East Valley Astronomy Club

March *Newsletter* *1994*

EVAC HIGHLIGHTS

About 50 people attended the February 23rd meeting. One of the major highlights of the evening was the unveiling of a restored 3.5 inch f/14 equatorial Mogey refractor by Leon Knott. Don Wrigley and Art Zarkos helped Leon with the restoration project, which took a total of about 50 hours. The instrument was made around 1908 by William and David Mogey. The craftsmanship in this telescope is spectacular. Two colors of brass were used in the construction of the instrument: yellow brass for the tube and rose brass for certain other parts such as the cradle rings. Some of the knobs have knurlings that would be impossible to make by modern machinists because the techniques to make the knurlings have been lost. The telescope came with four eyepieces, a star diagonal and a Herschel wedge. After the meeting, several people stayed behind to view the moon through the telescope. The images were clear and crisp, demonstrating that the antique refractor is not only beautiful to look at, but beautiful to look *through*.

Steve Coe was the guest speaker and talked about "The Discovery of the Island Universes," a narration of the discovery of galaxies. Although galaxies have been seen for many years, their true nature was not revealed until relatively modern times. As telescopes got larger and better, many fuzzy spots in the sky were resolved into stars. The open and globular clusters were resolved first and it seemed as though everything would ultimately be resolved into stars. Certain objects proved to be more stubborn. The "spiral nebulae" could not be resolved and so a debate arose in the scientific community. Were these objects small, nearby objects such as forming planets or were they large and distant objects (island universes)? The spectroscope revealed that the spiral nebulae were indeed made of stars—but it could not make any determination of distance. Observations of Cepheid variables in the Magellanic Clouds proved that the Clouds were very distant objects. Further observations of globular clusters in NGC 6822, M31 and M33 pushed back the distances even further, finally settling the debate. Galaxies are, in fact, huge, distant systems of stars, gas and dust—island universes.

The local star party on March 5th at the Florence Junction site was very well attended. About 20 people with a dozen telescopes showed up, even though the weather was questionable. The high clouds that covered much of the sky dissipated quickly after sunset, however, and the attendees were treated to an excellent night of observing. Don Wrigley brought his impressive 8-inch f/15 refractor. The refractor performed extremely well on deep-sky objects and gave excellent views of M104 and NGC 4038-9. Later, the instrument gave good views of Jupiter, which was still rather low in the sky. A few high clouds moved in from the northwest late in the evening and most people left the site by midnight.

The deep-sky star party the following weekend at Vekol Road was clouded (rained) out by a fast-moving storm that moved through Phoenix from the northeast.

MARCH'S SPEAKER

The speaker for this month's meeting will be Arizona Highways photographer Frank Zullo. Frank took the pictures that appeared in the recent Arizona Highways article about Arizona astronomy clubs.

UPCOMING EVENTS

EVAC Business Meeting
March 30, SCC Room PS172, 7:30pm

Local Star Party
April 2, Florence Junction Site and Carefree Site

Deep Sky Star Party/Messier Marathon
April 9, New Arizona City Site

Public Star Party
April 21, Gold Mountain Elementary School

MESSIER MARATHON

This year's Messier Marathon, sponsored by Saguaro Astronomy Club, will be held at the "new" Arizona City site on April 9/10. The purpose of the marathon is to observe as many Messier objects as possible in one evening. Observers who find 50 or more objects will receive 8½ x 11 certificates. First, second and third place winners will receive plaques suitable for mounting on a telescope. Duplicate awards will be given for ties.

If you wish to participate in the marathon, use the form and observing list in this issue of the newsletter. Next, study the list and develop a plan of attack. Finally, come prepared for a rewarding night of observing! Be sure to bring plenty of warm clothes, snacks and anything else you might need for the all-nighter. The minimum recommended telescope is a six-inch, although a four-inch scope will probably show all the objects.

Observing forms must be turned in before you leave the observing site.

PUBLIC STAR PARTY

One of the greatest joys in astronomy is sharing your knowledge and love of astronomy with others, especially school children. An excellent opportunity for you to do this is coming up on the evening of Thursday, April 21st at the Gold Mountain Elementary School in Apache Junction. If you would like to participate, please contact Don Wrigley for details and directions to the school.

