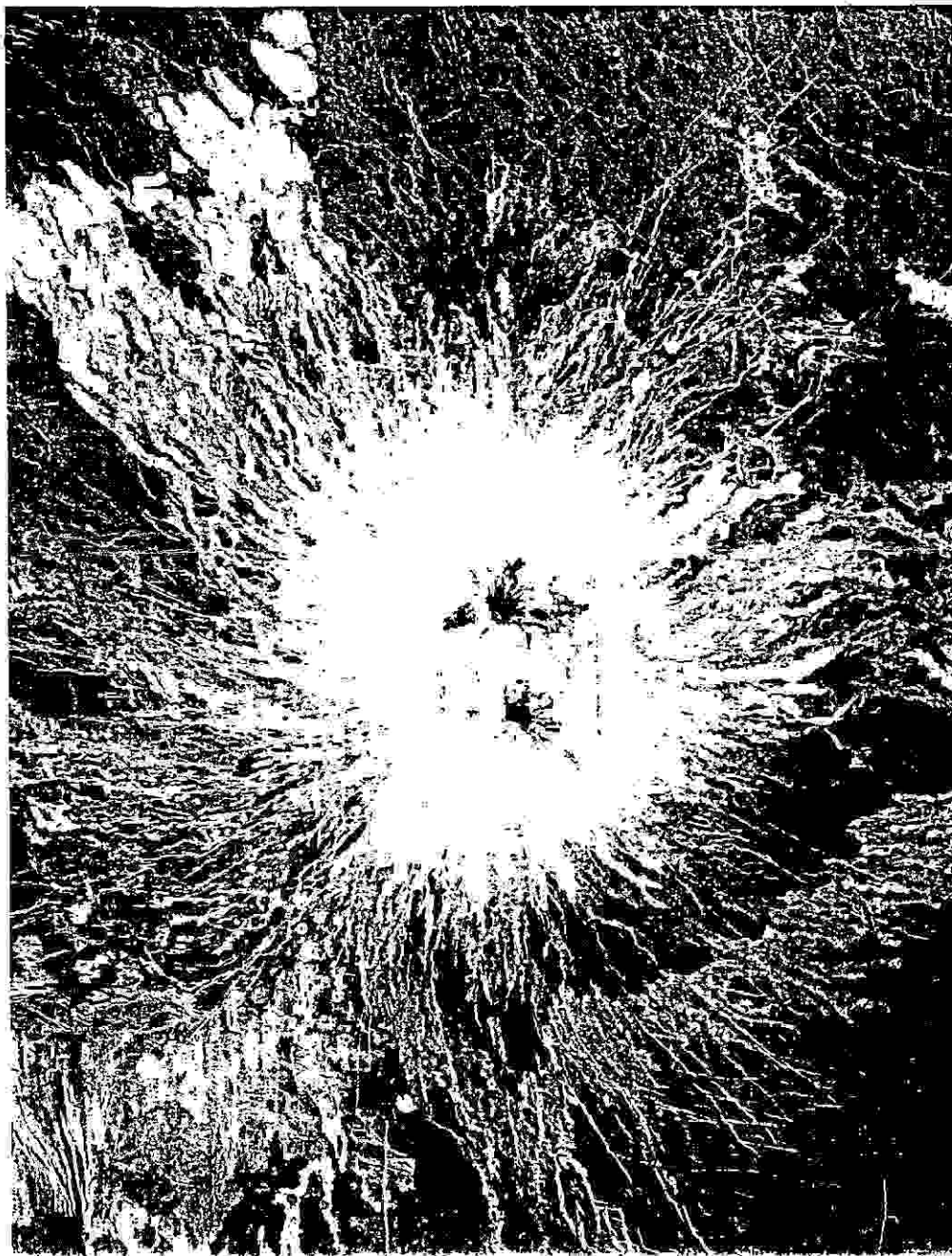


Desert Skies

APRIL 1992



NASA

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

JPL 400-005D 9/91

The Magellan Mission

Magellan is a NASA spacecraft mission to map the surface of Venus with imaging radar. Magellan was launched on May 4, 1989, aboard the Space Shuttle Atlantis; on August 10, 1990, the spacecraft began its orbit around Venus. The scientific instrument used for mapping is a synthetic aperture radar (SAR), which can penetrate the thick cloud cover perpetually shielding the surface of Venus. The length of Magellan's mapping cycle is 243 days — equivalent to one complete rotation of the planet. The spacecraft completed its first mapping cycle and primary mission on May 15, 1991, and immediately began the second cycle. During the first cycle, Magellan mapped more than 80 percent of the planet's surface. The current and subsequent cycles, all of equal duration, will provide a complete map of Venus.

