

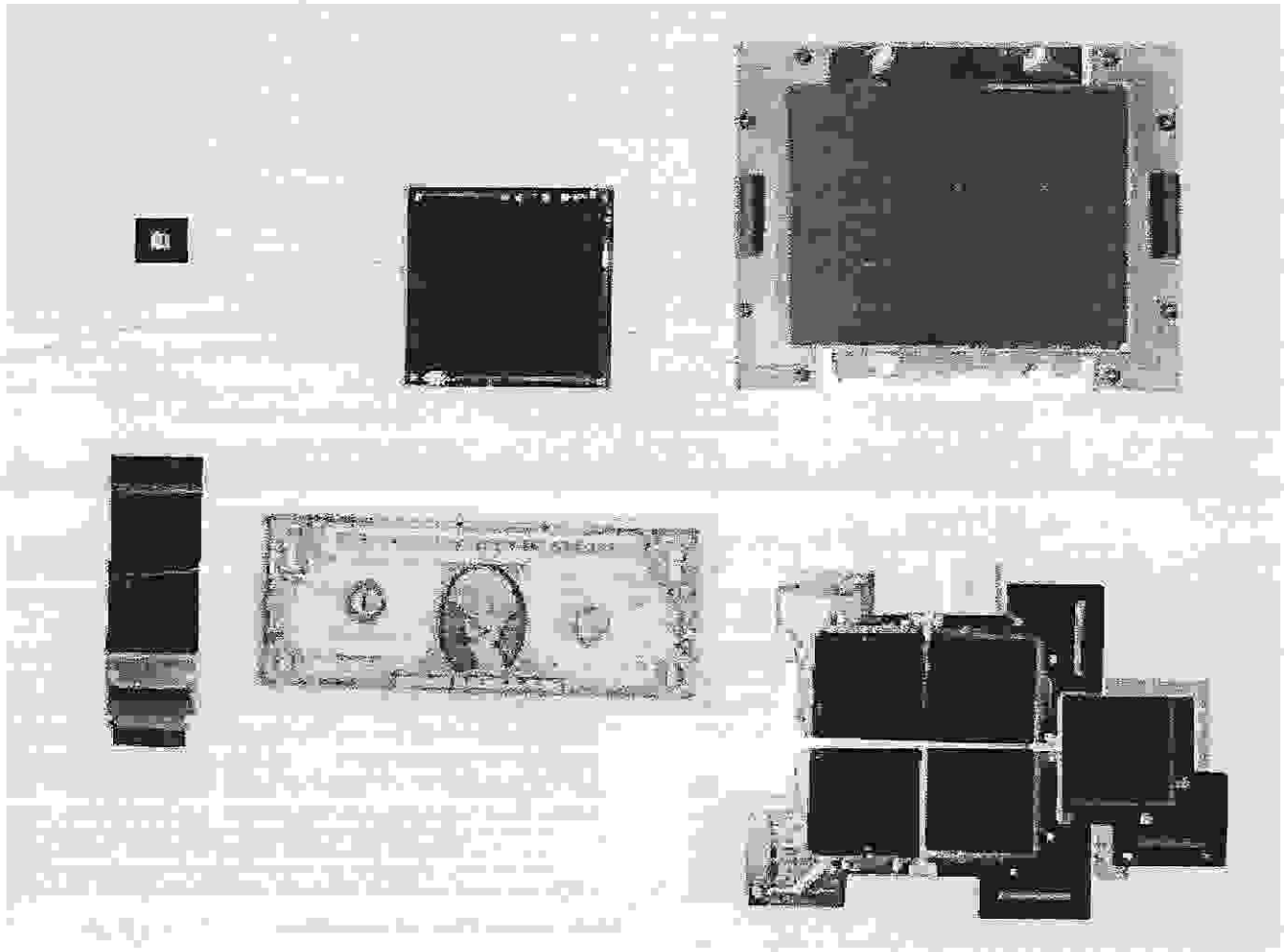


Desert Skies

Tucson Amateur Astronomy Association

Volume XLV, Number 10

October, 1999



**EVERYTHING YOU WANTED TO
KNOW ABOUT CCDs, BUT WERE
AFRAID TO ASK. COME TO THE
OCTOBER 1ST MEETING.**

Calendar of Events

BEGINNERS LECTURE: Friday, October 1st, 6:30 pm at the Steward Observatory Auditorium - Room N210. This month's topic is *CCD Basics* by Terri Lappin.

GENERAL MEETING: Friday, October 1st, 7:30 pm at the Steward Observatory Auditorium - Room N210. Topic is *CCD Workshop* coordinated by James McGaha.