SENTINEL STARGAZE

On May 7th, Saguaro Astronomy Club will once again hold the "Sentinel Stargaze," a spectacular evening of deep-sky observing under some of the darkest skies in Arizona. The event is to be held at SAC's Sentinel site, about 20 miles west of Gila Bend. To get to the site from the east valley, take I-10 south to Maricopa Road. Exit and turn south on Maricopa Road and continue all the way to S.R. 84. Turn right on S.R. 84 and continue another five miles or so to I-8. Take I-8 west past Gila Bend to the Sentinel exit. Turn south after exiting the freeway, cross the railroad tracks and drive for another two miles. The site is to the east (left) and is marked by white rocks.

If you want to go, please plan on arriving well before dark. From the east valley, you should allow at least 2½hours. The site has no facilities. The usual deep-sky star party rules apply: no white lights after dark, no campfires and park your vehicle in such a way as to minimize disruption if you plan to leave early. Although it's quite a drive, the dark skies make it well worth the effort.

More details will be forthcoming in the next issue of the newsletter.

COMING CELESTIAL ATTRACTIONS

If you like visual challenges, try looking for the young Moon after sunset on April 11. As seen from Arizona, the thin crescent will be just 26 hours past new. Look for the moon above the west-northwestern horizon about a half hour after sunset.

On the following evening, April 12, the Moon passes very close to Venus, low in the west-northwest after sunset. For western observers, the closest approach occurs a few hours earlier, during daylight. Nonetheless, this will be a very attractive pairing and should make a nice photograph as well!

On April 29th, Jupiter reaches opposition in the constellation Libra.

WANTED

Information, plans, resources and tips on the construction of a roll-off roof observatory. Commercial contractors OK. Contact Bill Dellinges, 1362 S. Vineyard #1063, Mesa AZ 85210; phone 962-1182.

FOR SALE

Laminated Tirion Sky Atlas 2000 Field Edition (white stars on black background), excellent condition, $30. Contact Robert Kerwin, 945-8161.

EVAC Officers

President	Bob Kelley	451-7319
Vice-President	Don Wrigley	982-2428
Treasurer	Bill Smith	831-1520
Secretary	Frank Kraljic	991-5105
Newsletter	Don Wrigley	982-2428
	Robert Kerwin	945-8161
Properties	Carl Lorson	834-6864

our incredible legacy
by M. Leon Knott

A couple of years ago, I and a number of other amateur astronomers and telescope makers were invited to an all night observing session at the Blue Ridge mountain observatory of a major North Carolina university.

The observatory boasted domes with both 16 and 18 inch reflectors, CCD's, a beautiful "monastery" and a 32 inch Ritchey-Cretien telescope "on order". They could also lay claim to some of the Carolinas' darkest skies and most isolated mountain tops. In short, a marvelous place indeed.

Our hosts were two professors of astronomy and physics, in charge of a large program of astronomical research and the concomitant astronomical and physics education (in fact, the university owns twenty 8 inch Schmidt-Cassegrains, all equipped with CCD's!).

Interestingly, our invitation included a clause urging us to bring along our own telescopes, which we were most happy to do.

So, as sunset drew near, the mountain-top offered a vision of the observatory domes surrounded by several large and not-so-large telescopes, many of them entirely built by their owners and in various configurations. In the observing frenzy immediately following the cessation of astronomical twilight, the two professors made the rounds, welcoming the observers and looking through their many instruments.

At one point, the professors happened to look through my 20 inch and a telescope making class member's 14.5 inch at the same time. Both scopes were trained on the Veil nebula, both were equipped with O-III or UHC filters and both were clean and well collimated.

As a number of us stood by, proud they were looking through our scopes and hoping they would be favorably impressed, the professors gazed at the Veil for a few moments and then looked up, almost as one, and said to one and all, "Wow! I've never seen that before! And its awesome!"

So what's wrong with this (absolutely true) picture?

