

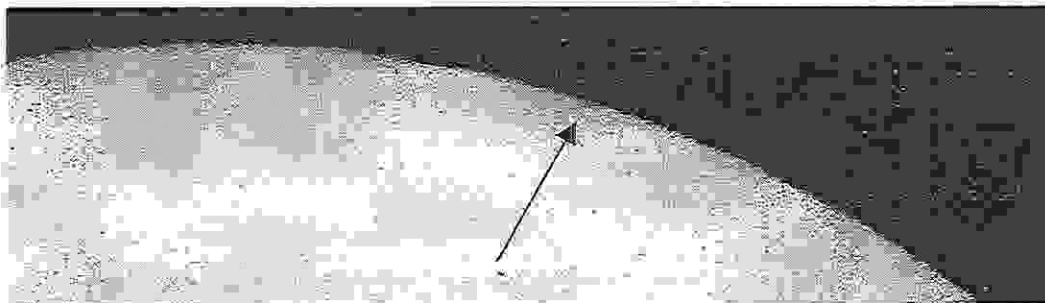
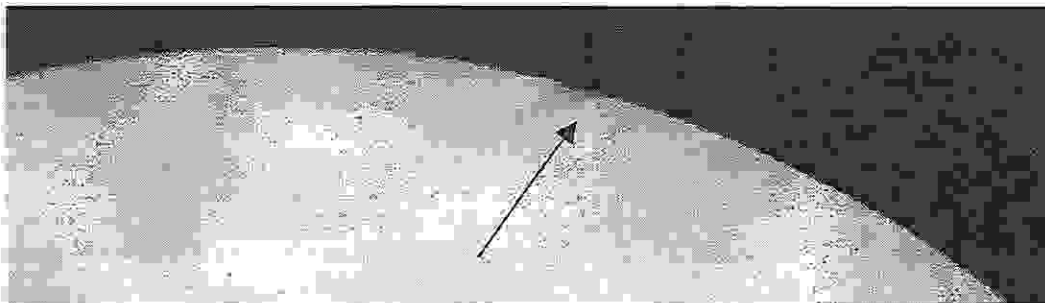
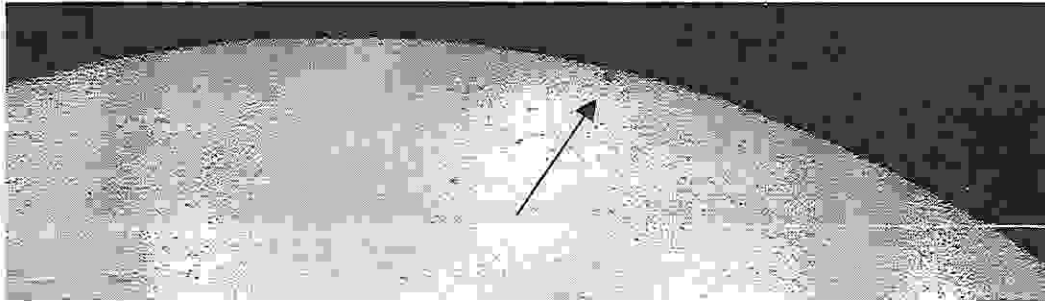
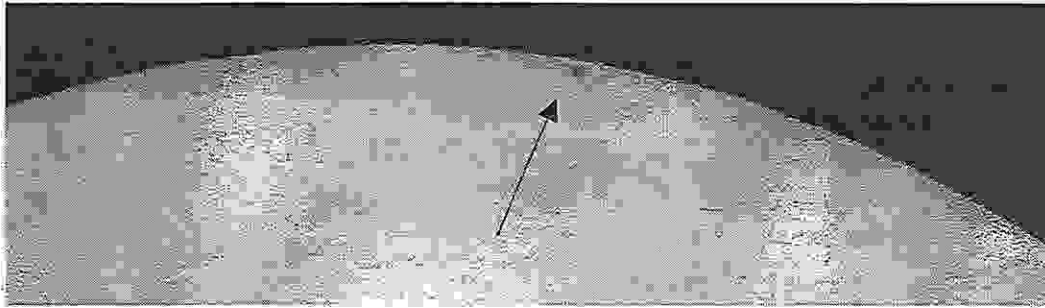


Desert Skies

Tucson Amateur Astronomy Association

Volume XLV, Number 12

December, 1999



Mercury Transit of the Sun

Calendar of Events

BEGINNERS LECTURE: Friday, December 3rd, 6:30 pm at the Steward Observatory Auditorium - Room N210. This month's topic is *The Dobsonian Telescope* by Andrew Cooper.

GENERAL MEETING: Friday, December 3rd, 7:30 pm at the Steward Observatory Auditorium - Room N210. Topic is *The Life and Times of a Star* by Andy O'Dell.

BOARD OF DIRECTORS MEETING: Thursday, December 9th, 7:00 pm at Steward Observatory Conference Room N305.

STAR PARTIES & EVENTS:

- Dec. 4 - TAAA Empire Ranch Star Party
- Dec. 4 - TAAA Beginners Star Party at TIMPA
- Dec. 6 - Tucson Urban League Academy H.S. Star Party
- Dec. 8 - Desert View H.S. Star Party
- Dec. 9 - Dietz Elementary School Star Party
- Dec. 11 - TAAA Holiday Party
- Dec. 11 - Smithsonian Study Group Star Party at Vega-Bray Observatory.
- Dec. 13 - Cragin Elementary School Star Party
- Dec. 16 - TIMPA Site Committee Meeting
- Jan. 1 - TAAA Millenium Star Party at Empire Ranch

Newsletter Schedule: Deadline for articles: Monday, Dec. 13. Printing: Tuesday, Dec. 28. Folding Party: Wednesday, Dec. 29. Mailing: Thursday, Dec. 30. The newsletter is scheduled to be in the mail at least one week prior to the following month's General Meeting.

