

PUBLIC INFORMATION OFFICE  
JET PROPULSION LABORATORY  
CALIFORNIA INSTITUTE OF TECHNOLOGY  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
PASADENA, CALIF. 91109. TELEPHONE (818) 354-5011

PHOTO CAPTION  
November 14, 1991

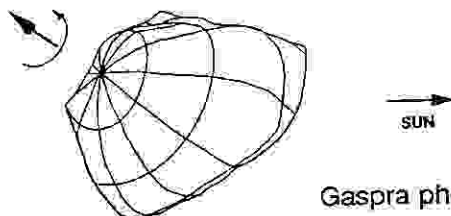
TOP

GALILEO  
P-39432  
GLL/GA2

This first image of asteroid 951 Gaspra was taken by the Galileo spacecraft on October 29, 1991, from a distance of 16,200 kilometers (10,000 miles). The Sun is shining from the right. The illuminated part of the asteroid is about 16 by 12 kilometers (10 by 7.5 miles). The surface shows many craters; two large facets about 8 kilometers (5 miles) across appear on the limb of the asteroid at top and bottom right. The smallest craters in this view are about 300 meters (1,000 feet) across. Gaspra rotates in a counter-clockwise direction in just over 7 hours; its north pole is near the upper left corner of the lighted part of the asteroid.

The Galileo project, whose primary mission is the exploration of the Jupiter system in 1995-97, is managed for NASA's Office of Space Science and Applications by the Jet Propulsion Laboratory.

####



Gaspra photo courtesy of Dr. Richard Greenberg (LPL).



**GENERAL MEETING** - Friday, Dec. 6, 7:30 P.M. at Steward Obs. lecture room.  
Donald Strittmatter, former president of TAAA, will present a talk on "What does a president do after 17 years in office??"  
**AND Member's Night AND Astronomical Flea Market AND Auction!!**  
Bring your stuff!

**EXECUTIVE MEETING** -Thursday, Dec. 12, 7:30 P.M. at Flandrau Planetarium.

**STAR PARTIES** - Saturday, Nov. 30 - Arivaca Star Party at new site\*

Thursday, Dec. 5 - Henry Elementary at Camp Cooper\*

Saturday, Dec. 7 - Arivaca Star Party at new site\*

Wednesday, Dec. 11 - Pueblo High School\*

Saturday, Dec. 28 - Empire Ranch\*

**CHRISTMAS PARTY** - Saturday, Dec. 14 - at 6 P.M. at the home of Duane & Sharon Niehaus\*

\* see map inside this newsletter

#### TAAA EXECUTIVE

President	Dean Ketelson	293-2855
Vice-President	Terri Lappin	579-0185
Executive Sec.	Dick West	574-0830
Recording Sec.	Sharon Niehaus	299-7328
Treasurer	Sharon Niehaus	299-7328
Member-at-Large	Bob Goff	790-1452
Member-at-Large	Ed Vega	586-9883
Chief Observer	Andy Meyer	742-4549
Membership Coord.	Terri Lappin	579-0185
Past President	Tim Hunter	299-2972
Desert Skies ed.	Dolores Hill	325-9820
Asst. ed.	Rik Hill	325-9820

#### Desert Skies Publishing Guidelines

- \* All articles, announcements, news etc. must be submitted by the 20th of the month. Materials received after that date will appear in the NEXT issue.
- \* All submissions are retained by the editor unless prior arrangements are made.
- \* Articles, artwork, and photos should be camera ready. Photos should be screened.
- \* We will not publish slanderous or libelous material!

Send ARTICLES, ANNOUNCEMENTS, etc. to:

Dolores Hill, Desert Skies

4632 E. 14th St., Tucson, AZ 85711

or Lunar & Planetary Lab, UA campus mail

Send ADDRESS CHANGES to:

TAAA

Attention: "address change"

P.O.Box 41254

Tucson, AZ 85717

#### MEMBERSHIP IN THE TAAA

Individual Membership	\$20.00
Family Membership	\$25.00
Senior Citizen (over 60)	\$18.00

Sky & Telescope subscription (optional) \$18.00

Rates for membership in the TAAA are given above. Members can subscribe to Sky & Telescope at the time of membership renewal, saving over 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, P.O.Box 41254, Tucson, AZ 85717. It is best to pay your dues 2-3 months before your membership actually expires.

#### 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 \$18 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.



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**ITEMS WANTED OR FOR SALE.....** If YOU have placed an ad and sell the item(s) or no longer wish to run it, please call Dolores or Rik Hill at 325-9820 (home) or 621-6951(work). Otherwise the ad will continue to appear. Thanks. -ed.

**NEEDED:** Donations of astronomy magazines to give away at star parties along with the TAAA brochure.

**FOR SALE:** CELESTRON binocular viewer (mint condition, like new, used only once);  
TELEVUE 2" star diagonal (excellent condition) with 1 1/4" adapter and Schmidt-Cass. adapter.  
Call John Zajac at 299-3203 (answering machine is always on).

**WILL TRADE:** 4.8mm NAGLER eyepiece (excellent condition) and additional cash for 7mm Nagler eyepiece.  
Call John Zajac at 299-3203 (answering machine is always on).

**FOR SALE:** 8" f/18 refractor tube assembly for less than the lens, portable (1-person); lens by Max Bray, exquisite lunar & planetary resolution, flat and smooth knife-edge test in double pass textbook diffraction patterns. With optical flat reducing length 50%...delivered to Tucson.... \$2200.

3" f/15 all brass antique telescope, push-pull objective tilt-adjustment, high quality construction, diffraction limited, \$2100. Estey (Vermont) antique pump organ, 11 stops, all notes work fine, delightful sound... \$995.

ALSO, country home, 4000 sq.ft. under roof, creek, lush vegetation, 7 acres bird-deer-or star watching...\$95,000, terms. Contact Stephen B. Smith at (602) 456-9440 or Box 5056, Huachuca City, AZ 85616.

**FOR SALE:** 6" Dynamax without tripod- legs screw in, 2 diagonals, 1 porro prism, 9mm, 13mm, 30mm eyepieces, camera adapter....\$500. Contact Robert L. Smith 14025 Penny Lane, Casa Grande, AZ 85222.

**WANTED:** Mirror cell for 6" mirror (Newtonian);

**FOR SALE:** Small diagonal for Newtonian telescope; 20th wave, 7/8" minor axis, custom made; OR WILL TRADE  
FOR 1 1/4" diameter eyepiece with 16-18mm focal length. Call Gilbert Friedman at 571-1662.

