFargo.com. The shirts will also be available at the Light Pollution Symposium.

Did I mention the shirt glows in the dark??

Fuzzy Spot, Scutum

By Ken Reeves

Scutum is a small constellation in the summer Milky Way. The original name given by Hevelius was Scutum Sobiescianum (Sobieski's Shield), but was shortened to Scutum by Flamsteed, both to make the name more accessible, and to avoid favoring certain kings (John III Sobieski, the king of Poland).

Although small in area, the bright Scutum Star Cloud sits squarely in the constellation, and is rich with open clusters and dark nebulae, although there are some globular clusters and planetary nebulae here too.

NGC 6649 (18h33.5 -10 24): The first cluster of the month is fairly bright, fairly large, poor, and somewhat loose. I saw 3 levels of stars with no haze and was able to resolve about 20 stars. The object is in a 5-sided shape, and sitting in a baron spot really makes it stand out.

NGC 6664 (18h36.7 -08 13): This very large, very bright open cluster has 5 levels of stars against a fairly hazy and granular background. I counted 41 stars with the brightest stars forming a U shape opening to the S. There is a bright star immediately to W. This nice big cluster is also visible in binoculars.

NGC 6694 (18h45.2 -09 24): M-26 is an open cluster, which is somewhat small, moderately bright, and somewhat poor. I counted about 15 stars, 2 of them fairly bright, in 4 levels. There is a very nice curving chain on the WNW side.

NGC 6704 (18h50.9 -05 12): Guess what? Another open cluster. This one is a little bright, somewhat large, pretty and rich, pretty condensed. The stars are not real bright, in 2 or 3 levels over a somewhat granular haze with 25 stars counted, many more pop out with averted vision. On the W side is a prominent clump of stars. A real nice string of stars arcs out to the N, then E and S, almost spiraling around the cluster, forming a very nice shape.

NGC 6705 (18h51.1 -06 16): M-11 is the crown jewel in Scutum, and considered by many as the best open cluster in the sky. Known as the "Wild Duck" cluster, the

stars are supposed to form a `V' shape pointing to the E, although I never could make that shape out. I considered it as pretty large, extremely rich, very bright, pretty well condensed. There is 1 bright star in middle and 2 levels of stars around the bright central star. I approximated that 80-100 stars were visible in the 10" scope, with most of stars W of the bright central star. I also noticed 2 star poor areas and 2 fairly bright stars to SE.

NGC 6712 (18h53.1 -08 42): Taking a break from open clusters, this globular cluster is pretty large, round, and pretty bright. I could resolve about 20 stars with averted vision at the center of the cluster over a pretty granular haze.

Basel 1 (18h48.2 -05 51): Back to open clusters, now we are out of the NGC catalog. This cluster is somewhat bright, somewhat large, pretty poor, and slightly condensed. Since it is poorly detached, it does not stand out very well from the background stars. There are 3 levels of stars and a small amount of haze with a total of 18 stars counted. The cluster sits in the middle of a dipper asterism.

Tr 35 (18h42.9 -04 08): Our last open cluster, from the Trumpler catalog, is somewhat faint, somewhat large, fairly poor, and slightly condensed. There are 20 stars in 3 levels with some possible haze. The primary stars form an arc that runs to the W then turns to the N.

IC 1295 (18h54.6 -08 50): The last object of the month is a planetary nebula, right next to globular cluster NGC 6712. It is virtually invisible without the UHC filter, but using the filter, it is just a little fainter than the 6712. With averted vision it is round and possibly fainter in the middle. There are stars to W, E, and S. A nice object, it is unusual for an IC planetary to be this good.