Sapas Mons Volcano (P-33169)

This false-color image shows the volcano Sapas Mons, located at 8 degrees north latitude and 183 degrees east longitude in the broad equatorial rise called Atla Regio. Sapas Mons is approximately 400 kilometers (249 miles) across and 1.5 kilometers (0.9 mile) high. The sides of the volcano have numerous overlapping lava flows. The darker flows on the lower right are thought to be smoother than the brighter flows near the center of the volcano. Many of the flows appear to have erupted along the sides of the volcano rather than from its summit. This type of eruption is a feature typical of large volcanoes on Earth, such as those found in Hawaii.

The summit area of the volcano has two mesas whose smooth, flat tops appear dark in the radar image. Also near the summit are groups of pits; some of the pits are as large as 1 kilometer (0.6 mile) across. These pits may have been formed when underground chambers of magma were drained through other subsurface tubes, causing the surface to collapse. An impact crater with a diameter of 20 kilometers (12 miles), located northeast of the volcano, is partially buried by lava flows.

Prior to the Magellan mission, little was known about Atla Regio. New data acquired by Magellan in February 1991 show at least five large volcanoes, like Sapas Mons, in this region; these volcanoes are linked by a complex system of fractures and rift zones. If this region evolved in the same manner as volcanic areas on Earth, Atla Regio was probably formed when large volumes of molten rock upwelled from hot spots within Venus' interior.



GENERAL MEETING - Friday, April 3, 7:30 P.M. - Dr. Jane Charlton, of Steward Observatory will present a talk on "Exploring the Lyman-alpha Forest".

EXECUTIVE MEETING -Thursday, April 9, 7:30 P.M. at Flandrau Planetarium.

30" TELESCOPE DESIGN, LAND AND FUNDRAISING MEETING - Wednesday, April 15, 7:30 P.M.
at the home of Duane and Sharon Niehaus*.

STAR PARTIES - Saturday, April 4 - Star Party with Sagauo Astronomy Club at Sentinel, Arizona*

Wednesday, April 8 - Donaldson Elementary School*

Saturday, April 11 - Jupiter Event Party at the home of T. Lappin & G. Rosenbaum*

Saturday, April 25 - Arivaca Star Party at new site*

Friday, May 1 - Star Party at Catalina Park for Mesa Verde Elementary School.
(Contact the chief observer for info.)

* see map inside this newsletter

TAAA EXECUTIVE

President	Dean Ketelson	293-2855
Vice-President	Terril 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	747-9323
Chief Observer	Andy Meyer	742-4549
Membership Coord.	Terril Lappin	579-0185
Past President	Tim Hunter	299-2972
Desert Skies ed.	Dolores Hill	325-9820
Asst. ed.	Bill 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

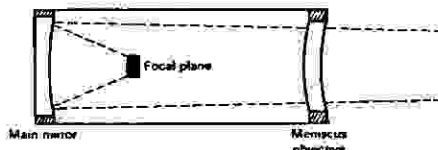
Rates for membership in the TAAA are given above. Members can subscribe to Sky & Telescope at the time of membership renewal, saving over 25% off the cost of a regular subscription. The subscription term must match your membership period.

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.

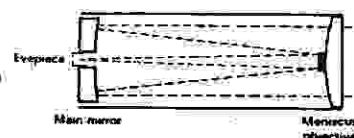
4 EASY STEPS TO MEMBERSHIP RENEWAL

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.



* All articles, announcements, news etc. must be submitted by the 20th of the month.



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.

FOR SALE: Epson LQ-2550 twenty-four pin, wide carriage, color dot matrix printer, \$450. Call Dan Knauss at 881-2639.

FOR SALE: 12 1/2", full thickness mirror blank with f/7 curve rough ground; 18" mirror 1 1/2" thick, presently has 25 foot focal length and is coated. Call Rik Hill at 325-9820 for information.

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.

SERVICE: Newtonian telescope mirrors tested FREE for club members by Bob Goff (call 790-1452).

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: 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.

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: 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#).



T-SHIRT CONTEST RUNOFF

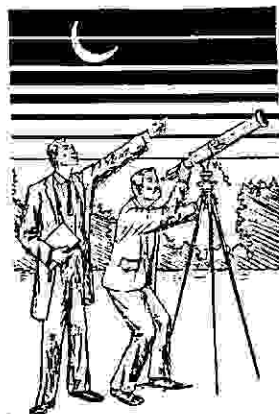
Two T-shirt designs tied in the "poll" taken at the March meeting! So, a "vote-off" will be held at the April general meeting! Come and see if your favorite is in the running!



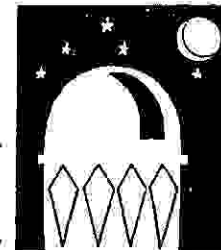
Terri Lappin will have registration forms for the RIVERSIDE TELESCOPE MAKING CONFERENCE to be held in the San Bernardino Mtns. at the April meeting.