**FOR SALE:** 65mm refractor with equatorial mount (no motor), manual slow motion controls, carry case, 4 eyepieces, approx. 30 yrs. old.....good for beginner.\$65. Call Virginia Breckenridge at 298-3586.

**FOR SALE:** NEW (never used) 13mm Plossl TeleVue eyepiece...\$80; two Celestron polarizing filters, 67mm dia. @ \$10.00; 10 rolls of Ektapress print film, 1600 ASA, hi-contrast...\$6/roll or \$25/Propack (5 rolls). (This is the film Mike used for the award-winning photo in the September issue of *ASTRONOMY*); calymenina trilobites from Morocco...\$10 ea. Call Mike Terenzoni at 577-6857.

**FOR SALE:** Mamiya M645 camera with pistol grip, w/80mm, f/2.8 lens...\$900; Chroma Pro slide duplicator, 2 3/4 x 2 3/4 max.size. Can crop & enlarge, correct for exposure, color balance, etc.....\$950. Call Bob Goff at 790-1452.

**FOR SALE:** Commodore 128 computer, color monitor, two floppy drives, printer. Software includes a wordprocessor, database, financial planner package, and many games (including one astronomy star chart program--weak by IBM standards and one astronomy game). All manuals are included. This computer belongs to the TAAA, given to us as a donation. All money received will go towards the 30" telescope/land project. We are asking \$300 for the entire package.....

If you have questions or want to see the computer call Teresa at 579-0185, before 10 P.M.

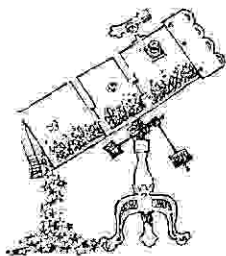
**WANTED:** Broken telescopes! Call Bob Goff at 790-1452.

**FOR SALE:** Pyrex mirror blanks: 5 5/8" O.D., 1" thick, R=44"...\$13. TELESCOPES AND MIRRORS TESTED Call Bob Goff at 790-1452.

**FOR SALE:** ASTRONOMY magazine 1974-1990; missing 7 early issues; 14 yrs. complete, in good condition...\$150. 8 inch Edmund mirror kit...\$40.00. CAVE drive, 1 1/2 inch shaft with housing, only 40 hrs. running time...\$80.00. Call Mike Sweetman evenings at 297-2781.

**FOR SALE:** 2" Rack & pinion Novak focuser with 1 1/4" adapter- mint condition (never used).....\$90.00. Call Ray Wallace at 294-1197.

**FOR SALE:** Yashica 35mm SLR camera/50MM lens...\$150. Call Patrick Craig at 792-4980 (new phone#).

Star Parties

Regular: November 30 New Arivaca site  
see map  
December 7 New Arivaca site  
December 28 Empire Ranch

Public: December 5 Henry Elementary  
at Camp Cooper  
December 11 Pueblo High School  
see map



As you should be aware, the land committee has found another potential site for the TAAO observatory. Located 17 miles west of Amado, AZ, off the Arivaca road, this BLM land may be available for lease with an option to buy or possibly a direct sale. Acquiring the site is dependent on our ability to produce and fulfill a development plan for the 40 or so acres that would be required. Of course any further effort on the part of the land committee is dependent on gaining a favorable consensus from the club. In turn, this requires as many members as possible to go see this land. In light of this a number of star parties will be held at this site over the next couple of months. Please make an effort to see this site so that you can help make an informed decision as to whether we should continue pursuing this site.

As to observations made this past month, the annual Chiricahua trip was fun and successful. I got my first view of a neat elliptical galaxy (E0) NGC404 in Andromeda. This object is so easy to find its pathetic! Its right next to  $\beta$  Andromedae; within the view of a low power eyepiece (non-widefield)! You can't miss it. The next star party was the scheduled visit to the Arivaca site but, unfortunately, we were clouded out. However all was not lost as Mr. Ketelsen brought out a BBQ grill for a pleasant cook-out. The clouds gave an exaggerated view of skyglow from the site. Tucson, Phoenix and Nogales are all visible but indications are that, under clear conditions, the glow will be similar to the Buenos Aires Wildlife Sanctuary. A public star party at Donaldson Elementary School was well attended but again the skies were a bit uncooperative (a few sucker holes but otherwise cloudy). It was refreshing to know that these little kids are thinking though, 'cause they asked the best questions!

Now for a confession. I missed the peak of the Leonid meteor shower this past month. If anybody witnessed the peak as it occurred on the early morning of Monday, Nov. 18 please call me or see me before intermission at the December meeting so you can describe your experiences to everyone. Please note that another good shower, the Geminids, will take place during the early hours of Saturday, Dec. 14, after the Moon has set! If anyone is interested in going to Empire Ranch early that morning call or see me at the monthly meeting.

Before I forget, I recieved a copy of the Ross Null optical test software discussed in Telescope Making magazine (#45). Let me know if you want a copy.

Finally, don't forget the partial lunar eclipse starting at 1:25am the morning of Saturday, Dec. 21. you early risers that join me for the Geminid shower may want to catch this one!

Please note the star parties coming up this month. Until later, may stars get in your eyes!

**NOTICE:** Bruce Walsh has just experienced the **THEFT** of his blue 14 1/2", F4.2, Guno collapsible truss Dobsonian telescope and accompanying blue mirror cell which is signed by "Beck". If you have information on the whereabouts of the instrument or see it for sale CALL POLICE (911) and/or BRUCE WALSH AT 325-7457.

### More Comet News!

Congratulations to the Shoemaker - Levy team after discovering two more comets in November. That makes 4 comets in the 5 week period ending on November 13! Unfortunately, only Shoemaker - Levy 1991a1 will be relatively bright and have a favorable apparition this next summer for Northern Hemisphere observers.

### Grand Canyon Star Party - Take 2

The Grand Canyon Superintendent has responded favorably to continuing the public star party we instituted last year. I am hoping to get national press and get a much higher telescope to public ratio. Tentative dates are 30 May - 7 June, 1992. Housing arrangements are still up in the air. Probably all we can guarantee are some reserved camp sites, but there is a chance that dorm space will be available again. With the later date this next spring, we can expect much larger crowds, but since we are having it during the summer months hopefully we can get a better astronomer turnout. Mark it on your calendar and plan to attend!

