

Desert Skies

Tucson Amateur Astronomy Association

Volume LVII, Number 2

February, 2011



M 45—The Pleiades

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Saturday, February 12 9AM
Steward Observatory
See article in this newsletter.

Cover Photo: M45 The Pleiades. Imaged by Michael Turner. Taken with a SBIG STL-2000XM CCD Camera on a Televue NP101 540mm @f5.4 with a AstroPhysics 400 GTO Mount. The image was taken on December 15th, 2007 .

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Membership in the TAAA

Annual Fees

Individual membership	\$25.00
Family (includes two adults plus minor children)	\$30.00

Youth under 18 years must join as a family upon parental or guardian acknowledgement of participation in TAAA events. Ask the Treasurer for the required form.

Discounts (one discount allowed, subtract from above rates)

Seniors (over 60 years)	\$2.00
College Students, Teachers (K - 12)	\$8.00
Youth under 18 yrs (form required, contact the treasurer)	\$13.00

Options (add to above membership rates)

Tucson society of the Astronomical League (TAL) fees	\$ 7.50
Sky & Telescope Magazine 1 year (12 issues)	\$32.95
Astronomy Magazine 1 year (12 issues)	\$34.00
2 years (24 issues)	\$60.00
Postage for New Member Pack	\$ 4.80

Donations are accepted for the following funds: SA-IDA/Light Pollution, TIMPA, Education, TAAA Astronomy Complex, and General/Undesignated.

Renewal Information

- Your membership expires as indicated on your mailing label.
- TAAA members may join the Tucson society of the Astronomical League (TAL) at the time they join or renew.
- Discounted Sky & Telescope or Astronomy magazine subscriptions are available to members and can be started or renewed at anytime. Rates are given above. Allow 3 months for processing. Subscriptions

must be sent through the TAAA. *Do not send money directly to the magazines.* To change an individual subscription to the group rate, pay the subscription amount to the TAAA treasurer. Include your magazine renewal notice.

- Please include a note explaining what you are paying for. Credit cards are not accepted. Write one check or money order for fees plus any options or donations. Make it payable to TAAA and send to:

Tucson Amateur Astronomy Association
PO BOX 41254 Tucson, AZ 85717

Mailing Address or Email Changes - Send to address above or email the treasurer.

TAAA Mission Statement - The mission of the Tucson Amateur Astronomy Association is to provide opportunities for members and the public to share the joy and excitement of astronomy through observing, education and fun.

Desert Skies Publishing Guidelines - All articles, announcements, news, etc. must be submitted by the newsletter deadline. Materials received after that date will appear in the next issue. The editor retains all submissions unless prior arrangements are made. Submissions should be submitted in Word compatible files via e-mail or on a recordable media.. All material copyright Tucson Amateur Astronomy Association or specific author. No reproduction without permission, all rights reserved. We will not publish slanderous or libelous material! Send submissions to:

George Barber
TAAA/Desert Skies Editor

Join our Email Lists on Yahoo Groups

TAAA Forum: <http://tinyurl.com/hwoau> (general astronomy discussion, posting allowed, 75/month)

TAAA Dark Site: <http://tinyurl.com/3d8ts9> (discussion of dark site issues, posting allowed)

Desert Skies is published monthly by the
Tucson Amateur Astronomy Association, Post Office Box 41254, Tucson AZ 85717.

President's Message

The Tucson Amateur Astronomy Association plays an extremely important role in Southern Arizona. While we can't claim credit for the near-perfect skies, the club can certainly take pride in our many activities, most of which are available free to the public. TAAA has existed longer than the majority of charitable organizations in Tucson, and we serve a unique role in the promotion of science and public education in the community.

I wish I knew how many children experienced their first glimpse through a telescope at a TAAA star party. Or, how many adults visited a general meeting and listened for the first time to a professional astronomer give a lecture using language that anyone could understand. How many individuals have made lifetime friendships, or found another member willing to share an important piece of astronomy equipment?

The TAAA is much, much more than just a legally incorporated Arizona entity; our charitable outreach goes much deeper than meeting IRS qualifications under the 501(c)(3) charitable organization regulations. We're a club full of caring, sharing, enthusiastic, friendly people! Next time

you're at a TAAA meeting or event, please make an extra effort to say "hello" to someone, or give them a smile. Take advantage of our free name badge program - those little badges can help you remember your new friend's name.

Since TAAA is a 501(c)(3) charitable organization, we are able to accept charitable donations. If you would like to support any of TAAA's many programs with a financial contribution, you may be able to claim a tax deduction. Our membership dues provides funds for general club operations, but projects such as TIMPA, CAC, and others must be funded by donations.

There's some really exciting stuff going on in the club, so be sure to check the newsletter, website, and e-mail forum for announcements. One major item that was approved by the Board recently was that the club will be hosting a Messier Marathon at CAC this spring - so be sure to start training yourself and your scope for an all-nighter!

Keith Schlottman

Meeting Information and Calendar of Events

TAAA MEETING DATE: Friday, February 4th, at the Steward Observatory Auditorium - Room N210

GENERAL MEETING: 6:30 pm
No Astronomy Essentials Lecture

Topic: **Presentations by the TAAA Astro-Imaging SIG**
Speaker: A-I SIG members

For many, astrophotography is a merging of two hobbies: astronomy and photography. Not all photographers or astronomers are natural born astrophotographers. This specialty can be as simple as using a standard camera and lens pointed at the sky, or as fancy (aka expensive) as a high quality CCD at the focus of a large telescope. While experience, time, and patience pay off, first time astrophotographers can take some pretty amazing photos of the night sky, too.

This month, we turn the February meeting over to the **Astro-Imagers Special Interest Group** so they can show us what they've been up to. Some members are just starting out and others have the latest equipment and image processing software. The night sky comes alive with color when a camera is turned skyward. Come see what our astrophotographers have to show us.

BOARD OF DIRECTORS MEETING: Wednesday, February 9th, 6:30 pm. The meeting is held at Steward Observatory Conference Room N305.

The January Minutes weren't available due to rescheduling of the board meeting. The minutes for that meeting will appear next month.

STAR PARTIES AND EVENTS:

- 5 Feb - CAC Star Party
- 10 Feb - AFSIG Mtg. and Double Star Program
- 10 Feb - Picture Rocks Intermediate School Star Party
- 11 Feb - Pueblo Magnet HS Star Party
- 12 Feb - Space Rock Workshop/Dr. Strom Lecture
- 15 Feb - Utterback Middle School Star Party
- 17 Feb - Castlehill Country Day School Star Party
- 19 Feb - Solar Observing Group.
- 25 Feb - Pima County Natural Resources Star Party
- 26 Feb - Timpa Star Party
- 27 Feb - UofA Astronomy Students Star Party

NEWSLETTER SCHEDULE: Deadline for articles: **Wednesday, February 16th.** The newsletter is published at least one week prior to the following month's General Meeting. Thank you for your patience during the transition period. A very special thank you to George Barber, he has continued long distance producing the newsletter during this transition phase.

Club News

Member News

We welcome all new members who have recently joined the TAAA. Glad to have all of you join! New members can pick up a members pack at a meeting if they didn't request it by mail. Hope you'll make it to our star parties or meetings so we can all get to know you. (Updated membership lists are available at our website after logging in as a member. You can also pick one up at most meetings.)

Astro-Imaging SIG Meeting

Monday, February 7th, 7pm
China Rose Restaurant, NE corner Speedway/Rosemont

Our presentations feature CCD images, planetary webcams, and film. Come see some of the state-of-the-art imaging over some Chinese food, or just show up and enjoy the show! For more information, contact Steve Peterson.

Astronomy Fundamentals Special Interest Group

By Ben Bailey

On Thursday, February 10th, we will hold our regular monthly meeting.