OBSERVERS REPORT

Star Parties



Regular:	April 4	Arivaca site, see map
	April 25	Arivaca site, see map
	April 11	Jupiter Event Party, see map
Public:	April 8	Star party at Donaldson Elementary, see map
	May 1	Star party at Catalina State Park for Mesa Verde Elementary School



Shut down Flandrau? It could happen sooner than you think! I hope the TAAA can make a strong show of support to keep this from happening. So, please, write your city, state and federal representatives, the president of the U of A, let them know you are a member of the club. Lets not let a valuable scientific and educational asset like this go to waste!

Kitt Peak National Observatory is looking for volunteers to become docents on the mountain. I have had the opportunity to spend time the past couple of weekends up there, first, for groundbreaking on the WIYN 3.5m telescope and second, during a visitors night. If you've never had a chance to see what goes on behind the scenes at a world class observatory I'm here to tell you its FASCINATING! For example, did you know that even on a clear night they have to scrub observing runs because of high humidity (wreaks havoc on the mirror coatings)? Terribly frustrating.

Anyway, if your interested in volunteering please call Barb Ostrowski, KPNO, 620-5300 or (602)740-2426. She's looking for 150 volunteers to do everything from lead tours to working at the gift shop. In particular, people are needed mid-week.

Otherwise, El Nino has kept me in stitches with very little observing taking place at the Meyer household. I did have an opportunity to see the double transit/shadow crossing of Europa and Io the late evening of March 19 (thanks to J. McGaha for bringing that one to my attention). Not that night, but on previous nights, the seeing has been quite reasonable. Anybody who had a chance to see the video by P. Lorenz friends from Chicago, Dan Joyce and Jim Carroll, can vouch for the quality of seeing we had early in the month.

Until next month, may transparency and good seeing prevail!

ajm

Andrew J. Meyer

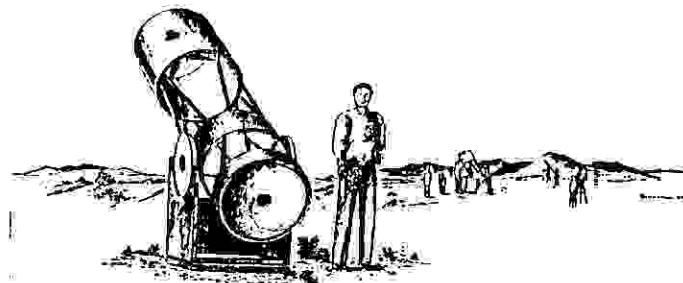
IMPORTANT NOTICES:

APRIL 2 - "Spinning & Melting Day" for the 6.5 meter honeycomb mirror at the UA Mirror Lab. TAAA members are invited to tour the facility - SEE the invitation in THIS newsletter!!

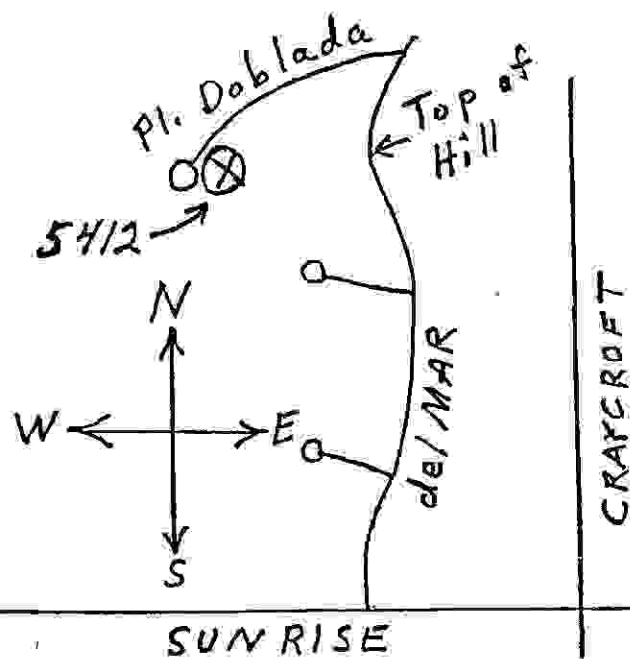
FLANDRAU PLANETARIUM IS IN DANGER OF BEING CLOSED DUE TO BUDGET CUTS (AT THE STATE AND UNIVERSITY LEVEL). THIS IS A SERIOUS POSSIBILITY! IT IS UNBELIEVABLE TO THINK THE "ASTRONOMY CENTER" OF THE COUNTRY WOULD NOT HAVE A PLANETARIUM!! WRITE TO U OF A PRESIDENT, DR. PACHECO AND YOUR STATE REPRESENTATIVES AND URGE THEM TO KEEP FLANDRAU OPEN! SHOW THEM THAT THE FACILITY HAS STRONG COMMUNITY SUPPORT AND SERVES A VITAL EDUCATIONAL NEED.



