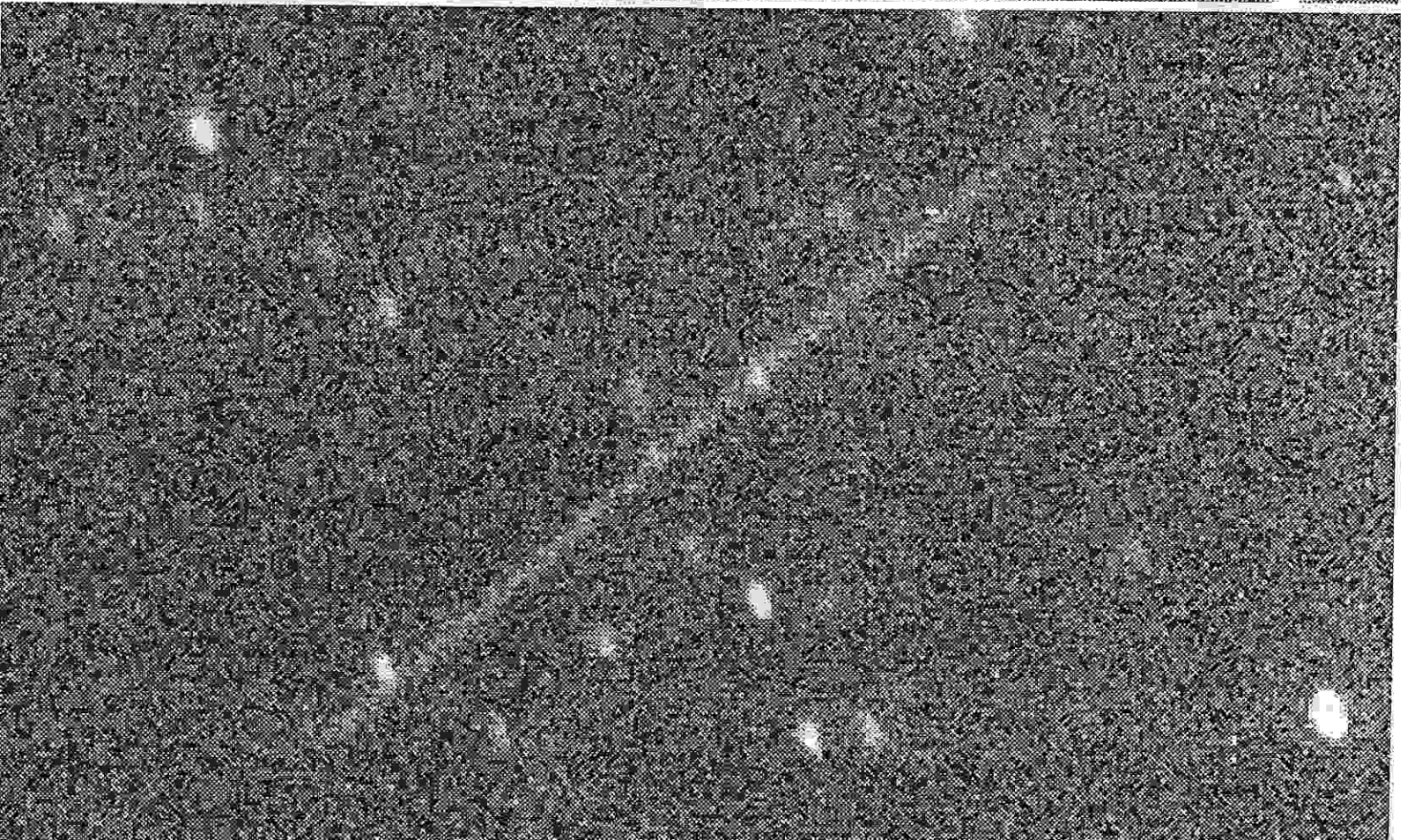
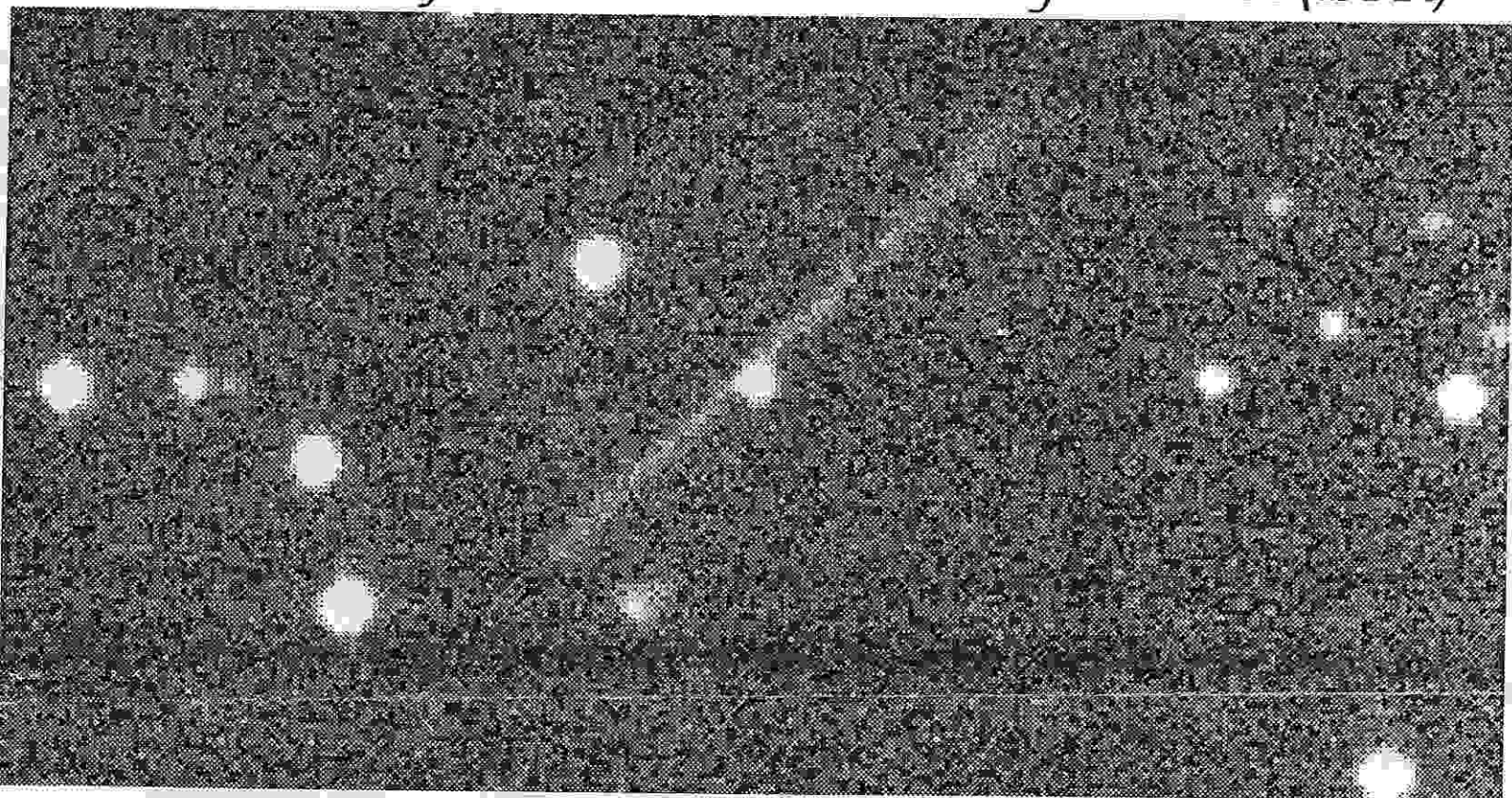


Desert Skies

January, 1995

The Newsletter of the Tucson Amateur Astronomy Association (TAAA)



GENERAL MEETING - Friday, January 6th, 7:30 pm at the Steward Observatory Auditorium -room N210. December's meeting is a **"Member's Night!"**

Pre-meeting "Beginners lecture" at 6:30 by Teresa Lappin - **"Light...but what kind?"** All are welcome! This, as well as the main meeting is in Steward observatory lecture hall N210. See enclosed map for directions!