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

STAR PARTIES & EVENTS:

- Oct. 2 - Trenching Party at TIMPA Site
- Oct. 9 - TAAA Empire Ranch Star Party
- Oct. 9 - TAAA Kitt Peak Starbecue
- Oct. 16 - TAAA Beginners Star Party at TIMPA
- Oct. 16 - Whipple Observatory Public Star Party

Newsletter Schedule: Deadline for articles: Monday, Oct. 18. Printing: Tuesday, Oct. 26. Folding Party: Wednesday, Oct. 27. Mailing: Thursday, Oct. 28. The newsletter is scheduled to be in the mail at least one week prior to the following month's General Meeting.

Cover: A comparison of CCD's. At top left is a typical video camera recorder CCD, about 1/2" on a side. This is typically the size of a CCD an amateur would own. At lower left is a 2K x 4K device and at lower right is a mosaic of five 2K x 2K devices. These are both common at professional observatories. The top center CCD chip is a 4K x 4K device used at the Keck Observatories. At the top right is a mock-up of the largest single slab CCD ever made, a 7K x 9K, of which only a handful are in existence. A dollar bill is shown for scale. Photo by Terri Lappin.

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

TAAA Phone Number: (520) 882-1950

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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 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

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

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President's Message

Finally! A break in the weather. And many members took advantage of it on Saturday, 9/4, at the Empire Ranch Star Party. I counted sixteen telescopes in the main cluster and there were several more in a smaller group down the runway. It was a great evening. We were not so fortunate at the Beginners Star Party on the following Saturday. Clouds drifted over the TIMPA Site from a storm cell to the west and, by 9:30 pm, it was sprinkling. Despite the less than encouraging weather, nine telescopes were there; a sure sign that members are ready to get back to observing.

There are some interesting options for star parties this coming month. On both club weekends, two activities are available. Saturday, 10/9, offers either the Empire Ranch Star Party or the club Starbecue at Kitt Peak. (Note: you must sign up for the Kitt Peak event at the October meeting because it is limited to fifty people.) For the following Saturday, 10/16, there is either the Beginners Star Party at TIMPA or a public star party at the Whipple Observatory Visitors Center. Lots to choose from, assuming the weather accommodates.

Don't forget the trenching party at TIMPA on Saturday, 10/2. Together with the TIMPA group, we will be running electrical service out to our future observing area. See the announcement later in this newsletter. Since there are so

many projects scheduled for the site, a new section within the newsletter has been started to keep members up-to-date on the progress.

In last month's newsletter, Alex Gibbs wrote an informative article about some interesting astronomy-related websites. Unfortunately, Alex was not able to continue the articles so I asked for someone to take over the task. I am pleased to announce that Rik Hill has stepped forward and volunteered to compose the monthly website article. Rik's first submission is included in this newsletter in the **Items of Interest** section. Thanks, Rik.

At last month's meeting, TAAA Librarian Sam Turner advised me that he would no longer be able to continue as librarian. Sam and his wife Phyllis took the club's library from an unused pile of books to an organized, catalogued, accessible library system. Sam personally brings some of the books to the monthly meetings for members to check out. The club appreciates all of the effort and dedication by the Turners and thanks them. Now it is time to find another volunteer to guide the future development of our library. If you would be interested, please call either Sam Turner at 296-1172 or John Kalas at 620-6502.

John Kalas

Meeting Information

Beginners Lecture

"CCD Basics"

by Terri Lappin

For beginners, this topic is full of techno-jargon, but Terri will try to explain some of the mystery away. While Terri hasn't observed with many CCDs, she works in the Steward CCD Lab where she applies the special coatings on the devices and tests some of them. During this lecture, Terri will decipher some of the jargon, explain why it isn't as easy as it looks, and, hopefully, will have some professional sized (although dead) CCDs to pass around for examination by the attendees.

Main Lecture

CCD Workshop

Coordinated by James McGaha

Charged-coupled devices (CCDs) have become a key component in astronomical research since their introduction to astronomy in 1979. The high sensitivity and low noise of CCDs combines to allow telescopes to reach far fainter objects than any previous technologies. This technology is now widely available to the amateur astronomer. The first TAAA CCD Workshop will discuss the technique and hardware needed to produce CCD images. The workshop will answer CCD questions thru presentations and as well as a panel discussion by nine of TAAAs CCD users. James McGaha, a long time CCD user, will lead and coordinate these presentations and a panel discussion.

Participating in the presentation, along with James, will be: Chuck Amedia, Tim Hunter, Dave Harvey, Gary Rosenbaum, Dan Knauss, Steve Peterson, Roger Tanner, and Ed Vega.

Club News

Annual Treasurer's Report

The TAAA 1998/1999 Annual Treasurer's Report is available for review at any monthly meeting. Our club membership is now 329, an increase of about 10% over last year.

Member News

We welcome the most recent members who have joined the

TAAA: David M Acklam, William L. D. and Erika Barrett, Susan Brown, Dona K Dean, Mark and Jayne Jacobson, Phillip and Joyce Mann, Jacob Noel-Storr, Steve Ratts, Thomas A Scott, Terry and Alexis Secory, Christopher Wellman. We also welcome back former members Frank Cathell and Christine Dowling. 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.