- Dean Ketelsen 293-2855



Personification of Orion, from Hyginus' Astronomicon, Venice, 1482

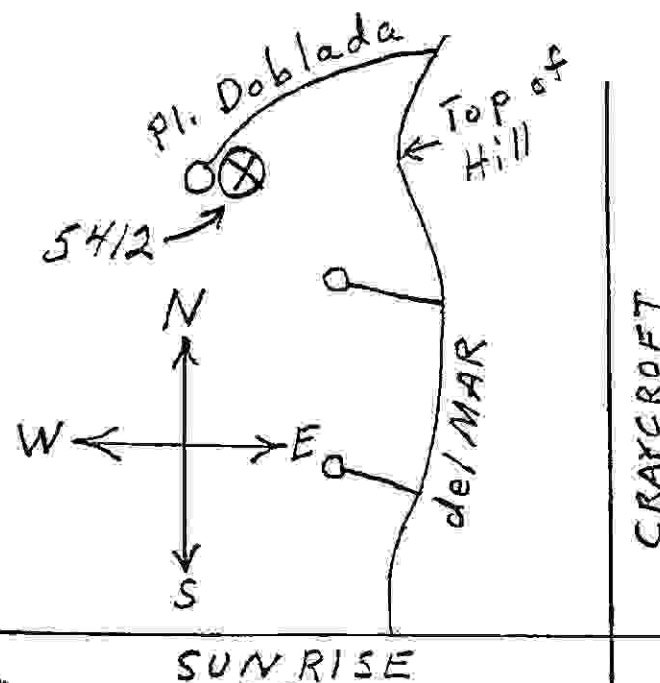


Personification of Perseus, from Hyginus' Astronomicon, Venice, 1482



# TAAA CHRISTMAS PARTY

ANNOUNCEMENT: This year the TAAA will hold its annual Christmas Holiday Party and Pot Luck Supper at the home of Duane and Sharon Niehaus. The date for this event is December 14, 1991. Arrival time is 6:00 p.m. or thereafter. If your last name begins with A thru M please bring a main dish. If your last name begins with N thru Z, please bring a salad or desert. Bring your family and/or yourself for an evening of good fellowship in the holiday spirit. Also, if you want to bring a telescope there is room to set it up near the house. See the map below for directions to Duane and Sharon's house.