The Time: 6:30 pm

The Place: U.S.G.S. Building – Room 253

Northeast corner of Park Avenue and Sixth Street

Parking: Free parking after 5:00 pm behind the building in the parking lot.

Remember, we are successful only if you participate. I am looking forward to seeing you there.

Special note: Our Chief Observer, Dr. Mary Turner will be doing a presentation on the early history of Astronomy at the March AFsig meeting. Mark your calendars for March 10th, 2011. You won't want to miss this it.

AFsig Committee

Chairperson: Ben Bailey
Vice Chairperson: Dennis McMacken
Observing Coordinator: Robert Gilroy
Workshop Coordinator: TBD
Lunar Obs. Facilitator: Mary Turner
Solar Obs. Facilitator: Dennis Dawson
Constellation Obs. Facilitator: Paul Anderson
Solar System Obs. Facilitator: Mike Finerty

The Astronomy Fundamentals special interest group meets on the 2nd Thursday of every month with some stimulating discussions from both the TAAA members and members of the scientific community. In addition, when we launch a new observing program, we have a presentation about that program discussing the history, folklore and the necessary requirements to complete the program.

AFsig Launching New Observing Program - Double Star Observing Program

Thursday, February 10 at 6:30 pm
U.S.G.S. Building – Room 253
N.E. corner of 6th Street and Park Ave.

The dark night sky is filled with millions and millions of stars. Some are close by (relatively speaking, but most are far away. Some are single stars (like our sun), but others are multiple star systems. Of these multiple star systems, we can detect and split double stars with our equipment. This month AFsig will launch the Double Star Observing Club at our regular February meeting. The presentation will provide a frame of reference for the subject of binary star observations, briefly discussing the history of this branch of astronomy in the professional and amateur realms, the basic science of visual binary star classification, and an introduction to four "fundamental" elements essential for the appreciation of double stars.

This presentation will be made by my long-time member, Tom Watson. He is an avid amateur astronomer and has been since his teenage years. Tom was a charter member of the Beginners Special Interest Group (BSIG) – BSIG was our name before we changed it to Astronomy Fundamentals as a better description for our group. He created our original observing manual from which our current observing programs are taken. Tom developed a special interest in double star observing and has volunteered to lead our Double Star Observing Club.

Come and join us for this interesting discussion. You can also sign up for the Double Star Observing Club. As with our other observing clubs, there will be guided observing sessions.

AF-SIG Solar Observing Group

On Saturday, February 19th, we will meet from 9 am until noon at Fort Lowell Park (Craycroft @ Glenn) near the southeast corner. Just look for the telescopes. Bring your kids. Bring water and something to nibble on. You don't need to have a telescope; others will have them if you don't. Everyone is invited to join us.

The **Solar Observing Program** (like all of our observing programs) is open to all members of TAAA at no charge. It is a guided program which means that at the scheduled observing sessions, there is someone there to guide you in finding the features needed for successful completion of the program. You can join the program at any time and can either attend the guided sessions or work on your own. A certificate is awarded at the completion of all the requirements. The beauty of this observing program is that our sun offers great flexibility in observing and recording the different features – you don't have to be concerned about light pollution, night vision, or traveling great distances to find dark skies.

If you are interested in participating in the Solar Observing Program or if you just want to be added to our email list to keep posted about our activities and solar news email Dennis Dawson at dennisldawson@gmail.com or Bob Gilroy at bobgilroy@tucsonastronomy.org for all of the particulars.

Club News (cont.)

Space Rocks Workshop

Saturday, February 12
9am - noon Steward Observatory Room N305

The **Starry Messenger SIG**, the **Space Exploration SIG**, and the **Astronomy Fundamentals SIG** are teaming up for a 3-hour long workshop about meteors, meteorites, and asteroids. We'll hear a presentation by Dr. Robert Strom, Professor Emeritus at the University of Arizona Lunar and Planetary Lab. Dr. Strom is a leading expert on the heavy bombardment period in the evolution of the solar system when large objects impacted the inner rocky planets. The title of his talk is "Impact Cratering and the Period of Late Heavy Bombardment". We'll also take a look at the projects contained in the Night Sky Network Space Rocks Outreach Toolkit. The workshop starts at 9am on Saturday, February 12th in Room N305 at Steward Observatory. A sign-up sheet will be at the February meeting, or send an email to smsig@tucsonastronomy.org if you want to attend. Space is limited, so sign up early.

The period of heavy bombardment resulted in many impacts to the inner rocky planets. It would've been an awful time to be on the Earth. While the solar system has calmed down, impacts do still occur both on the Earth and other solar system objects. Hollywood has done a great job at telling of the devastation that could happen should something large hit the Earth. The SyFy Channel would have you believe a large asteroid is on a collision course with the Earth on a weekly basis! As amateur astronomers who come in contact with the public, we are in a position to set things straight.

The projects in the Space Rocks Outreach Toolkit include visual and hands-on methods for teaching the public about Earthly impacts that have occurred. It also introduces the largest main belt asteroids, giving them scale in comparison with the Earth. The toolkit contains a few meteorites and meteor-wrongs (Earthly rocks), with a guide for assisting the public in identifying the space rocks from the Earth rocks. Other projects tell how asteroids are studied as well as how objects are classified (or reclassified as the case for Pluto). We'll use some of these

projects in the workshop, but the entire toolkit will be on hand for you to learn how to use it to "set things straight" with the public.

TAAA Apparel

Looking for a special gift or a way to make that fashion statement? Try on something from our fine line of club apparel. We have hats, T-shirts, denim shirts, and patches. We take cash and checks.

Upcoming Lectures

Here is the upcoming lecture schedule. Contact Terri Lap-pin at terrilapin@tucsonastronomy.org to suggest speakers or topics.

Feb 4		Astrophotography SIG Presentations
	<i>Invited Lecture</i>	
Mar 4	<i>Astronomy Essentials</i>	Al Anzaldúa Is Solar System Life Just a Jovial Saturnalia?
	<i>Invited Lecture</i>	Ari Spinoza Mars
Apr 1	<i>Astronomy Essentials</i>	Mary Turner Seasonal Objects
	<i>Invited Lecture</i>	Yancy Shirley Topic TBD
May 6	<i>Members Night Starts at 6:30pm</i>	Theme: TAAA members who work in the field of Astronomy
Jun 3	<i>Astronomy Essentials</i>	Bob Gilroy Topic TBD
	<i>Invited Lecture</i>	Dr. Marcia Neugebauer Solar Physics



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Club News (cont.)



Starry Messengers SIG -
Opening Minds to the Universe

Upcoming SIG Activities:

Space Rocks Workshop - February 12 9am to noon
Tucson Festival of Books - March 12 and 13, 2011

Join the Starry Messenger SIG, the Space Exploration SIG, and the Astronomy Fundamentals SIG for the Space Rocks workshop on February 12th. The workshop will be held in the Steward Observatory 3rd floor conference room (N305) from 9am to noon. Projects from the newest Night Sky Network toolkit, Space Rocks, will be put to use so you can become familiar with them. This kit includes a meteorite identification project that the public is sure to take an interest in. Dr. Robert Strom, from the UA Lunar and Planetary Lab will give a presentation during the workshop. Dr. Strom is considered an expert on the "late heavy bombardment" of the moon by asteroids, an event that took place early in the solar system's evolution and gave our satellite its characteristic "man/lady/rabbit in the moon" appearance. This topic ties in nicely with the toolkit materials and should lead to some interesting discussion. There will be a sign-up sheet at the February meeting. Space is limited, so be sure to sign up if you want to attend.

Please remember that the TAAA's big outreach event is next month's Tucson Festival of Books. See the article elsewhere in this newsletter about how you can help.