Cover: The transit of Mercury across the disk of the Sun on 11/15/99. The top photo shows Mercury approximately half way across the northern limb of the Sun. Movement across the Sun is shown in the lower photos. Photos were taken with Fujichrome Sensia II 100 speed color slide film using a 130mm Astro-Physics refractor with a Thousand Oaks Type II solar filter. Eyepiece projection was used with a 15mm eyepiece. Photos by John Kalas.

TAAA Web Page: <http://www.tucsonastronomy.org>

TAAA Phone Number: (520) 882-1950

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Star Parties	John Kalas (Interim)	620-6502	jckalas@aol.com

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 solar system and beyond. 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
Student membership	\$ 15
Add for Family membership	\$ 5
Add for Astronomical League (optional)	\$ 3
Add for contribution to Southern Arizona Section of I.D.A. (optional)	\$ 3 (recommended minimum)
Add for Sky & Telescope Magazine	\$ 29.95 (NEW)
Add for Astronomy Magazine	\$ 29

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 membership dues, magazine subscription(s) and any contributions to:

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

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) or wish to make a donation, add the appropriate amounts to your membership rate. If a magazine subscription renewal is desired, include the magazine 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.

Call the Treasurer if you have any problems. Send address changes to the above address.

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

Desert Skies is published monthly by the Tucson
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Arizona 85717

President's Message

WOW!!! What a month! It was a very active school star party period that included a huge event for the UofA Astronomy Students at the Saguaro National Park West Visitors Center. The TAAA supported the 200-250 student activity with about 17 telescopes. What a great way to share the night sky with folks who are really into astronomy! The next day was another highly successful joint TAAA/TIMPA activity. In the early afternoon, TIMPA put on some fancy radio-controlled model airplane flying demonstrations, including some nifty night flying. Several TAAA members also launched model rockets. The barbecue was well attended by both groups and the TAAA provided the evening enjoyment with many telescopes set up for observing. A great time was had by all.

We were also treated to two incredible astronomical events during the month: the Mercury transit of the Sun on 11/15 and the Leonid Meteor Shower on 11/17-18. The club encouraged members to go out to either the Empire Ranch site or the TIMPA site for the meteor shower. I attended TIMPA and there was a great turnout this year. See the article in the *Club News* section of this newsletter.

With 1999 coming to a close, I look back on the past year and feel a tremendous sense of appreciation for the help of so many members whose efforts yielded some great achievements. As I said, when I started as President a year and a half ago, the organization will only be as successful as the members make it. This past year was the proof.

There is an area where the club needs some help. With the recent vacancy in the School Star Party Coordinator position, I have had to take on this additional important responsibility. Together with the normal duties of the presidency, the newsletter editorship, and my heavy involvement in the TIMPA Site development project, I am buried. I really need someone to volunteer to take on the School Star Party Coordinator position. Please consider helping out. See the brief Help Wanted article in the *Club News* section of this newsletter for more details.

As we approach the end of the year, I'd like to personally wish all members a happy holiday season. I hope to see many of you at the upcoming TAAA Holiday Party.

John Kalas

Meeting Information

Beginners Lecture

"The Dobsonian Telescope"
by Andrew Cooper

The history, technical details, and use of the dobsonian telescope.

Main Lecture

"The Life and Times of a Star"
by Andy O'Dell

Stars are important to us - the sun keeps us warm and alive, and by way of supernovae, the deaths of massive stars form the heavy elements that make up our bodies. At this

month's lecture, Andy O'Dell, will talk to us about the life of a star from when it is first born from a dense cloud of interstellar gas and dust, through youth, middle and old age, and finally to the stellar graveyard. This will be illustrated with photographs of stars in clusters and nebulae around the sky.

Andy O'Dell is an associate professor at NAU in Flagstaff, on a yearlong sabbatical at Steward Observatory. His research interests are stellar evolution and peculiar stars. While at Steward, he will be studying clusters of galaxies at large redshifts (far distances) to learn about the evolution of galaxies.

Club News

The Leonids from TIMPA

by John Kalas

About thirty people came out to enjoy the event on Wednesday evening, 11/17, into Thursday morning, 11/18. At 9:30 pm, it looked like the event would be clouded out. Several people brought out telescopes and observed through the holes in the clouds. Gradually, a large hole opened in the clouds to the northwest and spread until the sky overhead cleared nicely. The Leonid meteor activity didn't get started until about 1:30 am Thursday morning, much later than last year. There were no early, long, horizontal fireballs, as was the case last year. No effort was made to accurately count the meteor frequency, but the maximum rate was probably around 75 per hour. By 4:30 am the shower had noticeably slowed. Seven people stayed out nearly to sunrise. Although not as impressive as last year's shower, it was still a worthwhile and enjoyable evening.

