



Desert Skies

Tucson Amateur Astronomy Association

Volume XLIV, Number 7

July, 1998



Calendar of Events

BEGINNERS LECTURE: Friday, July 3, 6:30 pm at the Steward Observatory Auditorium - room N210. This month's topic is *Sundials* by John Carmichael.

GENERAL MEETING: Friday, July 3, 7:30 pm at the Steward Observatory Auditorium - room N210. Topic is *Evaluation of Three Commercial Films for Astrophotography* by Doug Smith.

BOARD OF DIRECTORS MEETING: Thursday, July 9, 7:00 pm at room N305 of Steward Observatory.

STAR PARTIES & EVENTS:

July 18 - Empire Ranch

July 25 - TAAA Star Party at TIMPA Site

Newsletter Schedule: Deadline for articles: Monday, July 20. Printing: Tuesday, July 28. Folding Party: Wednesday, July 29. Mailing: Thursday, July 30. The newsletter is scheduled to be in the mail at least one week prior to the following month's General Meeting.

Cover: KINGS OF THE CANYON: Astro buddies Dennis Young of Sedona with his 28" scope and Mike Clements living on the road with his 41" were the hit of the Grand Canyon Star Party with these telescope monsters. They pulled at least 3 all-nighters, giving all who happened by views of galaxy clusters to the moon, Jupiter and Saturn. Check inside for a summary of this year's star party.

TAAA Home Page: <http://www.primenet.com/~lwilson/taaa/taaa.html>

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President	John Kalas	620-6502	jckalas@aol.com
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TAAA Mission Statement:

We are a resource for anyone interested in astronomy. It is our mission to nurture a person's natural curiosity about the night sky. By giving people a knowledge and understanding of astronomy, we enhance their enjoyment of the sun, moon, and stars. Through our public activities and school evening observing sessions, we bring astronomy to persons of all ages. Our regular meetings and observing sessions offer members a forum to meet others with similar interests and experiences and to learn from one another.

Membership in the TAAA:

Regular membership	\$ 23
Senior (over 60) membership	\$ 21
Add for Family membership	\$ 5
Add for Astronomical League	\$ 3
Add for Sky & Telescope	\$ 27
Add for Astronomy Magazine	\$ 24

Rates for membership are given above. Family Membership includes two adults plus minor children. Members may subscribe to Sky & Telescope or Astronomy Magazine (or both) at the time of membership renewal, saving substantially over the regular subscription rates. To assure we understand what you are paying for, please identify which class of membership and what options you want. Send one check made payable to TAAA to cover both membership and magazine subscription(s) to:

Tucson Amateur Astronomy Association
Attn: Renewals
P.O. BOX 41254
Tucson, AZ 85717

Call the Treasurer if you have any problems.

Send Address Changes to:

TAAA
Attention: "ADDRESS CHANGE"
P.O. Box 41254
Tucson, AZ 85717

Desert Skies Publishing Guidelines:

All articles, announcements, news, etc. must be submitted by the newsletter deadline noted 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 in Word compatible files via e-mail or on a floppy disk. 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
c/o John Kalas
3470 W. Red Bird Court
Tucson, AZ 85745
or e-mail: jckalas@aol.com

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. Find your membership class and its rate. Add the Family Membership rate to this, if applicable.
3. If you desire membership in the Astronomical League or magazine subscription(s), add the appropriate amounts to your membership rate. If this is a magazine subscription renewal, include the renewal notice if possible. Be sure to identify which options you are paying for.
4. Write one check, payable to TAAA, and send it to the address given above.

Desert Skies is published monthly by the Tucson Amateur Astronomy Association, PO Box 41254, Tucson, Arizona 85717

President's Message

Well, we're off. With the first general meeting under my belt and the apprehensions associated with it out of the way, its time to get down to business. The Board Meeting on 6/11 went well and a smooth transition was achieved. Larry Wilson's support to transfer the club's computer files over to Terri Lappin was very much appreciated.

Terri Lappin was thrilled with the gift certificate which was presented to her at the June meeting in recognition of her efforts. Thanks to all members who contributed.

As I mentioned at the June meeting, the three facility projects are actively being pursued. See the reports later in this newsletter. Several members stepped forward and offered their support for some of the openings which we

need to fill. Two individuals voiced an interest in developing a constellation article for the newsletter. Hopefully, this article will become a new feature starting in the August edition. Terri Lappin has started a new feature in the newsletter called **Member News**. It will welcome new members and let the club know of interesting things members are doing.