Herschel 400 Objects

NGC 6664

SAC's 110 Best of the NGC Objects

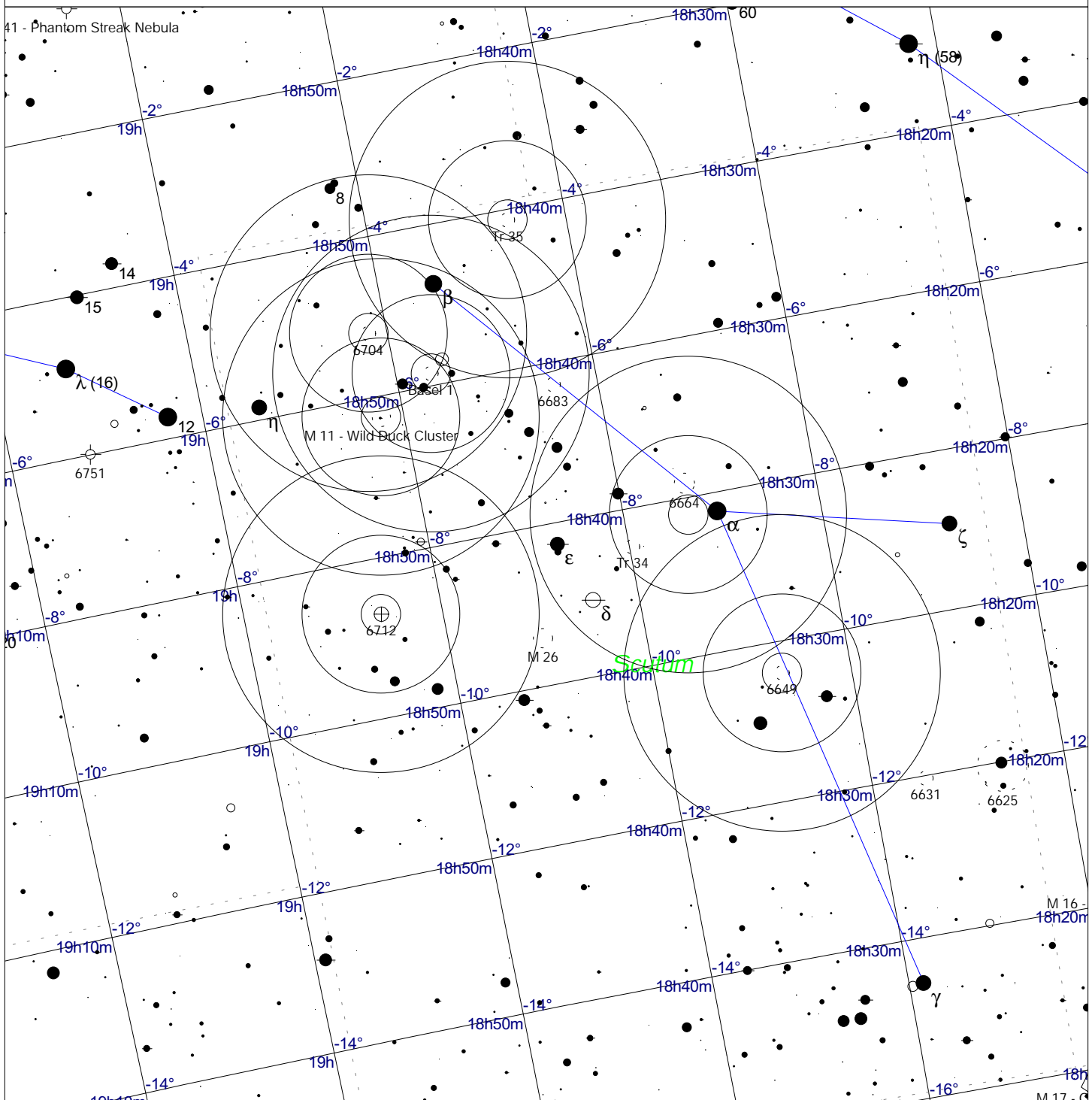
NGC 6712

(Continued from page 2)

of like to do this in a quiet, peaceful setting, so leave the boom box home. Conversation should be subdued, avoid shouting across the field.

By following these simple guidelines, you'll ensure enjoyment for all, and people won't dread your arrival.

Fuzzy Spot Scutum



STARS		SYMBOLS		Herschel 400 Object: NGC 6664 SAC 110 Best of the NGC Object: NGC 6715
● <4	● >9	● Multiple star	⊛ Dark nebula	
● 5		○ Variable star	⊕ Globular cluster	× X-ray source
● 6		☄ Comet	⊕ Open cluster	○ Other object
● 7		☉ Galaxy	☉ Planetary nebula	
● 8		☐ Bright nebula	☉ Quasar	

Local Time: 21:00:00 15-Aug-2000 UTC: 04:00:00 16-Aug-2000 Sidereal Time: 18:08:08
 Location: 33° 39' 56" N 112° 49' 10" W RA: 18h44m15s Dec: -8° 22' Field: 13.8° Julian Day: 2451772.6667

Seeing Double

By Thad Robboson

If you're like me, the monsoons have you pretty depressed by now. If it's not the clouds, it's all the crud in the air that keeps you from observing your favorite deep-sky objects. I would like to offer a cure from the cruddy sky blues...doubles, lots of them.

