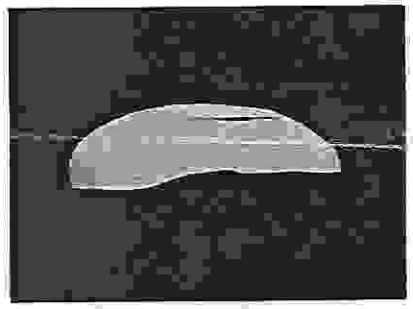
# Desert Skies

*Tucson Amateur Astronomy Association*

Volume XLVIII, Number 11 November, 2002



## TAAA STAR PARTY AT KITT PEAK

**Cover Photo:** TAAA members enjoyed a delicious picnic bar-b-que, a tour of the McMath-Pierce Solar Telescope, a beautiful sunset, and an evening of observing at the September Kitt Peak Star Party. Photos by Andrew Cooper.

**TAAA Web Page: http://www.tucsonastronomy.org** **TAAA Phone Number: (520) 882-1950**

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**Membership in the TAAA**

***Annual Dues***

Individual membership.....$ 23
Family .....$ 28
Senior (over 60) membership.....$ 21
Senior Family (at least one over 60).....$ 26
Student membership (over 18 years old).....$ 15

Family Membership includes two adults plus minor children. Persons under 18 may join at a special Reduced Family Membership rate ($15/yr) upon parental or guardian acknowledgement of participation in TAAA activities. Call the Treasurer to request the required form.

***Options (add to above membership rates)***

Tucson society of the Astronomical League (TAL) dues$ 3.50
Sky & Telescope Magazine .....$ 29.95
Astronomy Magazine .....$ 29.00
Postage for New Member Pack.....$ 3.50

***Donations*** are accepted for any of the TAAA funds: SA-IDA/Light Pollution, TIMPA, Education, 30" Telescope & Land, or General Fund.

***Renewal Information***

- Membership expires the last day of the month indicated on your mailing label. You will receive a renewal notice when they are due
- TAAA members may join the Tucson society of the Astronomical League (TAL). TAL expiration will match your TAAA expiration.
- Discounted Sky & Telescope or Astronomy magazine subscriptions are available to members and can be started or renewed at anytime. Only single year subscriptions are accepted. Allow at least 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, send the above subscription amounts and your magazine renewal notice to the TAAA treasurer.
- To ensure proper credit to your account, please include a note explaining what you are paying for. Credit cards are not accepted. Write one check or money order for dues 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 changes to the above address or email the treasurer.

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

**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. The editor retains all submissions unless prior arrangements are made. Partial page submissions should be submitted in Word compatible files via e-mail or on a floppy disk. Full-page articles, artwork, and photos can be submitted camera ready.  We will not publish slanderous or libelous material! Send submissions to:

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or by e-mail barbergj@flash.net

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

## President's Message

I thank everyone who helped out at ASDM. We had a very successful star party with several hundred attendees. It is important for astronomy to show the public that there is something beyond their everyday life and the television. These star parties are our opportunity to do just that. But these events only happen because so many of you are willing to commit your time to driving out into the dark and showing strangers what wonders the universe really holds. Thank you!

It seems an odd time to go out observing, but many of us are planning an outing for the morning of Nov. 19th. Despite being a weekday and a full Moon it is our last chance to see a Leonid meteor storm. For tips on avoiding the moonlight read my article in this newsletter.

One of the pitfalls of being president is always attending club events like ASDM and not always taking time to go observing for myself. I have to make a point of going out with nothing to do but worry about my own telescope. Hopefully I'll get a chance when the November New Moon comes again.

See you out in the dark...

Andrew

## Meeting Information and Calendar of Events

**TAAA MEETING DATE:** Friday November 1, at the Steward Observatory Auditorium - Room N210

**BEGINNERS LECTURE: 6:30 pm**
Title: Double Star Observing for the Beginner
Speaker: Lou Faix

Often overlooked by deep sky amateur astronomers, observing binary stars can be rewarding. This is one place in the sky where the seemingly unchanging heavens can be seen to change on a human scale. Mr. Faix will present these interesting objects with the help of some computer simulations.

**GENERAL MEETING: 7:30 pm**
Title. Seeing is Believing - The causes and cures of optical turbulence
Speaker: Dan McKenna, Steward Observatory

Good "seeing" is like driving through town without being stopped by red lights. It's rare and when it happens, it's pure bliss! Seeing is a term used to indicate how steady the image in a telescope appears. Seeing is affected by everything from the jet stream at 30,000 ft, to local geographic features, to heat coming off the telescope mirror or lens. Our speaker this month is Dan McKenna. Dan uses a device called a SCIDAR to measure seeing profiles. He has taken this instrument to various sites in Arizona, including Mt Graham. He is part of the team developing the control system for the Large Binocular Telescope. Dan has also developed adaptive optic systems for the University of Hawaii Institute for astronomy and the Mt. Wilson Observatory. Adaptive optics can create good seeing by correcting for atmospheric turbulence or "bad seeing". (It's comparable to switching the red stoplights to green as you approach them!). Dan is a Principle Engineer at Steward Observatory's Technical Division. When he's not working in astronomy you may find him playing tuba for the Civic Orchestra of Tucson and the Arizona Symphonic Winds or in the Arizona country side looking at rocks.