Additional help is still needed. The TAAA is approaching a slower time of the year with school star parties decreasing. This is an opportune time to set up and staff the necessary club functions and prepare for the busy season after the "monsoons".

John Kalas

Meeting Information

Beginner's Lecture:

John Carmichael
"Sundials"

John Carmichael is a local artisan who designs and creates unique sundials. He will show how solstices, equinoxes and latitude and longitude influence the design and construction of these ancient timepieces. John will also share how a sundial can be used for more than telling the time.

Main Lecture:

Doug Smith - TAAA Member
"Evaluation of Three Commercial Films for Astrophotography"

Doug will review the performance of Kodak Gold 1000, Fuji 1600 and Kodak TMAX P3200 films for their application in astrophotography.

Club News

TIMPA Site Committee

This group, headed by John Polacheck, is actively working to develop a "close to town" observatory site about seven miles west of Tucson. The intent is to place at least the club's 16 in. reflector in a roll-off roof style building. Depending on cost, the building may be made large enough to hold additional scopes. Concrete pads for TAAA member scopes are also being considered. Several visitations have already been made. John, Gary Rosenbaum, Terri Lappin, Dr. Ed Vega and Patrick Price visited the site on Sunday, 6/14, to assess the atmospheric qualities of the location. For a site which is that close to town, the "seeing" was reported to be surprisingly good. John Polacheck has offered to take any interested member to the TIMPA site for evaluation. Just give him a call at 743-1362. A club star party is scheduled for this site on Saturday, July 25.

Land Search Committee

A group of TAAA members went down to the Sonoita area to take a look at 20 acres of land. Committee head, Tim Hunter, arranged to have everyone meet at the Steak Out restaurant on Saturday, 6/13, at 6:30 pm. This meeting place was very easy to find Saturday evening because it was surrounded by many red trucks with flashing lights. Unfortunately, this popular eating establishment burnt to the ground just before we arrived. With the fire trucks blocking Route 83 south, we took the scenic route through Elgin, AZ to get to the property. The site had pros and cons, as any site would. The advantages were only 2 miles of excellent dirt road, electricity readily available and

impressive dark skies. The disadvantages were the levelness of the lot, development surrounding the site and perhaps the cost. Tim will investigate it further. This was only the first site evaluation trip and many more will be planned in the near future.

Member News

We welcome the most recent members who have joined the TAAA: Aaron Bland, Robert and Barbara Callanan, Stephanie and Terry Friedrichsen, Richard Hansen, Gary Logan, Jane Masquelier, Patrick Price, Allan Tigges, and James Winsky. We hope you enjoy the friendship of other members at a meeting or star party.

Congratulations to Roger Tanner for receiving his Masters degree in Optical Sciences from the UofA!

Congratulations to Ken and Rosemary Reiser who "own a piece of Arizona" and will eventually move out here from Indiana to enjoy the dark southern Arizona skies!

Congratulations to Tom Burden and his wife on the birth of a baby boy last month!

And one more congratulations to Sam and Phylis Turner who recently purchased a new telescope!

If you have news like a new telescope or a new addition to your family, let Terri know and she will get it into the Members News.

Club News

30" Mirror Report

The TAAA plans to put our 30" optics into the University of Arizona 40" telescope on Mt. Lemmon. The Steward Observatory Mt. Lemmon facility is located just north of Tucson in the Santa Catalina Mountains at an elevation of 9163 feet. Due to the elevation the sky is quite dark everywhere except when looking low to the south over Tucson. The facility consists of the following telescopes; NASA/UofA 60", University of Minnesota 60", UofA 40", UofA Lunar & Planetary Lab Lunar Chronograph, JPL automated site test telescope, Army radar telescope used for satellite tracking, a soon to be installed ultraviolet site test telescope, and a decommissioned Air Force hardened antenna silo for Titan II missile communications. There are also various support buildings, dormitories and a house where the site resident lives. UofA also has two telescopes on Mt. Bigelow, a 61" and a 16" Schmidt Camera.

On May 31, I went up to the 40" telescope on Mt. Lemmon to characterize the mechanical performance of the telescope mount. The optics of the 40" were designed strictly for infrared observations and do not perform adequately for optical observations. The primary mirror is stopped down to an aperture of 30".

I found the telescope mount to be in good working condition with a few exceptions:

The guide and drift pushbuttons on the hand paddle did not work. This has been repaired.