While the skies this time of year seem to be useless for

observing, steady seeing is not uncommon IF you don't have to look through all the air. That's why this month's list is aimed directly overhead. The fainter doubles may be limited to pristine, clear atmosphere, but the not-so-faint ones can be had rather easily. So dig dust off your star charts and 'scope....here's the list from the "33 doubles" online group for Cygnus.

Name	RA (J2000)	Dec (J2000)	Mag. 1	Mag. 2	Sep (")	PA (°)
Struve 2534	19 28	+ 36 32	8	8	7	64
Beta (Albireo)	19 31	+ 27 58	3	5.5	34.3	54
O. Struve 374	19 31	+ 50 11	7	10.5	18.7	298
16	19 43	+ 50 32	5	5	39	134
Delta	19 45	+ 45 08	3	6.5	2.2	247
17	19 46	+ 33 44	5	8	26	70
Struve 2578	19 46	+ 36 05	6.5	7.5	15.1	125
Struve 2576	19 46	+ 33 36	8	8	1.5	14
Struve 2588	19 49	+ 44 22	7	7.5	9.6	160
19	19 50	+ 38 43	6	10	54.6	106
O. Struve 390	19 55	+ 30 12	7	9	9.7	22
J781	19 55	+ 30 11	9.5	9.5	2.8	306
Phi	19 56	+ 52 26	5	7.5	3.1	177
O. Struve 393	19 58	+ 44 23	7.5	8.5	18.9	228
Struve 2609	19 59	+ 38 06	7	8	2.1	23
Struve 2611	19 59	+ 44 21	8	8	5.3	27
O. Struve 384	20 00	+ 36 25	7	10	11.5	295
h1468	20 02	+ 40 18	8	9	13	279
h1470	20 03	+ 38 20	7	9	28.8	337
Struve 2624	20 04	+ 36 01	7	7.5	1.6	172
Struve 2633	20 08	+ 32 35	8	11	11.7	103
Struve 2639	20 09	+ 35 29	7.5	8.5	6.2	301
Struve 2658	20 13	+ 53 08	7	9	5.5	113
O. Struve 404	20 16	+ 52 30	7	9.5	29.6	114
Struve 2663	20 17	+ 39 41	8	8.5	5.4	324
Struve 2666	20 18	+ 40 44	6.5	8.5	2.5	246
Gamma	20 22	+ 40 16	2	10	142	196
Struve 2681	20 23	+ 53 25	7.5	10.5	6.7	40
Struve 2700	20 35	+ 32 32	6.5	8.5	23.7	285
Struve 2702	20 35	+ 35 10	8.5	8.5	3.3	205
49	20 41	+ 32 21	6	8	2.8	46
Arg 39	20 42	+ 49 15	8.5	8.5	10.3	157
52	20 46	+ 30 43	4	9	6.6	67

If you would care to see other "33 doubles" lists, share observations, or ask questions, please contact me at :
tmrob@primenet.com

September 2000

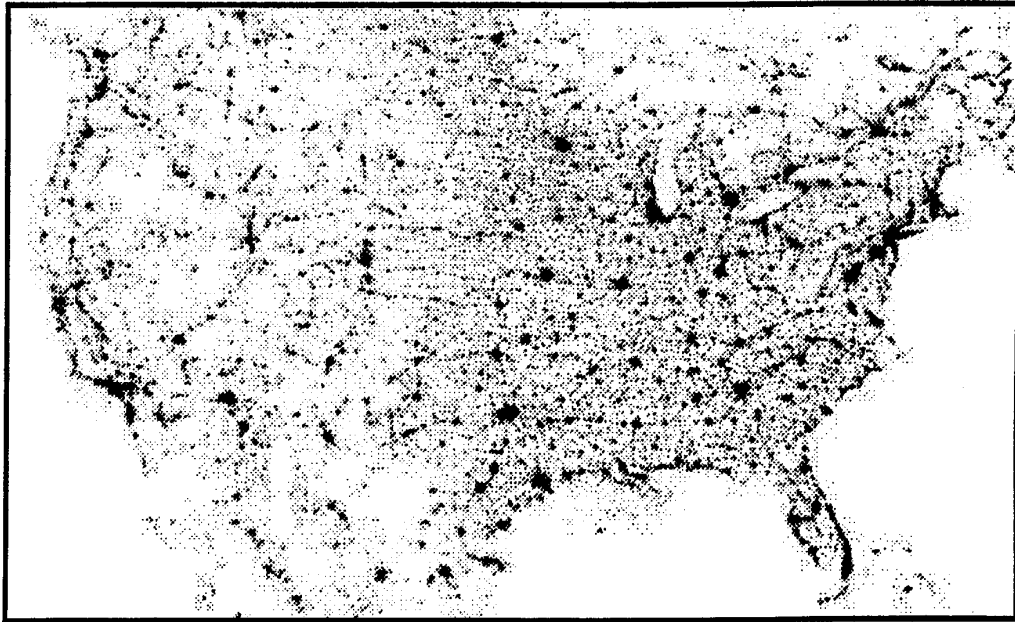
SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Schedule of Events for September 2000