## 11/14/91 TAAA membership list

Page 1

Last Name	First Name	Phone	Address 1	City	St	Zip
Anderson	Dave	575-0591	2225 W. Rapallo Way	Tucson	AZ	85741
Andress	Robert	625-8324	101 Verde Vista	Green Valley	AZ	85614
Baldvin	Ann	795-4048	3300 E. Hawthorne St.	Tucson	AZ	85716
Barber	Brad	742-5113	1545 W. Calle Tiburon	Tucson	AZ	85704
Beck	Lawrence	297-1204	P.O. Box 41764	Tucson	AZ	85717
Becker	Brad	881-7999	3335 N. Christmas	Tucson	AZ	85716
Bennett	Thomas	293-9026	1334 W. El Caminito	Tucson	AZ	85705
Bernholz	Charles	745-2312	4901 E. Sunrise Dr. Apt. 311	Tucson	AZ	85718
Blair	Edward	297-9806	90 W. Greer Lane	Tucson	AZ	85704
Bockisch	Sharon	325-4952	5230 E. Starhaven Lane	Tucson	AZ	85737
Breyere	Ed		715 South Los Rubies	Green Valley	AZ	85614
Brown	Arron	571-0654	5050 E. 5th St. K-2	Tucson	AZ	85711
Brydges	Jeff	888-0591	2541 W. Dolb Rock Way	Tucson	AZ	85741
Buchroeder	Richard	327-7320	8 S. Bella Vista Dr.	Tucson	AZ	85745
Burdon	Thomas	795-8973	2205 N. Swan	Tucson	AZ	85712
Burland	Janis	327-2950	1519 N. Palo Verde	Tucson	AZ	85716
Carlson	Norman	327-5501	4025 N. Freemont Ave.	Tucson	AZ	85719
Carter	Joe		6276 Placita Lozana	Tucson	AZ	85715
Cartwright	Bill		1351 W. Kimberly St. #192	Tucson	AZ	85704
Chandler	John		1225 Mt. Auburn Rd.	Evenaville	IN	47720
Chantell	Mark	887-8218	4045 N. Oracle Rd. #266	Tucson	AZ	85705
Contractor	Dr. Dinshaw	297-9736	6676 N. Harran Dr.	Tucson	AZ	85704
Corkins	Ken		600 N. Pantano #1417	Tucson	AZ	85710
Craig	Patrick	792-4980	1608 E. 8th St.	Tucson	AZ	85719
Crawford	David	327-9331	3545 N. Stewart	Tucson	AZ	85716
Cundiff	Richard J.	299-6434	3575 Thimble Peak Pl.	Tucson	AZ	85718
Daniels	Petrick	586-3730	HCR Box 2677	Benson	AZ	85602
Dennis	Joseph	722-4109	1121 N. Arbor Circle	Tucson	AZ	85715
Dettmann	Lee & Michele	325-2475	4540 E. Pima #4	Tucson	AZ	85712
Dietrich	Donald & Mary	885-3851	8989 E. Escalante #104	Tucson	AZ	85730
Dodson	Dean	886-3724	8441 E. Hillwood Lane	Tucson	AZ	85715
Doherty	John	888-4985	2750 W. Palmyra	Tucson	AZ	85705
Dvorak	Ed	287-5067	1351 E. Patagonia Hwy.	Nogales	AZ	85621
Early	Wallace		2582 N. Jordan Dr.	Tucson	AZ	85745
Esquerdo	Gil	290-0168	7506 E. Shore Dr.	Tucson	AZ	85715
Ferdie	Ronald	886-1645	7630 E. Linden St.	Tucson	AZ	85715
Finerty	Michael	795-0464	2970 E. 5th	Tucson	AZ	85716
Fioretti	Gene	749-1144	13758 E. Camino Cartemo	Tucson	AZ	85749
Flaher	Don	888-7613	865 W. Cresta Loma Dr.	Tucson	AZ	85704
Frey	Jim	749-3512	8084 Shadow Canyon Dr.	Tucson	AZ	85715
Friedman	Gilbert & Doris	571-1662	P.O. Box 17821	Tucson	AZ	85731
Gaddis	Tim		3519 N. Sierra Madre	Tucson	AZ	85749
Gardner	Gary		14855 W. Belmont Dr.	Casa Grande	AZ	85222
Gauitt	Paul	325-6539	PO Box 700	Rillito	AZ	85654
Gendel	Steve M.	322-6371	1437 E. Hampton St.	Tucson	AZ	85715
Giammona Jr.	Fred	575-1554	11 E. Orange Grove #112	Tucson	AZ	85704
Gill	Timothy E.		10201 E. Skycastle Way	Tucson	AZ	85730
Goff	Bob	790-1452	5712 E. Cooper	Tucson	AZ	85711
Gordon	Deborah Ann	899-1191	2037 N. Sunset Dr.	Chandler	AZ	85224
Grajewski	Julian	322-6294	1615 E. Hampton	Tucson	AZ	85713
Grider	Ron	795-6984	2310 N. Tucson Blvd. Apt #3	Tucson	AZ	85716
Hagerlin	Vince & Moira	790-0475	7411 E. Perth Place	Tucson	AZ	85730
Hall	Gary & Gretchen	883-0429	6752 S. Via Perico	Tucson	AZ	85746
Hallock	Troy	749-1041	9313 E. Star Water Dr.	Tucson	AZ	85749
Harvey	David	797-2512	1552 W. Chapala	Tucson	AZ	85704
Hazel Lawler	Richard	575-9204	6360 N. Orange Blossom	Tucson	AZ	85741
Head	Roy	825-3862	14508 N. Lone Wolf Ln.	Tucson	AZ	85737
Henning	Scott	326-7035	4411 E. Holmes St.	Tucson	AZ	85711
Hill	Richard & Dolores	325-9820	4632 E. 14th St.	Tucson	AZ	85711
Hippert	Gordon J.	299-9175	4930 N. Camino La Vela	Tucson	AZ	85718
Hoag	Art	795-8644	4410 E. 14th	Tucson	AZ	85711
Huerta	Mario A.		775 W. Roger Rd. #15	Tucson	AZ	85705
Hunter	Tim	299-2972	4905 E. Entrada Primera	Tucson	AZ	85718
Hurvitz	Michael	321-1813	5201 E. 2nd St.	Tucson	AZ	85711
Isles, Jr.	Rudy	889-0578	818 Rossman St.	Tucson	AZ	85706
Jacobsen	Bruce P.	325-2035	3133 E. Pima St.	Tucson	AZ	85716
Johnson	Kathryn	825-3052	Rt 42, 16670 N. Capstan	Tucson	AZ	85704
Keefer	Andrew	790-6557	6050 E. 35th St.	Tucson	AZ	85711
Keller	Robert		X Boeckeler Instr.	Tucson	AZ	85706
Kenyon	Tim		P.O. Box 42523	Tucson	AZ	85732
Ketelsen	Dean & Vicki	293-2855	1122 E. Greenlee Place	Tucson	AZ	85719
King	Anga B.	896-2054	P.O. Box 840	Oracle	AZ	85623
Klastow	Lawrence		4350 S. Evergreen Ave.	Tucson	AZ	85730
Knauss	Daniel	881-2639	2212 E. Drachman	Tucson	AZ	85719
Knight	Luann	297-9476	2310 W. Solero Dr. #718	Tucson	AZ	85741
Kohl	Philip		P.O. Box 1849	Port Townsend	WA	98368
Krieger	Kevin & Alexandra	575-8003	2255 W. Orange Grove #1108	Tucson	AZ	85741
Lambert	Bill	882-9695	321 N. Tyndall Ave.	Tucson	AZ	85719
London	Thomas	886-3643	2160 N. Pantano Rd. #107	Tucson	AZ	85715
Lappin	Teresa	579-0185	P.O. Box 40363	Tucson	AZ	85717
Lemcke	Jeffery	885-3896	6002 W. Miramar Dr.	Tucson	AZ	85715
Levine	David	625-4437	3319 S. Calle Del Albano	Green Valley	AZ	85614
Levy	David H.	762-5638	120 William Carey St.	Tucson	AZ	85747
Levy	Saul		2555 E. Irvington #47	Tucson	AZ	85714
Levis	Vivian	456-1653	Rt. 1, Ash St.	Huachuca City	AZ	85616
Liese	Lawrence		3725 Ironwood Hill Dr.	Tucson	AZ	85745
Lorenz	Paul	889-6490	3722 E. Milton Rd. #7	Tucson	AZ	85706
Loveall	Ralph	881-0965	3619 E. Fairmount #7	Tucson	AZ	85716
Lovman	Rip & Arlene	749-9604	3980 N. Via del Sol	Tucson	AZ	85749
Lynn	Bruce	744-1708	4901 W. Lambert Lane	Tucson	AZ	85741