Young Astronomer's Club is aimed at school-age kids and is concurrent with the main meeting. This month - **"The Sun"** and a field trip to the Flandrau telescope!

EXECUTIVE MEETING - Thursday, January 12th, 7:30 pm at Flandrau Science Center's Conference Room

STAR PARTIES: 31 December, 28 January, 4 February - Empire Ranch dark-sky star party. The dates for Empire Ranch indicate dark weekends, but do not guarantee the presence of TAAA members. If you want to be sure to have other observers there, call around or bring some!

7 January - Starparty on UA Mall in association with AAS Krupp lecture.

Next Newsletter Deadline - January 18th.

Cover: These images are of asteroid 1994XM1, discovered by Jim Scotti on December 9th with the Spacewatch telescope on Kitt Peak. Both images are 150 second exposures, and have the same scale, with north up. The top image shows the asteroid shortly after discovery, the lower 4.5 hours later with it low in the sky (note elongated star images). The upper exposure caught the object about 340,000 miles from the earth, the lower 245,000 miles away - just at about the moon's orbit. Closest approach was 60,000 miles over Russia near Moscow 7.5 hours after the lower exposure. Jim Scotti's were the only observations of this object (it is exceedingly difficult to locate something moving this fast - 20 degrees/hour at closest, and this near the earth - 14th magnitude, with a large telescope before a precise orbit is announced). The asteroid is probably about as big as Flandrau's dome and is in a 2.5 year elliptical orbit, inclined 5 degrees to the earth's. Both images courtesy Rik Hill and Jim Scotti.

TAAA EXECUTIVE

President	Dean Ketelsen	293-2855
Vice-President	Terri Lappin	579-0185
Executive Sec.	Rob Nyberg	745-0710
Recording Sec.	Tabitha Neihaus	797-4189
Treasurer	Duane Niehaus	797-4189
Member-at-Large	Bob Goff	790-1452
Member-at-Large	Dave Harvey	797-2512
Chief Observer	Mike Terenzoni	887-3226
Mem. Coord.	Gary Rosenbaum	579-0185
Past President	Tim Hunter	299-2972
Newsletter	Dean Ketelsen	293-2855
Starparty Chair	Karen Allen	749-5744

MEMBERSHIP IN THE TAAA

Individual	\$25.00/year (increased
Family	\$30.00/year rates as of
Senior Citizen (over 60)	\$23.00/year July 1st '94)

Sky & Telescope subscription (optional) \$20.00. Rates for membership in the TAAA are given above. Members may subscribe to Sky & Telescope at the time membership renewal, saving more than 25% off the cost of a regular subscription. The subscription term must match your membership period.

Send one check, made payable to: **Tucson Amateur Astronomy Association**, to cover both membership and subscription to: TAAA, PO Box 41254, Tucson, AZ 85717. It is best to pay your dues 2-3 months before your membership actually expires.

Desert Skies Publishing Guidelines

- * All articles, announcements, news, etc. must be submitted by the **newsletter deadline listed above**. Materials received after that date will appear in the next issue.
- * All submissions are retained by the editor unless prior arrangements are made.
- * Partial page article submissions should be submitted on Wordperfect compatible files on a floppy. Full page articles, artwork, and photos should be camera ready.
- * We will not publish slanderous or libelous material!

Send articles, announcements, etc. to:
TAAA - Desert Skies
PO Box 41254
Tucson, AZ 85717

Send ADDRESS CHANGES to:

TAAA
Attention: "address change"
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4 EASY STEPS TO MEMBERSHIP RENEWAL

1. Pay your dues 2-3 months early. **Your month of membership expiration is listed on your newsletter mailing label.**
2. a) Decide if you want Sky & Telescope, then add \$20 to your membership rate.
b) Include Sky & Telescope's renewal notice, if possible.
3. Write one check, payable to TAAA.
4. Send it to TAAA, P.O. Box 41254, Tucson, AZ 85717.
Call the Treasurer if you have any problems.

January, 1995 Meeting: "Member's Night"

As we try to do a couple times a year, the January meeting is a "Member's Night". It is a chance to find out what others in the club are interested in and what projects they are working on. It is usually a great learning experience, and you are usually surprised to find that many others share your interests. You might even find someone to assist you in working on a project.

Don't be shy, step on up and let us know what you are doing. Our members are at all experience levels, so don't think others would not be interested. We have room for 5 or 6 speakers and talks will be limited to 10-15 minutes unless we get a very few volunteers. So far only one has stepped up - a narration of a November solar eclipse trip, so there is room for more. Call Dean at 293-2855 or Teresa at 579-0185 to reserve your place now!

Beginner's Lecture Light...but what kind?

Visible light, the colors red, orange, yellow, green, blue, and violet, are well known to us. When we look through our telescopes, we are seeing the visible light which may have traveled light years before reaching the earth. In addition, light of different "colors" which we can't see is emitted by all objects. You know what the universe looks like in visible light...exactly what you see. What would it look like with x-ray or radio "eyes"? This month's Beginner's Lecture will discuss the different wavelengths (or energies) of light...called the electromagnetic spectrum and show you the world beyond the visible realm. The radio or infrared world is not a virtual reality world...it's very real!

The Beginner's Lecture starts at 6:30pm, one hour before the start of the regular meeting, in Steward Observatory's Lecture Hall.

Young Astronomers Club Steward Observatory, Room 208

The Young Astronomer's Club is aimed at school-age students and runs at the same time as the general meeting. The December meeting covered the winter constellation, Orion. We looked at Betelgeuse with a 60mm refractor telescope. We also discussed the Orion nebula - the idea of a star nursery led to quite a few questions! Since Venus is beautiful lately, the kids will be looking for it in the early morning.

This month we will be talking about the Sun. Our project will be to make a sundial. If the sky is clear, we will visit the telescope at the Flandreau Science Center. The constellation of the month is Gemini. The asteroid Vesta will be moving through Gemini in the coming months, and should be visible with binoculars. Call Nina Lehman at 579-1382 for information or if you want to help out.

American Astronomical Society
Annual Meeting
Saturday, Jan 7 - Friday, Jan 12

The AAS, a national organization of professional astronomers, is holding its 185th meeting in Tucson this January at the Tucson Community Center. This meeting promises to be one of the largest AAS meetings held so far. Over 1500 people are expected to attend! Several local groups are co-sponsoring this meeting. The TAAA is not an official sponsor, but we have been invited to participate in the meeting.

First, there are three public lectures which are listed below, all open to the public at no charge. After the Saturday public lecture, the TAAA we will have telescopes set up near Flandrau for a public star party. In addition, several TAAA members will be volunteering their time during the meeting. If you want to volunteer and have not received details from Dan Brocius, you must contact him before January 4th. Dan can be reached at 670-5706 (during regular business hours) or e-mail him at brocius@egret.sao.arizona.edu. There will be an orientation/training session that all volunteers must attend on Saturday, January 7th, 10 am to noon. If you can help stuff packets on Thursday, January 5th, let Dan know.

What do volunteers do? Lots...volunteer duties include the operation and on-the-spot repair of slide projectors and overhead projectors; keeping all session title placards current throughout the day; acting as messenger; assisting Local Organizing Committee with a bewildering and incomprehensible set of tasks; and other duties as assigned. In return, all volunteers receive a T-shirt and hat with the meeting logo and free parking at the TCC. With two days work volunteers receive free meeting registration (over \$200 for non-AAS members). Volunteer your time for four days and you also get a ticket to the society banquet at Old Tucson on Wednesday, Jan. 11th. Sorry, attending only the Saturday night star party will not get you any of these goodies. A "day's work" means working a full morning OR afternoon session. The organizers expect that you will want to attend some sessions and will trade-off with other volunteers. As long as someone takes on your assigned duty, you will be allowed to attend particular sessions which interest you. If you are interested in the schedule of lecture sessions, call Terri at 570-0185. A list of lectures will be available at the January 6th TAAA meeting for you to look over.