**BOARD OF DIRECTORS MEETING:** Wednesday, November 13, 7:00 pm at Steward Observatory Conference room N305.

**STAR PARTIES AND EVENTS:**

02 Nov - Las Cienegas Star Party
07 Nov - Astrophoto SIG
07 Nov - Oro Valley Public Library Star Party
08 Nov - Donaldson Elementary School Star Party
09 Nov - TIMPA/TAAA Picnic
13 Nov - Emily Gray Elementary School Star Party
14 Nov - Mission View Elementary School Star Party
19 Nov - Sewell Elementary School Star Party
30 Nov - Las Cienegas Star Party

**Newsletter Schedule:** Deadline for articles: Mon, Nov 18. Printing: Mon. Nov 25. Folding Party: Tues, Nov 26. Mailing: Wed, Nov 27. The newsletter is mailed at least one week prior to the following month's General Meeting.

## Club News

### Member News

We welcome the most recent members who have joined the TAAA: Jack and Carol Farmer, John Fry, Dawna and Corbin Gravley, Jim Jordan, Gary Jue, Bob Martino and Larry Petock. Glad to have all of you join! If you haven't already, be sure to pick up a new members pack at a meeting. 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 the regular meetings, so pick one up if you need it.)

## Club News (cont.)

### Calendars for 2003

Our supply of 2003 calendars is shrinking fast. If you want one, get one soon! They may not be around in December. The calendar selected this year comes from the Royal Astronomical Society of Canada. The cost is $10 each (~$7 off the regular selling price), or $9 each for more than one. They make great gifts. This calendar, which features full-color astronomical photos taken by amateur astronomers, has daily information about astronomical events, including moonrise and moonset information, plus space for adding important events you need to remember. Whether it's the excellent photographs or the moon data, our members have had good things to say about this year's calendar. Get yours now.

### New ALCor

Nick de Mesa has recently been accepted as the new ALCOR for the Tucson society of the Astronomical League. We thank Nick for filling this vitally important position. Nick has been a member of TAAA and TAL for just over two years. If you have questions about the Astronomical League or have observing logs to turn in for awards, be sure to talk to him. His contact information should appear on the second page of this newsletter

### Astrophoto SIG

7 November, 7pm
China Rose, NE corner Speedway/Rosemont

We have had some great presentations the last few months - some great CCD images as well as some film shots too. With the recent good weather, I'm hoping for some new crops of astrophotos. Come join us for some Chinese buffet and great astrophotos too.

### TIMPA Work Party

Saturday, Nov. 23rd, 9:00am

Cool weather is here again and we are going to take advantage of it to complete the viewing area at TIMPA. There are already several observing pads poured, but no road to reach them with. So the goal is to spread gravel to make a road. We will call in a couple gravel trucks and have them dump their loads in the appropriate place. Then all we have to do is spread it out into a road and parking areas beside the pads.

Bring water, sunscreen and hat, as well as shovels and rakes to help out. Contact Andrew at taaa@seds.org for more information.

Next step... bring electrical power to the pads.

### 2002 HOLIDAY PARTY TICKETS

The 2002 TAAA Holiday Party will be held December 14th, at the China Rose restaurant, 5101 East Speedway (at Rosemont). Our hostess, Carol Hunter, has designed for us a generous family-style Chinese dinner featuring eight main dishes including chicken, pork, beef, seafood, and vegetarian selections.

Our guest speaker will be Raymond E. White, University of Arizona Distinguished Professor Emeritus of Astronomy and Astronomer Emeritus at Steward Observatory, who will present a program on "The Inspiration of Astronomical Phenomena: Astronomy and Art". Professor White is one of the original organizers of INSAP, a series of international conferences concerning the many and variegated cultural impacts of perceptions about the day- and night-time sky His presentation promises to be exciting to a wide range of listeners, including both hard-core amateur astronomers, and those who love them!

The evening's entertainment will of course include the popular annual bonanza of door prizes.
We will begin with a social hour (cash bar) at 5:30 p.m., and dinner will be served at 6:30. Tickets are $16. If you have any special dietary restrictions, please let us know when you purchase your ticket, and we will endeavor to accommodate your needs.

Tickets will be sold at the November and December meetings, so bring money and checkbooks! 75 tickets will be sold, and a waiting list will be kept. Reservations may also be made by phone or email (order now!) to: Thom Peck 327-7823 tpeck@email.arizona.edu or Sheila Conrad, 529-1750.

Checks for phone/email orders must be mailed by December 1st to Sheila at 7254 E. Crystal Mist Drive, Tucson AZ 85750. If you find you cannot attend, please contact Thom or Sheila so that another member may be given the opportunity to enjoy this function. Refunds will be guaranteed only for cancellations made by December 8th.