Last Name	First Name	Phone	Address 1	City	St	Zip
MacKenzie	Dan	292-2121	832 E. Freeman Pl.	Tucson	AZ	85719
Maluf	Diane	586-9551	P.O. Box 1775	Benson	AZ	85602
Martin	Bob	326-7923	1671 N. Nancy Rose Ave.	Tucson	AZ	85712
McBroom	Robert	387-6005	P.O. Box 631, House B	Lukeville	AZ	85341
McDaniel	Robert	625-5724	822 Hermosa Place	Green Valley	AZ	85614
McGaha	James E.		5100 N. Sabino Foothills Dr.	Tucson	AZ	85715
Mechler	Gary	298-0456	6930 E. Arrowhead Place	Tucson	AZ	85715
Merens	Bernard H.	394-2739	P.O. Box 925	Patagonia	AZ	85624
Meyer	Andrew & Laura	742-4549	1440 W. San Annetta	Tucson	AZ	85704
Meyer	Arthur W.	290-1313	1940 S. Oak Park Dr.	Tucson	AZ	85710
Monzel	Peter		1523 E. Glenn	Tucson	AZ	85719
Moody	Marla	327-5876	837 N. Belvedere Ave.	Tucson	AZ	85711
Morgan	Tad	795-1923	3017 N. 2nd Ave	Tucson	AZ	85705
Mumme	Robert	792-3886	5623 E. Eastland	Tucson	AZ	85711
Murgales	David E.	571-1514	No Art Photo	Tucson	AZ	85716
Murphy	Randy	327-7062	6161 E. Pima #2054	Tucson	AZ	85712
Nault	Ben		1514 W. Knox St.	Tucson	AZ	85705
Newman	Diane C.		5412 E. Placita Dobleada	Tucson	AZ	85718
Niehaus	Dvane & Sharon	299-7328	10385 E. Observatory Dr.	Tucson	AZ	85747
Nye	Derald	762-5504	4765 E. Calle Chueca	Tucson	AZ	85732
Olin	Mark	529-1806	2922 S. Harrison	Tucson	AZ	85730
Oliver	Jim & Karen	885-7040	2612 N. Cranner Rd.	Tucson	AZ	85745
Olson	Robert	743-9187	6165 E. Falcon Ct.	Tucson	AZ	85708
Overman	Mark	748-8935	710 Paseo Del Canto	Green Valley	AZ	85614
Quirroz	Randy	648-3046	10531 E. Oakville Dr.	Tucson	AZ	85749
Rainville	C. J.	749-5092	5310 W. Riviera Dr.	Glendale	AZ	85304
Rausch	Scott	878-0182	1911 E. Rhea	Tempe	AZ	85484
Repp	Nancy & Terry		1911 E. Rhea St.	Tempe	AZ	85284
Repp	Terry & Nancy	345-0885	P.O. Box 43536	Tucson	AZ	85733
Robinson	R. Steve	747-0303	5755 E. River Rd. #3306	Tucson	AZ	85715
Robinson	Ray L.	577-6001	555 E. Limberlost #1049	Tucson	AZ	85705
Rogers	Curtis	293-7165	4131 W. Orangewood Dr.	Tucson	AZ	85741
Rosenbaum	Gary	579-0185	2720 N. Conestoga Ave.	Tucson	AZ	85749
Rostash	Rudolph	749-9517	15045-B E. Louisiana Dr.	Aurora	CO	80012
Roth	Herbert		2929 E. 6th St. #106	Tucson	AZ	85716
Saumon	Didier	326-7547	1200 E. Silvertree Dr.	Tucson	AZ	85718
Schultz	Rudy	297-5857	50 Kathryn St.	Clark	NJ	07066
Scrags	Paul	(201)381-0419	3447 E. Bunell	Tucson	AZ	85716
Smeaton	Robert	327-0350	1515 S. Extension Rd. #3091	Mesa	AZ	85210
Smith	Deborah K.	969-0826	263 E. Mohave Rd.	Tucson	AZ	85705
Smith	Jack C.	887-2443	6715 N. Table Mtn. Rd.	Tucson	AZ	85718
Smith	Michael S.	299-0122	4900 W. Jojoba	Tucson	AZ	85745
Solomon	Larry & Nancy	743-7924	5860 N. Calle Tiburon	Tucson	AZ	85704
Spaeth	Jan	293-5404	11781 N. Joi Dr.	Tucson	AZ	85737
Stamm	Jim	575-0830	531 E. Juda Dr.	Casa Grande	AZ	85222
Standage	Ron	836-6967	9999 E. Morrill Way	Tucson	AZ	85749
Starling	Michael	296-7665	1971 W. Placita Tampico	Tucson	AZ	85704
Stepp	Larry	297-6312	114 N. Avenida De San Ramon	Tucson	AZ	85710
Stokovski	Ed	296-4774	3010 N. Palomino Park Loop	Tucson	AZ	85712
Stoltz	Bruce	322-0515	4372 N. Vereda Rosada	Tucson	AZ	85715
Stone	Sigmund	299-3723	1700 W. Prince #2032	Tucson	AZ	85705
Streiff	Wolfrem M.		4110 E. La Paloma Dr.	Tucson	AZ	85718
Strittmatter	Donald	299-2304	2961 W. Katapa Trail	Tucson	AZ	85741
Sweetman	Michael	297-2781	10408 Flintlock Trail	Tucson	AZ	85749
Tarro	James & Mildred	749-4832	19 Pheasant Place			
Tekatch	Bill		5755 E. River Rd. #3602	Tucson	AZ	85715
Terenzoni	Michael	577-6857	3222 W. Magee Rd.	Tucson	AZ	85741
Thompson	Michael	579-0601	1921 S. Abrego Dr.	Green Valley	AZ	85614
Trexler	James	625-1216	P.O. Box 42556	Tucson	AZ	85733
Trueblood	Mark & Pat	323-1268	P.O. Box 1802	Sierra Vista	AZ	85636
Turner	Gayle	458-2209	2504 E. 3rd.	Tucson	AZ	85716
Urias	Tony	327-3854	117 Rocalla	Ajo	AZ	85321
Van Wyngarden	Jerry	(303)434-8159	420 S. Essex	Tucson	AZ	85711
Vega M.D.	Luis Eduardo	747-9323	9261 Moenkopi Trail	Tucson	AZ	85749
Vreeland	Albert	749-9242	P.O. Box 31446	Tucson	AZ	85751
Waechter	Frederick		1538 Plaza de Lirios	Tucson	AZ	85745
Wagner	John	743-7997	3640 N. Allwood Place	Tucson	AZ	85715
Wall III, M.D.	C. Robert	290-0949	2582 N. Jordan Dr.	Tucson	AZ	85745
Wallace	E. Early	622-5038	3820 E. Concord	Tucson	AZ	85706
Wallace	Ray	294-1197	2820 E. 6th St. #225	Tucson	AZ	85716
Walsh	Bruce	325-7457	2820 E. 6th St. #225	Tucson	AZ	85719
Walsh	Bruce	325-7457	1261 Rollercoaster Rd.	Tucson	AZ	85704
Wegrzyn	Walter	888-0630	70 W. Forrest Feztor	Tucson	AZ	85747
West	Richard & Kathy	574-0830	Box 2372	Arizona City	AZ	85223
Westmoreland	Willie		6923 Talon Dr.	Tucson	AZ	85708
White	Michael & Christi	745-6179	3605 N. Camino De Oeste	Tucson	AZ	85745
Wickersham	Betty	743-0008	7352 E. 38th St.	Tucson	AZ	85730
Wilmot	James C.	747-1419	3818 E. Diablo Canyon	Tucson	AZ	85718
Wilson	Larry	299-6608	3035 S. Shellia	Tucson	AZ	85746
Witt	Nelson	883-6669	P.O. Box 44198	Tucson	AZ	85733
Worstmann	Louisa		3170 N. Brittlebrush	Tucson	AZ	85712
Yovens	Bob	795-1668	5051 N. Sabino Canyon Rd. 2146	Tucson	AZ	85715
Zajac	John	299-3203	4561 N. Arroyo Vacio	Tucson	AZ	85715
Zimmerer	John	529-2207				

LARGE PRINT COPIES OF THIS DIRECTORY ARE  
AVAILABLE - SEE TERRI LAPPIN.