AAS Public Lectures

All lectures free and open to the public

*****Jan 7 (Saturday) 7pm Steward Lecture Hall (N210)**

"Celestial Seasonings: Astronomy and Rock Art in the American Southwest"
public archaeoastronomy lecture by Dr. Edwin C. Krupp.

Dr. Krupp is an astronomer and Director of Griffith Observatory in Los Angeles. He is recognized internationally as an expert on ancient, prehistoric, and traditional astronomy. He is an author of several books on the celestial component of belief systems and also writes astronomy books for children which are illustrated by his wife, Robin Rector Krupp. He is a contributing editor for Sky & Telescope and writes "Rambling Through the Skies".

*****Jan 7 (Saturday) 9pm (approximate time) Star Party at Flandrau Science Center**

Star Party with the Tucson Amateur Astronomy Association on the university mall.

*****Jan 9 (Monday) 8pm Tucson Community Center Ballroom 2**

"The Committee of Ten, Nancy Reagan's Astrologer, and Science Anxiety: A Practical Guide to the State of Astronomy Education" public lecture by Andrew Fraknoi

Andrew Fraknoi chairs the Astronomy Department at Foothill College near San Francisco and directs Project ASTRO at the Astronomical Society of the Pacific. He has organized workshops on teaching astronomy in grades 3-12, given over 350 public lectures on astronomical topics, and appears regularly on radio and television interpreting astronomical developments in everyday language. He is the author or co-author of ten books on astronomy and astronomy education.

*****Jan 13 (Friday) 7pm University of Arizona Student Union Arizona Ballroom "Exploration" AAS public lecture by Majel Barrett Roddenberry**

The "First Lady of Star Trek," Majel Barrett has been with the Star Trek Universe since the beginning -- first as Christine Chapel in the original series and recently as Lwuxana Troi in "Star Trek: The Next Generation" and "Star Trek: Deep Space Nine." She also appeared in two Star Trek movies.

Earlier this year, Barrett participated on a panel "Star Trek Science" at the American Association for the Advancement of Science meeting. Panelists discussed the educational and creative stimulation provided by the portrayal of advanced technology. Barrett will be presenting these ideas and more in her talk as she examines the importance of exploration and attempting the new for human society.

Barrett is a member of the National Space Society Board of Governors, and has appeared in public service announcements promoting the U.S. Space Program and, in 1993, she received a SpaceWeek International "Next Generation" award for her support of NASA's Space Station program.

Smithsonian Institution/Fred Lawrence Whipple Observatory Green Valley Lecture Series, 1995

All lectures are in the Green Valley Recreation Center West Auditorium in Green Valley. They start at 3:30pm and run about an hour. For more information call 670-5707. Co-sponsored by Green Valley Recreation, Inc.

Tue-Jan 17 New Discoveries in Gamma Ray Astronomy
Trevor Weekes, Whipple Observatory

Tue-Jan 24 The Aging of the Universe: As Seen by the Space Telescope
Nelson Caldwell, Whipple Observatory

Tue-Jan 31 Sampling the Primordial Soup
Craig Foltz, MMT Observatory

Tue-Feb 8 MMT: Making a Mega-Telescope
Frederic Chaffee, MMT Observatory

Potential Newsletter Editors Identified!

There are potential candidates for newsletter editor in Nina Lehman and her mother Nancy Wagner (at least they did not run in the other directions screaming). For those who do not know her, Nina is currently running the Young Astronomer's Club, which she started a few months back to introduce youngsters to astronomy. They will at least consider the job and try it once or twice to get a feel for the work involved before committing. So a word of warning - you may see a change in upcoming newsletters, as editors are certainly free to change the look and feel. Be aware that those complaining get assigned to help out!

Change in Automatic Deposit Director

TAAA's automatic deposit program has a new director in Gary Rosenbaum, who replaces Brad Becker. The program allows you to make a painless automatic monthly donation to the TAAA land fund (\$5 minimum). We currently have 6 members donating about \$220 per month. If you want to join or change your status in the program, call Gary at 579-0185.

Carpooling to Star Parties

There are many instances where TAAA members might not want to drive the long distance to Empire Ranch or elsewhere by themselves, or for that fact, observe by themselves at a remote site. To help alleviate some of those concerns, we are putting out a call to see if there is any interest in carpooling to get more members out in the country. If you are interested in riding with members to Empire, or if you are willing to share a ride, call Dean at 293-2855, or Teresa at 579-0185, and we will start a rideshare list.

Observing the Geminid Meteor Shower

Here are my observations on the Geminid Shower. I observed from our house in east Tucson (one mile east of Broadway and Houghton).

12/13/94: 0330-0420 MST Limiting Mag. 5.0 Clear sky.

42 Geminid meteors. 6 background meteors.

12/14/94: 0400-0458 MST Limiting Mag 5+ Clear sky

83 Geminid meteors (9 mag 1.0 or brighter. 2 were ~ mag -2)

8 background meteors.

12/14/94: 0500-0556 MST Limiting Mag 4.5 clear sky

68 Gemini meteors (10 were mag 1.0 or brighter, one -2 mag)

6 background meteors.

I observed a sector from west to northwest in order to get the darkest possible sky. The radiant was to my back so all my sightings were moving west to east. Several of the brightest meteors were distinctly green and left persistent trails. I don't think the fall off in the count from 0500 onward was a drop in the shower. I was losing at least a magnitude in seeing from the glare off Venus.

Certainly not as showy as the Perseids were earlier this year but it was a blast nevertheless. It was a shame the window for observation was so small, moon shine and all.