BTW, attire for the party is typical Tucson -- anything goes! If you want to dress up in your favorite holiday fancy duds, we will be pleased to admire and compliment you; but if your idea of dressing up is a new astronomical T-Shirt (also for our admiration) and your best Birkenstocks, that's equally acceptable!

**HELP WANTED:** Donations for door prizes and program volunteers/ideas are solicited by the party planners. We could also use a few people to help with legwork, set-up and other details (no decision-making or deep-thinking involved!). Please contact Thom or Sheila if you can lend a hand with this fun event.

## Club News (cont.)

### 2002 HOLIDAY PARTY

The party-planners are welcoming help from club members:

1. Donations of goodies for door prizes. In addition to the usual assortment, we will consider quality art/craft items, collectors'/vintage items, anything with an astronomical theme, and/or of use for stargazing sessions. If you are marketing an item, we will be glad to give you a plug for your donation.

2. Program volunteers/ideas, musical talent and/or other light entertainment, as well as astronomical topics.

3. Help with grunt work; decorations, set-up, paperwork, etc., both the day of the party and in advance.

There will be sign-up sheets at the next two TAAA meetings, but if possible please contact one of the following people ASAP: Twila Peck 327-7825 twilap@email.arizona.edu; Tom Peck 327-7825 tpeck@optics.arizona.edu; Sheila Conrad 529-1750

THANK YOU!

### Star Party for 50,000

9 November, Arizona Stadium

This year we have another opportunity to have a football star party. The September version worked out great and we had 3 scopes for hundreds of people over the 2.5 hours we were set up. We'll have another great crescent moon for the 9th, so come try it. I usually arrange with anyone who wants to volunteer to drop scopes off at the Mirror Lab the afternoon of the game. I then usually park off campus and bike in the few blocks for the event (5pm - 7:30pm). We can arrange to pick up your scope the next day. Anyway, it is a lot of fun with a crowd that big - hope to see some of you there! Call or e-mail if you want to join in - Dean Ketelsen 293-2855 or ketelsen@as.arizona.edu

## Items of Interest

### WEBSITES: TRIPS ON THE INTERNET SUPER-SKYWAY

Among my favorite celestial sights are the globular clusters. I need little excuse to spend an evening looking at these balls of 100,000-1,000,000 stars with any telescope. It's even a joy to use a big telescope to search for them in another galaxy! To start learning about these there are a number of great websites on-line.

A good starting point is the very informative, heavily linked page maintained by the Students for the Exploration and Development of Space (SEDS) at:
http://www.seds.org/messier/glob.html

The amount of information on this page is staggering and will take many nights to fully absorb. There are links to pages about individual objects, classes of object and the topic in general.

For those that want a real challenge, go and search for globulars in one of the nearby galaxies. You can start with M31 "The Great Andromeda Galaxy" with the on-line edition of Paul Hodge's "Alas of the Andromeda Galaxy" at:
http://nedwww.ipac.caltech.edu/level5/ANDROMEDA_Atlas/Hodge_contents.html
The atlas was review in this column in the October, 2000 Desert Skies which can be seen on-line at:

## Items of Interest (cont.)

http://www.tucsonastronomy.org/nl200010.html
Hodge lists and identifies, on plates taken with 4-Meter Mayall telescope on Kitt Peak, clusters, nebulae and dark nebulae. The globulars are well identified and with an 11" and a dark sky you should be able to bag some of these.
A page detailing some of these globulars as view by an amateur can be found at:
http://www.angelfire.com/id/jsredshift/gcm31.htm
If you feel confident after an evening of this try going to a few other nearby galaxies with:
http://www.angelfire.com/id/jsredshift/gcextra.htm
Here there is a list of the brightest globular cluster in eight neighbors to the Milky way ranging in brightness from 12.6 to 17.9 magnitude. This should provide targets for telescopes from 5" on up.

Lastly, if this topic and these objects really energize you, then you might want to consider joining the Yahoo "globularclusters" email list. Go to: www.yahoogroups.com and follow instructions. There is not a great volume of mail but when there is I think you will be surprised at the quality of the work being done by amateurs on these balls of stars.

As always, if you know of a particularly good website you would like mentioned here, drop me a line at rhill@lpl.arizona.edu

### HANDS ON THE SUN WORKSHOP
Nov. 1 - 3

The second annual Hands On The Sun workshop will be presented by Coronado Instruments, in conjunction with NASA Sun Earth Connection Education Forum. This will be a professional development workshop for teachers and Solar observers interested in optimizing observing techniques and learning more about the Sun. Continuing education credit for teachers through Pima Community College are available.(There will be a small fee payable to Pima Community College for credits.)

The workshop features a tantalizing array of presentations on topics such as solar observing, eclipse chasing, solar physics, and solar photography. The participants will be able to choose from 6 workshops on such items as visible and radio wave solar observation and solar spectroscopy.

Concurrent with the workshop will be H-alpha observing sessions at the Flandrau planetarium. Optional tours and observing sessions at both Kitt Peak and Jack Newton's Sky Village are also available at extra cost.