Professors of astronomy, the head and assistant of the astronomy program of a major university, in charge of an important research project and the education of high-tuition paying students, and they have never before seen one of the most famous of all astronomical objects. An object on which most amateurs cut their observational teeth.

I'm certain that the professors had taken CCD images of the Veil numerous times. I'm also sure that the genesis of the supernova remnant has figured strongly in their classroom dialogues. But I still find it hard to believe that they'd NEVER taken the time to visually inspect this awesome object.

I realize the chasm between the amateur and professional is deep and wide and seldom navigated successfully. And living here in the valley, where many of the professionals from ASU and U of A are seen giving presentations related to their work, its easy to see the levels of knowledge and dedication these higher-level astronomers possess. But....

I don't care how elevated the person may be, how educationally advanced and gifted, to go through life without experiencing the universe as seen through the eyes of the amateur has to be deprivation to the Nth degree. To never feel the spine-tingling shivers that accompany telescopic views of the Andromedan Galaxy or the Orion Nebula, to be immune to the feeling that can't help but draw exclamations of delight from our innnermost beings as we traverse the tenuous twists and turnings of the Veil, such a state must approach an experiential poverty beyond our understanding.

Of all people, the amateur is blessed with views of an incredible universe. Imagine going through life without your telescope, with no way to scratch the itch that besets the celestial sightseer.

I'll bet those two professors have looked at the Veil and other objects many times since that night. And I'll bet they consider their lives much the rich er for doing so.

The Deep Sky Notebook

by Robert Kerwin

Some Spring Galaxy Groups

Few shoppers can resist a "two for the price of one" sale. Everyone seems to be interested in getting more for their money and time. Early spring offers deep sky observers the astronomical equivalent of a bargain sale in the form of small groups of galaxies. For the effort of finding just one galaxy, the observer is often treated to views of three, four or more galaxies. These galaxy groups are fun to explore and provide a good warm-up for trips into the crowded Virgo Cluster.

Our first group is a trio of galaxies in northern Draco. This area of the sky is rather devoid of bright finder stars; fourth-magnitude κ Draconis is the closest bright star and lies about five degrees south of the group. All three galaxies are similar in appearance. The westernmost of the three, **NGC 4291**, appears as a faint glow about one arc-minute across. It is somewhat brighter toward the center and slightly extended east-west. Just to the east is **NGC 4319**, the faintest of the three galaxies. The slightly oval glow is approximately 1.5 arc-minutes across and slightly extended almost north-south. To the northeast is **NGC 4386**, which appears as a faint, oval glow about 1.5 arc-minutes long oriented southeast-northwest. The surface brightness increases slightly toward the center where the faint, stellar nucleus resides.

In contrast to our first group of galaxies, our next group in Leo is very easy to find. This compact group contains four galaxies and lies midway between γ and ζ in the Sickle of Leo. **NGC 3193** is the easternmost member of the group and is probably the most conspicuous. In an eight-inch telescope, this galaxy appears small and round with a bright, broad core surrounded by a faint glow. To the north is a ninth-magnitude star. Just to the southwest of NGC 3193 is **NGC 3190**. This galaxy is only slightly fainter than NGC 3193 and is elongated northwest-southeast. It is about 1.5 arc-minutes long and has a bright stellar nucleus surrounded by a bright elongated glow. Surrounding this central region is a very faint glow along the long axis of the galaxy. A mere five arc-minutes to the northwest of NGC 3190 is **NGC 3187**. This galaxy is a challenge for an eight-inch telescope and appears as a small, very faint, unconcentrated glow that is extended slightly northwest-southeast. The last member of the group is **NGC 3185**, located about ten arc-minutes south of NGC 3187. This galaxy appears about one arc-minute across and slightly elongated northwest-southeast. The glow brightens slowly toward faint, stellar nucleus.