I tested the drive rate and periodic error of the RA gear with a crosshair eyepiece at 1300X. I found the drive rate set at the wrong speed so I reset it. The RA worm rotates once in 4 minutes. The total periodic error of the RA gear is 7.26 seconds of arc, (± 3.6 seconds of arc). I plan to go up to the 40" with a Steward Observatory engineer and measure the backlash between the teeth of the worm and bull gear. We will reset the worm if necessary. Realignment of the worm or a tighter backlash setting will hopefully reduce the periodic error of the RA gear.

The declination drive guide rate was not a constant motion. The image seemed to take a series of jumps as a correction was made. There is slop in Dec when the Dec clamp is engaged. I think there is some play in the mounting plates of the drive screw. I will retighten all screws and if necessary clean and lubricate the drive mechanism. This should fix the problem.

When checking the stability of the mount I could detect very little if any high frequency vibration. I checked low frequency vibration by simply pushing on the telescope tube and releasing pressure. Because of the mass of the telescope it takes a fair amount of force to displace the image. The low frequency oscillations were about 7.5 minutes of arc in RA and damped out in about 5 seconds. I think the low frequency oscillations will be reduced if we adjust the RA worm gear. I may also increase the preload weights on the RA axis. Oscillation in Dec was minor but should be eliminated after I adjust the Dec tangent drive.

On the next trip to the telescope TAAA 30" committee members will be taking more accurate measurements of the telescope tube so we can determine how we will adapt our optics to the 40" telescope with a minimum of effort.

Gary Rosenbaum

Grand Canyon Star Party a Hit!

This year's star party was a massive hit with the public. With nary a cloud visible all week, the only night with no observing was Tuesday when 50mph wind gusts made viewing a little difficult, even though it was amazingly clear. Other nights were no less than spectacular with people waiting in lines approaching a half hour for some looks thru the massive scopes on the cover. The slide show crowds were as big as I had seen them, approaching 200 and more some nights - a gratifying change from last year, when clouds and bad weather severely compromised the observing.

We had a massive number of scopes too this year. Our traditional Ranger liaison Chuck Wahler counted 35 scopes one night. The astronomers came from New Jersey and Florida to the Pacific, and though the final accounting is not quite done, I think Arizona barely beat Texas and California for telescope totals. Over the week Derald Nye setup both day and night, showing over 2500 people views through his scope. It was a spectacular, memorable week. Look for a wrapup of both the South and North Rim events in next month's newsletter. And by the way, if you want to make plans for next year, the planned dates will be 12-19 June, 1999 - going from just before new to just before first quarter.

Dean Ketelsen

From the Mailbag

Here are some things that recently landed in our PO Box. These items will be at the next meeting, so ask Terri about anything that catches your eye. **Bold** items are new. *Its* your last chance for items in *italics*. They will be tossed out after the general meeting. Mention of an item does not indicate an endorsement by the TAAA.

Trips/Conventions/Meetings

- Solar eclipse trip information (Aug 11, 1999)
- **Astrofest 1998** (Kankakee, Illinois-Sept 11-13, 1998)

Miscellaneous

- *Info about Clyde Tombaugh Memorial Window for church in Las Cruces*
- *Planet Mars: The collectors cube (Mars dust sealed in a Lucite cube?)*
- **Hubble Library of Electronic Picturebooks CD-ROM (see article below)**

Club News

From the Mailbag (cont.)

Reports

Minutes from the recent meeting of the Sonoita Valley Planning Partnership.

Catalogs

We always have a selection of catalogs including Meade, ASP Conference Series, Novagraphics, Edmund Scientific, Swift Binoculars, Sky Publishing, Kalmbach Publishing, two Meteor Catalogs. There are many others.

Newsletters

International Dark-Sky Association, Saguaro Astronomy Club (PHX), East Valley Astronomy Club (PHX), Phoenix Astronomical Society, Albuquerque Astronomical Society (NM), Salt Lake Astronomical Society (UT), Denver Astronomical Society (CO), Peoria Astronomical Society (IL), Warren Astronomical Society (MI), Milwaukee Astronomical Society, Von Braun Astronomical Society (Huntsville, AL), The Universe in the Classroom (ASP).

Hubble Library of Electronic Picturebooks-CD-ROM

Expand your knowledge of the Universe by taking an escorted tour of the Solar System, climbing the mountains of Venus, walking on the Moon with astronaut Neil Armstrong, and more! The Exploration in Education program at the Space Telescope Science Institute (STSI) brings you many of the recent astronomical discoveries through the work of astronomers, historians, engineers, and space artists on a cross-platform CD-ROM with nearly 500 space images, 25 minutes of exciting astronaut video, image captions, tutorials, maps and essential reference material. The CD-ROM contains a total of 16 Electronic Picturebooks to educate and entertain. Easy installation and intuitive navigational tools make this Hubble Library easily accessible and enlightening for explorers of all ages. (The STSI is operated by the Association of Universities for Research in Astronomy, Inc. for NASA.)