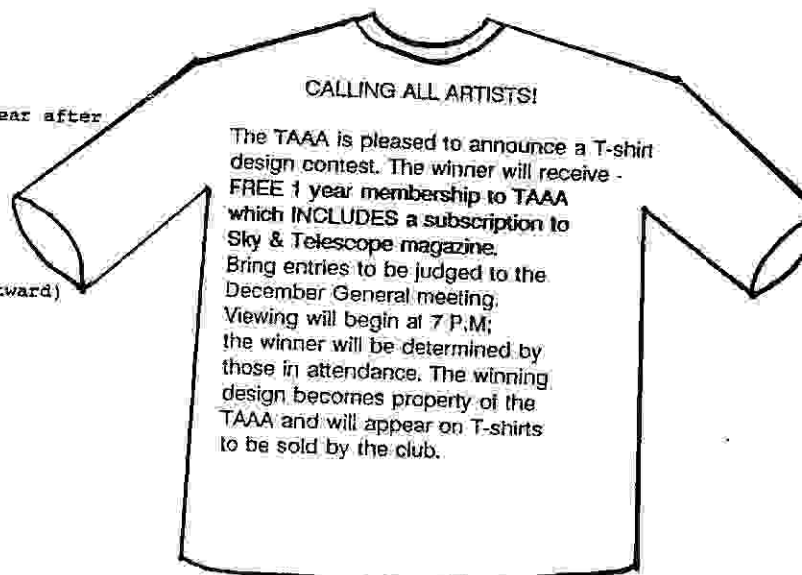
**CELESTIAL CALENDAR for December 1991 (all times are in MST):** **DARK SKIES for December 1991 (in MST):**

- S Nov. 30 TAAA Star Party, Arivaca site, see map elsewhere.  
 S Dec. 1 10pm, Venus at perihelion, .7184 a.u. from Sol.  
 M Dec. 2 7am, Moon passes 8° S of Venus.  
 T Dec. 3 9pm, Mercury at ascending node through the ecliptic.  
 W Dec. 4 8:56pm, NEW MOON, beginning of lunation 853.  
 T Dec. 5 6pm, Star Party at Camp Cooper for Henry Elementary School, see map elsewhere.  
 F Dec. 6 7:30pm, TAAA General Membership Meeting, Steward Obs. 1st floor auditorium, Don Strittmatter past TAAA president, Members Night and Auction.  
 S Dec. 7 TAAA Star Party, Arivaca site, see map elsewhere.  
 S Dec. 8 1:34am, Moon at ascending node (longitude 279.9°), 7am, Moon passes 0.6° N of Uranus. 1pm, Moon passes 0.2° S of Neptune.  
 M Dec. 9 Puppis-Velid meteors. 7pm, Moon at apogee.  
 T Dec. 10 3am, Moon passes 3° N of Saturn.  
 W Dec. 11 6pm, Star Party at Pueblo High School, set up by 5:30pm, see map elsewhere.  
 T Dec. 12 7:30pm, TAAA Executive Meeting, Flandrau Science Center conference room.  
 F Dec. 13 8am, Mercury 2.9° N of Mars.  
 S Dec. 14 4am, peak of Geminid meteors, maybe the best shower of the year, ZHR >60, often over 100, note that peak is well after the Moon sets! 2:31am, FIRST QUARTER MOON. 6pm, Holiday Potluck at the Niehaus', see map elsewhere.  
 S Dec. 15 10am, Mercury 7.5° N of Antares.  
 M Dec. 16 Piscid meteor, slow, ZHR 8. Dean Ketelsen, amateur astronomer & TAAA's fearless leader, cloned this date sometime in the past.  
 T Dec. 17 1st powered flight by Orville Wright, 1903  
 W Dec. 18 7:30pm, 30" Telescope Design, Land and Fundraising Meeting at Duane Niehaus', see map elsewhere.  
 T Dec. 19 Albert Michelson, German/American physicist & astronomer, born 1852  
 F Dec. 20 Arietid meteors, ?  
 S Dec. 21 Partial eclipse of the Moon  
 1:25am, penumbral eclipse begins.  
 3:00am, partial eclipse begins.  
 3:23am, FULL MOON, the "Long Night" Moon.  
 3:33am, mid-eclipse.  
 4:06am, partial eclipse ends.  
 5:41am, penumbral eclipse ends.  
 S Dec. 22 Ursid meteors, ZHR 9, a few fireballs? 1:52am, Winter solstice, the longest night. 3am, Moon at perigee, distance 56.2 earth-radii.  
 M Dec. 23 7am, Venus at greatest latitude N of ecliptic (3.4°).  
 T Dec. 24 Borman, Lovell & Anders become 1st men to orbit moon. (Apollo 8), 1968.  
 W Dec. 25 Sir Isaac Newton born this date in 1643, almost one year after Galileo's death.  
 T Dec. 26 December fireballs meteor shower, ZHR ? 10am, Moon passes 7° S of Jupiter.  
 F Dec. 27 Johannes Kepler born this date, 1571. 6:56pm, LAST QUARTER MOON.  
 S Dec. 28 TAAA Star Party, Empire Ranch.  
 S Dec. 29 Solon Irving Bailey, American astronomer, born 1854  
 M Dec. 30 Mars 7° E of Mercury in the morning sky.  
 T Dec. 31 3am, Jupiter stationary in RA, begins retrograde (westward) motion.