- Sep .5th** Moon at First Quarter, 0927 mst
- Sep. 13th** Full Moon at 1237 mst
- Sep. 15th** **SAC General Meeting at Grand Canyon University, 1930, Guest Speaker Rik Hill**
- Sep. 20th** Moon at Third Quarter, 0628 mst
- Sep. 22nd** Autumnal equinox at 1027 mst
- Sep. 22-23rd** Northern Arizona Star Party, Paulden, AZ: Hosted by the Prescott Astronomy Club
For more information, visit www.pacnet.org
- Sep.. 23rd** **SAC Star party at Flat Iron Mountain. Sunset 1825, Ast twilight ends 1948, Moon-rise 0244**
- Sep. 23rd** Neptune discovered by J. Galle and H. D'Arrest in 1846
- Sep. 25th** Birth of Ole Romer, Danish astronomer who was the first to measure the speed of light. 1644

LIGHT POLLUTION SYMPOSIUM

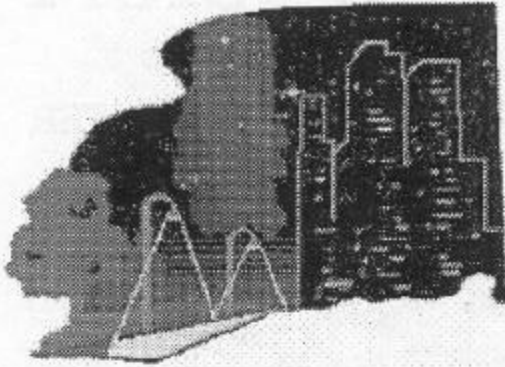
**FRIDAY, AUGUST 25, 2000 AT THE ARIZONA SCIENCE CENTER
7:00 TO 9:00 P.M.**



As this negative from a night satellite photograph illustrates, a tremendous amount of outdoor lighting (and 1.5 billion dollars of electricity in just the US each year) is wasted by lighting nothing but our night skies and outer space. Only 15 percent of this light is reflected from the ground. The rest goes up because of poorly designed light fixtures. Lacking proper shielding, these fixtures also allow light to shine directly into our eyes creating glare, which *DECREASES* the safety and security the lighting is intended to provide! These detrimental effects of glare are extremely problematic as our eyes age.

Besides the obvious pollution from wasted power plant production, the environmental impacts are quite widespread. Bright lights attract/confuse migratory birds and sea turtles (resulting in their deaths), disrupt the circadian rhythms of many plants and animals (including our own), and like loud music, are a nuisance when shining into your yard or through your windows.

WITH GOOD LIGHTING, EVERYONE WINS! We see better at night, preserve the dark skies, have a more pleasant and safe environment, while saving a great deal of energy and money. To learn more, please join us for this free lighting symposium. More details on the back.