See you all later ---- Stephen Alden

TAAA MEMBERSHIP LIST for corrections, call Gary Rosenbaum 579-0185

<u>Last name</u>	<u>First Name</u>	<u>Phone</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>
Alden	Stephen M. & Monica	721-8365	286 N Fenceline Dr	Tucson	AZ	85748
Allen	Steven L. & Karen	749-5744	3701 N Wendell Rd	Tucson	AZ	85749
Anderson	Carl	318-3371	4141 E Lee #9	Tucson	AZ	85712
Anderson	David & Vilma	575-0591	2225 W Rappallo Way	Tucson	AZ	85741
Andress	Robert	625-8324	101 Verde Vista	Green Valley	AZ	85614
Barber	Brad	742-5113	1545 W Calle Tiburon	Tucson	AZ	85704
Batchelder	Scott W	794-1381	3415 W Clarisse St	Tucson	AZ	85741
Becker	Greg	297-8752	4521 N Via Entrada Apt 189	Tucson	AZ	85718-5865
Belden	Richard P	825-1641	14541 N Rock Springs Ln	Tucson	AZ	85737
Bergman	Ray E	296-3935	9950 E Sandshell Court	Tucson	AZ	85748
Berlind	Perry	321-4484	1830 E. Broadway #124-236	Tucson	AZ	85719
Blair	Edward	297-9806	90 W Greer Lane	Tucson	AZ	85704
Branson	Detrick D		3455 E Lester	Tucson	AZ	85716
Breyere	Ed		15115 Interlachen Dr	Silver Springs	MD	20906
Briggs	Elyse		11630 E Calle del Rincon	Tucson	AZ	85749
Broehl	Charles R	825-7345	2324 E. Coreopsis Way	Tucson	AZ	85737
Bronnimann	Danetta & Mecikalski		7580 N Calle Sin Desengano	Tucson	AZ	85718
Brydges	Jeff	888-0591	2656 W. Lazybrook Dr.	Tucson	AZ	85741
Buchroeder	Richard	884-9800	8 S. Bella Vista Dr.	Tucson	AZ	85745
Bufe	Charles	628-8720	249 E Kelso	Tucson	AZ	85705
Burdon	Thomas S.	795-8973	2205 N Swan Rd	Tucson	AZ	85712
Burns	John	281-8900	1068 Camino Caralampi	Rio Rico	AZ	85648
Canizo	Thea		8875 E McClellan St	Tucson	AZ	85710
Carlson	Norman	327-5501	4025 N Fremont	Tucson	AZ	85719
Cartwright	Bill		2500 N Desert Links Apt 6104	Tucson	AZ	85715
Christensen	John	721-0820	2912 S Harrison Rd	Tucson	AZ	85730
Clark	Gilbert A.		1037 Carinthian Way	Pomona	CA	91768
Colvin	Kriss		2300 N Tanque Verde Loop	Tucson	AZ	85749
Contractor	Dr. Dinshaw	297-9736	6676 N. Harran Dr.	Tucson	AZ	85704
Coppolino	Dr Carl		PO Box 36390	Tucson	AZ	85740
Cota	Bill	529-0298	8030 E. Lakeside Pkwy #5101	Tucson	AZ	85730
Couner	Steve	695-0372	1107 E North Campus Dr	Tucson	AZ	85714
Crawford	David	327-9331	3545 N. Stewart	Tucson	AZ	85716
Crawford	Robert	544-3720	10700 N La Reserve Dr #1201	Tucson	AZ	85737
Crocker	K Robert	(503)524-7547	11765 SW Wilkens Lane	Beaverton	OR	97008
Crowley	David	760-0951	4500 N Via Madre	Tucson	AZ	85749
Cutler	Daniel G	297-8805	13475 N Lindbergh Dr	Tucson	AZ	85741
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DeWarf	Ronald A & Martha	327-3000	2101 North Catalina	Tucson	AZ	85712
Dettmann	Lee	325-2475	4540 E. Pima #4	Tucson	AZ	85712
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Dietrich	Donald & Mary	885-5851	8989 E. Escalante #104	Tucson	AZ	85730
Dodd	Charles G	825-2482	14292 N Trade Winds Way	Tucson	AZ	85737
Drew	Zach	529-2159	5281 N Rocky Ridge Pl	Tucson	AZ	85715
Dunlap	Dennis	443-0252	PO Box 5135	Scottsdale	AZ	85261-5135
Dvorak	Ed	287-5067	1351 E. Patagonia Hwy.	Nogales	AZ	85621
Eddington	George T	825-8956	14760 N Desert Rock Dr	Tucson	AZ	85737
Edmonds	Russell J	297-9492	699 W Magee Rd #15204	Tucson	AZ	85704
Esquerdo	Gil		2235 N Seville #623	Tucson	AZ	85715
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Fisher	Howard	299-3629	6256 N Camino Miraval	Tucson	AZ	85718
Flanagan Jr.	John F.	296-1643	10090 E. Gray Hawk Dr.	Tucson	AZ	85730
Ford	John		9822 Keyser Point Rd	Ocean City	MD	21842
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Frey	Jim		PO Box 37, Cruz Bay	St. John	VI	00831
Freyer	John & Gail	797-9055	1640 W Caspian Dr	Tucson	AZ	85704
Friedman	Gilbert & Doris	571-1662	1318 Avenida Polar #F107	Tucson	AZ	85710
Fultz	Ellen	445-8818	2811 Ithica	Prescott	AZ	86301

Furlong	Steve	795-9153	2839 E 9th St	Tucson	AZ	85716
Gandet	Thom	296-5399	4863 N Camino de la Codorniz	Tucson	AZ	85745-9717
Gardner	Gary		14855 W. Belmont Dr.	Casa Grande	AZ	85222
Garnett	Robin	623-5151	315 N Cherry Ave	Tucson	AZ	85719
Garramone	Robert J.	881-4256	4850 E. Edison St.	Tucson	AZ	85712
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Gittler	Andrew	577-6240	5755 E River Rd Apt 4103	Tucson	AZ	85715
Glasser	Joy	296-5658	8602 E Rancho Cir	Tucson	AZ	85715
Goff	Bob	790-1452	PO Box 44237	Tucson	AZ	85733
Goldstein	Michael		5425 N Camino de las Brisas	Tucson	AZ	85715
Gower	Gordon	749-0398	11411 E. Calle del Rincon	Tucson	AZ	85749
Grajewski	Julian		1615 E Hampton St	Tucson	AZ	85719
Green	Edward	790-3121	4562 E 31st	Tucson	AZ	85711
Guerrero	Robert	296-6208	3261 N. Placita Brazos	Tucson	AZ	85715
Hagin	Gerald D	742-1433	2050 W Paseo Monserrat	Tucson	AZ	85704
Hall	Gary & Gretchen		6722 N. Cocopas	Tucson	AZ	85718
Hamlin	Loren & Marjorie	297-4691	902 W Comababi Dr	Tucson	AZ	85704
Hancock	Molly		1001 W St Marys Rd #216	Tucson	AZ	85745
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Harris	Brian	577-1173	4924 N Boyd Ln	Tucson	AZ	85715
Harris	Robert M.		337 S. 18th St	Philadelphia	PA	19103
Harvey	David	797-2512	1552 W. Chapala	Tucson	AZ	85704
Head	Roy	825-3862	14508 N. Lone Wolf Ln.	Tucson	AZ	85737
Healy	F Dale	623-0534	5815 E Edison St	Tucson	AZ	85712
Hebert	Robert J	287-5502	965 N Silverlode Trail	Nogales	AZ	85621
Henning	Scott	326-7039	4411 E. Holmes St.	Tucson	AZ	85711
Higgins	Perry	290-0734	936 N Olsen Ave	Tucson	AZ	85719
Hill	Richard & Dolores	721-0123	10130 E. King Manor Dr.	Tucson	AZ	85730
Hoag	Art	795-8644	4410 E. 14th	Tucson	AZ	85711
Holland	Morry & Sabra	743-9635	7260 W El Camino del Cerro	Tucson	AZ	85745
Holsey	William & Joyce	297-3991	6501 N Camino Arturo	Tucson	AZ	85718
Hopton	Carole P	825-2685	2411 E Nasturtium St	Tucson	AZ	85737
Houpt	Rebecca	544-4376	8215 N Oracle No 25	Tucson	AZ	85704
Hunter	Tim	299-2972	4571 E Avenida Shelly	Tucson	AZ	85718
Hutzler	Richard	770-9608	2120 N Silverbell Rd #7208	Tucson	AZ	85745-1150
Isias	Eddie	741-2410	250 W Elvira Road	Tucson	AZ	85706
Itokazu	Wayne	(808)737-5557	910 Kapahulu #107	Honolulu	HI	96816
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Karkoschka	Erich	621-3994	University of Arizona	Tucson	AZ	85721
Kaseler	Ted	749-9601	298 N Nightfall Ave	Tucson	AZ	85748
Keefer	Andrew	790-6557	6050 E. 35th St.	Tucson	AZ	85711
Keith Kumm	Sandy Pharo	577-2643	P.O. Box 43474	Tucson	AZ	85733
Kessel	James	883-2524	2926 W Nebraska	Tucson	AZ	85746
Ketelsen	Dean & Vicki	293-2855	1122 E. Greenlee Place	Tucson	AZ	85719
Kinash	Ed		19 Atchison Crs.	S4R518		
King	Anga B.	896-2054	P.O. Box 840	Oracle	AZ	85623
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Kish	Robert	573-7335	2641 W Vereda Arboles	Tucson	AZ	85746-8006
Klugmann	Joachim		Mozart STR 4			
Knauss	Daniel	529-2387	5808 N. Moccasin Trail	Tucson	AZ	85715-0801
Kohut	Richard	326-0482	2640 S Cottonwood Ln #3	Tucson	AZ	85713
Kristmann	Steve	795-9332	3444 E. 4th St	Tucson	AZ	85716
Kuehn	Tom & Mary Beth		6830 E Via Colorada	Tucson	AZ	85715
Landon	Thomas	886-3643	2160 N. Pantano Rd. #107	Tucson	AZ	85715
Laner	Howard & Lillian	747-0971	6199 E Broadway #326	Tucson	AZ	85711
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Lehman	Nina N	579-1382	3641 W Shalako Place	Tucson	AZ	85741
Leonard	T Michael		3819 E Bellevue	Tucson	AZ	85716