Available now to our members for just \$33.95. If there is enough interest we will place a group order at \$24 each. Get ordering information from Terri at the next meeting or call her at 579-0185.

Dark Skies for July 1998

DARK SKIES (no twilight, no moonlight) for Tucson in 24-hour MST: 18=6pm, 20=8pm, 22=10pm, 0=12am
RISE, SET, VISIBILITY for sun and bright planets: rise for morning object, set for evening object

Tu/We 30/ 1	0:08 - 3:41	Sa/Su 11/12	21:11 - 21:13	Tu/We 21/22	21:04 - 3:56
We/Th 1/ 2	0:40 - 3:41	Su/Mo 12/13	21:11 - 21:56	We/Th 22/23	21:03 - 3:57
Th/Fr 2/ 3	1:12 - 3:42	Mo/Tu 13/14	21:10 - 22:36	Th/Fr 23/24	21:03 - 3:58
Fr/Sa 3/ 4	1:46 - 3:42	Tu/We 14/15	21:09 - 23:16	Fr/Sa 24/25	21:02 - 3:59
Sa/Su 4/ 5	2:23 - 3:43	We/Th 15/16	21:09 - 23:55	Sa/Su 25/26	21:01 - 4:00
Su/Mo 5/ 6	3:03 - 3:44	Th/Fr 16/17	21:08 - 0:35	Su/Mo 26/27	21:34 - 4:01
Mo/Tu 6/ 7	- - -	Fr/Sa 17/18	21:07 - 1:18	Mo/Tu 27/28	22:07 - 4:02
Tu/We 7/ 8	- - -	Sa/Su 18/19	21:07 - 2:03	Tu/We 28/29	22:40 - 4:03
We/Th 8/ 9	Full Moon	Su/Mo 19/20	21:06 - 2:53	We/Th 29/30	23:12 - 4:04
Th/Fr 9/10	- - -	Mo/Tu 20/21	21:05 - 3:46	Th/Fr 30/31	23:45 - 4:05
Fr/Sa 10/11	- - -			Fr/Sa 31/ 1	0:20 - 4:06

Weekend	Sun	Sun	Mercury	Venus	Mars	Jupiter	Saturn	Vi=Visibility	
Sa/Su	Set	Rise	Set Vi	Rise Vi	Rise Vi	Rise Vi	Rise Vi		
4/ 5	19:32	5:21	21:02 4	3:17 -2	4:18 8	23:26 -2	1:05 1	-3	brilliant
11/12	19:31	5:24	21:01 4	3:22 -2	4:11 7	22:59 -3	0:39 1	0	conspicuous
18/19	19:28	5:29	20:50 4	3:29 -2	4:05 6	22:32 -3	0:12 1	3	moderate
25/26	19:24	5:33	20:30 6	3:38 -2	3:58 5	22:05 -3	23:46 0	6	naked eye limit
1/ 2	19:19	5:38	19:59 -	3:48 -1	3:52 4	21:36 -3	23:19 0	9	binoculars limit

By Erich Karkoschka

Star Parties & Events

Empire Ranch July 18 (Saturday)

The Empire Ranch has been our normal observing site for quite a number of years. Empire Ranch is at about 4000 feet, so be prepared for cooler temperatures and arrive soon after sunset. Stay as long as you like, but let everyone know when you ready to leave. Someone may be taking astrophotos. Bring a telescope if you have one, but you don't have to have one to attend. Most of us would be glad to let you look through our telescope. There are no facilities at the site, so be prepared. One nice advantage of belonging to the TAA is the opportunity to observe among

friends. Help in finding an object, or sharing of equipment always goes on at our star parties. If you haven't attend a star party yet, you're missing the best part of belonging to the TAA.

TIMPA Site (for TAA members) July 25 (Saturday)

Here is a great opportunity to check out this proposed TAA observatory site. See for yourself how easy it is to get to and how good the observing conditions are. See map for directions

Items of Interest

VOLUNTEER DOCENTS NEEDED AT KITT PEAK NATIONAL OBSERVATORY

Docents are being sought by the National Optical Astronomy Observatories (NOAO), the organization which operates the Kitt Peak National Observatory. This is an unpaid, Volunteer position.

Docents are needed for a number of duties: to escort and guide visitors through the telescopes and facilities which are open to the public. Docent tour guides will learn basic information about the telescopes and related topics associated with the Observatories. Background in astronomy is helpful but not necessary; to act as 'greeters' the Kitt Peak Visitor Center by directing and providing information to visitors and to assist in the Gift Shop.