Our final galaxy group is located in Sextans. This pair of galaxies lies just east of a line drawn from Regulus to fourth-magnitude α Sextantis at about two-thirds of the distance from Regulus. **NGC 3166** appears as a bright glow elongated east-west and containing a bright core. The glow appears one arc-minute across in an eight-inch scope. Only eight arc-minutes to the east is **NGC 3169**. This galaxy is elongated northeast-southwest and is approximately one arc-minute across. It looks very similar to NGC 3166, but is somewhat smaller and fainter. The closeness of these two galaxies goes beyond mere appearances—these galaxies are, in fact, interacting.

Name	Type	Mag	Dimensions	Const	SkyAtlas	U2000	R.A.	Dec
NGC 4291	galaxy	11.5	2.0' x 1.7'	Dra	2	9	12h 20m	+75° 22'
NGC 4319	galaxy	11.9	2.8' x 2.1'	Dra	2	9	12h 22m	+75° 19'
NGC 4386	galaxy	11.7	2.8' x 1.8'	Dra	2	9	12h 25m	+75° 32'
NGC 3193	galaxy	10.9	2.5' x 2.5'	Leo	6	144	10h 18m	+21° 54'
NGC 3190	galaxy	11.2	4.1' x 1.6'	Leo	6	144	10h 18m	+21° 50'
NGC 3187	galaxy	13.4	3.2' x 1.4'	Leo	6	144	10h 18m	+21° 52'
NGC 3185	galaxy	12.2	1.8' x 1.1'	Leo	6	144	10h 18m	+21° 41'
NGC 3166	galaxy	10.4	4.6' x 2.8'	Sex	13	234	10h 14m	+03° 26'
NGC 3169	galaxy	12.3	1.8' x 1.1'	Sex	13	234	10h 14m	+03° 28'

It is that time of year again - make your plans now for the:

Grand Canyon Star Party

Where is the perfect astronomical getaway? A place where the spouse and kids would have lots to keep them busy during the day, where there are lots of interesting people, including a large international crowd, and where the skies are dark and the seeing great? It was sort of a best kept secret, but no more - it is the Grand Canyon! For three years now, the Tucson Amateur Astronomy Association (TAAA) has been going to the Canyon in the June dark-of-the-moon for what has to be one of the largest public star parties.

My first visit to the Grand Canyon was in June of 1979, where I was entranced by John Dobson and the San Francisco Sidewalk Astronomers. Starting with a slide show at sunset, hundreds of people would gather and listen as John talked knowingly about the universe. They would then all stay to view through the behemoths in the parking lot. The view of M13 with their 24" from the top of a tall ladder is with me still.

Eleven years later, after marrying in Las Vegas and stopping at the Canyon with a small telescope, my new wife Vicki and I found we could easily attract a crowd by setting up and offering views. We later decided it would be a great way to celebrate our anniversary by holding an annual star party at the South Rim. The objective is to maintain an astronomical presence there for two weekends and the week in between. The first year, in 1991, we had seven TAAA members spread out thinly, but we had enthusiastic crowds and have grown every year. In June of 1993, we had over 25 amateurs showing the sky to thousands of Canyon visitors.

The concept is simple and lots of fun. The Canyon has millions of visitors yearly, though only about 10% stay overnight. The mostly international crowd is always surprised to see us there, but as is mostly the case, the unexpected pleasures are the most treasured. We have been showered with gratitude on every return.

We generally use the same routine every year. Since the population of Grand Canyon Village is transitory, we have to have "new blood" every night. Many amateurs volunteer to set up on the prominent outlooks to show people sunspots or views across the Canyon. Visitors are most impressed if you show them the Colorado River rafts disgorging their passengers far below. If they are staying overnight, many return with your promise to show them equally impressive views of the cosmos. Yavapai Point is a popular sunset gathering spot, and a telescope or two and setting up for a slide presentation collect a few more potential observers. We rotate orientation talks among several volunteers to keep the talks fresh and individualized. We do get some repeat business, and the different perspectives are refreshing. As twilight deepens and the questions end, it is a short 70 yard walk to the observing field where hushed observing is punctuated by the occasional incredulous outburst. The best part is that most stay only a couple hours, then you are left on your own to stretch the limits of your telescope in some of the darkest skies anywhere.