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Levy	David H.	762-5638	120 William Carey St.	Tucson	AZ	85747
Lewis	Vivian	456-1653	507 E Ash St	Huachuca City	AZ	85616
Liese	Lawrence		3725 Ironwood Hill Dr.	Tucson	AZ	85745
Lopez	Mason	326-9419	2614 N La Verne	Tucson	AZ	85712
Lorenz	Paul	574-1719	4444 E Benson Hwy #289	Tucson	AZ	85706
Lowe	Peter J	544-9277	11821 N Dragoon Springs Dr	Tucson	AZ	85737
Lowman	Rip & Arlene	749-9604	3980 N. Via del Sol	Tucson	AZ	85749
Lynn	Robert B.	744-1232	4901 W. Lambert Lane	Tucson	AZ	85741
Lysell	Ron		10855 N Glen Abbey Dr	Tucson	AZ	85737
MacIlroy	Bruce M	577-0621	4601 E Skyline Dr Apt 318	Tucson	AZ	85718
Maley	George E		6037 N Reliance Dr	Tucson	AZ	85704-5325
Marinello	Micky	746-0541	5000 S Country Club #4102	Tucson	AZ	85706
Martin	Robert C.		1671 N. Nancy Rose Ave.	Tucson	AZ	85712
McBride	Aida	625-7309	1663 Calle del Grajo	Green Valley	AZ	85614
McDaniel	Robert E	625-5724	822 Hermosa Place	Green Valley	AZ	85614
McGaha	James E.		5100 N. Sabino Foothills Dr.	Tucson	AZ	85715
McGlocklin	Richard	749-9434	3170 N. Avenida Del Conejo	Tucson	AZ	85749-9544
Means	Dennis	322-3395	HC 04 Box 7520	Tucson	AZ	85735
Mechler	Gary	298-0456	6930 E. Arrowhead Place	Tucson	AZ	85715
Merems	Bernard H.	394-2739	P.O. Box 925	Patagonia	AZ	85624
Meriwether	Douglas	296-4457	6110 E. San Marino St.	Tucson	AZ	85715
Metcalf	Donna J	529-0304	4732 Paseo Sonoyta	Tucson	AZ	85715
Meyer	Andrew & Laura	742-4549	1440 W. San Annetta	Tucson	AZ	85704
Monzel	Peter		3128 S Lyndale #1	Minneapolis	MN	55408
Moore	Kenneth & Michele	749-5646	PO Box 18228	Tucson	AZ	85731
Mortazavi	Massoud	899-1191	2037 N Sunset Dr	Chandler	AZ	85224
Mumme	Robert	792-3886	4352 E. Bryn Mawr Rd.	Tucson	AZ	85711
Myers	Nancy & Jeff	744-6021	8982 N. Lattimore Ln.	Tucson	AZ	85741
Nakamura	Michael	624-3372	132 E. Deland St.	Tucson	AZ	85705
Nault	Ben	326-7059	3141 N Laurel Ave	Tucson	AZ	85712-1177
Nelson	Douglas		Box 156	Wabasso	MN	56293
Newhouse	Carol	798-8919	5350 E 16th St	Tucson	AZ	85711
Nichaus	Duane & Sharon	797-4189	9861 N Windwalker Trail	Tucson	AZ	85741
Nishimoto	Glenn	321-4737	3071 N. Sparkman Blvd.	Tucson	AZ	85716
Nyberg, D.P.M.	Rob	745-0710	5969 E. Rosewood	Tucson	AZ	85711
Nye	Derald	762-5504	10385 E. Observatory Dr.	Tucson	AZ	85747
O'Hara	Thomas		3220-4 E Presidio	Tucson	AZ	85716
Oliver	Dennis		4700 N Kolb Apt 10204	Tucson	AZ	85715
Oliver	Jim & Karen	885-7040	2922 S. Harrison	Tucson	AZ	85730
Olson	Robert E.	577-1050	4641 N. Camino Campero	Tucson	AZ	85715-6321
Patton	Susan E	745-2291	3300 S Jessica Ave	Tucson	AZ	85730
Perper	Lloyd	743-3162	6700 W El Camino del Cerro	Tucson	AZ	85745
Perrone	Louis	825-1089	1649 E Broken Bow Way	Tucson	AZ	85737
Pierce	Deloy	451-8215	51S 150E, PO Box 674	Farmington	UT	84025
Polacheck	John W & Faye Libby	555-8152	PO Box 299	Cortaro	AZ	85652
Pomerooy	J.A.	825-9363	14654 N. Spanish Garden Lane	Tucson	AZ	85737
Price	Ronald S.	742-5703	190 W Greer Lane	Tucson	AZ	85704-6008
Pryor	Kenneth C & Cheryl	790-2520	4020 S Snapdragon	Tucson	AZ	85730
Quiroz	Randy		1608 S. Treat Ave.	Tucson	AZ	85713-2115
Rainville	C.J.	749-5092	10531 E. Oakwood Dr.	Tucson	AZ	85749
Repp	Terry		10408 E Flintlock Trail	Tucson	AZ	85749
Ribaudo	Peter	294-3434	6134 E Euclid	Tucson	AZ	85706
Riggenbach	Jorga	749-2710	3531 N. Via San Jacinto	Tucson	AZ	85749
Robertson	Harold	825-2303	14310 N Choctaw Dr	Tucson	AZ	85737
Roisum	Tom	322-9682	3144 E Lester	Tucson	AZ	85716
Rorrer	Chris	741-0443	1535 W Argyle Ave	Tucson	AZ	85746
Rosenbaum	Gary	579-0185	4131 W. Orangewood Dr.	Tucson	AZ	85741
Ross	Alex		10915 E Pinal Vista	Tucson	AZ	85730
Rostash	Rudolph & Carole	749-9175	2720 N. Conestoga Ave.	Tucson	AZ	85749
Roth	Herbert		8419 N. Calle Tioga	Tucson	AZ	85704
Saber	Ingrid		6322 N Barcelona Lane #517	Tucson	AZ	85704
Salzman	Joseph	296-4023	6609 E. Crimson Sage Dr.	Tucson	AZ	85715
Sam	Robert	318-2225	2400 N Country Club	Tucson	AZ	85716
Samay	Ray		5009 N. Sunriver Cir. #49	Tucson	AZ	85704