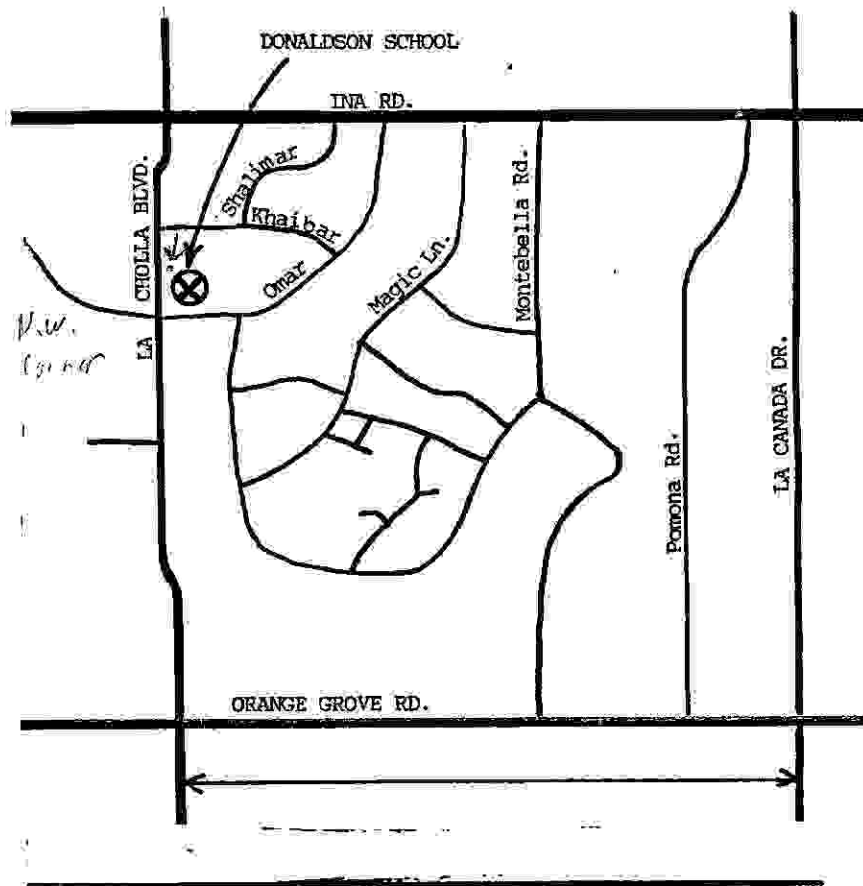
Star Parties



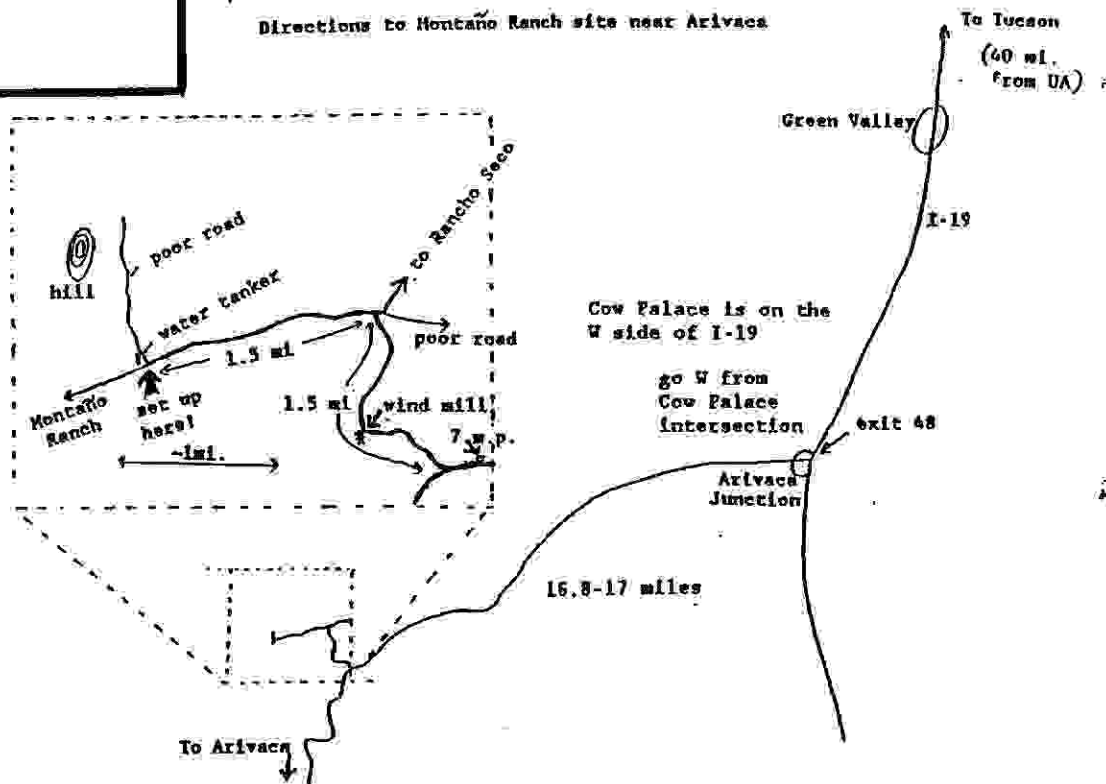
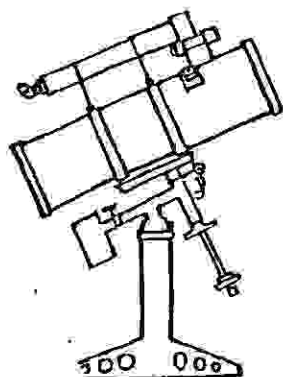
Sharon & Duane
Niehaus