In 1993 the viewing was dominated by Jupiter, the supernova in M81 and of course the galaxies of the spring sky highlighted by the rising Milky Way. We had an incredible 8 clear nights in a row - a record I would like to see any other star party match. In addition the seeing is amazingly good for being so close to a mile deep trench!

The dates for 1994 are June 4-11, and if you are interested in attending and want a real bed to sleep in, you haven't a moment to lose. June is the Grand Canyon National Park's busiest time, and it is never too early to book a room. Most hotels fill up 3-4 months in advance so you need to act now. Camping is a different story, as sites are available days before your visit. Refer to the phone list below for hotels and camping. The TAAA charges no registration fee - just take care of a place to stay and let us know you are coming (you need to sign liability waivers for TAAA and the National Park Service).

Come join us and have a great time, but be prepared to be exhausted, because with the Canyon calling by day and the incredible skies by night, who has time to sleep?

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

If you can tolerate a 7 mile drive, you can also try the following Motels at Tusayan (All area code 602):

Squire Inn	638-3515
Moqui Lodge	638-2424
Quality Inn	638-2673
Red Feather Inn	638-2414
7 Mile Lodge	638-2291

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

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

-Dean Ketelsen, President, TAAA

ARIZONA MESSIER MARATHON
April, 1994

Astronomy Club: _____; Name: _____

Address: _____; City, State, Zip: _____

Number of Objects: _____; Optics: _____

Obsvd	M#	R. A.	Decl	CON	TYPE	Mag	Size	Urano * Tir
_____	M 79	05 24.5	-24 33	LEP	GLOCL	8.4	8.7'	315 * 19
_____	M 76	01 42.3	+51 34	PER	PLNNB	11	163"X107"	37 * 1
_____	M 34	02 42.0	+42 47	PER	OPNCL	5.2	35.0'	62 * 4
_____	M 45	03 47.0	+24 07	TAU	CL+NB	1.2	100'	132 * 11
_____	M 42	05 35.3	-05 23	ORI	CL+NB	4	66'X60'	225/226/270/271 * 11
_____	M 43	05 35.5	-05 16	ORI	BRTNB	9	20'X15'	225/226/270/271 * 11
_____	M 78	05 46.8	+00 04	ORI	BRTNB	8	8'X6'	226 * 11
_____	M 41	06 47.0	-20 44	CMA	OPNCL	4.5	38.0'	318 * 19
_____	M 93	07 44.6	-23 52	PUP	OPNCL	6.2	22.0'	319/320 * 19
_____	M 47	07 36.6	-14 30	PUP	OPNCL	4.4	30.0'	274 * 12
_____	M 46	07 41.8	-14 49	PUP	OPNCL	6.1	27.0'	274/275 * 12