Sasnett	Richard		6537 E Calle Dened	Tucson	AZ	85710
Saumon	Didier	326-7547	University of Arizona	Tucson	AZ	85721
Schaber	Douglas C	325-2029	3914 N Campbell Ave	Tucson	AZ	85719
Schenz	Richard F	825-2573	1837 E Lone Rider Way	Tucson	AZ	85737
Schlottman	Keith	290-5883	9581 E. Calle Cascada	Tucson	AZ	85715
Schubert	Chad	886-1124	3913 E Montecito St	Tucson	AZ	85711
Schulte	Richard	299-3127	5149 N Calle Bosque	Tucson	AZ	85718
Schultz	Rudy	297-5857	1200 E. Silvertree Dr.	Tucson	AZ	85718
Schulze	Richard J	721-0694	1620 S Cathay Pl	Tucson	AZ	85748
Scott	Janna	298-6766	10156 E Arizmo St	Tucson	AZ	85748-1818
Seaman	Robin		5641 S Liberty Ave	Tucson	AZ	85706
Sebastian	David	886-8292	1701 N Wilmot No 150-G	Tucson	AZ	85712
Shapiro	Del & Claire	297-6695	6617 N Shadow Run Dr	Tucson	AZ	85704
Shoemaker	Cynthia	327-9740	2906 E Monte Vista	Tucson	AZ	85716
Skinner	Byron R.		14495 Amilaur Dr.	Tucson	AZ	85747
Smith	Michael S.	299-0122	6715 N. Table Mtn. Rd.	Tucson	AZ	85718
Smith	Stephen B.		Box 5056	Huachuca City	AZ	85616
Snider	Robert M		PO Box 1183	Benson	AZ	85602
Solomon	Larry & Nancy	743-7924	4900 W. Jojoba	Tucson	AZ	85745
Spitz	A.H.		5246 N. Paseo Del Arenal	Tucson	AZ	85715
Sprei	Stanley	577-7496	1070 64th St Apt 5	LaGrange	IL	60525
Stepp	Larry	297-6312	1971 W. Placita Tampico	Tucson	AZ	85704
Stolarski	Conrad J		2500 N Desert Links Dr #14106	Tucson	AZ	85715
Stone	Sigmund	299-3723	4372 N. Vereda Rosada	Tucson	AZ	85715
Straub	Deborah A	795-3128	1633 N Bentley Ave	Tucson	AZ	85716
Stravis	Joe		3003 W Broadway #85	Tucson	AZ	85745
Strittmatter	Donald J.	299-2304	4110 E. La Paloma Dr.	Tucson	AZ	85718-1506
Sunkin	Donald P	897-9674	#033 91068, FCI Safford RR2 Box 9000	Safford	AZ	85546
Sweetman	Michael	297-2781	2961 W. Katapa Trail	Tucson	AZ	85741
Tanner	Lori		PO Box 41328	Tucson	AZ	85717-1328
Tanner	Roger D	574-3876	9970 E Paseo San Bruno	Tucson	AZ	85747
Taylor	Lorna K	742-7184	7615 N Andover	Tucson	AZ	85704
Tekatch	Bill & Ann	(905)575-5433	19 Pheasant Place	L9A4Y4		
Terenzoni	Michael	887-3226	380 E. Calle Arizona	Tucson	AZ	85705
Thompson	Andy	(408)245-1415	142 Carlow Ct	Sunnyvale	CA	94087
Tickner	Bill	749-1555	8842 E. Driftwood Trail	Tucson	AZ	85749
Trexler	James	625-1216	1921 S. Abrego Dr.	Green Valley	AZ	85614
Trimbell	James	648-1526	4191 Campina Court	Green Valley	AZ	85614
Trueblood	Mark & Pat	455-9263	P.O. Box 797	Sonoita	AZ	85637
Trueblood	Ralph		8701 S Kolb Rd, Box 18-199	Tucson	AZ	85706
Turner	Gayle	458-2209	P.O. Box 1802	Sierra Vista	AZ	85636
Urias	Tony	327-3854	2504 E. 3rd	Tucson	AZ	85716
Van Wyngarden	Jerry	(303)434-8159	311 W. 6th St.	Ajo	AZ	85321
Vann	M J	648-1204	441 Paseo Bolsa	Green Valley	AZ	85614
Varner	Alan	294-4655	1515 W Highsmith Dr	Tucson	AZ	85746
Vega M.D.	Luis Eduardo	747-9323	420 S. Essex	Tucson	AZ	85711
Velkoff	Stephen		8701 S Kolb Rd, SP #1-287	Tucson	AZ	85706
Verstoppen	Virgil	825-0473	14730 N Palmwood Dr	Tucson	AZ	85737
Vollin	Jeff	293-9036	580 E Canyon View Dr	Tucson	AZ	85704
Vreeland	Albert	749-9242	9261 Moenkopi Trail	Tucson	AZ	85749
Wagner	John	743-7997	1538 Plaza de Lirios	Tucson	AZ	85745
Wall III M.D.	Dr. Robert	881-8100	3640 N. Allwood Place	Tucson	AZ	85715
Walsh	Bruce	325-7457	2365 E. Seneca St.	Tucson	AZ	85719
Wern	Evert	825-0641	1280 E Fawnbrooke Pl	Tucson	AZ	85737
West	Richard & Kathy	574-0830	70 W. Forrest Feezor	Tucson	AZ	85747
Westmoreland	Willie		Box 2372	Arizona City	AZ	85223
Wickersham	Betty	743-0008	3605 N. Camino De Oeste	Tucson	AZ	85745
Wilmot	James C.	747-1419	7352 E. 38th St.	Tucson	AZ	85730
Wilson	Larry	299-6608	3818 E. Diablo Canyon	Tucson	AZ	85718
Wilt	Nelson	883-6669	3035 S. Sheila	Tucson	AZ	85746
Yolanda Yubeta	Education Director	741-3164	Federal Correctional Inst.	Tucson	AZ	85706
Zajac	John	299-3203	5051 N. Sabino Canyon Rd. 2146	Tucson	AZ	85715
Zimmerer	John	529-2207	4561 N. Arroyo Vacio	Tucson	AZ	85715
Zumbrunnen	John & Kathleen	748-0588	4318 E 31st St	Tucson	AZ	85711

The Night the Stars Vanished by Barry Hirrell

Imagine yourself atop a lofty mountain peak, ready for a good night of observing. With eager anticipation you collimate, align, adjust and carefully prepare for nightfall. It's new moon, the evening air is cool and still. Tonight you'll easily locate those elusive deep sky wonders, shimmering across the cosmos.

But the twilight fades and still the sky remains void of starlight. None of the familiar constellations spring into view. Tonight is different, for tonight all the stars have gone away. You check and recheck your eyepiece, but there is not a glimmer of light to be found. You've fought clouds, dew, turbulence, but the one thing you always took for granted--the stars themselves--have vanished.

Admittedly, a very unlikely scenario. But I use this story to illustrate a point. Your astronomy club should not be taken for granted. The main component of a successful club is a strong and supportive membership. A lot of work and planning goes into all of the aspects of the club's activities. The bulk of this work falls on the shoulders of a dedicated few. Star parties need to be coordinated, the newsletter must be put together, and issues of vital importance need to be dealt with. Too many people just sit back and watch. "Let those other club members do it", "Hey, I'm just too busy", "Nobody cares what I think anyhow". Do any of these excuses sound familiar?

The club thrives on your support. Your contribution, however small, would be greatly appreciated. How about sharing your experiences or knowledge with others via the newsletter? Perhaps you could set up a star party at your child's school. how about running for club office? come to a board meeting and let us know what your interests are. what can we do as a club to turn others on to the wonders of the night sky? There are many people who need to see our universe as it truly is. It is our duty to give them access to the stars. Our club can do much more in this respect. Make it your New year's resolution to give more of yourself to the club. Try to participate in more events. Let's make 1995 a great year for our wonderful club.

-Barry Hirrell, a resident of San Francisco, is a regular at the Grand Canyon Star Party and promotes astronomy every chance he gets with the San Francisco Sidewalk Astronomers - ed.



THE WESTERN ONE

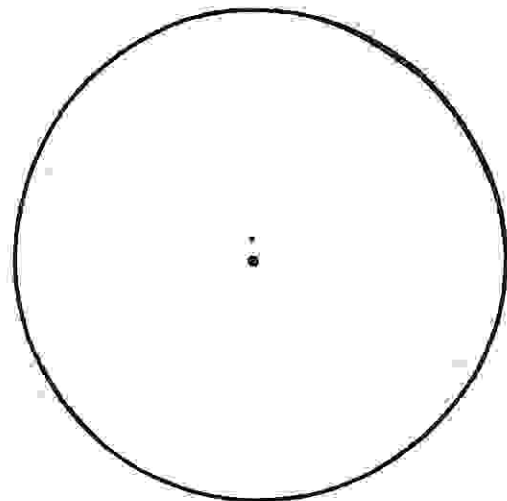
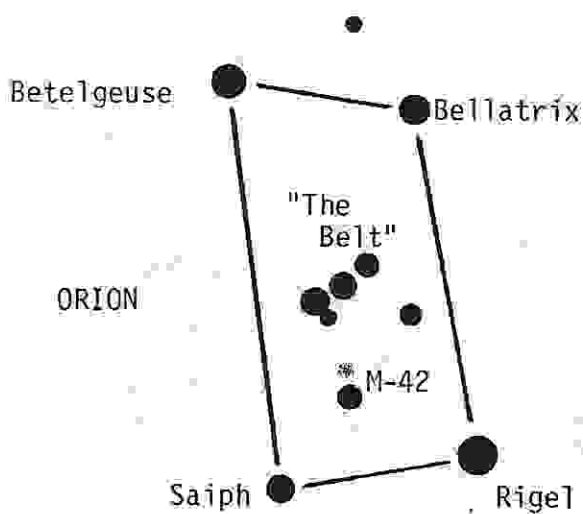
The bright stars of Orion beckon our attention every winter. The brightest stars of Orion form a nice geometrical pattern called a trapezoid, with two supergiant stars in opposite corners, Betelgeuse in the northeast corner and Rigel to the southwest. Halfway between these two great suns is a row of three stars in a line southeast to northwest, this is "Orion's Belt". Now lets turn our attention to the western most and faintest member of the belt a star named Mintaka or Delta Orionis.