CRAYCROFT



Directions to Montano Ranch site near Arivaca



CELESTIAL CALENDAR for April (all times are in MST):

- W Apr. 1 12pm, Moon passes 7.0° N of Venus.
T Apr. 2 10:02pm, NEW MOON.
F Apr. 3 7:30pm, TAAA General Membership Meeting, Steward Obs. 1st floor auditorium.
S Apr. 4 TAAA Star Party, Arivaca site, see map elsewhere.
S Apr. 5 3pm, Mercury 2.3° N of Venus.
M Apr. 6 10am, Moon passes 1.2° S of Pleiades.
T Apr. 7 6pm, Mercury stationary in RA, resumes direct (eastward) motion.
W Apr. 8 6:30pm, Star party at Donaldson Elementary School, see map elsewhere.
T Apr. 9 7:30pm, TAAA Executive Meeting, Flandrau Science Center conference room.
F Apr. 10 3:05am, FIRST QUARTER MOON.
S Apr. 11 Jupiter Event Party at Gary and Terry's, see map elsewhere.
S Apr. 12 10pm, Comet Giacobini-Zinner at perihelion.
M Apr. 13 12am, Moon at perigee, 57.7 earth-radii.
T Apr. 14 5am, Venus at greatest latitude S of the ecliptic (-3.4°).
W Apr. 15 7:30pm, 30" Telescope Design, Land and Fundraising Meeting at Duane Niehaus', see map elsewhere.
T Apr. 16 9:42pm, FULL MOON.
F Apr. 17 Surveyor 3 launched: 1st spacecraft to sample the surface of the Moon, 1967.
S Apr. 18 11am, Mercury at aphelion, 0.4667 a.u. from Sol.
S Apr. 19 M56 discovered by Charles Messier, 1779.
M Apr. 20 1am, Moon passes 2.6° N of Antares.
T Apr. 21 2pm, Uranus stationary in RA, begins retrograde (westward) motion.
W Apr. 22 Lyrid meteors, ZHR >30 , dark sky till 11:40pm of 4/21, bright Moon in morning interferes.
T Apr. 23 7am, Mercury at greatest elongation west, 27.3° from Sol.
F Apr. 24 2:40pm, LAST QUARTER MOON.
S Apr. 25 TAAA Star Party, Arivaca site, see map elsewhere.
S Apr. 26 Copernicus makes his first observations of the planet Saturn, 1514.
M Apr. 27 Immanuel Kant, Russian philosopher & astronomer, born 1724.
T Apr. 28 α Bootid meteors, ZHR 7ish.
W Apr. 29 12am, Moon passes 7.0° N of Mars.
T Apr. 30 4pm, Jupiter closest to Regulus, 5.0° .
F May 1 6:30pm, Star party at Catalina State Park for Mesa Verde Elementary School, dinner at 5:30pm for club members who sign up to attend.
S May 2 TAAA Star Party, Arivaca site, see map elsewhere.

Andrew J. Meyer



DARK SKIES for April 1992 (in MST):