Leonid Observations 11/19/99

by Laurel Dunlap

I saw meteors on the order of ~17-25/hr between ~0400-0545am MST. Not bad considering I fully expected to see less than that as the peak had been the previous morning 11/18. At ~0420 or so, I saw three meteors within a few minutes of each other, all easily as bright as Regulus ~mag 1.5. Two came from near the radiant and one came from just below the Beehive and moved toward the sickle of Leo. Each left ~4-5 second trains. At ~0520-0530, I saw 5 satellites each separated by ~1-2 min intervals moving through and near Leo with a couple of very faint meteors maybe ~mag .5 (looked like a displaced scene from Star Wars), although no meteor tracks intersected the satellite tracks. I saw more meteors this am than Wed. and Thurs. with trails most only lasting as long as the meteor itself. Several were seen showering into the predawn glow. Why did I watch this am after the peak? Just because... and I'm glad I did!

Club News (cont.)

TAAA Holiday Party Saturday, December 11th

The December meeting will be your last chance to reserve tickets for this year's TAAA Holiday Party. The party will be held at 7pm on December 11th at El Parador Restaurant near Broadway and Tucson Blvd. Dinner, non-alcoholic drink, tax and gratuity are all included in the \$15/person price. Purchase a dinner ticket from Barb Callanan at the December meeting, or send a check, made payable to TAAA, to PO Box 41254, Tucson, AZ 85717.

The buffet we've selected includes Carne Seca Chimichangas, Chicken Chimichangas, rice, beans, and salad. In addition, this buffet includes Chicken Breasts with Marsala Sauce, which we've heard is extra mild and more like an Italian dish. Of course, there's also chips and salsa. (Vegetarians should talk to Terri about an alternate seafood or other suitable dish. There will be an extra cost for the seafood dinner.)

As always, this promises to be an exciting evening of good food and good friends. Dress is casual. We are looking for a speaker or two (talk to Dean Ketelsen if you want to speak) and will be giving away some great door prizes. Hope to see you there!

Help Wanted: School Star Party Coordinator

Recently, the School Star Party Coordinator position became vacant. The school star party program is the major educational outreach effort of the TAAA. It exposes the youth of our community to the wonders of astronomy. This position maintains the master calendar and is the contact point for schools or non-profit organizations to arrange for star party dates. The coordinator schedules the events and records all of the pertinent information about the school/organization (i.e. event location, contact person's name and phone number, size of group, etc.). Once this basic information is established, the coordinator generates a brief announcement for the newsletter, transmits the info to the newsletter editor, and prepares the signup sheet for the monthly meeting. The candidate for this position must have a computer (preferably with Microsoft Word) and e-mail capability.

This position is a very important one within the TAAA. If you would be interested in learning more about it, please call John Kalas at 620-6502. John Kalas will assume the responsibilities of the coordinator until a replacement can be found.

IMPORTANT INFORMATION REQUESTED

The Jewish Federation of Southern Arizona has proposed to reclaim the Shabbat first Friday of each month as an evening of family devotion and worship, effective with the first Friday of November 1999. The TAAA's present meeting schedule makes this a hardship for members of the Jewish Community who would participate in this new activity.

Before the TAAA Board of Directors considers a monthly meeting reschedule, we would like to know how many people will be adversely affected by not being able to attend

monthly meetings. Please phone John Kalas at 620-6502 or e-mail to <jckalas@aol.com> to advise the TAAA.

We need your input for the Board's consideration!

Robert Callanan
Member-at-Large

Member News

We welcome the most recent members who have joined the TAAA; Russell Anderson, Ken and Peggy Barron, Allen Chandler, Mary Clark, Torsten Clay, Danny Ford, Laura Gardiner, Jack Gresham, Harold Meckler, Gordon Phillips and Randy Rightmire. Glad to have you join! Hope you'll make it to a star party or a meeting so we can all get to know you.

"TELESCOPES FOR TELETHON 2000" by Laurel Dunlap, AICor TAL/TAAA

One may think that Muscular Dystrophy is just one disease in the vast array of diseases and conditions afflicting people today. Yet, the Muscular Dystrophy Association has ongoing research related to ~40 Neuro/Muscular diseases. The scope of the research supported by MDA donations includes, not only, many of the different Muscular Dystrophies, but also Motor Neuron Diseases, Diseases of Peripheral nerves, as well as Metabolic Deficiency diseases of muscle, and the list goes on... The research done in each disease area has lead to new information that is helpful well beyond the current list of diseases being studied.

One might ask, "How is this possible?" The mysteries of Neurological and Muscular connections are being revealed with each step forward along the way. In the same way that NASA research led to improving many Cardiovascular medical devices e.g., vascular graft materials; MDA's Neuromuscular Research has opened doors previously closed to understanding of many Neurological and Muscular conditions. In short, a friend or loved one may have been the unknowing benefactor of new information, and ideas, resulting from MDA research. Advances in the understanding of diminished nerve conduction have been helped by MDA research.

Telescopes For Telethon began as a vision of David and Wendee Levy, and a desire to bring the astronomy community together; to benefit people of all ages, that have had their lives changed by debilitating neuro/muscular conditions. The National and Canadian Star Party events encourage our desire to explore, and share the night sky as amateur astronomers, coupled with a charity donation event benefiting MDA research. The Muscular Dystrophy Association has it's National Headquarters here in Tucson, and what a great way to promote Community Spirit, than to help support this very worthwhile event.

This year, it was decided that a Community Wide Tucson Planning Committee would help coordinate and concentrate efforts to best reach the intended objectives. A single large event is currently in the planning stages, but this in no way precludes the possibility of other smaller events that may add to the total Tucson contributions. I am humbled at

Club News (cont.)