Club News (cont.)

TAAA Holiday Party December 11th

This year's Holiday 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. 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 dish which will cost extra.)

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 and hope to give away some door prizes. Reservations will be taken at the September through December meetings. Reservations by mail can be made now. Send a check, made payable to TAAA, to PO Box 41254, Tucson, AZ 85717. We are limited to 80 people, so make your reservations early.

Help Wanted: TAAA Librarian

Sam Turner advised the club that he will no longer be able to perform the duties of TAAA Librarian. Sam and his wife Phyllis volunteered to take on the considerable task of cataloguing the books in the club's library as well as establishing the checkout system. Through their efforts, the membership has had an opportunity to use the library. The club appreciates all of the work that the Turner's did to enhance the usefulness of the library.

Now it is time to find a replacement librarian. If anyone would be interested in the position, please contact John Kalas at 620-6502.

UofA Under Construction!

There's been a huge increase in construction at the UofA. As many of you are aware, Cherry Ave. and University Blvd. are now closed and a big hole is being dug for the new Integrated Learning Center. In addition, over the next several months a fifth floor will be added to part of Steward Observatory. This construction will significantly impact how TAAA members get to meetings. For the next year, it is highly recommended that members use the parking lots to the NORTH, for example, at 1st and Cherry or those near 1st and Vine. Walk down Vine to 2nd St., and then along the walkway to the courtyard and lecture hall entrance. Yes, it's a real mess on campus...haven't even mentioned the Student Union construction! Those of us working on campus sometimes think we should be wearing hard hats! But, it's been promised that the construction is for the better...so please bear with the dust, the traffic cones, road closures, fences, cranes, etc, etc...And, enjoy our meetings!

Chiricahua Campout!

6 November, 1999

Massai Point, Chiricahua National Monument

Years ago, we would organize an annual campout to the Chiricahuas and combine a little public observing with the other campers with some of the darkest sky observing

anywhere. We've not done it since Comet Hyakutake, so it is about time to do it again. I've reserved the group campsite for those who wish to pitch a tent at the base of the mountain. They can fit 5 cars in the parking for that location, so the first 5 who contact me can have a spot. The rest of you are on your own for first come, first served camping. I myself will likely make the 30 mile trip back to Wilcox for a soft bed at Motel 6 and others are welcome to make similar plans. The main point is some great observing at Massai Point. It is nearly 7,000 feet and you should be prepared for near freezing temperatures for late night observing, and the camping at 4500 feet will be similarly cool. Contact me for questions, directions, or if you would like to get on the group campsite list. There is no camping at Massai Point itself, though if you wanted to nap for a couple hours during the night, it would likely be fine. Hope to see you there!

Dean Ketelsen: 293-2855

REACH FOR THE STARS is getting under way! by Bill Lofquist

A new program to encourage youth leadership in astronomy is getting under way. This program will place its greatest emphasis in the first year on young people developing knowledge of astronomy and observational skills so they can, in turn, help to teach other young people.

The first step is to create a small steering committee of young people and adults to shape the plans and get the program under way. We could use one or two more people from TAAA to help with this. Also, if TAAA members know of young people who would like to participate, please let me know.

We will also be in need of TAAA members as mentors for small groups of young people as the program gets under way.

We will keep you informed through the Desert Skies as further developments occur. In the meantime, if you would like to get involved in this, please contact me as listed below.

Bill Lofquist
520-297-6653
520-575-8586 FAX
email: wlofquist@aol.com

Y2K Astronomy Calendars

Solve your personal Y2K problem with a 2000 Astronomy Calendar from the publishers of Astronomy Magazine. We continue our annual sale of calendars at the October meeting. The cost is \$10 each (\$2 off the regular selling price), or \$9 each for more than one. This calendar, which features a full-color astronomical photo each month, has daily information about astronomical events, both historical and observational...plus space for adding important events you need to remember. Pick one up at the October 1st meeting.

Club News (cont.)

A Halloween Star Party

by Terri Lappin

Halloween...little ghosts, goblins, and space aliens abound! What better time to treat these creatures to a peek through your telescope? This year Jupiter and Saturn will be well placed for observing. Spending the evening out in the October air is a much more pleasant than being indoors with the doorbell ringing every few minutes! Gary and I have set up telescopes each Halloween for several years and have always enjoyed the experience. Several TAAA members have joined in on the fun. Here are a few guidelines to help make your Halloween a success.

Set up your telescope near the sidewalk with a jack-o-lantern or similar attention getting, but dim, light source nearby. Spooky music gets attention too! Make sure power cords don't become trip hazards. Leave your patio lights off to draw kids away from your front door and towards you and the telescope. Be sure to have a stepladder handy for the little ones. The tendency is for people to support themselves by leaning against the telescope so politely warn them not to touch the telescope. It's best to use an eyepiece with some eye relief. These are easiest for the public to use. While most masks have large openings for

eyes, kids may see better if they remove their masks. I also recommend using an eyepiece you didn't pay too much for since it will most likely be smeared with make-up or sticky fingers.