The **Starry Messenger Special Interest Group** provides an environment in which TAAA members can enhance their knowledge and understanding of astronomy and related concepts. We offer tools and techniques for explaining astronomy to people of all ages. Any TAAA member involved in astronomy outreach is supporting the goals of the Starry Messenger SIG. Even if you have never attended a SMSIG workshop or meeting, you can consider yourself a member of the SMSIG. We value your contribution.

Arizona Daily Star

Tucson
Festival
of Books

with the University of Arizona.

Presented by:

UMC
UNIVERSITY MEDICAL CENTER

Night Sky Network Toolkits

NASA, through sponsorship of the Night Sky Network, recognizes the essential role amateur astronomers play in public astronomical education. Under contract with NASA, the Night Sky Network team at the Astronomical Society of the Pacific has developed a series of toolkits for amateur astronomers to use in informal settings such as star parties and other outreach events. Below is a list of the Outreach Toolkits received by the TAAA. If your scope is not well-suited for public events, or if you want a change of pace, consider bringing a toolkit to a community event. Toolkits are also great backups for cloudy nights. Each themed toolkit contains several projects; you pick and choose what you want to use. Toolkits are self-contained with nearly all the materials needed for these hands-on projects. You may need to provide fresh batteries, scissors, or a bag of flour, depending on what project you select. A Resources CD and a Training DVD are included. Individual training in their use is available upon request. Please make arrangements with Terri Lappin (smsig@tucsonastronomy.org) to borrow these toolkits. Normally, you can keep a toolkit for a month at a time.

Night Sky Network Toolkits:**Space Rocks - Asteroids, Comets, and Meteorites:**

meteorite samples, asteroid detection

Exploring the Solar System: scale model of solar system

Our Galaxy, Our Universe: scale model of the Milky Way galaxy and the Universe

Shadows and Silhouettes: lunar phases, eclipses, and transits

Black Hole Survival Kit: gravity concepts

Supernova!: life cycle of massive stars, earth's protective atmosphere

Mirrors and Glass - An inside look at telescopes: how telescopes work

Telescopes - Eyes on the Universe: basic principles of optics, the human eye, and observing

PlanetQuest: demonstrate planet detection techniques

Other Resources:

SolarScope: provides a white light image of the sun suitable for small group viewing.

Dark Skies Education Kit: light pollution principles, includes a Sky Quality Meter

Comet Chef: an apron (with a comet on it) and chef's hat to wear when mixing up comets

Club News (cont.)

TAAA Exhibit at Tucson Festival of Books

The TAAA will have a booth at the Tucson Festival of Books on March 12 and 13. At last year's festival, 1400 people became aware of the TAAA when they visited our booth. They learned about gravity, the curvature of space-time and black holes. They saw scale models of the solar system and the Milky Way galaxy. They saw our star in both white light and H-alpha. They learned how much fun astronomy can be and were invited to learn more by joining the TAAA. We hope to make the next years' experience just as much fun.

Terri Lappin is looking for help now as we plan our festival activities. Email her at terrilappin@tucsonastronomy.org, or call her at 520-579-0185 if you can help between now and early March.

We are also asking TAAA members to devote a couple hours of their time as a booth volunteer during the festival. By the end of last year's festival, our volunteers had smiles on their faces but were exhausted. We want to share the fun with more of you, so please consider helping out during the festival even if it's just a couple hours. There are many jobs to do. You can have your choice:

- Be the "face of TAAA", talk with the public
- Show them our star
- Keep our booth clean
- Assist in the learning experience through hands-on activities
- Filling in as others take well deserved breaks
- Odd jobs as they come up

We need at least 4 volunteers at all times. Watch the TAAA newsletter next month for more information. There will be a sign up sheet for booth volunteers at the February and March meetings.

TAAA to Benefit by using Night Sky Network Services

THIS IMPORTANT INFORMATION WILL AFFECT YOU!

ALL TAAA MEMBERS SHOULD READ THIS (EVEN IF YOU DON'T USE THE INTERNET)

(Note: if you don't have email, see the last paragraph of this article.)

The Night Sky Network began as an outreach effort to help NASA bring science to the public. NASA recognized the enthusiasm and dedication amateur astronomers have for this hobby and contracted with the Astronomical Society of the Pacific to develop outreach toolkits. The TAAA joined the NSN as a charter member and we've watched it grow over the past 8 or so years. If you've not recently visited the Night Sky Network website, check it out: <http://nightsky.jpl.nasa.gov/index.cfm>

Not long ago, the Night Sky Network began offering extensive online support for managing club records and communication with club members. The TAAA has now begun the process to move our membership records to the NSN server. *This will give you easy, direct access to your club membership record through a personalized login account.*

This month you will receive an email message from the TAAA officially notifying you that we will be placing your contact information on the Night Sky Network server. You will not need to do anything for this to happen. Once our records have been uploaded to the server, the Night Sky Network will send you an email message with your personal Night Sky Network login and password. It is recommended that you login and then change your password to something you will remember. If you don't like your username, you can change that too (assuming you don't select a username already in use.) You can also edit your profile and set your user preferences. Full instructions are available through the Help menus throughout the Night Sky Network website.

As a TAAA member, you will see the following benefits.

- Your own personal user name and a private password
- Ability to update your contact information
- Check when your membership dues need to be paid
- Control over your online privacy and communications
- Easy access to current information about TAAA events
- Enter and track your volunteer hours (including mileage for tax purposes) for recognition of your service
- One-touch directions to events as well as time of sunset, moon phase, weather forecast, and a simple sky chart for that evening
- A "Member Help" file available on the Night Sky Network login screen to assist you with managing your NSN profile settings

You might want to view this video (<http://www.youtube.com/watch?v=qw5CyNEYHks>) to learn more about the Night Sky Network and your profile.

If you want to preview the Night Sky Network before you receive your login account, go to <http://nightsky.jpl.nasa.gov/>, click on "Login" and use our guest account.

Username: TAAA_Guest

Password: TAAA

Your Night Sky Network login account will uniquely identify you as a member of the Tucson Amateur Astronomy Association. If you are a member of another astronomy club that also uses the Night Sky Network, existing profile settings will not be transferred to the profile associated with the TAAA. You will have two separate profiles, one associated with the TAAA and a second profile associated with your other club membership.

Club News (cont.)

WHAT IF I DON'T HAVE AN EMAIL ADDRESS? If you don't have an email address, your contact information will still be uploaded to the Night Sky Network. However, you will not be issued a login account. You will continue to receive the newsletter in paper form and you will still give address corrections to the treasurer as you've always done. Other members will be able to view your name and phone number in the Night Sky Network TAAA membership list. You can call Terri Lappin (see page 2 of Desert Skies) to block your phone number from being visible in the TAAA membership list. Should you get an email address in the future, it can be added to your membership record and you will be given a Night Sky Network login account at that time. If you have security concerns about your information being provided to the Night Sky Network, you can read the Opt-Out article in this issue of Desert Skies for instructions and act accordingly by February 19th at midnight.

Night Sky Network Security and Opt-Out Information

As mentioned elsewhere in this newsletter, the TAAA will move our membership records and other housekeeping activities to the Night Sky Network on February 20th. This means your contact information will be stored on a server at the Jet Propulsion Laboratory, who with NASA sponsors the Night Sky Network. The JPL server has tighter security than our current membership records storage scheme, so with regards to security this is a step in the right direction.

A typical club record includes your name(s), mailing address(es), email address(es), phone number(s), as well as your membership type and membership expiration. You can view the Privacy Policy of the Night Sky Network (<http://www.jpl.nasa.gov/copyrights.cfm>) to learn how JPL and NASA might use your information. Those without internet access may contact Terri Lappin or Teresa Plymate for a printed version of this document.

The Night Sky Network requires that we provide you an opt-out method should you not want any information (including even your name) sent to the Night Sky Network. Opting-out could negatively impact enjoyment of full membership in the TAAA as you will need to make other

arrangements to receive notice of our events, however, we will make sure you receive the newsletter in a timely manner either by email or in paper form.