"TELESCOPES FOR TELETHON 2000" (cont.)

having been asked to chair this committee, and hope to give it my best effort. Yet, I truly know that it is the entire community of Amateur Astronomers that will make this the great event that it can be! Every individual contributing to the cause adds to the total success. I would like to extend an Open Invitation to both the TAL and TAAA members to participate in the Telescopes For Telethon project.

BE ON THE LOOKOUT for future articles in Desert Skies as the event begins to take shape. The date we have selected and are working toward is Saturday, April 8, 2000. David and Wendee hope to see YOU there, and they continue to remark at what a tremendous spirit of charity was evident last year when the TAL and TAAA answered the Call for Telescopes! If you would like to help with the planning process, have suggestions, ideas, or critiques, please feel free to contact me via e-mail: laureus@earthlink.net or phone 544-7780. We would be glad to include you in the process!

The "Telescopes For Telethon 2000" Project Objectives Are:

- Share our knowledge, and love of observing 'The Wonders of the Night Sky' with the public.
- Provide a great venue for that goal, that helps us reach the greatest number of people in the public.
- Raise funds to help MDA's vast research needs.

- Increase awareness of the fact that MDA supports research not only for MD, but for many Neurological and Muscular disorders/conditions, that have affected the lives of so many individuals.

To view a list of MDA diseases currently being funded for research, you may visit this website,
<http://www.mdausa.org/disease/index.html/>

Construction on Campus

Remember, there's a lot of construction on campus, especially south of Steward Observatory and along Cherry Ave. Cherry Ave at University is closed. Allow extra time to park and walk to Steward Observatory.

From the Mailbag

This past month we received a copy of a new book, "Astronomer's Computer Companion", for review. If any member would like to write a review of this book for Desert Skies, please arrange with Terri to get the book. Eventually, the book will be placed in our library. This book explains to the reader "what software to use to track the movements of the planets, asteroids; how to keep a log and generate star charts; how to calculate exposures for astronomical photographs; and how to use the Internet (for astronomy)". It includes a CD with some software programs.

Items of Interest

Websites: Trips on the Internet Super-Skyway

by Rik Hill

If you are a planetary observer and have not been to the ALPO website then you are missing a lot of good information. This site is the home of the Association of Lunar & Planetary Observers and is located at: <http://www.lpl.arizona.edu/alpo>. Here you will find pages for the individual Sections of the ALPO, many with recent observations and newsy notes about current activity on their respective bodies. Also you will find information concerning the latest doings in the ALPO as well as how to join and who the various staff members are and how to get a hold of them. The next ALPO annual meeting will be held concurrently with the Astronomical League in Santa Barbara, not too far away for us. On the website you will find information on how to register and when it will be.

For the astrophotographers among us, or those who just like good astrophotos, the website of Chris Schur is a treat. Chris is an amateur astronomer/paleontologist living in Payson, AZ and he has put together a spectacular collection of his astro-work on the web at: <http://pulsar.la.asu.edu/~chris/>. He has been working on these pages for years and it shows it. His astrophotography is among the finest in the U.S. There are also a number of lengthy articles he has written on astrophotography that are a wealth of tips and ideas for the beginner and experienced imager. On another link you can take a tour of Chris'

modest observatory. He is not one of those amateurs that has done all his work by throwing money at it but rather uses hard work, innovation and creativity. You may enjoy his geological link at the bottom of the page too. Besides doing great astronomical work Chris is a top-notch amateur paleontologist.

On a short personal note, I invite you to enjoy my images from the transit of Mercury at:
<http://www.lpl.arizona.edu/~rhill/mercobs.html>

If you know of a particularly good website you'd like reviewed, send me an email at: rhill@lpl.arizona.edu or visit my website at: <http://www.lpl.arizona.edu/~rhill>

Mercury Transit of the Sun

11/15/99 at STARIZONA

by Laurel Dunlap

What a show! Dean and Donna Koenig of STARIZONA had several telescopes turned on the solar event that began ~14:11 hrs. local time, outside their store on Oracle Road in Tucson. There was a line to view it during the entire ~1 hour transit of Mercury and several of the visitors were TAL/TAAA club members.

Visitors inside the shop were treated to an H-Alpha Live Video feed of the event. Watching the photosphere and

Items of Interest (cont.)

Mercury Transit of the Sun (cont.)

chromosphere of the Sun during the Mercury transit indoors was exciting for the crowd that had gathered. The prominent spicules, and undulations of the chromosphere, with a grand finale of a solar prominence, added another interesting dimension to the viewing. Imaging/viewing the chromosphere requires a narrow bandwidth (λ ~6562.8 Angstroms) filter that not only safely reduces the amount of incoming light, but in so doing, reduces detail on the photosphere.

In spite of the photospheric image reduction, fluid motion structure could periodically be seen, and imagined as quite nearly three dimensional. About 3/4 of the way through the transit, we were surprised to see the shadow of a C-130 cargo plane (someone from the outside group told us what had flown across the solar image) flying through the FOV leaving a brief exhaust stream. And the group that had gathered, broke the near breathless silence with laughter, and chuckles, at having caught this on tape. A clip of Dean's Mercury transit video was later shown on the local NBC and CBS stations at 10 pm. The next transit of Mercury won't occur until ~May 7, 2003 and will be seen in some parts of Europe. Many, many thanks to Dean and Donna for treating us to such a wonderful show!