The registration fee for the workshop is $50.00, payable to Coronado. For more information, or to register contact Loraine Ramirez at Coronado instruments, or e-mail Loraine Ramirez at loraine@coronadofilters.com

### Leonids 2002 - Your Last Chance
By Andrew Cooper

If you have looked on the internet, in this month's Sky&Tel or Astronomy magazines, or many other places the Leonids buzz has started again. No wonder, after last year's spectacular show of thousands of fireballs from a true meteor storm. But will there be a repeat?

The predictions say yes! All teams (Jenniskens, Asher/McNaught and Lyytinen/Van Flandern) that called the timing of the peaks perfectly last year are again publishing predictions for 2002. Their predictions for last year may have been a little over exuberant about the numbers, but the timings of both predicted peaks were correct. They are again predicting two peaks for 2002, one at 4h UT and one at 10.5h UT on the morning of the 19th The 4h UT peak will target Europe while we are still in late evening hours. But the 10.5h UT peak will be perfectly placed for viewing from most of North America occurring at 3:30am MST as the earth passes through debris left by comet Tempel-Tuttle in 1866. At that time the radiant will be well up in the morning sky, about 50 degrees elevation at an azimuth of about 90 degrees, or almost due east.

To add to the urgency is the predictions that these will be the last good appearances of the Leonids for several cycles, probably your last chance for a meteor storm in your lifetime. The problem for 2002 is a full moon, not just near full, but almost perfectly full for the second peak with 99.5% of the face illuminated Nature can be perverse that way.

Two tactics of moon avoidance present themselves. One is to find a mountaintop to sit upon where the amount of atmospheric aerosols overhead that moonlight can reflect from is minimized, leaving the valley dust below you. Another is to get into the shadow of a mountain where the moon will set early, blocking direct moonlight and the mountain's shadow will block moonlight from reflecting from dust in the air above you. While the full moon will be up it will also be low on the western horizon, at the peak it will be only 35 degrees elevation at an azimuth of 266 This will only improve for the last hours of the night as the radiant climbs higher in the sky.

Personally I like my mountain shadow idea. The moon is setting almost due west so find a spot due east of the highest convenient peak. This places the radiant high in the eastern sky, with the mountains at your back For Tucson the best available mountains are Mt. Lemmon (9157ft in
the Santa Catalina Mts.) or Mt Wrightson (9453ft in the Santa Rita Mts.). Both offer dark sites with little to no lights visible on the horizon. The shadows of the Santa Ritas are somewhat more accessible from highway 83 and several side roads are available to choose from that lead up into the national forest land. For Phoenix the Bradshaw Mts. are convenient, the east slope is easily accessible from I-17 and they are quite high (7108ft), so maybe somewhere above Bumble Bee is the place to be.

## Items of Interest (cont.)

You will probably find me in the shadow of Mt. Wrightson with a lounge chair and camera gear on the morning of the 19th!

For more info..

http://comets.amsmeteors.org/meteors/showers/leonidprediction.html
http://leonid.arc.nasa.gov/

### Steward Observatory Public Lecture Series

Since 1924, Steward Observatory has been hosting public evening lectures in astronomy. The lectures are usually held on Monday nights at 7:30pm in room N210 of Steward Observatory. (Steward Observatory is located at 933 N. Cherry Ave. near the NE corner of the UA campus. After each lecture, the 21-inch telescope will be open (weather permitting) to view the night sky. All of the lectures and the use of the telescope are free of charge and open to the general public.

Marc Aaronson Memorial Lecture (7:00pm)
Nov. 1 - Dr. Geoff Marcy - The Prospects for Planets and Life in the Universe (This lecture will be held in the Integrated Learning Center, Room ILC 120)

Nov. 11 - Dr. Donald McCarthy - The Last Meteor Storm of Your Lifetime: Leonids 2002

Nov. 25 - Dr. William Boynton - Results from Mars Odyssey

Karl Jansky Lecture (7:30pm) sponsored by the National Radio Astronomy Observatory
Dec. 9 - Dr. Shrinivas Kulkarni - The Brightest Explosions in the Universe

### Desert Sunset Star Party

May 1-4, 2003
Kartchner Cavern State Park, Benson AZ

Hosted by Chart Markers and More (Pat and Arleen Heimann) and the Arizona State Park Department.

Mark your calendars and watch our website for updates: http://chartmarker.tripod.com

Registration begins the end of November - Limited to 250 attendees. Please help us spread the word. We are requesting volunteers from TAAA to help with security, check-in, cleanup, etc. If you can help, please contact us. We still have openings for speakers. Speaker volunteers should provide a written title and brief description. E-mail to chartmarker@cox.net. Please contact us as soon as possible so we can include your topic in the publicity materials.