_____	M 50	07 03.2	-08 20	MON	OPNCL	5.9	16.0'	273 * 12
_____	M 48	08 13.8	-05 48	HYA	OPNCL	5.8	54.0'	230/231/275/276 * 12
_____	M 1	05 34.5	+22 01	TAU	PLNNB	8.4	6'X4'	135/136 * 5
_____	M 35	06 08.9	+24 20	GEM	OPNCL	5.1	28.0'	136/137 * 5
_____	M 38	05 28.7	+35 50	AUR	OPNCL	6.4	21'	97 * 5
_____	M 36	05 36.1	+34 08	AUR	OPNCL	6	12'	97/98 * 5
_____	M 37	05 52.4	+32 33	AUR	OPNCL	5.6	24.0'	98 * 5
_____	M 44	08 40.1	+19 59	CNC	OPNCL	3.1	95.0'	141 * 12
_____	M 67	08 50.4	+11 49	CNC	OPNCL	6.9	30.0'	186/187 * 12
_____	M 65	11 18.9	+13 05	LEO	GALXY	9.6	9.5'X2.3'	191 * 13
_____	M 66	11 20.2	+12 59	LEO	GALXY	8.9	9.0'X4.2'	191 * 13
_____	M 95	10 44.0	+11 42	LEO	GALXY	11.2	8.5'X5.0'	190 * 13
_____	M 96	10 46.8	+11 49	LEO	GALXY	10	7.5'X5.0'	190 * 13
_____	M 105	10 47.8	+12 35	LEO	GALXY	9.6	3.8'X3.8'	190 * 13
_____	M 81	09 55.6	+69 04	UMA	GALXY	8.1	26'X14'	23 * 2
_____	M 82	09 55.8	+69 41	UMA	GALXY	9.2	13'X6'	23 * 2
_____	M 97	11 14.8	+55 01	UMA	PLNNB	11	202"X196"	46 * 2
_____	M 108	11 11.5	+55 40	UMA	GALXY	10.7	8.8'X2.2'	46 * 2
_____	M 109	11 57.6	+53 23	UMA	GALXY	10.7	8.3'X4.6'	47 * 2
_____	M 40	12 21.9	+58 06	UMA	2STAR	9		47 * 2
_____	M 106	12 18.9	+47 19	CVN	GALXY	9.6	22.0'X9.0'	74 * 7
_____	M 94	12 50.9	+41 08	CVN	GALXY	8.7	14.0'X12.0'	75 * 7
_____	M 63	13 15.8	+42 02	CVN	GALXY	9.7	15'X9'	75/76 * 7
_____	M 51	13 30.0	+47 11	CVN	GALXY	8.8	9'X7.5'	76 * 7
_____	M 101	14 03.3	+54 22	UMA	GALXY	8.7	28'X28'	49 * 2
_____	M 102	15 06.5	+55 45	DRA	GALXY	11.1	6.5'X3.0'	50 * 2
_____	M 98	12 13.9	+14 55	COM	GALXY	11	9.9'X2.2'	193 * 13/14
_____	M 99	12 18.9	+14 26	COM	GALXY	10.2	5.0'X4.7'	193 * 13/14
_____	M 100	12 23.0	+15 50	COM	GALXY	10.6	6.8'X5.8'	193 * 13/14
_____	M 85	12 25.5	+18 12	COM	GALXY	10.2	7.4'X5.5'	148 * 13/14
_____	M 84	12 25.1	+12 54	VIR	GALXY	10.8	5.0'X4.0'	193 * 13/14
_____	M 86	12 26.3	+12 57	VIR	GALXY	10.9	12.0'X9.0'	193 * 13/14
_____	M 87	12 30.9	+12 24	VIR	GALXY	10.4	7.0'X7.0'	193/194 * 13/14
_____	M 89	12 35.7	+12 34	VIR	GALXY	11.1	3.4'X3.4'	194/193 * 13/14
_____	M 90	12 36.9	+13 10	VIR	GALXY	11.8	11.4'X4.7'	194 * 13/14
_____	M 88	12 32.1	+14 26	COM	GALXY	10.6	6.7'X3.0'	193/194 * 13/14
_____	M 91	12 35.5	+14 30	COM	GALXY	11.5	5.5'X4.5'	194/193 * 13/14
_____	M 58	12 37.8	+11 50	VIR	GALXY	11.5	6.0'X5.0'	194 * 13/14
_____	M 59	12 42.1	+11 39	VIR	GALXY	11	4.5'X3.5'	194 * 13/14
_____	M 60	12 43.7	+11 34	VIR	GALXY	10.3	3'X2.5'	194 * 13/14