Beginning Amateur Astronomy Course Available

Fly Me To The Stars-Astronomy I
(Through Parks and Recreation)

Class Code: 6807

Have a fun, relaxed tour of the skies for beginners, with star parties and field trips. Use telescopes, binoculars or just your eyes to find stars, planets, constellations. Clear skies equal great nighttime viewing. Pima East Campus Thursday nights 7:30 - 9:30 PM.

Starting January 6 through March 2 @ \$49.00. Phone-in registration (by credit card only) will be accepted beginning Mon. Dec. 6. Call 791-4877.

Classes taught by TAAA Members Phyllis and Sam Turner, and Sandi McCormick.

Astronomical Resources in Southern Arizona

Flandrau Planetarium

- Program Information - (520) 621-7827; Astronomy News - (520) 621-4310 www.flandrau.org/

International Dark-Sky Association

- 3225 N. 1st Ave., Tucson AZ 85719
(520) 293-3198, www.darksky.org

Kitt Peak Visitors Center

- (520) 318-8726, www.noao.edu

SkyWatchers Inn

- 5655 N. Via Umbrosa, Tucson AZ 85750
(520) 615-3886,
www.communiverse.com/skywatcher

SkyWorks

- 7401 E. 22nd St., Tucson AZ 85710
(520) 751-6752, www.sky-works.com

Starizona

- 5201 N. Oracle Rd., Tucson AZ 85704
(520) 292-5010, www.starizona.com

Stellar Vision

- 1835 S. Alvernon Way, Suite 206, Tucson AZ 85711
(520) 571-0877,
www.theriver.com/stellar_vision

Whipple Observatory Visitors Center

- (520) 670-5707, [http://cfa-](http://cfa.harvard.edu/cfa/ep/visitcenter.html)
www.harvard.edu/cfa/ep/visitcenter.html

Riverside Telescope Makers Conference Awards

RTMC awards the Clifford W. Holmes Award and the Clyde Tombaugh Award each year during the conference. Nominees for this year's awards are being accepted through Jan 1, 2000. The Holmes Award is given to "an individual who has brought the public closer to the stars". The Tombaugh Award is given "for creative innovation in telescope design. Information about these awards and how to submit nominations can be found at the RTMC website (<http://www.rtmc-inc.org>). Those who don't have access to the Internet can contact Terri Lappin at 579-0185 for a printed version.

Star Parties & Events

TAAA Empire Ranch Star Party

December 4 (Saturday)

The Empire Ranch has been our normal dark-sky observing site for quite a number of years. Empire Ranch is about 4000 feet in elevation, so be prepared for freezing temperatures and try to arrive before sunset. Stay as long as you like, but let everyone know when you are ready to leave; someone may be taking astrophotos. Bring a telescope if you have one, but you don't need one to attend. Any member would be glad to let you look through their telescope. There are no restroom facilities at the site, so be prepared. One nice advantage of belonging to the TAAA is the opportunity to observe among friends. Help in finding an object or the sharing of equipment always goes on at our star parties. If you haven't attended a star party yet, you're missing the best part of belonging to the TAAA. See the

directions to Empire Ranch on the outside flap of this newsletter.

TAAA Beginner's Star Party at TIMPA

December 4 (Saturday)

What makes this event special is that our novice members can get help with observing issues or equipment problems. There will be experienced members present who would be more than happy to help. If you don't own a telescope, don't worry. There will be lots of scopes set up and everyone is invited to look through them. This is a great way to check out the different telescope designs before you make that all-important decision to buy. There is no

Star Parties & Events (cont.)

TAAA Beginner's Star Party at TIMPA (cont.)

scheduled talk for this activity. Just come out with lots of questions and we'll do our best to get you the answers you need. Arrive at about 4:30 pm for a group question and answer session. It should be dark enough to observe by 5:30 pm. If you have friends who might be interested in amateur astronomy, bring them along. Be prepared for the cold weather and bring lots of warm clothing. Directions to the TIMPA site are located on the outside flap of this newsletter.

Tucson Urban League Academy H.S. [South]
December 6 (Monday) No. of scopes: 8

TAAA Member, Bill Lofquist, will coordinate this event to be held at the new Quincy Douglas Center on the corner of Kino Blvd. and 36th St. Approximately 60 students plus families and faculty will attend. Eight telescopes will be needed. Set-up will be at 5:30 pm with viewing from 6:00 pm to 9:00 pm. Call Bill Lofquist at 297-6653 to volunteer or mark the sign-up sheet at the December meeting.

Desert View H.S. [Southwest]
December 8 (Wednesday) No. of scopes: 4

We need 4 scopes for this group of about 50 Desert View High School students. The school is located at 4101 E. Valencia (on the north side of Valencia, east of Alvernon and west of I-10). Set-up will be at 6:00 p.m. in the Faculty parking lot's SE corner. Observing will run from 6:30 pm to about 8:30 pm. A Star Party Leader is needed for this event. A sign-up sheet will be at the December meeting.

Dietz Elementary School [East]
December 9 (Thursday) No. of scopes: 5

The entire school, K thru 5th grade, is invited to this astronomy-related evening. The students will participate in a variety of science and cultural activities before going to the telescopes. Several scopes from the Flandrau Planetarium will be assisting for the observing session. The school is located on the east side of Prudence midway between 22nd St. and Golf Links. Set-up will be at 6:45 pm on the playground along Prudence. Turn into E. Palma and go through a gate onto the playground. Observing will start at 7:15 pm and continue until 8:30 pm. A Star Party Leader is needed for this event. A sign-up sheet will be at the December meeting.