Chart Markers and More
Pat and Arleen Heimann
http://chartmarker.tripod.com

### NASA's Space Weather Center Comes to Kitt Peak

The Kitt Peak Visitor Center officially opened its newest exhibit on Tuesday, October 8. The grand opening of the Space Weather Center, developed by NASA's Goddard Space Flight Center and the Space Science Institute, was attended by Tucson Mayor Bob Walkup, the Directors of NOAO and KPNO, essay-contest winners from the Indian Oasis Middle School, and numerous representatives of the tourist industry. The Space Weather Center offers visitors an interactive approach to exploring the dynamics of space weather, an increasingly important area of solar science. Vibrant graphics, visitor-operated computer kiosks, and hands-on exhibits combine to present the Sun-Earth connection in a way that is fascinating and informative. Educational materials are also available for teachers, making the exhibit perfect for school field trips. The Space Weather Center is open from 9:00 to 3:30 Monday through Sunday. Admission is $4.00 for adults, $2.50 for children 6 to 12, and free for children 5 and under. Please call the Kitt Peak Visitor Center at (520) 318-8726 for additional information.

## Star Parties & Events

### TAAA Star Party at Las Cienegas (Empire Ranch)

Nov 2 (Saturday)

Las Cienegas (formerly Empire Ranch) has been our normal dark-sky observing site for quite a number of 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 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. Mosquito repellent is also advised. Be prepared for cold temperatures once the sun goes down. Attendees should park their vehicles either perpendicular to the airstrip facing toward the center of the strip or parallel to the airstrip along either side facing west. That way, when you are ready to leave, you will not have to back up and turn on your bright white backup lights. One nice advantage to 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,

## Star Parties & Events (cont.)

you're missing the best part of belonging to the TAAA. See the directions to Las Cienegas on the outside flap of this newsletter.

### Oro Valley Public Library Star Party Northwest

Nov 7, (Thursday) No. of Scopes: 6

The staff of the new Oro Valley Public Library has requested we join their grand opening festivities with a Star Party. Take Oracle Rd North to Ina Rd, go west on Ina Rd until you reach La Canada Drive, take a right on La Canada Dr. and continue north to Naranja; it's on the southeast corner of Naranja and La Canada (just north of the police station on La Canada). The viewing location is next to the tree sculpture on the south side of the library. Set up is at 5:30 pm with observing from 6 pm to approximately 8 pm. A Star Party leader is needed for this event. A sign up sheet will be available at the November meeting.

### Donaldson Elem. School Star Party Northwest

November 8, (Friday) No. of Scopes: 10

This is to be a large event and a strong showing on our part is needed; last year we participated with 11 scopes for a truly memorable event. The school is located at 2040 W. Omar Drive. Take Ina Road west from Oracle Road to La Cholla Blvd. Turn left (south) and proceed for ½ mile. You will see a gate to the school entrance on the left (east) side of La Cholla. Proceed through the gate and look for the open observing area on the north side of the school buildings. Set up is at 5:45 pm with observing from 6:30 pm to approximately 8.30 pm. A star party leader is needed for this event and a sign up sheet will be available at the November meeting. Note: a $100.00 donation will be provided to the TAAA and free pizza and soft drinks will be provided to all TAAA volunteers!

### TAAA/TIMPA Joint Activity

November 9 (Saturday)

Join the fun as the TAAA and TIMPA get together for RC flying, a bar-b-que, and stargazing. The afternoon begins with the TAAA offering flying demonstrations, as well as free flying instructions to TAAA members and their friends until 5:00 pm. Their radio-controlled transmitters have dual controls, so learning to fly is easy, fun, and safe! Their instructors are very skilled, and more importantly, very patient teachers.

There's also the possibility of periodic "combat" demonstrations by the TIMPA pilots. You'll have to pay close attention, because these competitions last only 5 minutes or so each.

For the picnic, bring your own items to grill, and a dish to pass.

After sunset, the usual TAAA star party will begin, and we will get a chance to show the TIMPA members some of the wonders of the night sky. Don't be surprised if a few of the more adventurous TIMPA members try a little night flying, too. It's really neat to watch. Be sure to dress VERY WARMLY, as the temperature will drop rapidly after sunset. Hot drinks can be enjoyable, too.

### Emily Gray Elementary School Star Party East

Nov 13, (Wednesday) No. of Scopes: 6

This Star Party will include 7th, 8th and 9th grades. Take Speedway Blvd. east to Houghton Rd. Turn left (north) on Houghton and continue for about 2 ½ miles. At Prince Rd turn right (east), go approximately 1 mile. Turn left on Melpomene Way and proceed for approximately a half-mile. The school is located on the left side of the street. The viewing location is on the far west field on campus. A member of the staff will meet you at the parking. Set up is at 5:45 pm with observing from 6:30 pm to approximately 8.30 pm. A Star Party leader is needed for this event. A sign up sheet will be available at the November meeting.

### Mission View Elem. School Star Party South

Nov 14, (Thursday) No. of Scopes: 8-10

This is one of our larger star parties of the year that prepares a very unique program! There will be five rotating "centers" ("Moon Phases", Moon and Tide Connection", "NASA Moon Walk", "Moon Features", and "Moon Watch".) The telescopes are, of course, the "Moon Watch" center. The school is located at 2700 S. 8th Ave. at the corner of 37th St. and 8th. Go south on 6th Ave. a little over a mile until you reach 37th St. (look for Discount Tire- if you pass the Salvation Army, you've gone too far). Make a right (west) on 37th St. and continue about 2 blocks. Mission View is on the right side of the street, across from the Children's Home. There will be a set of double gates to the playground near the west end of the school. The program will be on the grassy area. Setup will be at 6 pm with observing from 6.30 pm to 8 pm. Refreshments will be provided to all TAAA volunteers! A Star Party leader is needed for this event. A sign up sheet will be available at the November meeting.