S/M	Dec. 1/2	6:45pm - 3:53am
M/T	Dec. 2/3	6:45pm - 4:54am
T/W	Dec. 3/4	6:45pm - 5:42am
W/T	Dec. 4/5	6:45pm - 5:43am
T/F	Dec. 5/6	6:45pm - 5:44am
F/S	Dec. 6/7	6:46pm - 5:44am
S/S	Dec. 7/8	6:46pm - 5:45am
S/M	Dec. 8/9	7:39pm - 5:46am
M/T	Dec. 9/10	8:34pm - 5:46am
T/W	Dec. 10/11	9:29pm - 5:47am
W/T	Dec. 11/12	10:24pm - 5:48am
T/F	Dec. 12/13	11:18pm - 5:48am
F/S	Dec. 13/14	12:14am - 5:49am
S/S	Dec. 14/15	1:11am - 5:50am
S/M	Dec. 15/16	2:10am - 5:50am
M/T	Dec. 16/17	3:13am - 5:51am
T/W	Dec. 17/18	4:20am - 5:51am
W/T	Dec. 18/19	5:28am - 5:52am
T/F	Dec. 19/20	none
F/S	Dec. 20/21	none
S/S	Dec. 21/22	none
S/M	Dec. 22/23	6:51pm - 7:10pm
M/T	Dec. 23/24	6:52pm - 8:22pm
T/W	Dec. 24/25	6:52pm - 9:33pm
W/T	Dec. 25/26	6:53pm - 10:40pm
T/F	Dec. 26/27	6:53pm - 11:44pm
F/S	Dec. 27/28	6:54pm - 12:46am
S/S	Dec. 28/29	6:55pm - 1:48am
S/M	Dec. 29/30	6:55pm - 2:48am
M/T	Dec. 30/31	6:56pm - 3:48am
T/W	Dec. 31/1	6:56pm - 4:45am
W/T	Jan. 1/2	6:55pm - 5:40am
T/F	Jan. 2/3	6:55pm - 5:57am
F/S	Jan. 3/4	6:56pm - 5:57am
S/S	Jan. 4/5	6:57pm - 5:57am

Times listed are for Tucson, Arizona when:  
 (1) Moon is below the horizon  
 (2) Sun is >18° below the horizon  
 (astronomical twilight)

Andrew J. Meyer



Andrew J. Meyer

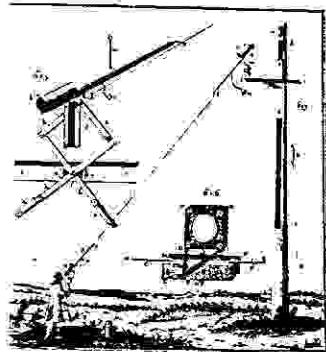
**TAAA MIRROR-MAKING CLASS TO BEGIN!**

A mirror making class will be taught by expert opticians Bob Goff and Duane Niehaus. All supplies are included in the fees listed below. There will be a sign-up sheet at the December meeting. For more information call Bob Goff at 790-1452.

6" mirrors.....\$100  
 8" mirrors.....\$150  
 10" mirrors.....\$230

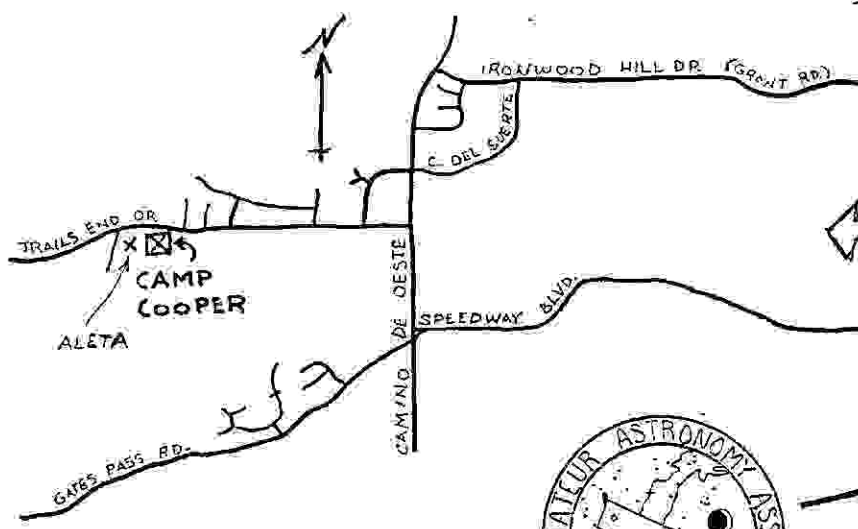
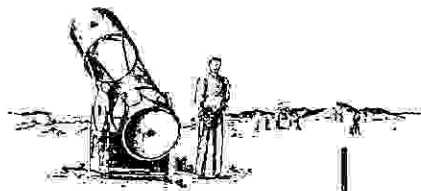
**DECEMBER MEETING: TAAA MEMBERS NIGHT, FLEA MARKET & AUCTION**

Bring photos, slides, equipment, stories etc. to share with other members on "Member's Night". Also, don't forget to bring your astronomical stuff to sell or trade at the "Flea Market". In addition, the club will AUCTION donated items to benefit the TAAA 16" and 30" telescope projects.





# STAR PARTIES



MAP FOR T.V.S.D  
CAMP COOPER

MAP FOR  
PUEBLO H.S.



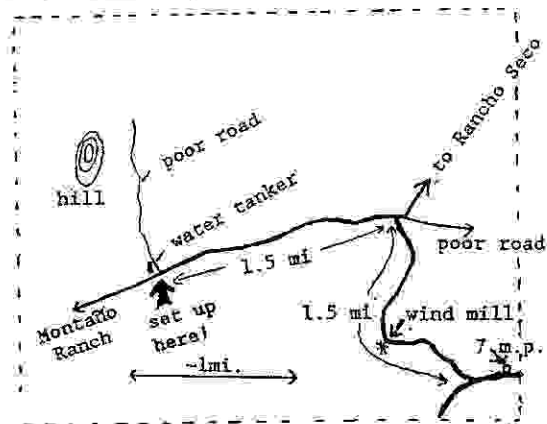
1 MILE



EMPIRE RANCH  
Starparty Site

Go 0.3 mi. south of  
Milepost 40 then turn  
east. About 0.9 mile  
turn south and park at  
clearing or where others  
are parked. Drive slow  
and use parking lights  
after dark.

Directions to Montano Ranch site near Arivaca.