Docents are needed at Kitt Peak from 10:00 AM to 4:00 PM each weekday and on weekends. A time commitment of one six-hour shift per month is requested of Docents. Although a full day commitment is preferable, it is possible for Docents to be available for half days. Transportation to and from Kitt Peak is provided.

The next formal training sessions is scheduled for October 1998, or inquire about informal training.

For further information, contact: Ginny Beal, NOAO Outreach Coordinator, Phone: 318-8535, email: gbeal@noao.edu

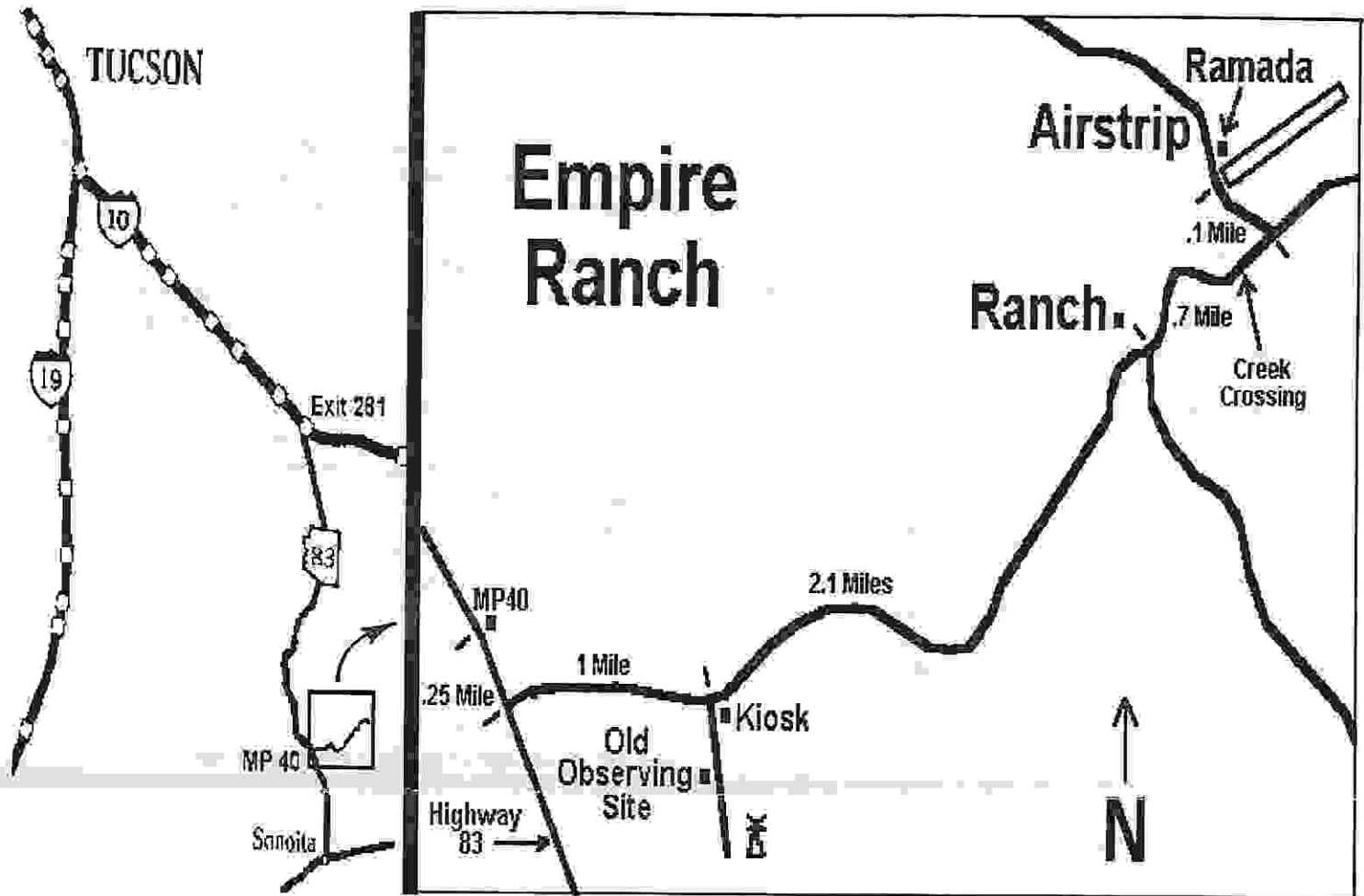
THANKS TO TAA MEMBERS FROM NOAO

A special Kitt Peak Night Observing Program on April 30 for one hundred 6th-grade students went very smoothly because of help from TAA members. Several stations were set up for visits by groups of students, and one of those stations allowed the students to view the night sky through a variety of telescopes provided by TAA members. Special thanks to Bill Ball, Don Breckenfeld, Randy Quiroz, Jim Charboneau, Joyce Charboneau and Chuck Schroll for their help.