### Sewell Elementary School Star Party Central

Nov 19, Tuesday No. of Scopes: 10

Paul Olson, a TAAA member has requested this star party in conjunction with Project ASTRO. He has arranged to display lunar samples courtesy of NASA Dryden Flight Research Center Education Resources. This promises to be a rather large event! The school is located at 425 N. Sahuara Avenue. Take 5th Street west past Craycroft Rd. and turn right (south) on Sahuara Ave. The school will be on your right. Entrance to the school area is through a gate located just south of the main building through the parking lot. Go to the gate at the west side of the lot (near the dumpster); drive around the school to the

## Star Parties & Events (cont.)

NORTH PLAYGROUND. Setup will be on the concrete Basketball Courts at the NORTH SIDE OF THE SCHOOL. Project Astro teachers will offer free pizza and sodas for TAAA volunteers beginning at 5pm! Set up will be at 5.45pm with observing from 6.30pm to approximately 8.30pm. Paul Olson (791-2965) will be the star party coordinator. A sign up sheet will be available at the November meeting.

### TAAA Star Party at Las Cienegas (Empire Ranch)

Nov 30 (Saturday)

The Lunar cycle this month gives us another opportunity to observe at Las Cienegas. Check out your favorite Autumn objects!

## Desert Skies Classified

FOR SALE: Moto-Focus. Gently used for 1 year on Celestron C-8. Have all parts and accessories. Perfect condition. Original price was over $100.00. Asking $50.00. Contact Jeff Buzek at 760-4578 or e-mail at jeffbuzek@aol.com (11/02)

FOR SALE: 8" f/15 Fraunhofer (= coma-free) achromat. Superb objective. 1/30th wv (532nm) PV (=1/43rd wv RMS) correction on wavefront (interferogram available). Strehl ratio = 97.7% for green light. Standard visual color correction. Very smooth figure. Rouge polished and hand corrected. Easily resolves to Dawes' limit (e.g. omega Leonis) and gives excellent images of sun, moon, planets, and deep sky. Uncoated, but polish is complete (= low-scatter). Comes in an aluminum cell. Also available are two excellent folding flats (6" Cervit; 4" Fused-Silica), both flat to 1/10th wv (550nm) or better and smooth (interferograms available). Recently recoated with Beral. A wooden tube (Baltic birch; 42"x18"x12") adapted to a G-11 mount is also available to form a complete folded refractor system. $4000 firm for complete system. Or $2500 for objective in cell, $1000 for 6" flat and $500 for 4" flat. I am the maker and will be glad to demonstrate the telescope to any serious buyer. Roger Ceragioli, rogerc@as.arizona.edu, 798-3263(evenings)/621-9084 (days). (12/02)

FOR SALE: FOR SALE: 8" Orion Deep Space Explorer Dobsonian telescope. 1200mm focal length (f/5.9). Helical focuser 4 years old. Includes Orion EZ finder reflex sight. The scope needs a counterweight due to the heavy focuser $300. Please e-mail at ctlancaster@msn.com (01/03)

FOR SALE: TAKAHASHI E-130 Astrograph on EM-1 equatorial mount (modified for N or S hemispheres), 4.2 mm and 7 mm Televue Nagler eyepieces, 12 mm illum. crosshair eyepiece, with SBIG ST-4 CCD guide camera, 80 mm Celestron guide scope, Olympus OM-1 for 35 mm photos, Mamiya attachments for: 6x6 mm or 6x7 rollfilm or Polaroid pack or 6x7 cut-film holders for large format. Mamiya Universal Press camera w/ f2.8, 100 mm goes with the ensemble. $1,955 Jim Jondrow, 529-0933 , jjondrow@fastucson.net (02/03)

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 George Barber at 822-2392or e-mail at barbergj@flash.net.

## 2003 TAAA Event Calendar

For those who need a look at the 2003 calendar to plan ahead, here it is. This should be the final version, but changes are possible. Always check the newsletter or the web page for the current calendar.

| Date | Location | Moon* | Rise | Set | Notes |
|---|---|---|---|---|---|
| Jan 04 | Las Cienegas | 7% | 19:34 | | |
| Jan 25 | TIMPA | 41% | 1:54 | | |
| Feb 01 | Las Cienegas | 1% | 18:21 | | |
| Feb 22 | TIMPA | 56% | 0:55 | | |
| Mar 01 | Las Cienegas | 1% | 17:11 | | |
| Mar 22 | TIMPA | 71% | 23:53 | | Joint TAAA/TIMPA Event |
| Mar 29 | Messier Marathon | 7% | 5:31 | 16:03 | |
| Apr 05 | TIMPA | 16% | 22:31 | | Annual Club Picnic |
| Apr 26 | ASDM | 17% | 4:03 | | Public Star Party |
| May 03 | Las Cienegas | 6% | 21:22 | | |
| May 1-4 | Desert Sunset Star Party | | | | Kartchner Caverns State Park |
| May 15 | Telescopes for Telethon | 100% | 19:06 | | Total Lunar Eclipse |
| May 24 | TIMPA | 30% | 2:34 | | |
| May 24 | Kitt Peak | 30% | 2:34 | | Restricted signup |
| May 31 | Las Cienegas | 1% | 6:17 | 20:14 | |