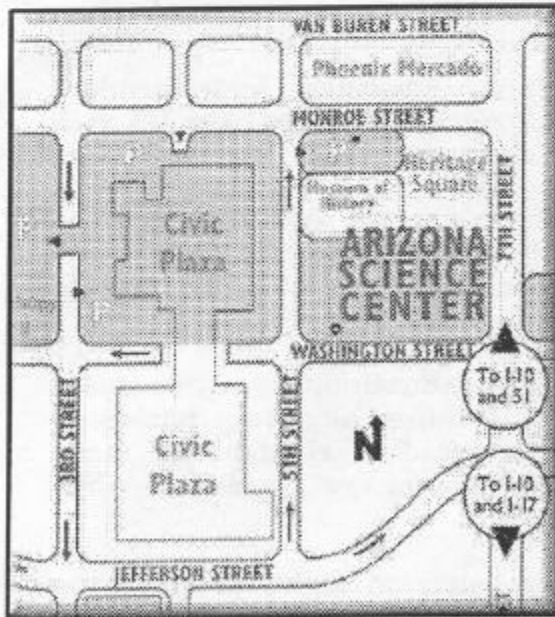


Light Pollution Symposium
Cost: No Charge
Friday, August 25, 2000
7:00 to 9:00 P.M.
Arizona Science Center
Downtown Phoenix
600 East Washington Street

**GUEST SPEAKER: NOTED ASTRONOMER, AUTHOR, AND LIGHTING EXPERT
 CHRIS LUGINBUHL OF THE U.S. NAVAL OBSERVATORY-FLAGSTAFF**

Presented by the Greater Phoenix Section of the International Dark-Sky Association,
 in cooperation with the Arizona Section of the Illuminating Engineering Society of
 North America, and graciously hosted by the Arizona Science Center.

IDA: www.darksky.org
 IESNA-AZ: www.cybertrails.com/iesna-az
 AZ Science Ctr: www.azscience.org



**Parking at the Heritage/Science Park garage
 (SE corner of Monroe and 5th)
 and at the new Plaza East garage
 (SW corner of 7th and Washington)
 is discounted with validation.**

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THE DARK SKY; LET'S NOT MAKE LIGHT OF IT!