For the past 8 years, we have set up a scope on Halloween. In our neighborhood, we've become known as the "people with the telescopes". Both the kids and the adults get a kick out of the experience and many forget that they are there for the goodies! Several gremlins come back for a second and third look.

If you live in a neighborhood with bad lighting, use this casual observing session to make your neighbors aware of light pollution and how it affects our ability to see the night sky. Don't make it a lecture, but just make them aware of the problem.

I am interested in hearing about your Halloween observing experiences. Tell me how many kids/adults look through your telescope and what objects you showed them. Last year I had one report of about 200 kids at one house! I hope that TAAA members can make every Halloween into a successful neighborhood star party.

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 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, i.e. electricity to our observing area and to TIMPA's ramada, a telephone line to our area, a secure storage cage in the TIMPA Barn, and permanent bathrooms.

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

Trenching Work Party

Saturday, October 2nd
9:00 am to 4:00 pm

Get those shovels and work gloves out and volunteer to support this activity. A mechanized trenching machine will be rented and operated by the TIMPA organization to open the trench necessary to lay the electrical cable from the barn to our observing area and then on to the TIMPA ramada. Our shovels will be needed to put the dirt back into the trench after the cable has been installed. Please consider helping.

Plan on bringing your own lunch. The club will supply beverages.

A New Observatory Opportunity

TAAA members Claude and Teresa Plymate have been attending the recent TIMPA Site Committee meetings and were aware of our difficulties in proceeding with an observatory building at TIMPA. The quotation received for a roll-off roof design was prohibitively expensive. Claude and Teresa work on Kitt Peak and became aware of an unused observatory (dome and support building) located in a storage area on the mountain. They approached the board with a proposal of pursuing acquiring the observatory for use at our TIMPA site. Although not our first choice for the observatory building's construction, a conventional dome design would work. If the club could secure the building, it would mean a much less expensive structure could be erected quickly.

[illegible]

Dark Skies for October 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

Th/Fr 30/ 1 19:31 - 22:35
 Fr/Sa 1/ 2 19:30 - 23:31
 Sa/Su 2/ 3 19:29 - 0:30

Su/Mo 3/ 4 19:28 - 1:32
 Mo/Tu 4/ 5 19:26 - 2:33
 Tu/We 5/ 6 19:25 - 3:34
 We/Th 6/ 7 19:24 - 4:33
 Th/Fr 7/ 8 19:22 - 5:01
 Fr/Sa 8/ 9 19:21 - 5:02
 Sa/Su 9/10 19:20 - 5:02

Su/Mo 10/11 19:19 - 5:03
 Mo/Tu 11/12 19:39 - 5:04
 Tu/We 12/13 20:15 - 5:04
 We/Th 13/14 20:54 - 5:05
 Th/Fr 14/15 21:36 - 5:06
 Fr/Sa 15/16 22:22 - 5:06
 Sa/Su 16/17 23:11 - 5:07
 Su/Mo 17/18 0:04 - 5:08
 Mo/Tu 18/19 1:00 - 5:08
 Tu/We 19/20 1:58 - 5:09
 We/Th 20/21 2:58 - 5:10

Th/Fr 21/22 4:01 - 5:11
 Fr/Sa 22/23 5:05 - 5:11
 Sa/Su 23/24 - - -

Su/Mo 24/25 FULL MOON
 Mo/Tu 25/26 - - -
 Tu/We 26/27 19:02 - 19:35
 We/Th 27/28 19:01 - 20:27
 Th/Fr 28/29 19:00 - 21:23
 Fr/Sa 29/30 18:59 - 22:23
 Sa/Su 30/31 18:58 - 23:25

Weekend	Sun	Sun	Mercury	Venus	Mars	Jupiter	Saturn	
Sa/Su	Set	Rise	Set Vi	Rise Vi	Set Vi	Rise Vi	Rise Vi	Vi=Visibility
2/ 3	18:06	6:17	18:50 7	3:01 -4	21:48 1	19:10 -3	19:55 0	-3 brilliant
9/10	17:57	6:22	18:48 6	2:56 -4	21:41 1	18:40 -3	19:26 0	0 conspicuous
16/17	17:49	6:27	18:47 5	2:55 -4	21:36 1	18:10 -3	18:57 0	3 moderate
23/24	17:41	6:32	18:44 5	2:56 -4	21:31 1	17:39 -3	18:28 0	6 naked eye limit
30/31	17:34	6:38	18:36 5	3:00 -4	21:27 1	17:09 -3	17:59 0	9 binoculars limit

By Erich Karkoschka

Star Parties & Events

TAAA Empire Ranch Star Party October 9 (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 cold temperatures and try to arrive before sunset. There may be mosquitoes to contend with, so be sure to bring along some insect repellent. 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.