## 2003 TAAA Event Calendar (cont.)

| | | | | | |
|---|---|---|---|---|---|
| Jun 21 | TIMPA | 35% | 1:02 | | |
| Jun22-29 | GCSP | | | | |
| Jun 28 | Las Cienegas | 1% | 4:13 | 19:03 | |
| Jul 19 | TIMPA | 60% | 23:30 | | Possible Monsoons |
| Jul 26 | Las Cienegas | 5% | 3:46 | | Possible Monsoons |
| Aug 23 | Las Cienegas | 14% | 1:35 | | Possible Monsoons |
| Aug 30 | TIMPA | 15% | | 20:59 | Possible Monsoons |
| Sep 20 | Kitt Peak | 27% | 0:17 | | Restricted signup |
| Sep 20 | TIMPA | 27% | 0:17 | | |
| Sep 27 | Las Cienegas | 6% | 19:31 | | |
| Oct 18 | ASDM | 43% | 0:00 | | Public Star Party |
| Oct 25 | Las Cienegas | 1% | 18:01 | | |
| Nov 09 | | 100% | 17:57 | | Total Lunar Eclipse |
| Nov 15 | TIMPA | 59% | 22:51 | | |
| Nov 22 | Las Cienegas | 1% | 6:39 | 16:30 | |
| Dec 20 | Las Cienegas | 8% | 5:26 | | |
| Dec 27 | TIMPA | 27% | 22:21 | | Beginner's Training? |

*lunar data for central Tucson

## Dark Skies for November 2002

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 | 31/ 1 | 18:57 - 2:54 | Su/Mo | 10/11 | 23:06 - 5:25 | Th/Fr | 21/22 | - - - |
| Fr/Sa | 1/ 2 | 18:57 - 4:03 | Mo/Tu | 11/12 | 0:05 - 5:26 | Fr/Sa | 22/23 | 18:46 - 19:29 |
| Sa/Su | 2/ 3 | 18:56 - 5:13 | Tu/We | 12/13 | 1:03 - 5:27 | Sa/Su | 23/24 | 18:46 - 20:24 |
| | | | We/Th | 13/14 | 1:59 - 5:28 | | | |
| Su/Mo | 3/ 4 | 18:55 - 5:20 | Th/Fr | 14/15 | 2:53 - 5:28 | Su/Mo | 24/25 | 18:46 - 21:25 |
| Mo/Tu | 4/ 5 | 18:54 - 5:21 | Fr/Sa | 15/16 | 3:46 - 5:29 | Mo/Tu | 25/26 | 18:46 - 22:28 |
| Tu/We | 5/ 6 | 18:54 - 5:22 | Sa/Su | 16/17 | 4:40 - 5:30 | Tu/We | 26/27 | 18:46 - 23:34 |
| We/Th | 6/ 7 | 19:12 - 5:22 | | | | We/Th | 27/28 | 18:46 - 0:39 |
| Th/Fr | 7/ 8 | 20:05 - 5:23 | Su/Mo | 17/18 | - - - | Th/Fr | 28/29 | 18:45 - 1:46 |
| Fr/Sa | 8/ 9 | 21:04 - 5:24 | Mo/Tu | 18/19 | - - - | Fr/Sa | 29/30 | 18:45 - 2:53 |
| Sa/Su | 9/10 | 22:05 - 5:24 | Tu/We | 19/20 | LUNAR ECLIPSE | Sa/Su | 30/ 1 | 18:45 - 4:01 |
| | | | We/Th | 20/21 | - - - | | | |

| Weekend | Sun | Sun | Mercury | | Venus | | Mars | | Jupiter | | Saturn | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sa/Su | Set | Rise | Rise | Vi | Rise | Vi | Rise | Vi | Rise | Vi | Rise | Vi |
| 2/ 3 | 17:31 | 6:41 | 6:09 | 9 | 6:24 | 9 | 4:24 | 3 | 0:04 | -2 | 20:25 | 0 |
| 9/10 | 17:26 | 6:47 | 6:37 | - | 5:37 | 1 | 4:18 | 3 | 23:39 | -2 | 19:56 | 0 |
| 16/17 | 17:21 | 6:53 | Set | | 4:58 | -2 | 4:11 | 3 | 23:14 | -2 | 19:27 | 0 |
| 23/24 | 17:18 | 6:59 | 17:33 | - | 4:28 | -4 | 4:05 | 2 | 22:48 | -2 | 18:57 | 0 |
| 30/ 1 | 17:17 | 7:05 | 17:46 | - | 4:08 | -4 | 3:58 | 2 | 22:21 | -2 | 18:28 | 0 |

Vi=Visibility
-3 brilliant
0 conspicuous
3 moderate
6 naked eye limit
9 binoculars limit

By Erich Karkoschka

## TAAA Board of Directors Meeting - October 9, 2002

Board Members Present: Andrew Cooper, Thom Peck, Terri Lappin, Jane Tongate, Bill Lofquist, Robert Callanan
Board Members Absent: Steve Peterson
Other Members Present: Barbara Callanan, Twila Peck
Meeting opened at 7:20 pm.