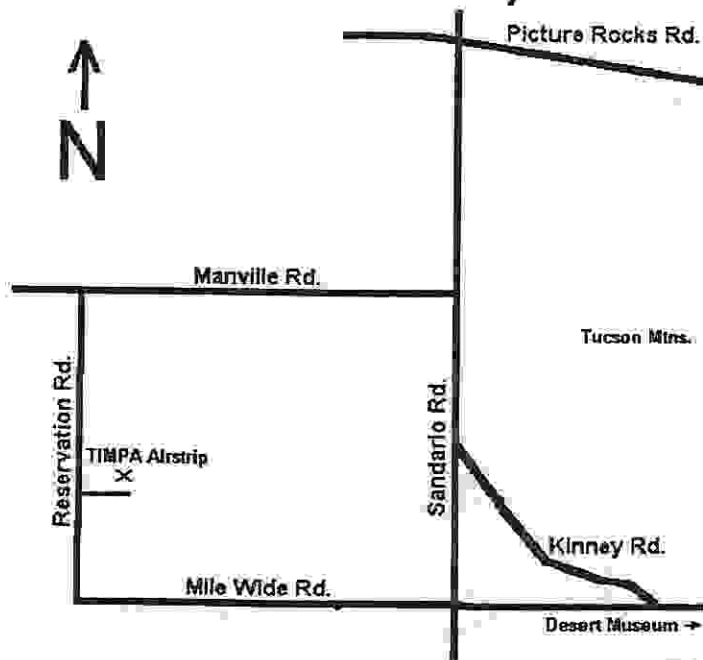
Thanks again to TAA members who helped recruit Project ASTRO volunteer astronomers, or offered their services as an astronomer. As a result, twenty astronomer/teacher partnership matches were made in May. The partners will attend the two-day workshop in September, and work together in the classroom to enhance science education through astronomy.

For information about NOAO Education Programs contact Suzanne Jacoby, 318-8364, sjacoby@noao.edu or Ginny Beal, 318-8535, gbeal@noao.edu.

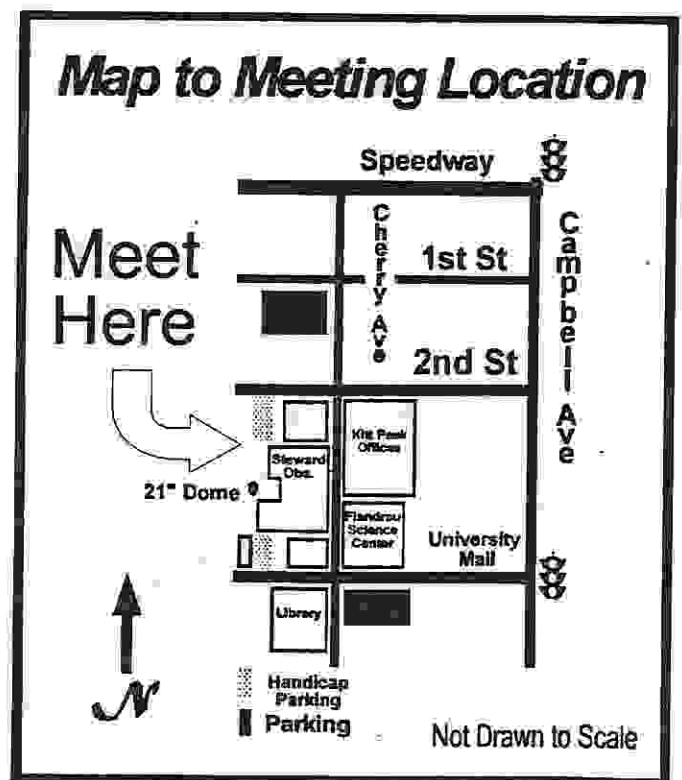
Maps



TIMPA Star Party



Map to Meeting Location



Observing Reports

TWO STARS PASSING IN THE NIGHT

The majority of paired and multiple star systems we see are actually physically connected. Other pairs are like two great ocean liners passing each other at sea. Astronomers call pairs of this type "optical" or "chance alignment" doubles, since they are not physically bound in any way. These double stars happen to have different space motions. Chance alignment doubles only appear close together because they lie within our line of sight. As a general rule, doubles with a separation of 20" or less are usually binary systems, and doubles of 30" or more are much more likely to be optical pairs.