Kitt Peak Cookout & Star Party: Starbecue October 9 (Saturday), 4pm-11pm, KPNO Picnic Grounds

The annual Fall Kitt Peak Cookout and Star Party has been scheduled for Saturday, 10-9-99. This year, we have the privilege of a New Moon for our event. If you haven't experienced a dark sky evening star party on the mountain before, then here is your opportunity. As in the past, we will be limiting attendance to 50 people total, without exception. However, you **MUST** sign up, to attend.

The elevation reaches nearly 7,000 ft at the summit of Kitt Peak. Cool fall night temperatures, and breezes are to be

expected. It's best to bring something warm to wear after sundown. A sign marks the entrance to the Picnic Grounds just left of the main Mountain road (SR386), prior to reaching the Observatory entrance. Follow that road to the left, past the Radio dish (visible on the right), and park near the Ramada. You will not be permitted to venture above the picnic grounds after 4pm. If you plan to visit the observatory, or visitor center earlier, proceed with your vehicle to the picnic grounds at 4pm. We will prepare to leave the mountain by 11pm, and should be heading down the mountain road no later than 11:30pm.

We can thank KPNO/NOAO for their generous offer to share the Mountain with us, by respecting the night visitation rules that are designed to assure the safety of everyone, and demonstrate consideration for the ongoing research conducted on the mountain.

All attendees will be asked to comply with the following rules:

1. Park vehicles at the Picnic Grounds.
2. Do not venture above the Picnic Grounds after 4pm.
3. Cooking fires need to be extinguished by sundown, and must be contained within the ramada cooking area.
4. Waste should be disposed of properly in provided containers.
5. Radio transmissions including CELLULAR PHONE use is STRICTLY PROHIBITED.
6. Loud music is not permitted.
7. Lights after sunset are to be kept at a minimum. (similar to other dark sky star parties)
8. All attendees will prepare to head down the mountain by 11pm.

Star Parties & Events (cont.)

Kitt Peak Cookout & Star Party: (cont.)

So... if you want to plan a New Moon observing session, combined with an informal cookout, and meet new club members, then the Kitt Peak Star-B-Que is the place to be. Coals will be started at 4pm. Members will bring their own "something to grill" and a dish or item to share with the group.

I will have a sign-up sheet at the October 1st meeting. If you will not be at the meeting, and would like to attend, call me to be placed on an alternates list. For any other questions, contact me at 544-7780 or via e-mail at: laureus@earthlink.net

Laurel Dunlap ALCor TAL/TAA

TAA Beginner's Star Party at TIMPA October 16 (Saturday)

Now every month the TAA invites all members out to the TIMPA site for an "extra" star party to enjoy a night of observing. 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 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 5:30 pm for a group question and answer session. It should be dark enough to observe by 6:30 pm. Of course, a first quarter moon will be available earlier. If you have friends who might be interested in amateur astronomy, bring them along. With the warm weather, be prepared for mosquitoes and bring insect repellent. Last year they were somewhat bothersome. Bring warm clothes. The temperature may drop after sunset. Directions to the TIMPA site are located on the outside flap of this newsletter.

Whipple Observatory Open House and Star Party October 16 (Saturday)

The Whipple Observatory will present an Open House and Star Party on Saturday, October 16. Observing will begin at 6:30 p.m. courtesy of telescopes provided by the Tucson Amateur Astronomy Association and Sonora Astronomical Society. The event is free and open to the public.

2:00 p.m.	Visitors Center opens
5:30 p.m.	Informal lecture on astronomy by Observatory staff
6:30 p.m.	Observing begins (in parking area next to Visitors Center). On view: Mars, Jupiter, Saturn, Antares, double stars, a few meteors, and the Moon.

Dress for cool evening temperatures. Small flashlights and binoculars are useful to bring.

Please cooperate with staff directing parking when you arrive. The parking spaces nearest the building are reserved for astronomy club members and their telescopes. Visitors should park along the driveway or in the parking area outside the gate or along the road as directed. (Please note: Visitors will be allowed to park cars next to the building in the space usually reserved for telescopes until 5 p.m. At that time, visitors will have to move their cars to other parking spaces so that telescopes may be set up.)

For more information call 670-5707. In case of threatening weather, call 670-5707 after 2 p.m. on the 16th for information about star party cancellation.

How To Find The Observatory Offices:

The administrative complex for the Fred Lawrence Whipple Observatory is 43 road miles south of Tucson and 38 road miles north of Nogales, Arizona. From Tucson, drive south on Interstate 19 to exit 56 (Canoa). At the bottom of the exit ramp, turn left and drive under the freeway to the frontage road on the east side. Turn right and drive south three miles to Elephant Head Road. Turn left and drive east, crossing the Santa Cruz River on Elephant Head Bridge. One mile east of the river, turn right on Mount Hopkins Road. Drive southeast about seven miles to the Observatory Office (end of pavement).