The name Mintaka means "Belt". Mintaka is a blue giant with a magnitude of 2.2. It is a member of the Orion Association which consists of many bright giant and supergiant stars. Mintaka has a spectrum of B0, and its extremely hot having a temperature of about 30,000°K. and a luminosity of 20,000 Sun's. The distance to Mintaka is about 1500 light years. Mintaka is a spectroscopic binary system and its only slightly variable by 0.2 magnitude, the light variations being undetectable to the unaided eye.

For users of binoculars and small telescopes Mintaka has a true physical companion about 1' due north. This star is a main sequence star with a spectrum of B2, and its only slightly cooler than Mintaka A. Mintaka C has a magnitude of 6.8, and it appears deep blue or almost purple in a telescope, compared to the primary which glows blue white. The separation of the two stars is 52.6" which corresponds to a true separation of 0.4 light years. In two centuries of observation no orbital motion has been yet detected, suggesting a very great orbital period perhaps taking 10,000 years to complete one orbit.

Many more fine binary systems await the telescopist in Orion. But Mintaka should whet your curiosity to search for others. So dress warm and have fun searching through the star fields of Orion this winter.

JEFF BRYDGES



Mintaka as viewed through a 2.4" refractor at 35x

OBSERVER'S REPORT

January 1995 offers all of the bright planets for view, allowing both beginning and advanced skywatchers an excellent opportunity to observe planetary motion. Elusive Mercury makes an appearance low in the western evening sky this month from January 10-20 (best dates around mid-month). Mercury will appear as a bright yellow-white star for those who don't have trees or buildings blocking their western horizon. In binoculars or a telescope observers will see it pulsate different colors due to the bending of Mercury's light by Earth's atmosphere.

Mars is putting on a decent show in Leo in the evening sky. Mars is very bright in January, outshining the bright star Regulus in Leo. Mars gets progressively brighter in January, and appears as a very bright orange star. To see Mars, look in the eastern sky around 11 p.m. early in the month, at 10 p.m. at mid-month, and at 9 p.m. late in the month. Mars gets higher in the sky later at night, reaching high in the sky by midnight. Mars is also gradually drawing closer to earth, its closest approach to us will be on February 15 when it is 63 million miles from our home planet.

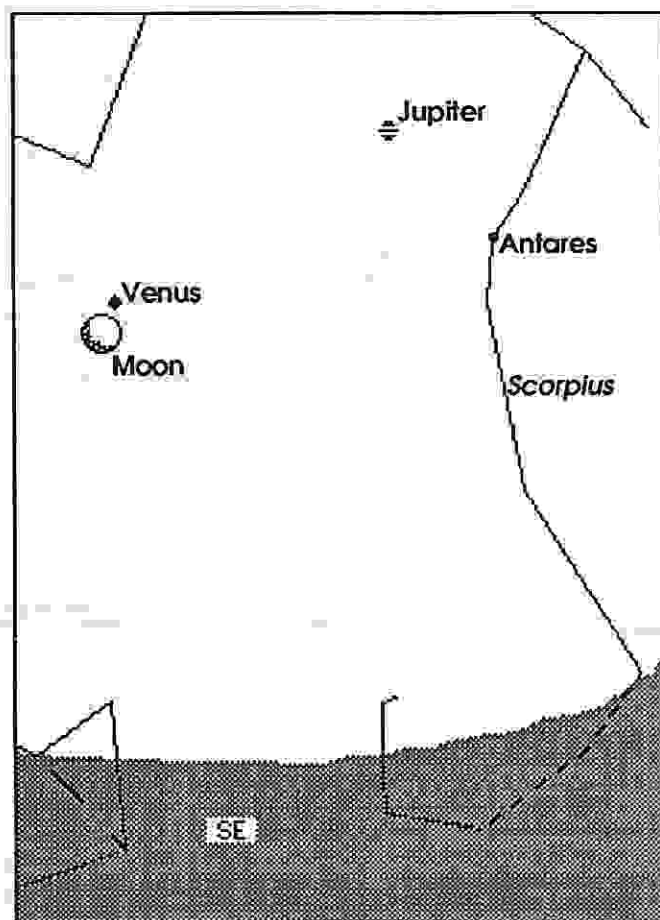
Saturn is still easily visible in the evening sky. The ringed planet is sinking in the southwestern sky but observers with a telescope can still obtain a good view of its ring system until the end of the month.

Venus and Jupiter, not to be missed, put on a show this month in the morning sky in the constellation Scorpius. Early risers can see brilliant Venus slowly slide by Jupiter on the mornings of Jan. 9-19. Simply look in the east-southeastern sky throughout the month for both planets, Venus by far the brighter of the two.

Skywatchers braving the cold will get the entire night to see the little known Quadrantid Meteors peak on January 3. A beautiful thin crescent moon sets about 90 minutes after sunset in the western sky, leaving the rest of the night to meteor watching. Best time to view the shower is after midnight. The shower is named after Quadrans Muralis, an extinct constellation that used to comprise the northern part of the present day constellation Bootes, the Herdsman. The radiant (the point meteors seem to emanate from—not the best place to look!) is between the head of Draco and the "top" of Bootes (opposite side from Arcturus), but does not rise until 1 a.m. A simple way to watch the shower is simply to scan the area around the Big Dipper. Expect

to see around 20-100 meteors per hour depending on the darkness of your sky.

Finally, early risers have a treat on the mornings of January 26-28. The waning crescent moon joins the planets Venus and Jupiter in the southeast. On January 27, the crescent moon passes just one degree west of Venus in our morning sky, creating a spectacular sight.



Looking Southeast, January 27—6:00 a.m.

Until 1995, seasons greetings! 🌟

Michael Terenzoni

WHAT'S NEW AT



Mineral Museum Update

If you have not heard, the University's Mineral Museum has settled in its new location in our basement. Walls have been removed and newly painted rooms created to accommodate mineral cases and specimens. The move has been a lot of work for assistant curator Shirley Wetmore but the collection finally made the transfer from boxes into exhibit cases or has been displayed on the exhibit floor. The mineral museum has

a large variety of superb specimens in its collection including an exceptional University meteorite collection and the noted Bisbee Brophy collection. The Museum's Arizona wulfenite collection is second to none and represents most of the 150 locations where wulfenite is found state-wide. When Shirley is working downstairs the museum's 6000 micro-specimens are accessible for viewing through microscopes. In addition, tours for school groups are available. School tours include indoor mineral hunting. Call Shirley at 621-4227 if interested. Come see the Mineral Museum Monday-Friday, 10AM-5PM (closed weekends).

Michael Terenzoni
Outreach Coordinator
Flandrau Science Center
Phone: 621-4515;

Voice mail at 621-2001-mailbox #111-1123

TAAA Executive Committee Meeting - 15 Dec 1994

Members present: D. Ketelsen, T. Lappin, G. Rosenbaum, B. Goff, D. Niehaus, J. Zajac, N. Lehman, M. Terenzoni, R. Nyberg. Guest: Peter Schmerl. The meeting was called to order @ 7:45PM.