To opt-out, please send an email message to NSN.optout@tucsonastronomy.org stating that you want to opt-out of the Night Sky Network. If you don't use email, then call either Terri Lappin or Teresa Plymate (see page 2). Please do this by midnight on February 19th. You will be contacted to arrange an alternate method of communicating with you.

Night Sky Network iPhone Application

If you use an iPhone, the Night Sky Network has an App for you! "Go StarGaze" will give you a list of astronomy events in your area. You can download it free at <http://itunes.apple.com/us/app/go-stargaze/id380833895?mt=8>. Tell your friends about it, too.

Las Cienegas Observing Site

By John Kalas

At a recent Board of Directors meeting, there was a discussion about how the club should handle regularly scheduled monthly star parties at this site. Significant concern was voiced over the sporadic attendance that has occurred in the past. One board member heard that a new member of the club had visited the site in the recent past on the date published in the newsletter only to find that no one else showed up. With the increasing concerns over illegal alien traffic in the area, which is known to exist, the board has decided to stop officially scheduling monthly star parties at Las Cienegas effective January 2011.

This does not mean that the site cannot or should not be used by members for observing. Las Cienegas is a safe and wonderful site when used by a group of people. It is strongly suggested that members interested in using the site in the future make their interest known over the "taaforum" list server. That way, they will be assured that other people will be in attendance.

Want better observing?
Join the group that's keeping the sky dark
International Dark Sky Association
Southern Arizona section

We get people to use better lighting, so we'll have a dark sky

Some of the things we do:

- Talks to schools and organizations
- Demonstrations at Desert Museum
- PowerPoint presentations on CD

- Work with government agencies
- Identify non-compliant lighting in So AZ

Monthly meetings
2nd Wednesday, 5:30 - 7 pm.
3225 N. First Ave

Contact: Joe Frannea
sky@sa-ida.org
www.sa-ida.org

To preserve and protect the nighttime environment and our heritage of dark skies through quality outdoor lighting

Club News (cont.)

Space Exploration Special Interest Group - SESIG

By Al Anzaldua

SESIG is teaming up with Starry Messenger SIG and Astronomy Fundamentals SIG for the 3-hour long workshop about meteors, meteorites, and asteroids on February 12. Besides projects contained in the Night Sky Network Space Rocks Outreach Toolkit, the workshop will feature a presentation by Dr. Robert Strom, Professor Emeritus at the UA Lunar and Planetary Lab.

The title of his talk is "Impact Cratering and the Period of Late Heavy Bombardment". The workshop starts at 9am on Saturday, February 12th in Room N305 at Steward Observatory. A sign-up sheet will be at the February meeting, or send an email to smsig@tucsonastronomy.org if you want to attend.

SESIG also will sponsor a presentation at 7:00 pm on April 21 by electrical engineer and space activist, Avery Davis on the feasibility of space-based solar power. (Venue TBA.) Avery is a TAAA member who has studied designs and ideas for space-based solar energy satellites for many years. There will be a sign-up sheet at the February meeting for this exciting talk.

On May 19 SESIG will feature a presentation on growing food in outer space in the context of recycling nutrients, gases, and water within enclosed habitats. The presentation will be given by Jason Cook, an organic farmer and expert on edible and sustainable landscapes. Please see sign-up sheets for this presentation at the February, March, and April meetings

Messier Marathon at CAC

By John Kalas

At the January 19th Board of Directors meeting, a discussion took place regarding the annual Messier Marathon. This event has been traditionally held at Farnsworth Ranch near Arizona City. For security reasons, the Saguaro Astronomy Club has decided to move the event to a location much further west of Phoenix. Although this change may work well for the Phoenix folks, it makes the trip much longer for Tucsonans. Several TAAA Members, who normally attend the event, have voiced concern over the change of location. Therefore, it has been decided that the TAAA will host a Messier Marathon for TAAA Members only at the CAC Site on Saturday, April 2. Watch for more information regarding this event in next month's club newsletter.

Fundamentals of Astronomy Class

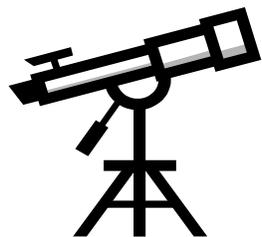
By Ben Bailey

AFsig is currently considering putting on its popular **Fundamentals of Astronomy** class this March. This class is aimed at giving the beginning amateur astronomer a good start in the hobby including the basics of the night sky, equipment used, and observing techniques.

The class is given on three successive Saturdays and usually runs from 9:00 AM to 4:00 PM. After the last class, students and instructors will meet at TIMPA for a potluck supper and star party. The proposed dates are March 12, 19, and 26. The class is open to all TAAA members. AFsig is currently making a waiting list club of club members.

If you are interested, send an e-mail to fundamentals@tucsonastronomy.org or contact one of the AFsig Committee members. An announcement on the TAAA forum will be coming soon regarding this class.

Telescopes for Borrowing



Free service



Only for Members

Don't own a telescope?

Our Loaner Program is your answer!

These telescopes are in the program

Sears 60mmf/15 on equatorial mount

Unitron 62mmf/14.5 on equatorial mount

Meade 90mm ETX

Coulter Odyssey8 8-inch f/4.5 Dobson

Meade 10-inch f/4.5 on equatorial mount

Meade 10" LX200 GPS (requires training session)

Beginners, here's your chance to learn and observe the sky before buying any equipment. The Loaner Program is available to any current member after meeting requirements detailed in the TAAA Loan Policy. Contact the Equipment Loan Coordinator (see page 2) or any club officer for details about these telescopes.

Member's Events

TAAA Star Party at CAC

Saturday, February 5th

The **Chiricahua Astronomy Complex (CAC)** is the club's newest observing site. Located in Cochise County approximately 100 miles from the center of Tucson, the site includes a full bathroom facility. At an elevation of 4800 feet, be prepared for cold temperatures. Try to arrive before sunset. Unlike the other two club observing sites, TIMPA and Las Cienegas, the CAC site requires that members make reservations for both monthly club star parties and private member use. We are restricted by a 60 person/30 vehicle maximum limitation. If you would like to attend, contact CAC Director John Kalas via e-mail at jckalas@cox.net or by phone at 620-6502. Reservations will be on a first come - first serve basis. Depending on the number of members interested in attending, guests may not be allowed.



Directions to CAC:

The Chiricahua Astronomy Complex is about 90 miles and a 1½ hour drive from the TTT Truck stop at Craycroft Road and Interstate 10.

- ⇒ Take I-10 East from Tucson past Benson.
- ⇒ Exit I-10 at Dragoon Road (Exit #318) - Turn right onto Dragoon Road at bottom of exit ramp.
- ⇒ Travel 13.5 miles southeast to intersection with Route 191 and turn right (south).
- ⇒ Travel 17.9 miles south (past Sunsites and Margie's Corner Café at High St. on the right and Border Patrol checkpoint) to intersection with Route 181 at Sunizona and turn left (east).
- ⇒ Travel 10.9 miles east to intersection with S. Price Ranch Road and turn right (south). S. Price Ranch Rd. is a dirt road just before you reach mile post 49 (cluster of mailboxes on right on Rte. 181).
- ⇒ Travel ½ mile south on S. Price Ranch Rd. to intersection with E. Perseus Way (wide dirt road with E. Perseus Way street sign on left) and turn left (east).
- ⇒ Travel east on E. Perseus Way slightly more than ¼ mile to entrance of Chiricahua Astronomy Complex, address 9315 on right (twin brown gates flanked by white rail fences set back 50 feet from road). Look for TAAA sign on left side of entry road.