TAAA Holiday Party
December 11 (Saturday)

See the notice in the *Club News* section of this newsletter.

Smithsonian Study Group Vega-Bray Observatory
December 11 (Saturday)

For those TAAA members who are not planning to attend the TAAA Holiday Party but would like to observe that evening, here is an opportunity to do so. Dan Brocius of the Whipple Observatory needs some help at the Vega-Bray Observatory in Benson. About 35 people attending a study group activity at Whipple will be going out to the Vega-Bray Observatory to do some sky watching. The TAAA gave Dan no commitment for volunteers. This notice is for information only. Set-up will be at 5:00 pm with observing from about 6:00 pm to 10:00 pm. Volunteers will receive a box dinner. Two or three scopes would be appreciated. A sign-up sheet will be at the December meeting.

Cragin Elementary School [Central]
December 13 (Monday) No. of scopes: 6

This is a young group of about 40 kindergartners and 1st graders with families. The kids are learning about the solar system so the moon and planets will make for an interesting observing session. The school is located at 2945 N. Tucson Blvd. on the west side of Tucson Blvd. between Grant Rd. and Ft. Lowell. Set-up will be at 6:00 pm on a field off the parking lot on the west side of the school. Observing will be from 6:30 pm to 8:00 pm. A Star Party Leader is needed for this event. A sign-up sheet will be at the December meeting.

TIMPA Site Committee Meeting
December 16 (Thursday)

See announcement in the *TIMPA Site News* section of this newsletter.

TAAA Millenium Star Party at Empire Ranch
January 1 (Saturday)

Normally, the TAAA avoids scheduling club events on holidays like New Year's Day. But, since it is such a special day and we might lose a prime observing night in January, we've decided to schedule an observing session for New Year's Day evening. It could be a great way to start the New Year. So, if you can make it, it should be an enjoyable activity.

Final Chance to Make Reservations
TAAA Holiday Party, Saturday Dec. 11th

TIMPA Site News

What is TIMPA, Anyway?

We forget that not all TAAA members know about the TIMPA project. For our new members, this explanation will appear in all future newsletters.

TIMPA stands for Tucson International Modelplex Park Association. It is a parcel of land (approx. 160 acres) located about seven miles west of the Saguaro National Park West. The property is leased from the City of Tucson by the TIMPA organization and is to be used as a specialty park. The TIMPA organization flies radio-controlled model airplanes at the site. The Southern Arizona Rocketry Association (SARA) also uses the site to launch model rockets.

About three years ago, TAAA member, John Polacheck, heard about the site and inquired if the TIMPA organization would be interested in acquiring another partner, the TAAA. The TIMPA group was very interested because the relationship would be non-competing. TIMPA and SARA use the site during the day and the TAAA would utilize the facility at night. The TAAA has used the site, by permission, for about a year for scheduled star parties, such as Beginners Star Parties. On July 14th, the TAAA and the TIMPA organization signed a letter of agreement allowing the TAAA unlimited use of the site for scheduled star parties as well as member use at other times. Ultimately, the TAAA intends to develop an observing area on the site that will include an observatory for the club's 16" reflector telescope. Many joint benefit projects will be undertaken in the next several months to improve the facilities at the site:

1. Run electricity and telephone line to our observing area and on to TIMPA's ramada. Also, run a water line to our site. (Completed - 10/9)
2. Construct a secure storage cage in the TIMPA Barn. (In process 11/20)
3. Move the TAAA property from the mini-storage unit to the new security cage in the TIMPA Barn. (Scheduled for 12/12)
4. Construct permanent bathrooms facilities. (Tentative schedule 1st quarter 2000)

Watch the newsletter for announcements about TIMPA activities and how you can help.

Observatory Status

As mentioned in last month's newsletter, the TAAA is pursuing an unused dome and support structure on Kitt Peak. President, John Kalas, has sent an official letter to NOAO requesting the acquisition of the observatory. Now, we just keep our fingers crossed and hope that our request will be accepted.

Electricity & Telephone Service Status

The installation is complete. All electrical distribution boxes have been installed by TIMPA's electrician. Power is now available out at our observing area, at the proposed bathroom location, and at the TIMPA ramada.

Dark Skies for December 1999

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	18:45 - 1:20	Sa/Su 11/12	20:43 - 5:48	Tu/We 21/22	FULL MOON
We/Th 1/ 2	18:45 - 2:17	Su/Mo 12/13	21:37 - 5:48	We/Th 22/23	- - -
Th/Fr 2/ 3	18:46 - 3:12	Mo/Tu 13/14	22:33 - 5:49	Th/Fr 23/24	- - -
Fr/Sa 3/ 4	18:46 - 4:07	Tu/We 14/15	23:31 - 5:50	Fr/Sa 24/25	18:53 - 19:58
Sa/Su 4/ 5	18:46 - 5:01	We/Th 15/16	0:29 - 5:50	Sa/Su 25/26	18:53 - 21:04
Su/Mo 5/ 6	18:46 - 5:44	Th/Fr 16/17	1:30 - 5:51	Su/Mo 26/27	18:54 - 22:09
Mo/Tu 6/ 7	18:46 - 5:44	Fr/Sa 17/18	2:33 - 5:51	Mo/Tu 27/28	18:54 - 23:11
Tu/We 7/ 8	18:46 - 5:45	Sa/Su 18/19	3:39 - 5:52	Tu/We 28/29	18:55 - 0:09
We/Th 8/ 9	18:46 - 5:46	Su/Mo 19/20	4:47 - 5:53	We/Th 29/30	18:56 - 1:06
Th/Fr 9/10	19:00 - 5:46	Mo/Tu 20/21	- - -	Th/Fr 30/31	18:56 - 2:01
Fr/Sa 10/11	19:50 - 5:47			Fr/Sa 31/ 1	18:57 - 2:56