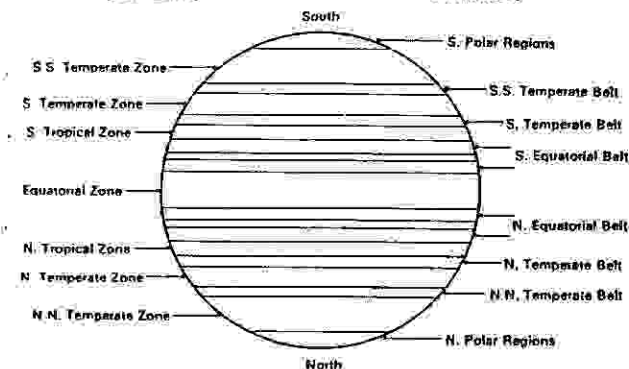
W/T	Apr. 1/2	8:07pm - 4:46am
T/F	Apr. 2/3	8:08pm - 4:45am
F/S	Apr. 3/4	8:09pm - 4:44am
S/S	Apr. 4/5	8:38pm - 4:42am
S/M	Apr. 5/6	9:41pm - 4:41am
M/T	Apr. 6/7	10:43pm - 4:39am
T/W	Apr. 7/8	11:43pm - 4:38am
W/T	Apr. 8/9	12:38am - 4:36am
T/F	Apr. 9/10	1:28am - 4:35am
F/S	Apr. 10/11	2:11am - 4:34am
S/S	Apr. 11/12	2:51am - 4:32am
S/M	Apr. 12/13	3:27am - 4:31am
M/T	Apr. 13/14	4:02am - 4:29am
T/W	Apr. 14/15	none
W/T	Apr. 15/16	none
T/F	Apr. 16/17	none
F/S	Apr. 17/18	none
S/S	Apr. 18/19	8:22pm - 8:57pm
S/M	Apr. 19/20	8:23pm - 9:57pm
M/T	Apr. 20/21	8:24pm - 10:52pm
T/W	Apr. 21/22	8:25pm - 11:40pm
W/T	Apr. 22/23	8:26pm - 12:23am
T/F	Apr. 23/24	8:27pm - 1:01am
F/S	Apr. 24/25	8:28pm - 1:35am
S/S	Apr. 25/26	8:29pm - 2:06am
S/M	Apr. 26/27	8:30pm - 2:35am
M/T	Apr. 27/28	8:31pm - 3:03am
T/W	Apr. 28/29	8:32pm - 3:33am
W/T	Apr. 29/30	8:33pm - 4:03am
T/F	Apr. 30/1	8:34pm - 4:07am
F/S	May 1/2	8:35pm - 4:06am
S/S	May 2/3	8:36pm - 4:04am

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

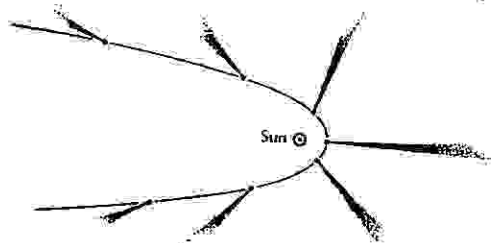
Andrew J. Meyer

LIGHT ZONES

DARK BELTS

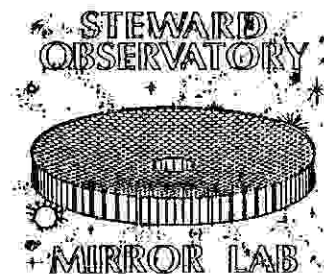


Zones and belts on the surface of the planet Jupiter



UA MIRROR LAB EXTENDS SPECIAL INVITATION TO TAAA MEMBERS!

The Steward Observatory Mirror Laboratory will begin casting a 6.5-meter f/1.25 borosilicate honeycomb mirror on March 29th. This marks the first time that U.S. astronomers will try to make a mirror of such gigantic proportions since the casting of the 200-inch mirror in 1935. "Spinning and Melting" day will be Thursday April 2. The oven will begin spinning at 7.4 rpm when the temperature reaches 750 C at approximately 8:30 AM on April 2. The 10 tons of E6 glass chunks will slowly melt throughout the day with the oven reaching maximum temperature of 1180 C at roughly 1AM on April 3. Tours of the Mirror Lab Polishing Facility will be available at selected times during the day and evening.



Members of the T.A.A.A are invited to stop by the Mirror Lab and watch the spectacle on April 2. Of course, watching glass melt is alot like watching grass grow, so it doesn't really matter what time of day you choose to visit. Unfortunately, we live in times where security is required for such expensive activities, so all visitors will be required to wear ID badges. Members of TAAA who wish to visit the Mirror Lab should contact Becky Gaspar at 621-9379. Tell her your name, that you are a member of TAAA and what time of the day you expect to visit. An appropriate ID badge can then be made for you to pick up at the door. If you wish to bring guests who are not TAAA members, contact Dean Ketelson or John Hill (621-3940) for approval. Be warned that the Mirror Lab is not a safe environment for children under 12 to be running around.

John Hill 20MAR92

THE INTERNATIONAL DARK-SKY ASSOCIATION (IDA)

Tim Hunter, President IDA

IDA's Fourth ANNUAL MEETING will take place in Tucson, Arizona, at the Hotel Park Tucson (5151 East Grant Road, Tucson, AZ 85712, 602-323-6262) on the week end of Friday April 11, Saturday April 12, and Sunday April 13, 1992. The tentative agenda for the meeting is:

FRIDAY APRIL 11th (late afternoon, early evening)

IDA Board Meeting
Informal Get Together

SATURDAY APRIL 12th

Papers sessions
Business meeting
Banquet

SUNDAY APRIL 14th

Informal Get Together

There will be IDA information materials, posters, pamphlets, pictures, t-shirts, et cetera available at the meeting as well as good camaraderie with amateur and professional astronomers, lighting engineers and designers, lighting manufacturers, city authorities, and other interested persons.