The constellation of Hercules which is high overhead at this time of the year contains a splendid example of an optical pair. The star Kappa (κ) Herculis, which marks the right elbow of Hercules is a fine colorful optical double for small telescope users. In fact the Arabic name for κ Herculis is Al Marfik, which means "the Elbow". Kappa Herculis has a rather dim combined magnitude of 5.0. Individual magnitudes are 5.3 for κ Herculis A, and 6.5 for κ Herculis B. Both are giant stars with spectra of G8III and K2III respectively. Kappa Herculis A is similar to Capella in Auriga, with a diameter of 12 suns, and a luminosity of 60 suns. Its optical partner is an Arcturian star with a diameter of 18 suns, and it's 86 times more luminous than our Sun.

These two giant suns have a convergent course. They will appear nearest by the year 3350, being separated by only 7". This should make a nice tight pair for future telescopists before their proper motions carry them apart.

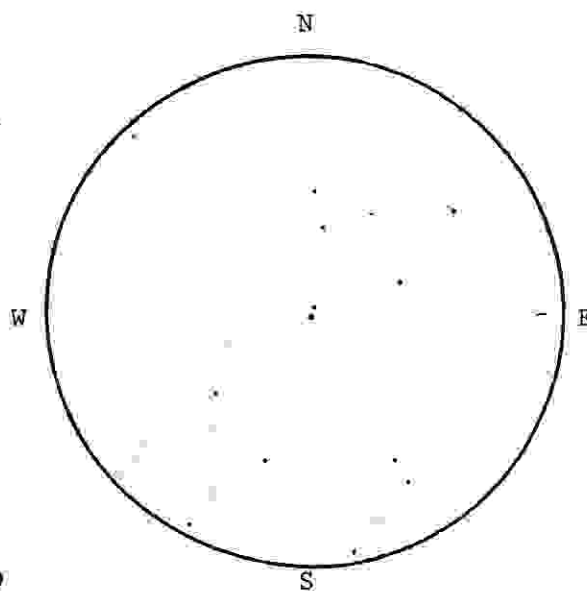
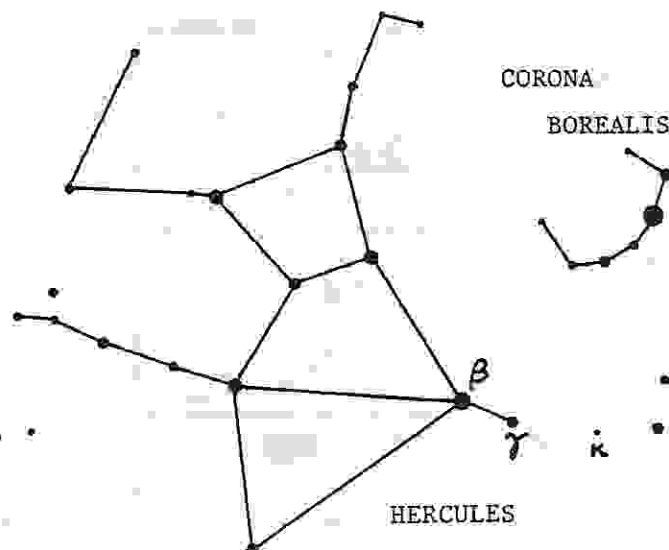
Kappa Herculis A is about 280 light years from Earth, and its proper motion is carrying it toward the west-southwest (P.A. 251°), at a rate of 3.4" per 100 years. By comparison Alpha Centauri our closest stellar neighbor moves this distance in one year! Kappa Herculis B lies about twice as far away at 610 light years. It has a much higher space velocity, it travels 4.5" per 100 years toward the southwest (P.A. 226°).

With my 60mm telescope I like to use my lower powers on this wide pair, 35x seems to give a good view of this 28.4" golden pair. To me the dimmer star has a slightly more orange tint. What color does this star appear to you? The companion can be found to the north at a P.A. of 12°. Since F.G.W. Struve first measured this pair in 1832 the separation has decreased only 2.8" in 122 years. The position angle has also increased only slightly, just a mere 2° over the same period of time.

To locate κ Herculis start at 3rd magnitude Beta (β) Herculis, then star hop 3° to Gamma (γ) Herculis, and finally one more hop continuing southwest for 4° to 5th magnitude κ Herculis. If you prefer using the coordinate system, κ Herculis can be found at R.A. 16h 08m 04.4s Dec. +17° 02' 49" for epoch 2000.