Items of Interest

Websites: Trips on the Internet Super-Skyway by Rik Hill

If you have not been to the website for the Students for the Exploration and Development of Space (SEDS)-University of Arizona chapter, you should plan a trip there soon. It is an excellent one-stop for all kinds of things in both space science and astronomy in general. On their front page are links to many image archives, various spacecraft mission pages, pages for other space/astronomy organizations as well as links to other SEDS websites, including the national headquarters. One of my favorite links is the Best of the Space Telescope site where a wide variety of images from

the Hubble are available without having to wade through huge image archives.

For those that are not observers of the "faint-fuzzies" and appreciate the earth's nearest neighbor there is a splendid webs site for the LunaScan Project (LSP). At the top of the home page is a rendering of the moon showing the current phase. From there you'll find links to archives of photographs of the moon taken by amateur astronomers of all capabilities. Some are from CCD's and some are captured from video or scanned in from photographs. It's a wonderful resource for those just starting to find their way about the moon. The link I use most often is under

Items of Interest (cont.)

Websites: Trips on the Internet Super-Skyway (cont.)

the heading Lunar Surface Directories Keyed to Interesting Areas. Under this is a link, Nearsides Directories and Section Charts. This leads to a map of the moon as seen from earth where you can "click" on a region and pull up all their photographs on hand of that area. Many of the images are amateur but among these you will find Ranger, Lunar Orbiter and Apollo images, among other resources. The Alphonsus region in the center of the moon will give you a good idea of what's available as this is one of the most heavily observed regions on the moon.

These two websites can be found at:

SEDS <http://seds.lpl.arizona.edu>

LSP <http://www.evansville.net/~slk/lshomepage.html>

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

Light Pollution and Light Trespass

by Jack and Sheila Tepper

Before we can criticize businesses, parks, and other public institutions for offensive lighting practices, we, ourselves, should check around our own property to make sure we are not contributing to the problem. Our outdoor lighting should be low wattage, shielded fixtures, aimed downward, lighting up the ground. Over head spotlights that operate with motion detectors should be timed to go out in a very short time, as soon as we are safely indoors, and not stay on for 10 to 15 minutes contributing to glare. Garden lights and pathway lights can be obtained that are very low wattage, such as solar lights.

The main point is to look around and see what you personally can do to reduce the light pollution and light trespass problems. Join the Southern Arizona Section of the International Dark-Sky Association and learn more about what you can do to help keep Tucson dark.

FIGHT LIGHT POLLUTION!

PLEASE ATTEND THE MEETINGS OF THE SOUTHERN ARIZONA SECTION OF THE INTERNATIONAL DARK-SKY ASSOCIATION (SA-IDA). Protect your rights for dark skies. Attend and participate (you do not need to be a member of the IDA to attend).

SA-IDA meets on the second Wednesday of each month, at 5:30 p.m. at the offices of the IDA, 3225 N. First Ave. This is just south of the Map and Flag store on North First Ave. Close to the northwest corner of North First and Fort Lowell. Park behind the complex by entering from Fort Lowell behind the lighting fixture store.

Ed Vega

Job Opportunity

NEEDED: Amateur astronomer to assist other amateurs and teach basic observational astronomy to beginners at the Vega-Bray Observatory near Benson. Astronomy sessions are 4 to 5 hours long and begin around sunset at the observatory. Must be easily available some weekdays and weekends and have own reliable transportation. Reasonable compensation. Call Ed Vega at 615-3886.

Steward Observatory Public Evening Series

Steward Observatory has been hosting public evening lectures in astronomy for 70 years. The lectures for the Fall 1999 semester will be held on Monday nights at 7:30 pm in room N210 of Steward Observatory. Following the talks, there will be opportunities for viewing the night sky (weather permitting) with the use of the 21-inch telescope at the Campus Station of the Observatory operated by undergraduate majors in astronomy and related sciences. All of the lectures and the use of the telescope are free of charge and open to the general public.

For more information about speakers and their talks, visit Steward Observatories website at:
http://hypatia.as.arizona.edu/~connie/pub_lect.html

Oct. 11	Dr. Richard Green "Supermassive Black Holes and Quasars: How STIS and Gemini Will Change Our Ideas"
Oct. 25	Dr. Humberto Campins "What Have Comets Done for Us Recently?"
Nov. 8	Dr. Dean Hines "Near, Far, Young & Old: The Universe Unveiled by NICMOS"
Nov. 22	Dr. James Leibert "Between Big Planets and Little Stars"
Dec. 6	Dr. Ann Zabludoff "A Stroll Through Our Extragalactic Neighborhood"

TAA Board of Directors Meeting - August 12, 1999

EDITOR'S NOTE: These minutes were not available for inclusion in the September edition of the newsletter and are presented here for the benefit of the members. The following information are summaries of the topics discussed at the board meeting. Complete minutes of this meeting are available for review at the next monthly meeting from Ingrid Saber, TAA Secretary.