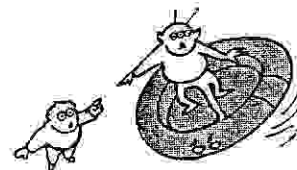
SEND US YOUR SLIDES:

Whether you plan to attend the Annual Meeting or not, send us slides showing your best example of a good lighting job and/or light fixture. Send us your best example of the worst lighting job and/or fixture you have come across. I will load all the slides I receive in a slide tray and show them at the Annual Meeting. We will choose two winning slides illustrating the best and the worst in lighting. These will be chosen by acclamation by the audience. It should be a lot of fun and instructive. Be sure to send us as many slides as you want. Do be sure they are labelled with your name and address so we know who gets credit for which slide. Send copies not originals, because we will not be able to return the slides we receive. The winning slides will be submitted to Sky and Telescope and given top consideration for publication.

We invite all IDA members and interested persons to attend the Fourth Annual Meeting. It promises to be informative and enjoyable. The registration cost (to cover IDA's expenses for the meeting rooms) will be \$15. The banquet cost will be about \$25 per person. For hotel reservations contact the Hotel Park directly. For more information or early registration write to:

International Dark-Sky Association
3545 N. Stewart Ave.
Tucson, Arizona 85716





Spring Flingers Afoot!

Be forewarned that the next general meeting - April 3rd, coincides with the Spring Fling carnival on the campus mall. You should arrive earlier and expect parking much more difficult to find. Both the Administration parking ramp (off of 2nd St.) and the McKale ramp should be open, with the former less affected by Spring Fling.

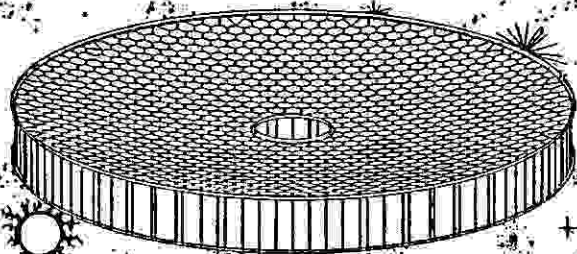
TAAA Elections in May

Elections for TAAA executive members will be held at the May meeting. If you would like to be considered for an office, Gary Rosenbaum is the nominating committee this year, so let him know. In addition, we are interested in volunteers for several new positions, including a volunteer coordinator, property manager, librarian, and a phone tree organizer - to simplify communication among the Club for timely events or changes in planned activities. For volunteer positions, contact any executive member.

Grand Canyon Housing

It may already be too late to make motel reservations for the Grand Canyon Star Party if you have not done so. Both the Canyon lodging through Fred Harvey and the nearby Best Western is full if not very nearly. The only thing I can suggest is to check regularly in case there have been cancellations, or to make tentative camping reservations when they open (no more than 8 weeks in advance) and show up at the motels at 4pm when they make the rooms of no-shows available. Vicki and I were able to make reservations last year only two weeks before the star party, but I am beginning to think we were extremely lucky. If you do plan to camp, I still have some of the complimentary campsites available, so make your plans and let me know now if you want them.

STEWART
OBSERVATORY



MIRROR LAB

To Commemorate the casting of the
First 6.5 meter f1.25 Telescope Mirror
We offer these quality T-Shirts
(Black, with white and blue design)
\$12.00 plus \$2.95 shipping & handling to:

MIRROR LAB T-SHIRTS
1004 E. EDISON ST
TUCSON, AZ 85719

Please specify S,M,L,XL allow 6-8 wks
Include address and phone number

Jupiter Event Party

April 11 Jupiter Star Party at the home of Gary Rosenbaum & Teresa Lappin. Location: 4131 W. Orangewood Dr. Near Ina & I-10. From Ina turn north onto Oldfather. At the top of a small hill will be Thornydale Elementary School on your left. When you get to the school parking lot turn right onto Orangewood. The house is located on the first intersection into the neighborhood at Orangewood and Red Wing on the southeast corner. White tri-level house with three arches. Bring a telescope if you like. We will have some munchies available.

At 2:18 UT (7:18 pm MST) the Great Red Spot will be near the meridian of Jupiter.

Numerous events will then occur with the moons of Jupiter. The first is a mutual event, a partial occultation of Ganymede by Europa. The occultation begins at 5:02 UT (10:02 pm MST) and ends at 5:49 UT (10:49 pm MST). The 22% maximum light loss will be difficult to detect visually but the occultation and the moons individual motions will be interesting events. This is the last mutual event of Jupiters moons listed for 1992.

At 6:19 UT (11:19 pm MST) Io will begin a transit (Ingress) across the face of Jupiter.