TAAA and AFSIG Star Party at TIMPA

Saturday, February 26

If the weather cooperates, it should be a good observing night for everyone. The AFSIG will be very active that night at TIMPA. Steve Marten will be doing his popular "Walk-Around-the-Night-Sky", the **Constellation Observing Club** will introduce the next 5 constellations to its participants, the **Solar System Observing club** will try again to get a clear night for observing, and the **Double Star Observing Club** will hold its first observing session..

Also, the **Gila Monster observatory** will be open for your observing pleasure.

Come and join one of our activities, or observe on your own - and enjoy the camaraderie. AFSIG will open the gate at 5:00 pm.

TIMPA star parties are great for both beginners and experienced observers. Our novice members can get help with observing issues or equipment problems, as there are many experienced members there who would be happy to help. If you don't own a telescope, come anyway, because there are lots of telescopes set up and everyone is invited to look through them.

This is a great way to check out different telescope designs before you make that all-important decision to buy. We'll do our best to get you the answers you need. If you have friends or relatives who are curious about amateur astronomy, feel free to bring them along.

The TIMPA site features a large parking area, and full restroom facilities. Be prepared for cold temperatures. Directions to the TIMPA site are located on the last page of this newsletter.

Las Cienegas (Empire Ranch)

Note: The club is no longer scheduling monthly star parties at this site. The site may still be used by members, but it is recommended that members make their interest known via the taaforum e-mail listserver to organize the activity. This will preclude someone going to Las Cienegas, only to find out that no one else went down.

Las Cienegas (formerly Empire Ranch) had been the club's dark-sky observing site for many years. Please 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 astro-images. There are restroom facilities at the site.

Las Cienegas is at 4000 feet in elevation so be prepared for cold temperatures. The directions to Las Cienegas are located on the last page of this newsletter.

Desert Skies Classified

FOR SALE	Celestron Nexstar 80GTL Refractor telescope on computerized mount. Used very little. Clean and in very good condition. See http://www.celestron.com/c3/product.php?ProdID=391 for product information. Includes accessories and users manual. Selling for \$250 OBO. Contact Susan Warner at warners@email.arizona.edu or 621-6526.
FOR SALE	Vixen ED80Sf on AZ4 alt-azimuth mount with NEQ5 steel tripod. Includes 0.8X field flattener for astrophotography, owner's manual, and padded aluminum carrying case, plus 8x50 finder and very smooth 2-inch Crayford focuser. Provides beautiful images of both terrestrial objects and the nighttime sky. Asking \$775.00 for the complete package. Photos available via email. Contact Robert at 520-648-1421 or email rewoerner@gmail.com . [03/11]
FOR SALE	Vixen VMC95L Cassegrain with Mini-Porta Mount; Vixen Dot Finder; Vixen NPL25mm eyepiece; Celestron 32mm Plossl eyepiece; Celestron 15mm Plossl eyepiece. All items for \$300.00 OBO Contact - Neal Scofield, RetiredBadqe@comcast.net 883-5456 [03/11]
FOR SALE	Coronado (Pre-Meade) SolarMax 60mm Hydrogen Alpha scope with BF10 blocking filter. In excellent to mint condition. Includes CEMAX eyepieces 25mm, 12mm, and 18 mm + 2x Barlow, Clamshell mounting rings, Hard case (a few scuffs). Asking \$2200, OBO. Contact John Barnes (520)663-4174. [03/11]
FOR SALE	Celestron NexStar 11" GPS (28cm). Like new. Also includes mount, remote control, Pelican 1450 case, Celestron 40mm eyepiece, Tele Vue 18mm and 10mm eyepieces, and SCT Micro Touch Focuser. Telerad guide and instruction manual too. Bargain priced at \$2,400. Contact Lee Paulsel at paulsel@comcast.net or phone: 520-577-8966. [04/11]

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 or e-mail the newsletter editor.

Dark Skies for February 2011

DARK SKIES (no twilight, no moonlight) for Tucson in 24-hour MST: 18=6pm, 20=8pm, 22=10pm, 0=12am

Mo/Tu 31/01 19:21 - 5:54	Fr/Sa 11/12 2:12 - 5:47	Mo/Tu 21/22 19:37 - 22:32
Tu/We 01/02 19:22 - 5:54	Sa/Su 12/13 3:08 - 5:46	Tu/We 22/23 19:38 - 23:40
We/Th 02/03 19:22 - 5:53		We/Th 23/24 19:39 - 0:46
Th/Fr 03/04 19:23 - 5:53	Su/Mo 13/14 4:02 - 5:45	Th/Fr 24/25 19:39 - 1:47
Fr/Sa 04/05 19:46 - 5:52	Mo/Tu 14/15 4:52 - 5:45	Fr/Sa 25/26 19:40 - 2:43
Sa/Su 05/06 20:39 - 5:51	Tu/We 15/16 5:38 - 5:44	Sa/Su 26/27 19:41 - 3:32
	We/Th 16/17 - -	
Su/Mo 06/07 21:33 - 5:51	Th/Fr 17/18 - FULL MOON	Su/Mo 27/28 19:42 - 4:15
Mo/Tu 07/08 22:27 - 5:50	Fr/Sa 18/19 - -	Mo/Tu 28/01 19:42 - 4:52
Tu/We 08/09 23:21 - 5:49	Sa/Su 19/20 19:36 - 20:12	Tu/We 01/02 19:43 - 5:26
We/Th 09/10 0:17 - 5:49		We/Th 02/03 19:44 - 5:28
Th/Fr 10/11 1:14 - 5:48	Su/Mo 20/21 19:36 - 21:22	Th/Fr 03/04 19:45 - 5:27

RISE, SET, VISIBILITY for sun and bright planets: rise for morning object, set for evening object

Weekend	Sun	Sun	Mercury		Venus		Mars		Jupiter		Saturn		Vi=Visibility
Sa/Su	Set	Rise	Rise	Vi	Rise	Vi	Rise	Vi	Set	Vi	Rise	Vi	
5/ 6	17:59	7:12	6:37	9	4:21	-3	7:17	-	21:33	-2	22:33	1	-3 brilliant
12/13	18:05	7:06	6:48	-	4:28	-3	7:06	-	21:12	-2	22:05	1	0 conspicuous
19/20	18:11	7:00	Set	-	4:34	-3	6:55	-	20:52	-1	21:36	1	3 moderate
26/27	18:17	6:52	18:21	-	4:39	-3	6:43	-	20:32	-1	21:07	1	6 naked eye limit
5/ 6	18:22	6:44	18:57	8	4:42	-3	6:31	-	20:12	0	20:38	1	9 binoculars limit

By Erich Karkoschka

Public Star Parties and Community Events

All members are asked to support the TAAA School Star Party program and other community events listed below. TAAA either sponsors or co-sponsors these events. These are great opportunities for beginners as you may only need to know a few objects in the sky. Even without a telescope, you can be valuable in other capacities. Sign up sheets for many events can be found at the meeting or contact a TAAA officer.

CHANGES IN THE TAAA SCHOOL STAR PARTY PROGRAM

Bill Lofquist

Beginning this month we will be making some changes in the management of the school star party program. Roger Schuelke and Mark Meanings have both made requests that they be relieved of their involvement in the program. We greatly appreciate their significant contributions to making this important TAAA effort work so well.

The school star party program is one of the most important things that TAAA does, both for the larger community and for our members. It gives us an opportunity to take our interest in astronomy to the community, and it is mostly done with young people through their schools and other organizations.

At the January meeting of the TAAA Board of Directors, a decision was made to create a transition team to move toward new leadership for the program. We hope this will be a brief period during which we will learn from Roger and Mark how the program is currently working, get their suggestions for strengthening it, find new members to become involved in it, and move ahead to build on the accomplishments of the past and present.

This team consists of Luke Scott, Terri Lappin, Claude Plymate, Ben Bailey and Bill Lofquist. Bill will coordinate the work of the committee.