Obsvd	M#	R. A.	Decl	CON	TYPE	Mag	Size	Urano * Tir
_____	M 49	12 29.8	+08 01	VIR	GALXY	10.2	8.0'X7.0'	193/194 * 13/14
_____	M 61	12 22.0	+04 29	VIR	GALXY	10.9	6.6'X6.4'	238 * 13/14
_____	M 104	12 39.9	-11 37	VIR	GALXY	9.3	8.9'X4.1'	284 * 13/14
_____	M 64	12 56.7	+21 41	COM	GALXY	8.9	10.0'X5.0'	149 * 7
_____	M 53	13 12.9	+18 10	COM	GLOCL	7.7	12.6'	150 * 14
_____	M 5	15 18.6	+02 05	SER	GLOCL	5.75	17.4'	244 * 14/15
_____	M 68	12 39.5	-26 45	HYA	GLOCL	8.2	12.0'	329 * 21
_____	M 83	13 37.1	-29 52	HYA	GALXY	8.5	11.2'X10.2'	370/371 * 21
_____	M 3	13 42.2	+28 23	CVN	GLOCL	6.4	16.2'	109/110/151 * 7
_____	M 13	16 41.7	+36 28	HER	GLOCL	5.9	16.6'	114 * 8
_____	M 92	17 17.1	+43 08	HER	GLOCL	6.5	11.2'	81 * 8
_____	M 9	17 19.2	-18 31	OPH	GLOCL	7.9	9.3'	337/338 * 15
_____	M 107	16 32.5	-13 03	OPH	GLOCL	8.1	10.0'	291 * 15
_____	M 12	16 47.2	-01 57	OPH	GLOCL	6.6	14.5'	246/247 * 15
_____	M 10	16 57.1	-04 06	OPH	GLOCL	6.6	15.1'	247 * 15
_____	M 14	17 37.6	-03 15	OPH	GLOCL	7.6	11.7'	248 * 15
_____	M 4	16 23.6	-26 32	SCO	GLOCL	5.9	26.3'	336 * 22
_____	M 80	16 17.0	-22 59	SCO	GLOCL	7.2	8.9'	335/336 * 22
_____	M 19	17 02.6	-26 16	OPH	GLOCL	7.2	13.5'	337 * 22
_____	M 62	17 01.2	-30 07	OPH	GLOCL	6.6	14.1'	375/376 * 22
_____	M 6	17 40.1	-32 13	SCO	OPNCL	4.2	15.0'	376/377 * 22
_____	M 7	17 53.9	-34 49	SCO	OPNCL	3.3	80.0'	377 * 22
_____	M 27	19 59.6	+22 43	VUL	PLNNB	7.3	480"X340"	162/163 * 8
_____	M 71	19 53.8	+18 47	SGE	GLOCL	8.3	7.2'	162 * 16
_____	M 11	18 51.1	-06 16	SCT	OPNCL	5.8	14.0'	250/295 * 15/16
_____	M 26	18 45.2	-09 24	SCT	OPNCL	8	15.0'	295 * 15/16
_____	M 16	18 18.8	-13 47	SER	CL+NB	6	25'	294 * 15/16
_____	M 17	18 20.8	-16 11	SGR	CL+NB	6	45'X35'	294/295/339/340 * 15/16
_____	M 18	18 19.9	-17 08	SGR	OPNCL	6.9	9.0'	294/339 * 15/16
_____	M 24	18 17.0	-18 35	SGR	OPNCL	4	120'X90'	339 * 22
_____	M 25	18 31.6	-19 15	SGR	OPNCL	4.6	32.0'	340 * 15/16
_____	M 23	17 56.8	-19 01	SGR	OPNCL	5.5	27.0'	339 * 15
_____	M 21	18 04.6	-22 30	SGR	OPNCL	5.9	13.0'	339 * 22
_____	M 20	18 02.3	-23 02	SGR	CL+NB	6.3	28.0'	339 * 22
_____	M 8	18 03.1	-24 23	SGR	CL+NB	5	80'X40'	339 * 22
_____	M 28	18 24.5	-24 52	SGR	GLOCL	6.9	11.2'	339/340 * 22
_____	M 22	18 36.4	-23 54	SGR	GLOCL	5.1	24.0'	378 * 22
_____	M 57	18 53.6	+33 02	LYR	PLNNB	9	86"X62"	117 * 8
_____	M 56	19 16.6	+30 11	LYR	GLOCL	8.3	7.1'	118 * 8
_____	M 29	20 23.9	+38 32	CYG	OPNCL	6.6	7.0'	84/85/119/120 * 9
_____	M 39	21 32.2	+48 26	CYG	OPNCL	4.6	32.0'	86 * 9
_____	M 52	23 24.2	+61 35	CAS	OPNCL	6.9	13.0'	15/34/58 * 3
_____	M 103	01 33.2	+60 42	CAS	OPNCL	7.4	6.0'	16/37 * 1
_____	M 69	18 34.4	-32 21	SGR	GLOCL	7.7	7.1'	378 * 22
_____	M 70	18 43.2	-32 18	SGR	GLOCL	8.1	7.8'	378 * 22
_____	M 54	18 55.1	-30 29	SGR	GLOCL	7.7	9.1'	378 * 22
_____	M 55	19 40.0	-30 58	SGR	GLOCL	7	19.0'	379/380 * 22
_____	M 75	20 06.1	-21 55	SGR	GLOCL	8	66.0'	343 * 23
_____	M 15	21 30.0	+12 10	PEG	GLOCL	6.35	12.3'	210 * 16/17
_____	M 2	21 33.5	-00 49	AQR	GLOCL	6.5	12.9'	255/256 * 16/17
_____	M 72	20 53.5	-12 32	AQR	GLOCL	9.4	5.9'	299 * 16
_____	M 73	20 59.0	-12 38	AQR	ASTER	8.9	2.8'	299 * 16
_____	M 30	21 40.4	-23 11	CAP	GLOCL	7.5	11.0'	346 * 23
_____	M 31	00 42.8	+41 16	AND	GALXY	3.5	178'X40'	60 * 4
_____	M 32	00 42.8	+40 52	AND	GALXY	8.2	8'X6'	60 * 4
_____	M 110	00 40.4	+41 41	AND	GALXY	8	17'X10'	60 * 4
_____	M 33	01 33.9	+30 40	TRI	GALXY	7	73'X45'	91 * 4
_____	M 74	01 36.6	+15 48	PSC	GALXY	10.5	12'X12'	173 * 10
_____	M 77	02 42.7	-00 02	CET	GALXY	10.5	9'X8'	220 * 10