Cow Palace is on the  
W side of I-19

go W from  
Cow Palace  
Intersection

Arivaca  
Junction

16.8-17 miles

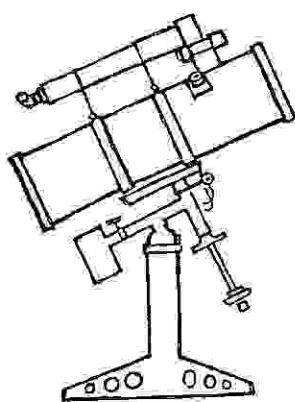
To Arivaca

To Tucson  
(40 mi.  
from UA)

Green Valley

I-19

exit 48



Mission scientists were delighted to present the first ever image of an asteroid, Gaspra, during the Galileo Press Briefing at Jet Propulsion Laboratories on November 14th. Navigation was so accurate that of the nine images taken at a range of 16,000 kilometers, only the center image was transmitted. Each image is 800 by 800 pixels and it is estimated that the center of gravity of the asteroid was located at pixel 400:400, quite a feat!

The image of Gaspra showed a body approximately  $20 \times 11 \times 12$  km which had obviously suffered one catastrophic collision after another over roughly the past 300 to 500 million years. With a resolution of about 160 meters, individual craters could be seen ranging in size from about 0.2 km to about 1.7 km. "Facets" were visible which suggested major fractures from prior collisions some of which probably split the original "parent" body. Surprisingly, for a body with such a weak gravitational field, even at this resolution the surface appeared smoothed or rounded. This suggests that there may be a thin (perhaps 3 to 10 meters) layer of dust or "regolith". Several weeks hence, the three images (which were taken at 8.7 second intervals and through different color filters) will be combined to produce a color image of the asteroid.

Additional higher resolution images are stored on Galileo's tape recorder and the scientists are naturally impatient to get them sent to Earth. If the high gain antenna can be freed, each image can be transmitted in about a minute. Failing that, the images take up to 80 hours at 40 bits per second and transmission may have to wait until next Spring or until Galileo again approaches Earth next Fall. The approximate position of Gaspra on December 7th is: 18.54 RA, -20.9 DEC at magnitude 15.4.

# SKY PUBLISHING BOOK ORDER

Here's your chance

to order some good books

and save some money too!

Sky Publishing, who brings us Sky & Telescope each month, also makes astronomy books available at a reasonable discount to TAAA members. An order will be placed soon so look over this list and order something. Payment is needed in advance, costs listed include shipping charges. Make checks payable to TAAA and send to our PO Box. There are other books available and I will bring the complete catalog to the December 6th meeting or call me at 579-0185 if you want to place an order. The deadline for placing an order is January 3rd.

The Edmund Mag & Star Atlas (Dickenson, et al)	\$15.80
Burnham's Celestial Handbook, paper (3 volumes)	\$30.00
Sky Atlas 2000 (Tirion)	field edition \$13.10
	desk edition \$13.10
	color edition \$39.60
Norton's 2000.0, hardbound (ed. by Ridpath)	\$28.50
Uranometria 2000.0	north hemisphere \$35.20
	south hemisphere \$35.20
The Astronomical Companion, soft (Guy Ottewill)	\$10.60
Astronomy with Binoculars, softbound (Muirden)	\$ 6.20
1000+: The Amateur Astronomer's Field Guide to	
Deep Sky Observing, spiralbound (Lorenzin)	\$35.20
The Astronomers, hardbound (Goldsmith)	\$19.20
The Cloudy Night Book, softbound (Mumford)	\$ 6.90
Starlight Nights, softbound (Peltier)	\$10.00
Sky & Telescope Binders	\$10.75

# 1992 CALENDARS

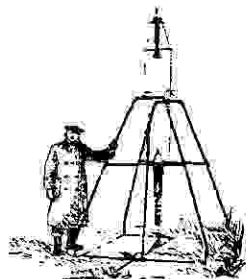
We will be placing an order for 1992 SPACESCAPES CALENDARS this month. The SPACESCAPES calendar will be on display at the December meeting. Each month, this calendar displays a beautiful astro-photo from a professional observatory or NASA for your enjoyment. If you prefer, you can look through the Cedco catalog and choose from a number of other theme calendars...trains, cars, animals, etc. The deadline for ordering is December 15th. Use the handy order form below if you wish. Calendars are \$12 each. Make checks payable to TAAA and send to: PO Box 41254, Tucson, AZ 85717

I wish to order a Spacescapes 1992 calendar. Enclosed is \$12.00 for each calendar ordered. I would like to order \_\_\_\_\_ calendars.

Name \_\_\_\_\_

Address \_\_\_\_\_ Phone \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_





## KITT PEAK MUSEUM

### Volunteer Program

### SHARE YOUR INTEREST IN ASTRONOMY BECOME A VOLUNTEER WITH THE KITT PEAK MUSEUM

Each year, over 100,000 people visit the Observatories. As a volunteer, you can help communicate to our visitors the excitement of scientific research and the wonders of the Universe.

Our volunteer educators (docents) will meet professional astronomers from around the world and see firsthand the tools of modern astronomy.

This is an extraordinary opportunity for anyone interested in astronomy or science in general. Kitt Peak volunteers will acquire work experience in a unique environment while, at the same time, helping the Observatory fulfill its mission to the public.

We are looking for Volunteers of all ages, from all walks of life, and all backgrounds. We do not require prior knowledge of Astronomy. All we are looking for is a willingness to learn. Transportation to the Observatories is provided from Tucson.

Call or write to: Kitt Peak Museum  
Volunteer Program  
P.O. Box 26732  
Tucson, AZ 85726-6732  
(602) 740-2426

## IMPORTANT NOTICE TO SENIORS!



FLANDRAU SCIENCE CENTER & PLANETARIUM

presents:

### The Friday 3:30 SKY SHOW

The Flandrau Science Center & Planetarium recognizes that some people like to go to bed at night, instead of staying out till all hours, so we've designed a special program just for you! The Friday SKY SHOW at 3:30 pm lets you enjoy the "night sky" in the cool, comfortable seating of the air conditioned STAR-Theater, without the bugs, the cactus or a long drive in the dark! ... And we'll give you a substantial discount, to boot!

So get out of the elements and  
do your star-gazing in the cool comfort of  
Flandrau Science Center & Planetarium's "night sky"

... and go to bed at night!

~~\*\*\*\*\*~~

Flandrau is conveniently located on the U of A campus at Cherry and the Mall.  
The new Visitor's Parking Lot is open directly south of Flandrau.

**SENIOR TICKET DISCOUNT PRICE FOR THIS SHOW**  
**ONLY \$2.75! (And that's nothing to snooze about...)**

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  - Featuring The Stellar-Dome manufactured by S.V.  
in Tucson
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