Several matters will be pursued in the days and weeks ahead. They include:

1. Recruit two new coordinators for taking requests for star parties and organizing the volunteers to provide the telescopes.
2. Recruiting more TAAA members to participate as volunteers in the program.
3. Refining the processes of requesting star parties and signing up to provide the telescopes.

A larger pool of members participating in the star party program will make it easier for us to provide this important service to the community. Better use of our website for taking requests by teachers and others has been a long-time goal. While we have used the signup sheets on the table during our monthly meetings as the primary way for members to make themselves available for star parties, we can also use the website to make this task easier.

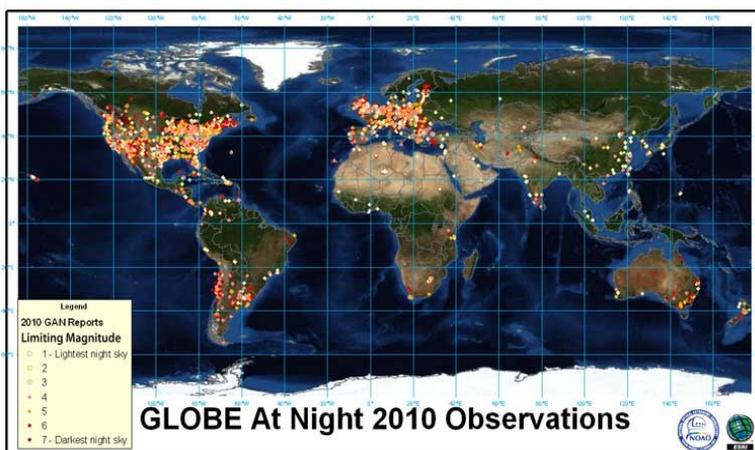
We invite members to give their suggestions for how we can expand and improve the school star party program. We especially hope that more members will give of their time and knowledge, as well as the use of their telescopes, by participating in these events.

Thanks again to Roger and Mark for their leadership and contributions to the school star party program.

GLOBE at Night

Again this year you are invited to participate in the worldwide GLOBE at Night campaign, a citizen science project designed to measure and combat light pollution. Taking part in GLOBE at Night just takes a few minutes and your measurements can make a world of difference. There will be two campaign periods in 2011: February 26 - March 6 and March 22 - April 4.

Connie Walker runs the GLOBE at Night program on behalf of the National Optical Astronomy Observatory. For detailed information and maps at <http://www.tusd1.org/contents/depart/cooper/documents/maps.pdf>.



Public Star Parties and Community Events

Picture Rocks Intermediate School Star Party West

Thursday, Feb. 10

Volunteers Requested: 6

Picture Rocks Intermediate School will be doing a Science and Technology Night for an estimated 150 students and parents at 5875 North Sanders Road. Speedway Blvd. west to Gates Pass Road. Over the mountain to Kinney Road. Turn right towards Desert Museum. Continue west to Sandario Road. Turn right or north. Continue through Saguaro National Park to Rudasill Road. Turn left or west. Go to first stop sign (Sanders Road) and turn left/south. School is on your right but pull into bus loop to set up telescopes. Viewing will take place Bus Loop. Contact person Janie Schembri can be reached at 616-3700 or j.c.schembri@maranausd.org. Observing will be from 6:30pm to 8:30pm, with setup 30 minutes prior to start.

Pueblo Magnet HS Star Party South

Friday, Feb. 11

Volunteers Requested: 6

Pueblo Magnet HS will be doing a Night Spacetacular for an estimated 150 students and parents at 3500 South 12th Avenue. South on I-10 to I-19. Exit on Ajo Way; turn left. East on Ajo Way to 12th Avenue; turn left. North on 12th; turn left.. Viewing will take place football field. Contact person Lolly Levine can be reached at 520.225.4351 or lolita.levine@TUSD1.org. Observing will be from 7:00pm to 9:00pm, with setup 30 minutes prior to start.

Utterback Middle School Star Party Central

Tuesday, Feb. 15

Volunteers Requested: 6

Utterback Middle School will be doing an Exploring the Night Sky for an estimated 60 students and parents at 3233 S. Pinal Vista. East on Broadway to Kino Pkwy; turn right. South on Kino to 36th Street; turn left. East on 36th Street to Campbell Avenue (1 block); turn right. South on Campbell to Pinal Vista (2 blocks); turn left. Utterback is on the left.. Viewing will take place in the large courtyard inside the school entrance. Contact person Griselda Meraz can be reached at 225-3572 or Gricelda.Meraz@tusd1.org. Observing will be from 5:30pm to 7:30pm, with setup 30 minutes prior to start.

Castlehill Country Day School Star Party Central

Thursday, Feb. 17

Volunteers Requested: 6

Castlehill Country Day School will be doing a Family Science Night for an estimated 150 students and parents at 3225 N Craycroft. North on Craycroft, first light past Ft. Lowell is St. Gregory's, turn left, the school is on the right. Viewing will take place Soccer field. Contact person Michelle Meyer can be reached at 795-0008 or riegalmeyer@aol.com. Observing will be from 6:00pm to 10:00pm, with setup 30 minutes prior to start.

Pima County Natural Resources Star Party West

Friday, Feb. 25

Volunteers Requested: 6

Pima County Natural Resources will be doing a Night with the Stars for an estimated 50 students and parents at 7300 W. Hal Gras Road. 1.5 miles south of Gates Pass Road or 3.8 miles north of Ajo Way. Viewing will take place Ironwood Picnic Area. Contact person Sandy Reith can be reached at 520-615-7855 x104 or sandy.reith@pima.gov. Observing will be from 7:00pm to 9:00pm, with setup 30 minutes prior to start.

UofA Astronomy Students Star Party West

Sunday, Feb. 27

Volunteers Requested: 10

Dr. Tom Fleming, UofA astronomy professor, has again requested TAAA support of a star party for his astronomy students on Sunday, 2/27, at the Saguaro National Park West Red Hills Visitor Center. Approximately 100 students are expected to attend. The event starts at 7:00 pm and runs until 9:00 pm. Set-up will start at 6:00 pm. John Kalas will be the star party leader. There will be a sign-up sheet at the February meeting. If you are unable to attend the meeting, please contact John directly via e-mail at jck-alas@cox.net or by phone at 620-6502 to volunteer.



Parents and students observing at Indian Oasis Elementary School Star Party in Sells, AZ

CHIRICAHUA ASTRONOMY COMPLEX

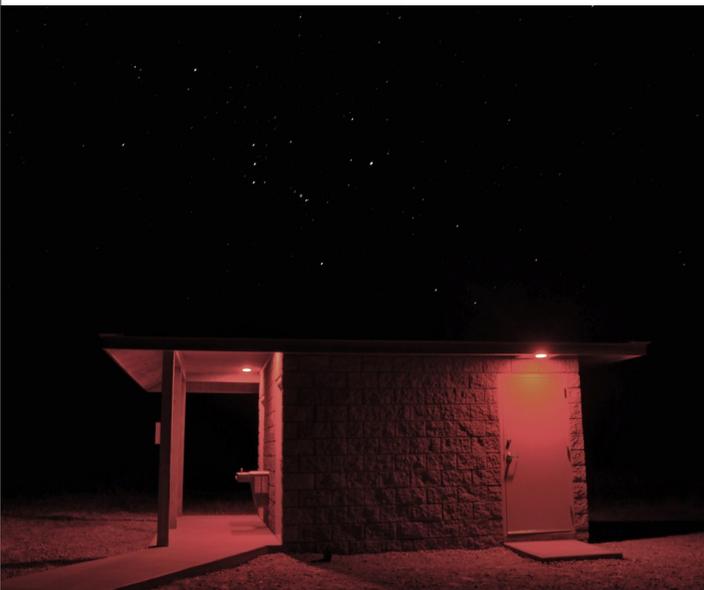
Chiricahua Astronomy Complex Facility Update

John Kalas - Construction Coordinator/CAC Site Director



The January CAC Star Party on January 1st did not occur because of lack of interest due to the New Year's holiday and extremely cold weather. The February CAC Star Party is scheduled for Saturday, February 5th.