Location: Steward Observatory Conference Room N305, University of Arizona

Call to Order: 7:08 pm

Board Members Present: John Kalas, Andrew Cooper, Ingrid Saber, Terri Lappin, Robert Callanan, Daniel Manrique

Board Members Absent: Bill Lofquist

Members Present: Maureen Babcock, Barbara Callanan, Claude and Teresa Plymate, John Polacheck, and Gary Rosenbaum

TAAA Board of Directors Meeting - August 12, 1999 (cont.)

1. **Project ASTRO: TAAA Style** - Maureen Babcock and Terri Lappin proposed a concept whereby the TAAA would continue the benefits of Project ASTRO after it ceases official operation in 2000. They presented a written proposal explaining their ideas, which includes having TAAA members develop "demonstration activities" for presentation to groups in the Tucson community. The board encouraged pursuit of the proposal.
2. **TIMPA Site Report & TIMPA Board of Directors Appointment** - John Polacheck advised that he has the reflectors for lining the drive and that we should place our own lock on the gate. He suggested that measurements be taken in the TIMPA barn for construction of a security cage. The TIMPA organization is handling the design, specification, and quotation of the electrical service to be run out to our observing area and then on to the TIMPA ramada. John Polacheck recommended that the club's 16 inch telescope be removed from storage and placed somewhere for evaluation of the improvements needed to make it easier to use. He would like this effort to begin now so that the telescope is ready when the observatory structure is available. At the end of the discussion, John Kalas advised the board that the TIMPA organization had requested that one member of the TAAA be appointed to the TIMPA Board of Directors. John recommended the appointment of John Polacheck and the board agreed.
3. **Treasurer's Report** - Terri Lappin distributed the monthly financial statements and there were numerous discussions about various aspects of the club's finances. The board had planned to hear from our financial consultant, J.J. Ruether, but he was unable to attend this meeting. The review of the club's investment performance was postponed until next month's board meeting. Terri mentioned that she would be presenting the Annual Financial Report, required by the club's by-laws, at the next board meeting.
4. **Club Property: Valuation and Inventory** - Terri Lappin, concerned about adequate insurance coverage for the club's property, has developed a computer data base of all of the property. To simplify the accounting effort, Terri recommended that the club not track assets of less than \$50. value. She also suggested that we adopt an identification system that would "tag" each tracked asset with a label having a number assigned to it. The "tagging" of asset items could be performed when the club property is transferred from our current mini storage shed to the security cage inside the TIMPA barn.
5. **Holiday Party** - Terri advised the board that all preparations with the El Parador Restaurant are proceeding well. Sales of tickets for the event will begin at the September monthly meeting. Barbara Callanan volunteered to handle ticket sales at the October through December meetings. Liz Kalas will sell tickets at the September meeting.
6. **TAAA Shirts and Caps** - Andrew Cooper brought all of the samples of apparel that he purchased as samples. They included; an "Aussie" style hat, a baseball cap, a long-sleeved denim shirt, a T-shirt, and two examples of a polo shirt. The items are being priced "at cost" to encourage members to purchase the apparel. It was decided to display the samples at the September monthly meeting and take orders. Andrew will develop an order form for that purpose.
7. **Land Search Trip** - John Kalas advised that he has had difficulty in coordinating the trip(s) to visit sites proposed by Tim Hunter, and that he would like to have someone else take on the responsibility. Several sites in Arivaca have been identified. John voiced his concern about spending time considering parcels that cost \$60,000., as they are well outside of the club's ability to afford. Terri Lappin offered to follow up on the project.
8. **Kitt Peak Surplus Dome** - Claude and Teresa Plymate advised the board that they had discovered and inspected an unused observatory (dome and support building) in a storage area on Kitt Peak. They felt that the items were in good condition. They had wondered if the club would be interested in pursuing acquisition of the observatory for use at the TIMPA site. The dome is an Ash Dome approximately 16 feet in diameter. The support building is an 8 foot high, round steel frame structure with aluminum siding on the outside and curved asbestos panels on the inside. It was agreed that interface with Kitt Peak would be through the Plymates. This new opportunity will be reviewed at the September 1st TIMPA Site Committee meeting. Plans will be made to have a group of TAAA members visit Kitt Peak to inspect the dome and building.
9. **4th Ave. Street Fair** - Terri Lappin reported that she had received an application for non-profit organization participation in the winter street fair scheduled for Dec. 10 - 12. The merchants association has eliminated the excessive requirements for volunteer support of the fair. A lottery is still used to select the non-profit participants. The board authorized Terri to submit the application.

Meeting adjourned: 9:55 pm

TAAA Board of Directors Meeting - September 9, 1999

EDITOR'S NOTE: The minutes of the September 9th Board of Directors meeting were not available for inclusion in this newsletter. Complete minutes will be available for review at the October monthly meeting.