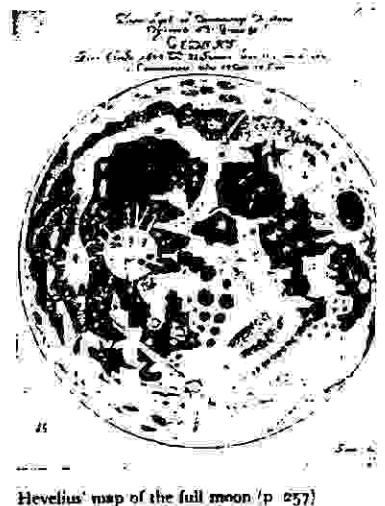
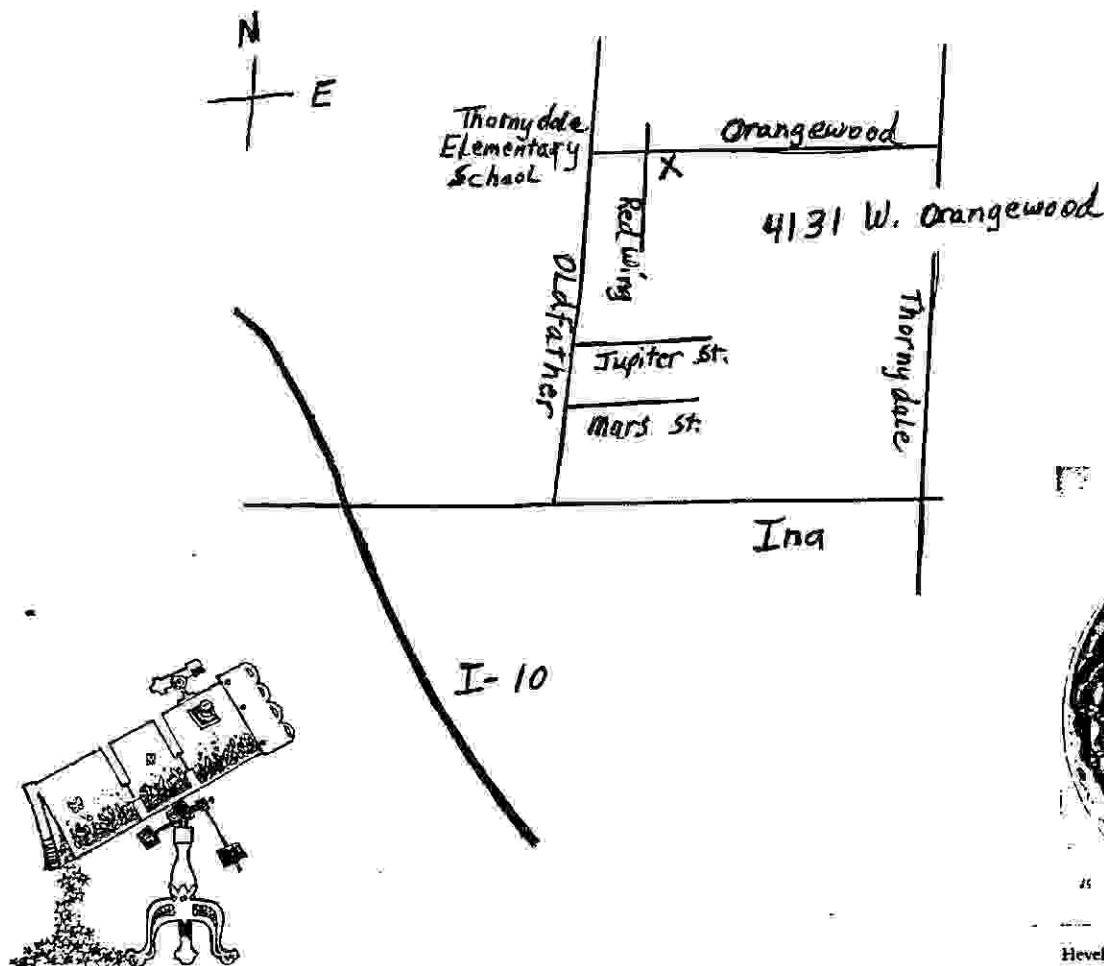
At 6:21 UT (11:21 pm MST) Europa will be occulted by (pass behind) the limb of Jupiter.

At 6:36 UT (11:36 pm MST) Ganymede will be occulted by the limb of Jupiter

At 7:14 UT (12:14 am MST) the shadow of Io will begin a transit (Ingress) across the face of Jupiter.

Other events occur later in the morning.

The moon will be 9 days old which puts the terminator near the craters Plato, Copernicus and Clavius. Some Lunar Domes may be visible near the crater Copernicus.





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 28732
Tucson, AZ 85728-6732
(602) 740-2428

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Professor William Bickel, Dept. of Physics

APR. 13 EXPLORING THE SPACE FRONTIER: SPACE ART AND SCIENCE

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