On January 8, Robert Crawford and I successfully installed the third and final video surveillance camera at the site on the bathroom facility porch. While there, we also adjusted all the cameras for nighttime recording. The lighting complaint to address the Livingston's two illegal mercury-vapor lights will be issued as soon as the video cameras are installed and operational on my observatory/cottage currently being constructed adjacent to the CAC Site. My project is running about one month late, so my cameras should be ready in early February.



Orion over the restrooms at CAC

I have not had the opportunity to arrange a work party to install the "No Trespassing" signs around the property. The signs must be installed before the lighting complaint is submitted to the county.

On December 29, Jeff Kreamer, Bill Lofquist, Mary Lofquist, Mae Smith, Carter Smith and I completed the surveying and staking of the RV Area.



RV Area Surveying Crew (l to r): John Kalas, Bill Lofquist, Jeff Kreamer, Mary Lofquist, Mae Smith and Carter Smith.

On January 19, I visited our excavating contractor, Peter Ammon, to review the necessary contracts for the start of Phase 2 construction. Partial payment checks have been requested from TAAA Treasurer, Teresa Plymate. Peter expects to be able to start clearing the two areas in about a month. As soon as the clearing and preliminary grading are completed, Peter will install the gravel pads for the two steel storage containers which are already paid for and are currently being stored at Advanced Mobile Storage in Tucson. After completion of the gravel pads, I will request that the two storage containers be delivered to the site. Peter Ammon will then open a trench from the switch just south of the bathroom facility to allow SSVEC to extend the electric power system over to the RV Area. I contacted SSVEC recently and they are updating their quotation for the electric power extension.



Thor's Helmet—Image taken at CAC
by Paul & Cathy Anderson

CONSTELLATION OF THE MONTH BY CHRISTIAN WEIS

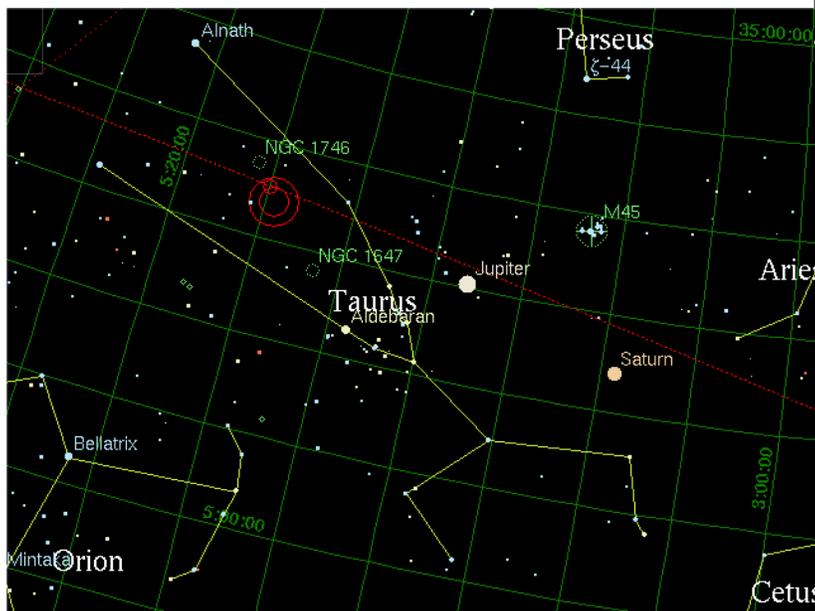


http://www.redorbit.com/modules/reflib/article_images/10_0514adc71280f4b2b760e7b14d8143b3.jpg

Taurus—The Bull

Winter nights bring some of the brightest stars the northern celestial hemisphere has to offer. On any date in January during the early evening Taurus will have reached the meridian and its brightest beacon, red Aldebaran (Alpha Tauri), shines as the eye of the bull while the animal charges across the heavens toward Orion and Auriga. Since ancient times Taurus has been seen as a bull, symbolizing strength and fertility, since at one time it embraced the sun during the spring. This was important to early civilizations since springtime marked the new agricultural period. Aldebaran serves as a marker for the Hyades star cluster, which is a large, naked-eye group of stars covering a patch of sky about 5 degrees across and forming a V-shaped pattern. However, Aldebaran is not a member of the group. It is merely a foreground star which happens to sit in the same line of sight as the cluster members. The Hyades is one of the closest clusters to Earth at about 130 light years. Some of the other stars scattered across the constellation are actually members of the Hyades if one takes into account their common proper motion through space, and as a group they are called the "Taurus moving cluster."

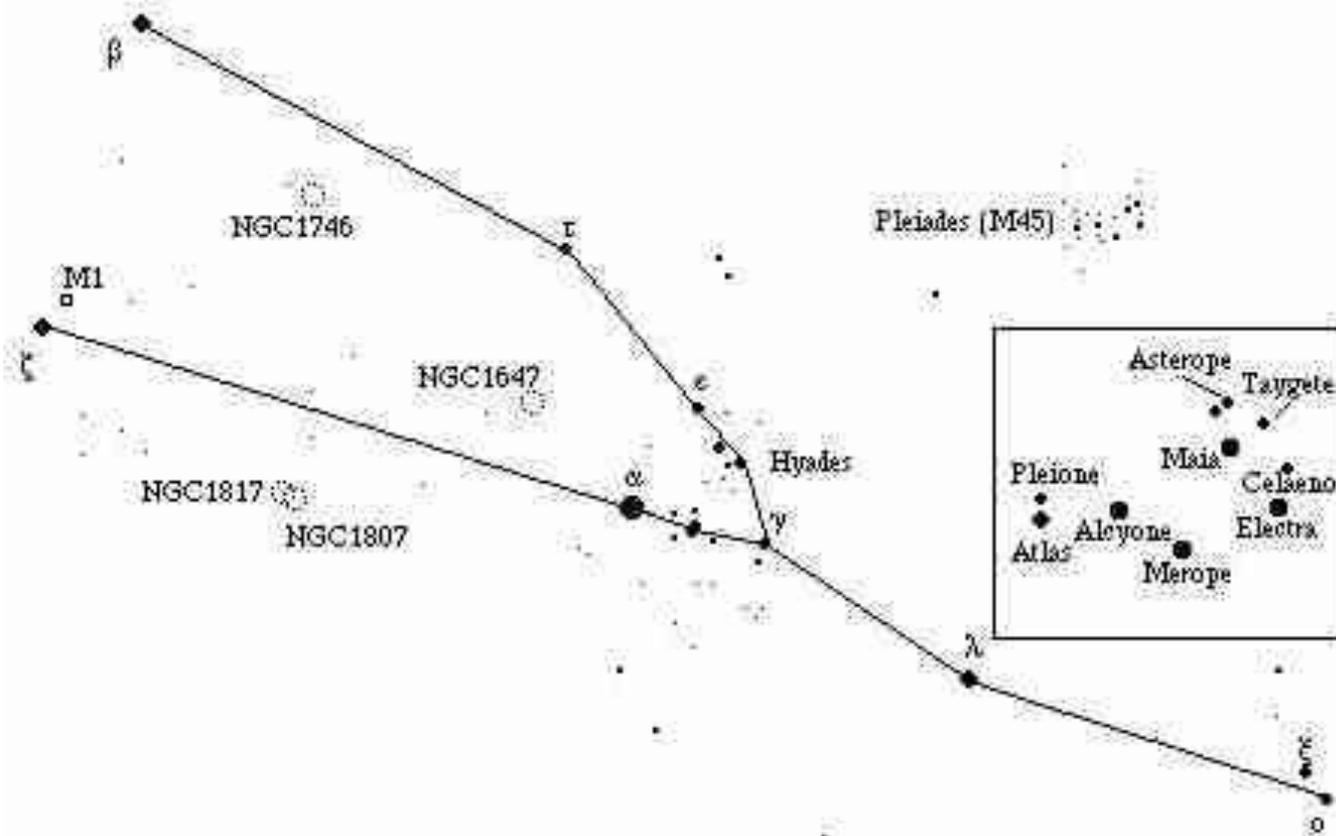
The cluster has traveled beyond its closest point to the solar system, and several million years from now as it recedes in the distance, it will be seen as a small run-of-the-mill cluster measuring less than half a degree across located east of Betelgeuse in the constellation of Orion.