Desert Skies Classified

- FREE:** To a good home: 1969 vintage Edmund Scientific "heavy duty" equatorial mount on short wooden tripod; no clock drive. It includes the two giant counterweights (dare that stack of papers to go flying in a hurricane!) While it's been "weathering" for the last two years outside, unprotected, it can be polished up nicely to work smoothly. **BONUS:** An official Duane Niehaus tangent arm is mounted on the declination axis for smooth slow motion. No extra charge! You haul. Call Howard Lester 621-3451 or 885-5479 or e-mail at hlester@as.arizona.edu
- FOR SALE:** Astro-Physics 130mm EDT refracting telescope on a Losmandy G-11 mount with Easy radial guider 2.7" and digital readout at focuser knob. For price please send e-mail to CTGWC@aol.com
- 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

Constellation Report by Chris Lancaster

Cepheus

This constellation crosses the meridian at 9pm during the middle of October and can be found in the northern sky between the cross shaped constellation of Cygnus and the "W" pattern of Cassiopeia. Its boundaries stretch all the way to Polaris, the north star, so since it is situated so near the pole, most of the constellation remains above the horizon at all times, and even its most southerly stars rise again no more than 4 hours after setting.

Cepheus was king of an ancient land in northern Africa with Cassiopeia as his queen. These two in addition to their daughter Andromeda form a family portrait of sorts in the sky, all sitting side by side in the area of the heavens north of $+30^\circ$ declination and between 21h and 2h RA.

In 1784, John Goodricke discovered that Delta (δ) Cephei, in the extreme southern part of the constellation, exhibited variations in brightness which modern studies have precisely measured to be 5.366341 days. The variability results from an actual pulsation of the star rather than other phenomena like eclipses or outbursts. A multitude of these pulsating stars in the Milky Way and other galaxies have since been discovered, and are all called Cepheid variables after this star. This stellar class is very important to astronomers since the period of pulsation, which generally ranges from a few hours for the dimmest Cepheids to as long as 50 days for the brightest ones, correlates to the star's luminosity. Thus, Cepheid variables can be used as accurate measuring sticks for determining distances to other galaxies when the period and apparent magnitude of these stars are known.

Although Delta is an easier star to see, its magnitude range of 3.6 to 4.3 is less noticeable than U Cephei, which ranges from 6.8 to 9.2 magnitudes. U is an eclipsing binary at RA 1h 2.3m Dec $+81^\circ 52.5'$, or if you look in the area one-third the distance from Gamma (γ) Cephei to Polaris and move 1h 25m east of that line (a short distance at this declination—about 1.5 degrees), you will see a group of four stars forming a crooked line 23' long and all near 8th magnitude. U is the southernmost of this group and if glowing at its brightest it will outshine the other three. If at its dimmest, it will fall short of the others. Its period is about 2.5 days and takes only 8 hours to dim and return to normal after spending 2 of those hours in its eclipsed phase. The finder chart below indicates magnitudes without the decimals. North is left, south is to the right.

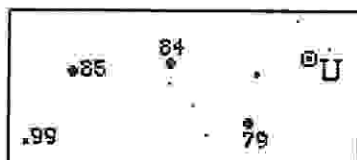


Chart length spans 0.5°

Now, point your scope to Mu (μ) Cephei. This is the famous "Garnet Star" which gets its nickname from the rich orange-red color it shows. This is an irregular variable with fluctuations spanning hundreds of days, but it always remains visible to the naked eye under suitable conditions. It forms a wide triangle with Alpha (α) and Zeta (ζ) Cephei, and if you have the patience, you may notice its variability from magnitude 3.7 to 5.0. As a point of interest, μ is the north polar star of the planet Mars.

Among the brighter deep sky objects in Cepheus are NGC6939 and NGC6946. NGC6939 is an open star cluster made of a scattering of dozens of stars ranging between 12th and 15th magnitude in an area about $8'$ in size. NGC6946 is a magnitude 11 spiral galaxy of about the same size to the southeast. It looks slightly oval and is generally of uniform brightness across its face. I mention these together because they are only about $40'$ apart and present a contrasting duo in an eyepiece capable of about a 1° field of view. Center your scope at RA 20h 33m Dec $+60^\circ 20'$ [or about 2.5 degrees south of Theta (θ) Cephei and slightly east] and you'll see this pair.

Sharp eyed observers will see the faint nebulosity of NGC7023. It surrounds a 7th magnitude star at RA 21h 0.5m Dec $+68^\circ 10'$, or 3.5 degrees southwest of Beta (β) Cephei. It's central glow is roughly rectangular in shape and fades quickly to the edge of its total area of $18'$.

There are many more galaxies, nebulae, and star clusters in Cepheus. You may use a star chart with which to guide you or simply browse the constellation on your own journey of discovery.

* Polaris