Weekend	Sun	Sun	Mercury	Venus	Mars	Jupiter	Saturn	Vi=Visibility
Sa/Su	Set	Rise	Rise Vi	Rise Vi	Set Vi	Set Vi	Set Vi	
4/ 5	17:17	7:08	5:31 3	3:40 -4	21:16 1	3:28 -3	4:42 0	-3 brilliant
11/12	17:18	7:13	5:48 3	3:51 -4	21:15 1	2:59 -3	4:13 0	0 conspicuous
18/19	17:20	7:18	6:10 5	4:03 -4	21:14 1	2:31 -3	3:44 0	3 moderate
25/26	17:23	7:21	6:33 7	4:15 -3	21:12 1	2:04 -3	3:15 0	6 naked eye limit
1/ 2	17:28	7:23	6:55 -	4:27 -3	21:11 1	1:37 -3	2:47 0	9 binoculars limit

By Erich Karkoschka

International Dark-Sky Association

The International Dark-Sky Association was incorporated in 1988 as a tax-exempt non-profit organization, exclusively for educational and scientific purposes within the meaning of Section 501(c)(3) of the United States Internal Revenue Code of 1987 (Identification Number 74-2493011). IDA operates under formal Bylaws, established at the time of incorporation and revised at the first annual meeting, 4 February 1989, and again in September 1990.

IDA's goals are to be effective in stopping the adverse environmental impact on dark skies by building awareness of the issue of light pollution and of the solutions and in educating about the value and effectiveness of quality nighttime lighting. A united approach should be very supportive of the many local and individual efforts. Much has been accomplished in some locations, but much more needs to be done everywhere. We believe that we can succeed in preserving dark skies and in improving the nighttime environment for everyone. Quality outdoor lighting is the key. IDA can and will be supportive of members' problems concerning these issues, by sharing common knowledge on

a local, national, and international basis. We are making a difference!

IDA will also be active in building awareness of the adverse problems affecting astronomy from radio interference (RFI), space debris, and any other environmental impacts that have the potential to destroy mankind's view of the universe in which we live.

Specific areas where IDA is active include: education on all phases of the issues; a Quarterly Newsletter; brochures, leaflets, economic information, lighting design examples, and other such resources and references; Speaker's Bureaus; documentation of good and bad lighting photos and video; Good Lighting Awards; media contacts; press releases; marketing the issues; developing viable and effective Sections as local resources in many communities and areas.

Membership in the IDA is \$30/year. In addition, IDA sells slide sets, posters, and information sheets pertaining to light pollution. Visit their web site at www.darksky.org

TAAA Holiday Party

Great Food

Great Friends

Great Fun

Interesting Presentations

Door Prizes

Saturday, December 11th, 7:00 pm

At The El Parador Restaurant

Reservations Still Available

Constellation Report by Chris Lancaster

Auriga

The Charioteer

Auriga is mainly considered to be a charioteer, but it also has a dual role as a goat herder. In some depictions it appears as a man on a chariot, but carrying a goat and three kids in his arms. The identity of Auriga is said to be either the Greek character of Hephaestus, or his son, Erechtheus. These two were both crippled, and thus came to invent the chariot to add to their mobility.

Auriga is easily found if you look to the northeast in the early evening. It forms the shape of a pentagon [with Capella and Beta (β) Tauri (formerly Gamma Aurigae) forming two of the corners opposite each other] north of Orion and sandwiched between Gemini and Perseus.

In the late fall and early winter, Auriga is above the horizon before the sun sets, and by virtue of its northerly declination, it remains in the sky all night, making a slow march toward the west while the constellations farther to the south reach the obscuring earth sooner. Acting as a regional beacon is the sixth brightest star in the sky, Capella. This is a star which is similar to the sun in color and temperature (a spectral type of G8 for Capella and G2 for the sun), but it is a giant star producing the light of 160 suns and thus shining at magnitude +0.1 from a distance of 42 light years. Capella approximates the appearance of the sun if our star were observed from a distance of only a few light years.

Auriga is immersed in the Milky Way, so we don't have to look long for some excellent star clusters. Charles Messier cataloged three in his studies of the constellation--M36, M37, and M38. M37 (mag. 6.2) sits just outside of the pentagon shape and is sure to be a favorite. It is the largest, brightest, and richest of the three, containing over 100 stars near 12th magnitude and brighter and perhaps 500 overall. It rivals the appearance of a loose globular cluster with its dense population of stars. If you draw a line one-third the distance between Theta (θ) Aurigae and Beta Tauri and move not quite two degrees southeast you will easily spot M37 (RA 5h 53m Dec +32° 33').