<http://0.tqn.com/d/space/1/0/V/P/taurus.gif>

CONSTELLATION OF THE MONTH BY CHRISTIAN WEIS - CONT.

Another cluster which is conspicuous to the naked eye is M45, the Pleiades, or "seven sisters." It appears in the northwest part of the constellation initially as a fuzzy spot, but upon direct inspection breaks into six or seven (or more) distinct stars, depending on the visual acuity of the observer and atmospheric conditions. So striking is this cluster that it has its own mythological stories. One describes Zeus changing the sisters into celestial doves to escape Orion. Another says that the Pleiades was once a single star, brighter than any other in the heavens, and it became so boastful that the god Tane flung Aldebaran at it, breaking it up into the fragments that we see today. All of the brighter stars of the cluster are of spectral type B, which means they are hot and burning ferociously. With superbly dark skies and a large telescope, a wispy nebulosity can be seen surrounding some of the brightest members of the Pleiades, especially Merope. There has recently been some debate on whether the stars themselves are immersed in a dusty envelope or whether the nebula is a foreground feature while the starlight shines through it during its journey to Earth. For those of you wishing to learn the names of the stars of the Pleiades, Atlas and Pleione are the father and mother, and the seven sisters complete the family as labeled on the inset in the chart below.



The placid glow of the Pleiades contrasts with the violent beginnings of an object near the eastern edge of the constellation. On July 4, 1054, a new star blazed in the sky near Zeta Tauri. Its appearance was recorded by Chinese astronomers as well as in Native Americans drawings. It slowly faded over the course of several months, and now we see in its spot M1, the Crab Nebula. It is located 1 degree northwest of Zeta Tauri at RA 5h 34.5' Dec +22d 01'. The star that destroyed itself in the supernova explosion is now a type of neutron star called a pulsar only a few miles in diameter spinning 30 times per second. Although the pulsar is too dim to see, the nebula is an intriguing object to view. In small scopes M1 appears as a ghostly oval smudge. Large instruments can capture the filaments of material which are slowly expanding into space. The magnitude 8.4 nebula spans 6' from a distance of 6,300 light years.

Objects of lesser fame are found also in the eastern half of the constellation. Four star clusters are scattered here, and none are particularly rich. The two largest ones, NGC1746 and NGC1647, measure about 40' and contain between 25 and 50 stars collectively shining at magnitude 6 to 6.5. Farther south is a pair of clusters, NGC1817 and NGC1807. These are much smaller, each about 10'. NGC1807 holds about 15 stars of magnitudes 8 to 9. NGC1817, only 22' from 1807, is significantly richer, containing about 50 stars of magnitudes 10 to 14.

DARK SKIES - M1 - The Crab Nebula

Right Ascension 05 : 34.5 (h:m)
 Declination +22 : 01 (deg:m)
 Distance 6.3 (kly)
 Visual Brightness 8.4 (mag)
 Apparent Dimension 6x4 (arc min)



<http://www.ricksastro.com/Gallery/st7m1redo.jpg>

One of the feature dark sky objects in the Constellation of Taurus the Bull is M1 (Messier 1) also known as The Crab Nebula. The Crab Nebula is the result of a supernova that was seen in 1054 AD. It shines as a nebula of magnitude 8.4 near the southern "horn" of Taurus, the Bull.

The Nebulosity is what is left when a star explodes. The nebula is filled with a mysterious filament that is not only tremendously complex, but appears to have less mass than expelled in the original supernova explosion. M1 spans about 10 light-years. Lying in the center of the nebula is a pulsar which is a neutron star as massive as the Sun, but the size of a small town. The Crab Pulsar rotates 30 times every second.

M1 can be easily seen under clear dark skies, however under less favorable conditions it can easily get lost in the background illumination. It looks like a dim patch in 7x50 or 10x50 binoculars. With more magnification it appears as a nebulous oval patch surrounded by haze. When looking through a 4-inch telescope, some details in its shape become apparent with some suggestions of the streak structure in the inner part of the nebula. It takes around a 16-inch telescope to start making out the filaments and fine structure of the Crab Nebula



An image of the inner region of the Crab Nebula around the central pulsar produced by combining observations from the Hubble Space Telescope and the Chandra X-ray Observatory in 2000 and 2001



Image Credit: NASA, ESA, J. Hester, A. Loll (ASU)



Image through the eyepiece by Stephen Reb

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

Address Service Requested

Please consider renewing your membership on time. Renewal month and dollar amount appears on your address label. Magazine subscriptions are not included. TAL fee is included if participating in TAL. See details on page 2.

Directions to TIMPA and Las Cienegas

Directions to TIMPA Site

GPS coordinates: 32 deg 15.868' N, 111 deg 16.390' W

From the North:

1. Take Ina Rd. west about three miles past I-10.
2. Turn left (south) on Wade Rd.. Wade Rd. becomes Picture Rocks Rd. when the Rd. bends to the right (west).
3. Take Picture Rocks Rd. west to Sandario Rd..
4. Turn left (south) on Sandario Rd. to Manville Rd..
5. Turn right (west) on Manville Rd. to Reservation Rd..
6. Turn left (south) on Reservation Rd. (dirt Rd.) and go about two miles. The TIMPA entrance is on the left.

From the East:

1. Take Speedway Blvd. west and it turns into Gates Pass Rd..
2. Go over Gates Pass and continue west to Kinney Rd..
3. Turn right (north) on Kinney Rd. and continue past the Desert Museum.
4. Kinney Rd. bends left at the entrance to Saguaro National Park West and becomes Mile Wide Rd..
5. Take Mile Wide Rd. west about five miles to Reservation Rd.. Mile Wide Rd. ends at Reservation Rd. and you must turn right (north) onto Reservation Rd..
6. Take Reservation Rd. north about one mile. The entrance to TIMPA will be on the right.

NOTE

A gate card is required for TIMPA access. Please **DO NOT** ask the caretakers for entry to the TIMPA SITE. A list of TIMPA key keepers is available on the TAAA website, or by contacting a board member. For scheduled TIMPA star parties, a designated TAAA representative will provide access to the site.

Directions to Las Cienegas (Empire Ranch)

GPS coordinates: 31 deg 47.356' N, 110 deg 37.913' W

Take I-10 East from Tucson. Take Exit 281 (Route 83 Sonoita-Patagonia Highway South). Travel south on Route 83 for about 19 miles, watch for green and white milepost 40 sign on the right side of the road. Approximately ¼ mile past milepost 40, turn left into Las Cienegas. The road is dirt and is "wash-boarded" so go carefully. At about 2.9 miles, there is a fork in the road. Stay to the right. When the road ends in a "T", take a left. Cross over a concrete section of the road down in a wash. Just up the hill from the wash (about .2 mile), turn left. 0.1 mile ahead will be the end of an abandoned airstrip with a covered Ramada. The club members have been setting up several tenths of a mile down the runway. If you arrive after dark, as a courtesy to other members, use only your parking lights to approach the set-up location.