(1) **Land issues:** TAAA may be able to acquire land by gaining special legislative exemption for non-profit, educational groups from the current bidding process. John Zajac brought attorney Peter Schmerl, who proposed to investigate how to gain this exemption. He thinks it will require introduction of a bill in the House, then a referendum. B. Goff moved to hire attorney Peter Schmerl for the sum of \$250 for the purpose of legal research regarding land acquisition. R. Nyberg seconded the motion. After considerable discussion, the motion passed unanimously.

(2) **AAS Mtg.:** TAAA will hold a star party on 7 Jan in the UofA Mall in conjunction with the E. Krupp lecture. Other info will appear in a separate newsletter article.

(3) **Upcoming events:** currently no Jan Genl. Mtg. speaker scheduled. Feb speaker may be someone about IOTA. March may be Russ Genet. Possible 4 Feb Smithsonian Star Party. There are currently no Jan school star parties scheduled. B. Goff reported Vail SP had 200 students and parents; D. Ketelsen heard reports that the Aqua Caliente SP was "super." B. Goff proposed a Feb Gab Fest; D. Ketelsen noted member Bernie Mehrens has offered to host a Gab Fest this Winter.

(4) **Newsletter Editor:** Winter visitor Jim Jondrow has offered to assist in newsletter production while he

is in Tucson. Nina Lehman expressed interest in trying it and is the most likely successor.

(5) **Treasurer's Report:** Currently \$29,389.38, increased \$355.27 from Nov total. T. Lappin, G. Rosenbaum, and D. Niehaus have done preliminary work on a FY 93/94 Annual Report. D. Ketelsen requested a firm land fund total by the time his term ends.

(6) **Educ. Report/Youth Activities:** D. & S. Niehaus completed 8 week sessions teaching @ 3 elementary schools; they will do 4 schools in the Spring. The EC encouraged N. Lehman to continue her youth activities at the Genl. Mtg. She will keep attendance records and submit receipts for expenses. She reports good attendance, and asked Dean to announce the youth group during the meeting each month.

(7) **AL News:** none.

(8) **BBS:** N. Lehman proposes to set up a BBS using her equipment for club use.

(9) **Astronomy Day, May 6, 1995:** discussion, but no plans made. (10) **Membership:** T. Lappin moved that we direct Stellar Vision to accept only checks for memberships and to mail them immediately in envelopes we will provide. B. Goff seconded. After discussion, the motion passed unanimously.

(11) **Star Party charges:** There was discussion whether to charge schools for star parties, and how much to charge non-school groups. The matter was tabled to next meeting. The meeting was adjourned @ 10:30PM.

Respectfully submitted, Rob Nyberg.

Desert Skies Classified

For Sale: CD-ROM disks of astronomical images and CD-ROM player. ARN (Astronomical Research Network), IRAS, Deep Space, Neptune and moons for \$40 each or best offer. External CD-ROM drive, like new in box \$150 or best offer. Perry Berlind, 795-4575. (02-95)

For Sale: 7X32 riflescope for telescope finder - long eye relief \$10. Gilbert Freidman 571-1662.(03-95)

For Sale: Issues of Astronomy and Sky & Telescope magazines. Will only be sold as groups. Prices are suggested, and negotiable. **Astronomy** 8/85-7/86, 8/86-7/87, 8/87-7/88, in the nice Astronomy binders, \$5 per set, fragments from 9/88-1/89, free. **Sky & Telescope** 2/88-1/89, 2/89-1/90, 2/90-1/91, in standard magazine holders, \$1 per set, 1/87-1/88 fragments free. Enrique, 792-9975, or e-mail echavez@as.arizona.edu. (03-95)

For Sale: Old German equatorial mount of unknown origin and quality. Good "fixer-upper" for someone building a 6 or 8 inch scope. \$35.00 (or free to the first amateur under 18 that can put it to good use). Call Norm Carlson, 887-2122.(4-95)

For Sale: Coulter 4.25" F/4 optic set with Novak mirror supports \$45, 3.1" Novak diagonal in holder \$30, Deep Sky Magazine, 24 issues \$15. Call evenings 797-1693, ask for Ted.

For Sale: SBIG ST-4 imager/autoguider \$600. Meade 97E spotting scope \$225. Glen Nishimoto, 321-4737. (4-95)

Your ad will run for 4 months unless specified. Month and year of last appearance is last item of ad. For additions or changes to this list call Dean, 293-2855.

DARK SKIES for Tucson (in MST)

1995 JANUARY no twilight
no moonlight

Su/Mo	1/ 2	6:58pm - 5:58am
Mo/Tu	2/ 3	7:20pm - 5:58am
Tu/We	3/ 4	8:25pm - 5:58am
We/Th	4/ 5	9:27pm - 5:59am
Th/Fr	5/ 6	10:27pm - 5:59am
Fr/Sa	6/ 7	11:24pm - 5:59am
Sa/Su	7/ 8	12:20am - 5:59am

Su/Mo	8/ 9	1:14am - 5:59am
Mo/Tu	9/10	2:08am - 5:59am
Tu/We	10/11	3:01am - 5:59am
We/Th	11/12	3:53am - 5:59am
Th/Fr	12/13	4:43am - 5:59am
Fr/Sa	13/14	5:32am - 5:59am
Sa/Su	14/15	- - -

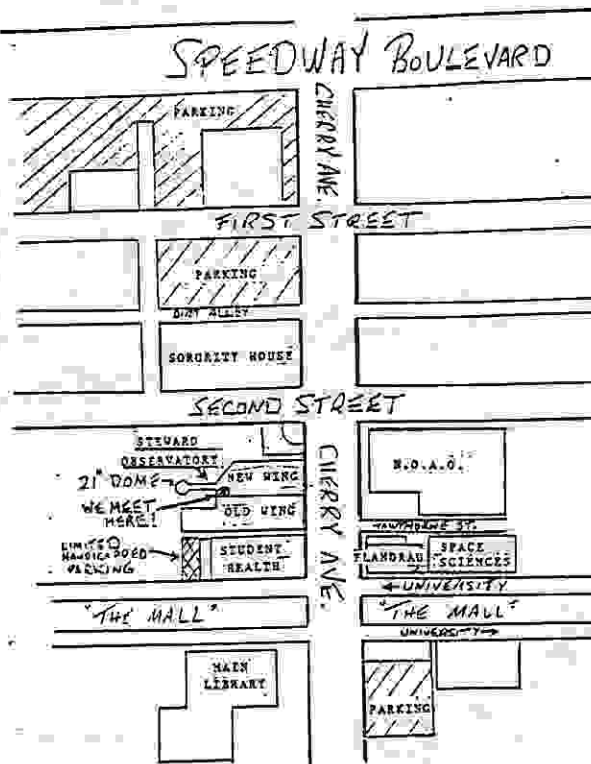
Su/Mo	15/16	- - -
Mo/Tu	16/17	- - -
Tu/We	17/18	- - -
We/Th	18/19	7:10pm - 7:54pm
Th/Fr	19/20	7:11pm - 8:53pm
Fr/Sa	20/21	7:12pm - 9:53pm
Sa/Su	21/22	7:13pm - 10:54pm

Su/Mo	22/23	7:14pm - 11:56pm
Mo/Tu	23/24	7:14pm - 1:00am
Tu/We	24/25	7:15pm - 2:04am
We/Th	25/26	7:16pm - 3:08am
Th/Fr	26/27	7:17pm - 4:11am
Fr/Sa	27/28	7:18pm - 5:09am
Sa/Su	28/29	7:18pm - 5:56am

Su/Mo	29/30	7:19pm - 5:55am
Mo/Tu	30/31	7:20pm - 5:55am
Tu/We	31/ 1	7:21pm - 5:54am

Erich Karkoschka

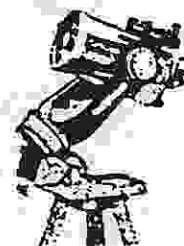
TAAA Meeting Location



Tucson's Complete Astronomy Shop

- New and Used Equipment
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- Observatory Construction & Repair
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