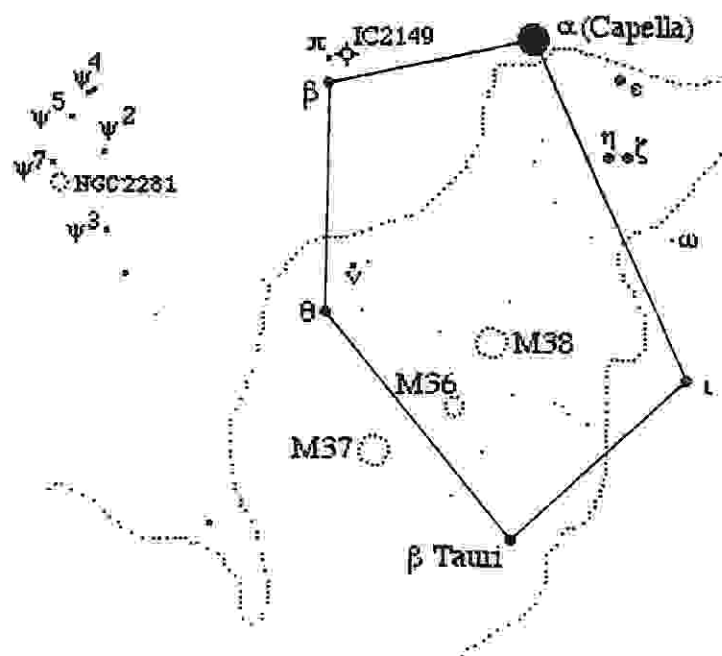
Using the same line connecting Theta Aurigae and Beta Tauri will enable us to find M36 (mag 6.5). This time, look half way between the two stars and about the same distance to the northwest as we used for M37. M36 (RA 5h 36.3' Dec +34° 08') contains about 60 young stars, the brightest of which are all of spectral class B2 through B8, which means they have hot surface temperatures near 20,000 degrees Kelvin. It is the smallest of the trio but shining slightly brighter than our next target which sits 2.3 degrees to the northwest. This is M38 (mag. 7.0; RA 5h 28.7' Dec +35° 50'), a cluster also boasting many hot A and B type stars with some G-type giants interspersed. When looking at M38, you should also spot a small magnitude 8.2 cluster half a degree to the southwest which is NGC1907. Measuring 7' in diameter, it is less than half the size of M38.

Near the Psi (ψ) complex of stars is NGC2281. This star cluster measures about 15' across and presents itself as a semi-circle or bowl shaped collection of magnitude 7 and dimmer

stars. Look for NGC2281 at RA 6h 49.3' Dec +41° 04', or about 3/4 of a degree to the SSW of ψ^7 Aurigae.

For a real challenge, try IC2149. This is a tiny planetary nebula measuring 9" across and glowing weakly at 11th magnitude. While actually spotting the nebula is difficult, its location is easy to pin down since it is about 2/3 of a degree west of Pi (π) Aurigae, which in turn is just north of Beta (β) Aurigae, the NE corner of the pentagon. More precisely, NGC2149 is located at RA 5h 56.3m Dec +46° 07.5'. With sufficient aperture and good seeing, you may have a shot at spying its 14th magnitude central star.

To the area southwest of Capella is a group of three stars, Epsilon (ϵ), Zeta (ζ), and Eta (η), which comprise an asterism called "the kids." They are in the shape of a tall isosceles triangle, and the star at the point, Epsilon, is of special interest in part due to the fact that it is an eclipsing binary star of spectral type F0 with an exceptionally long period of 27.06 years, with each phase of deepest eclipse lasting an entire year by itself. Furthermore, its distance is estimated to be near 2,040 light years, so to shine at magnitude 3 (3.8 in eclipse) to an observer on Earth indicates that it is one of the most luminous stars known, producing 60,000 times the light of the sun.



TAAA Board of Directors Meeting - November 11, 1999

EDITOR'S NOTE: The minutes of the November 11th Board of Directors meeting were not available for inclusion in this newsletter. Complete minutes will be available for review at the December monthly meeting.

Desert Skies Classified

- WANTED:** Used beginner's telescope for a teenager. Contact John Polacheck. Phone: 743-1362. e-mail: jpolacheck@ibm.net 2/00)
- FOR SALE:** Celestron Celestar 8, 8" SCT with wedgepod, one 25mm eyepiece, and one 32mm eyepiece. Six months old, used once. \$1000. Call John Newbern at 750-1558. (2/00)
- FOR SALE:** Meade LX 50 7" Maksutov Cassegrain on superwedge with accessories. Great planetary scope! As new, \$1950. Contact Gordon Gower at 792-9690. (3/00)
- FOR SALE:** Tele Vue 20mm Plossl 1 1/4" Eyepiece, new in box, \$75. Meade 18mm Superwide (67 deg. A.F.) 1 1/4" Eyepiece, new in box, \$125. Losmandy DC 14 Dovetail Plate for C-14 Telescope, \$100. Losmandy DR 90 90mm I.D. Rings for DC 14 Dovetail Plate, \$100. Or \$175. for Dovetail Plate and Rings. Contact Bill Dellings at (480) 983-6651 or via e-mail at: stargzr@prodigy.net (3/00)
- SERVICE:** Custom machine shop work—design and manufacture of telescopes and mountings. Fabrication of small parts or repair of existing hardware. For consultation and price quotes, call Duane Niehaus at 290-1722.

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

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**Have a
Safe
&
Happy
Holiday
Season**