The Urban List

Num	Name	CON	RA(2000)	Decl	Typ	Mag	Notes
1	M 31	And	00 42.7	+41 16	Gal	3.4	Andromeda Galaxy
2	NGC 752	And	01 57.7	+37 40	OC	5.7	shows well in RFT
3	Gamma And	And	02 04.9	+42 20	Dbl	2.2/5.5	Sep 9.8" PA 63deg
4	NGC 7662	And	23 25.9	+42 33	PN	9.2	Blue Snowball Nebula
5	M 2	Aqr	21 33.5	-00 49	GC	6.5	Bright, very large.
6	Lambda Ari	Ari	01 58	+23 35	Dbl	4.9/7.7	Sep 38" PA 47deg yellow/deep blue
7	NGC 1907	Aur	05 28.1	+35 20	OC	8.2	round, stars 9...12m
8	M 38	Aur	05 28.7	+35 51	OC	6.4	bright, irr. figure
9	M 36	Aur	05 36.3	+34 08	OC	6.0	bright, stars 9...11m
10	M 37	Aur	05 52.3	+32 33	OC	5.6	500 stars
11	Xi Bootes	Boo	14 51.4	+19 06	Dbl	4.7/7.0	Sep 6.6" PA 318deg yellow/orange
12	Webb	Cam	03 43	+59 58	Dbl	5.9/8.5	Sep 55" PA 35deg gold/deep blue.
13	NGC 129	Cas	00 30.0	+60 13	OC	6.5	very large, stars 9...13m
14	Eta Cas	Cas	00 49.1	+57 49	Dbl	3.4/7.5	Sep 12.8" PA 317deg
15	NGC 457	Cas	01 19.5	+58 17	OC	6.4	bright, stars 7...10m
16	M 103	Cas	01 33.4	+60 39	OC	7.4	pretty large, stars 10...11m
17	NGC 654	Cas	01 44.0	+61 53	OC	6.5	irr. figure, stars 11...14m
18	Stock 2	Cas	02 15.0	+59 16	OC	4.4	nice star chains
19	M 52	Cas	23 24.2	+61 35	OC	6.9	stars 9...13m
20	NGC 7789	Cas	23 57.4	+56 43	OC	6.7	stars 11...18m
21	IC 1396	Cep	21 39.1	+57 30	OC	3.5	50' dia, incl nebula
22	Mu Cep	Cep	21 43.5	+58 47	Var	3.4~5.1	Herschel's Garnet Star
23	Nu Cma	Cma	06 36	-18 40	Dbl	5.8/8.5	Sep 17" PA 262deg yellow/blue
24	M 41	Cma	06 46.0	-20 45	OC	4.5	south of Sirius
25	NGC 2362	Cma	07 18.7	-24 57	OC	4.1	includes Tau Cma
26	M 44	Cnc	08 40.0	19 40	OC	3.1	Praesepe or Beehive cluster
27	48 Cnc	Cnc	08 46.7	+28 46	Dbl	4.2/6.6	lots, colors, Sep 30.5" PA 307deg
28	Mel 111	Com	12 25.0	+26 00	OC	1.8	Coma Star Cluster
29	24 Com	Com	12 35.1	+18 23	Dbl	5.2/6.7	Sep 20.3" PA 271deg
30	M 53	Com	13 12.9	+18 10	GC	7.7	bright
31	STF 1669	Crv	12 41.3	-13 01	Dbl	6.0/6.0	Sep 5.4" PA 312deg, variable?
32	Y CVn	CVn	12 45.1	+45 26	Var	7.4~10	La Superba
33	M 51	CVn	13 29.9	+47 12	Gal	8.4	Whirlpool Galaxy
34	M 3	CVn	13 42.2	+28 23	GC	6.4	bright, stars 11...m
35	Beta Cyg	Cyg	19 30.7	+27 58	Dbl	3.1/5.1	Sep 34.3" PA 54deg Albireo!
36	NGC 6811	Cyg	19 38.2	+46 34	OC	6.8	large
37	NGC 6826	Cyg	19 44.8	+50 32	PN	8.8	Blinking Planetary
38	NGC 6910	Cyg	20 23.2	+40 47	OC	7.4	pretty bright
39	61 Cyg	Cyg	21 06.9	+38 45	Dbl	5.2/6	Sep 30.3" PA 150deg Piazzzi's Star
40	NGC 7027	Cyg	21 07.0	+42 14	PN	9.6	15" dia, 10.4mag
41	Gamma Del	Del	20 46.6	+16 08	Dbl	4.5/5.5	Sep 9.6" PA 268deg
42	NGC 6543	Dra	17 58.6	+66 38	PN	8.3	Cat's Eye Nebula
43	NGC 1535	Eri	04 14.3	-12 44	PN	10.4	very bright, small
44	M 35	Gem	06 08.2	+24 22	OC	5.1	very large
45	M 13	Her	16 41.7	+36 28	GC	5.9	Hercules Globular Cluster
46	NGC 6210	Her	16 44.5	+23 48	PN	9.7	very bright, very small
47	M 92	Her	17 17.1	+43 08	GC	6.5	very bright, very large
48	V Hydrae	Hya	10 51.6	-21 15	Var	6~12	can be very deeply red star
49	R Lep	Lep	04 59.6	-14 48	Var	5.5~11.7	Hind's Crimson Star
50	M 79	Lep	05 24.2	-24 31	GC	8.4	pretty large

Abbreviations for Typ(e) are: Gal=Galaxy, OC=Open Cluster, PN=Planetary Nebula, Dbl=Double star, GC=Globular Cluster, Var=Variable star and Neb=emission or reflection Nebula