EVAC Membership as of February 1994 (Sorted by name)

Name

Manfred Alber
Enrico Alvarez
Alex Beck
Jerry Beicher
David Brown
Walter Carruthers
Steve Conner
Bill Dellinges
Don Dorchester
John & Nellie Durham
Don Farley
Saul Fein
Dennis Fox
Tom Harvey
Bill Heckathorn
Ted & Brenda Heckens
Sam Herchak
Frank Honer
Michael Janes
Robert & Beth Kerwin
Mel Kirschner
Leon & Fannie Knott
Frank Kraljic
Roger Kubeck
Marc Leichter
Bob & Lln Leivian
Carl Lorson
Gene Lucas
Gordon MacKay
Stewart & Matthew Mann
PO Box 809
Jerry Misner
Tony & Joyce Muller
Joe Murray
Carl Noble
Bob Norby
George & Peggy Palfy
Bill & Kajia Peters
Eric Peterson
Randy Peterson
Don Pfohl
Lika Romney
Doreen & Wendell Rossman
Charlie & Paul Santori
Robert Sassano
Byron Scott
Bob Kelly

EVAC Membership as of February 1994 (Sorted by name)

Name

Stanley R. Shorb
Dick Simmon
Bill Smith
Steve Smith
Steve Smith
Emerson Stiles
Scott Strawn
Richard Stufflebeam
Bob Swanson
Jim Waters
W. D. Westmoreland
Jeff Whitlock
Homer & Ginny Willard
Russell Wilson
Don Wrigley
Art Zarkos
Frank Zullo

VOLUNTEERS NEEDED!!

To help with

Galaxy '94

When: Friday, April 8th from 8:30am - Noon
Where: America West Arena

For more information, contact Ted Heckens at 827-1524

EVAC/Robert Kerwin
1406 N. 85th Place #117
Scottsdale, AZ 85257

New Arizona City Site

Take I-10 to exit 200 (Sunland Gin Road). Turn right (south) after exiting the freeway. After about 15 miles, the pavement ends and about one mile further, the road turns sharply to the west. One mile past the road to the old site, the main road will turn south just after the "Silverbell Estates" signs. Continue for another 2.5 miles. The road will veer off to the west. Immediately to the east is the road to the site. About 100 yards down this road are several large, open areas to the left.