So then one pre-monsoon night why not check out this lovely chance alignment pair high above in Hercules.

by Jeff Brydges



κ Herculis in a 2.4" telescope at 35x.

TAAA Board of Directors Meeting - June , 1998

Location: Steward Observatory Conference Room N305, University of Arizona

Call to order: 7:04 pm

Officers/members in attendance: Teresa Lappin, Larry Wilson, John Kalas, Bob Schwartz, John Polacheck, Ingrid Saber, Andy Cooper, Gary Rosenbaum, Dave Reynolds

1. Bob Schwartz, financial liaison, said that the TAAA received its first statement from Buehler which recorded only two weeks of account activity. The investment split for the club's funds is 63% in equity funds and 37% in money market at 4.96% interest.
2. TIMPA Site Committee Report: John Polacheck said that the TIMPA administration is very interested in a partnership with the TAAA. TIMPA will seek a variance to their use agreement for night use of the facility. The observatory building design is currently being reviewed. The size of the structure was discussed and cost estimates will determine the size. Decision is needed for general construction style.
3. All current appointees were reconfirmed by the new Board of Directors:

Land Search Committee	Tim Hunter
TIMPA Site Committee	John Polacheck
30" Mirror Committee	Gary Rosenbaum
Financial Liaison	Bob Schwartz
School Star Party Coordinator	Karen Allen
Project ASTRO Coalition	Terri Lappin
4. John Polacheck requested consideration of a proposal to place a line item on the TAAA membership application for an optional \$3. donation to the I.D.A. for use by the Southern Arizona Section. A motion was made by John Polacheck. Terri Lappin voiced concern over one non-profit making donations to another non-profit group. The motion was seconded and passed by the Board.
5. Astronomical League: John Kalas explained that, of the three options presented to the TAAA by the A.L. for membership, only one was workable. There is too much emotion regarding 100% participation or completely dropping A.L. participation. The only viable alternative is to establish a "club within a club", establish a new name for this group and pay the dues under this new name. A motion, so stating, was made by John Polacheck, seconded and unanimously approved. The new name for this A.L. group within the TAAA will be the "Tucson Astronomical League". Terri Lappin will send the A.L. dues for the approximately 100 TAAA members who chose to be members of the A.L. A coordinator from this new group will be needed to act as A.L. Correspondent (ALCOR). Temporarily, Terri Lappin will put her name down as contact person for the A.L. John Kalas will send a letter to the A.L., as a technicality, officially dropping the TAAA from A.L. membership.
6. John Polacheck proposed, as he did at the June meeting, that the TAAA use the better gift donated by Starizona each month as a fundraising option for the TIMPA Site. He suggested that raffle tickets be sold at \$1.00 ea. (6 for \$5.00 and 15 for \$10.00) and a special drawing be held each month in addition to the free raffle. Much discussion led to a motion by John Polacheck and seconded. The vote came out as 3 in favor and 3 opposed. President John Kalas recommended that the topic be revisited at the July Board meeting.

Meeting adjourned: 9:20 pm

Desert Skies Classified

FOR SALE: Nearly complete set of Sky & Telescope magazines from 1958 - 1984, bound in 24 volumes with a few loose issues. Make an offer. Contact Jim De Veny at 318-8390 (W) or 323-0936 (H) or e-mail: deveny@noao.edu.

FOR SALE: 13.1"/4.5 binocular telescope on dobsonian mount, F.L. 1474mm, with excellent Coulter primary mirrors. Designed and built by Richard Livitski. Matching 16 mm eyepieces, designed and built specifically for these binoculars by Richard Buchroeder. Great optics! Fun telescope for all types of astronomy, especially deep-sky objects. You'll love the three-dimension-like impression, especially of globular clusters. A bargain at \$3,000. Call Ed Vega at 721-3815 (working hours), 747-9323 (home) or e-mail: vegasky@azstarnet.com (8/98)

FOR SALE: Besseler Dichroic Enlarger with Gray Lab timer and power supply. Includes two lenses and 35mm slide holder. All for \$550. Call Duane Neihaus at 529-7767. (8/98)

FOR SALE: 7" Questar Telescope complete with mount/drive and leg set. Includes dew cap, lens shade, two eyepieces and two fitted cases. \$9,000. Or will consider partial trade. Call Mario Sivilli at 327-0665. (8/98)

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 John Kalas at 620-6502 or e-mail at jckalas@aol.com.