Num	Name	CON	RA(2000)	Decl	Typ	Mag	Notes
51	M 56	Lyr	19 16.6	+30 11	GC	8.3	bright, stars 11...14m
52	Beta Lyr	Lyr	18 50.0	+33 22	Dbl	3.5/8.6	Sep 45.7" PA 149deg
53	M 57	Lyr	18 53.6	+33 02	PN	9.4	Ring Nebula
54	STF 2481	Lyr	19 11.0	+38 47	Dbl	8.3/8.3	Sep 5" PA 201deg deep red/blue
55	NGC 2215	Mon	06 20.8	-07 17	OC	8.4	considerably large
56	Beta Mon	Mon	06 28.8	-07 02	Dbl	4.7/5.2	Sep 7.3" PA 132deg
57	NGC 2244	Mon	06 31.9	+04 57	OC	4.8	12 Mon, in Rosette Nebula
58	NGC 2251	Mon	06 34.7	+08 22	OC	7.3	very large
59	NGC 2252	Mon	06 34.7	+05 22	OC	7.7	very large
60	NGC 2324	Mon	07 04.1	+01 03	OC	8.4	large
61	IC 4665	Oph	17 46.3	+05 43	OC	4.2	course cluster, 40' dia.
62	NGC 6633	Oph	18 27.3	+06 31	OC	4.6	27' little compressed
63	STF 688	Ori	05 19.0	-10 45	Dbl	8.6/8.7	Sep 11" PA 273deg orange/blue
64	M 42	Ori	05 35.3	-05 23	Neb	4.0	Great Nebula in Orion
65	Sigma Ori	Ori	05 38.7	-02 36	Dbl	4.7/5.6	Sep 12.9"/42.6" PA 84deg/61deg
66	STF 790	Ori	05 46.0	-04 16	Dbl	6.4/8.7	Sep 7" PA 88deg orangish/blue
67	NGC 2169	Ori	06 08.4	+13 58	OC	5.9	The "37" cluster
68	1 Peg	Peg	21 22.0	+19 48	Dbl	4.1/8.2	Sep 36" PA 312deg yellow/deep red
69	M 15	Peg	21 30.0	+12 10	GC	6.4	very bright
70	NGC 869	Per	02 19.1	+57 08	OC	5.3	western half of Double Cluster
71	NGC 884	Per	02 22.5	+57 09	OC	6.1	eastern half of Double Cluster
72	NGC 957	Per	02 33.3	+57 34	OC	7.6	pretty large, stars 13...15m
73	TR 2	Per	02 37.3	+55 59	OC	5.9	abt 20 stars with 3 doubles
74	M 34	Per	02 42.1	+42 47	OC	5.2	bright
75	Eta Per	Per	02 50.7	+55 54	Dbl	3.8/8.5	Sep 28.3" PA 300deg
76	STF 336	Per	03 02.0	+32 24	Dbl	6.9/8.4	Sep 9" PA 8deg white/deep blue
77	Mel 20	Per	03 22.0	+49 00	OC	1.2	Alpha Per. Association
78	NGC 1342	Per	03 31.7	+37 22	OC	6.7	very large, about 60 stars
79	NGC 1528	Per	04 15.3	+51 13	OC	6.4	bright
80	h1991	Scl	00 39.0	-25 06	Dbl	6.6/9.7	Sep 45" PA 93deg orange/deep blue
81	M 80	Sco	16 17.0	-22 59	GC	7.2	very bright
82	M 4	Sco	16 23.6	-26 32	GC	5.9	8-10 bright stars
83	M 6	Sco	17 40.3	-32 15	OC	4.2	large, stars 7...10m
84	M 7	Sco	17 53.9	-34 48	OC	3.3	very bright, stars 7...12m
85	M 11	Sct	18 51.1	-06 16	OC	5.8	Wild Duck, stars 9...14m
86	M 5	Ser	15 18.6	+02 05	GC	5.8	very bright, stars 11...15m
87	IC 4756	Ser	18 39.0	+05 27	OC	4.6	group of 80 stars
88	M 8	Sgr	18 03.7	-24 23	Neb	5.0	Lagoon Nebula
89	M 24	Sgr	18 17.0	-18 35	OC	3.1	Small Sag. Star Cloud
90	M 17	Sgr	18 20.8	-16 11	Neb	6.0	bright
91	M 22	Sgr	18 36.4	-23 54	GC	5.1	very bright, stars 11...15m
92	M 45	Tau	03 47.0	+24 07	OC	1.2	The Pleiades
93	STT 84	Tau	04 31.0	+06 48	Dbl	7.3/8.2	Sep 9" PA 254deg orange/white.
94	M 81	Uma	09 55.6	+69 04	Gal	6.9	fine spiral
95	M 82	Uma	09 55.9	+69 41	Gal	8.4	dark lanes
96	M 97	Uma	11 14.8	+55 01	PN	11.0	Owl Nebula
97	Zeta Uma	Uma	13 23.9	+54 56	Dbl	2.3/4	Sep 14.4" PA 152deg, Mizar.
98	SS Virgo	Vir	12 25.3	+00 46	Var	6~9.6	deep red star
99	M 104	Vir	12 40.0	-11 37	Gal	8.0	Sombrero Galaxy
100	Cr 399	Vul	19 25.4	+20 11	OC	3.6	Coat Hanger

Abbreviations for Named objects are as follows: M=Messier, NGC=New General Catalogue, IC=Index Catalogue, Mel=Melotte, Tr=Trumpler, Cr=Collinder, STF = F. G. Wilhelm Struve Dorpat catalog of 1827, STT = Otto Struve,

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Videmus Stellae

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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