1. Changes to the agenda: Andrew asked for additions to the agenda, discussion on Holiday Party, Kitt Peak Star B'Que overflow and the upcoming Leonids were added to the agenda.

2. Events: Andrew handed out a schedule through December and reported publicity and turnout for the AZ Sonoran Desert Museum (ASDM) was good.

3. Treasurer's Report: Terri handed out her report. Terri pointed out a few periodic expenses. Tax and corporate paperwork is good to go and due soon. Quest has contacted Terri regarding next year's phone listing, for a small

## TAAA Board of Directors Meeting - October 9, 2002 (cont.)

fee the club website could be listed, the Board declined. There was brief discussion to have Kinkos copy the newsletter; member Roger Tanner currently handles this. Terri reminded the Board of the lifetime membership issue and other items that have been tabled. Terri will invite the club financial adviser to a future meeting.

4. Holiday Party: Twila reported that she and Sheila Conrad are working on the event and wanted to update the Board and get some input. The party will be December 14 at the China Rose

5. ASDM: Andrew briefly discussed the agreement with ASDM and counter proposal for events held at the museum. The leadership is in transition at this time. The museum had wanted our events to be separate from theirs but in the future might use the star party for an ASDM opening event in summer 2003. Andrew will be discussing this further with ASDM event staff. The ASDM newsletter published a Nov 5 date for the last star party. Andrew would like to have scopes available on this date in case museum members show.

6. Apparel: Terri showed different jacket styles, the Board agreed on the brown storm jacket to offer for sale

7. TIMPA: Andrew reported that TIMPA Board gave the OK to put the road back to the pads. Andrew will be scheduling a work party for November 23.

8. Kitt Peak Star B'Que Overflow: Robert proposed a motion. The motion was tabled since Steve Peterson was absent. Robert will forward his motion to him.

9. Leonids: Andrew led a brief discussion. It was decided by the Board not to have a scheduled event since the full moon could make observing difficult. Andrew will submit viewing tips in the newsletter.

Meeting adjourned at 9:15 pm.
Respectfully submitted,
Jane Tongate, Secretary

## Object of the Month by Alfredo Garcia, Jr.

This month's OTM belongs to the wondrous class of objects known as nebulae. And in particular, a nebula that is left over after a supernova event. This type of nebula is known as a supernova remnant (SNR). An outstanding example of these supernova remnant nebulae is found within the boundaries of a winter constellation named after a "bull". This "bull" is of course, the constellation of Taurus and the supernova remnant is the celestial wonder known as Messier 1, which is most commonly known as the Crab Nebula.

M1 is without a doubt the best and most famous member of the supernova remnants and is located within our own Milky Way Galaxy. The British astronomer John Bevis discovered this supernova remnant in 1731. Charles Messier independently discovered it on 28 August 1758 while he was looking for Comet Halley on its first predicted return. He mistook it for the comet at first, but then realized it was the nebula previously discovered by John Bevis. This mistake in identity caused Messier to begin the compilation of his catalog. As an interesting note, the nebula was first referred to as the "Crab Nebula" in 1844 based on a drawing made by the astronomer Lord Ross.

Though M1 was telescopically discovered in 1731, its beginnings go back to 4 July 1054. It was on this day that Chinese astronomers noted the supernova event that caused the Crab Nebula. Brightness estimates of the event placed it at four times the brightness of Venus. Records show that it was plainly visible to the naked eye in daylight for 23 days and 653 days in the night sky.

The estimated distance to the Crab Nebula is about 6,300 light-years. At this distance estimate, the remnant has a linear size of approximately 10 light-years and is still expanding at a rate of 1,800 kilometers per sec! This corresponds to annual expansion rate of 0.2 arcseconds per year. M1 currently has an apparent size of 6 x 4 arcminutes or about 1/5 the apparent size of the Full Moon. Despite its decent apparent size, M1 lacks a bright central core and has fairly low overall surface brightness. It has a visual magnitude of 8.4 and can be observed as a dim oval patch with telescopes or binoculars as small as 50mm in aperture.

The best time to observe the Crab Nebula during November (if you can bear the cold nights!) is during periods when the Moon is not visible. If you go out observing (from the Tucson area) in early or late November at about 11:00 PM, you will find M1 at an altitude of about 35 degrees (early month) to about 55 degrees (late month) above the east horizon. If you use setting circles or have an automated go-to telescope, you can find the Crab Nebula at RA 05hr 34.5min and DEC +22deg 01min.

## Object of the Month by Alfredo Garcia, Jr. (cont.)

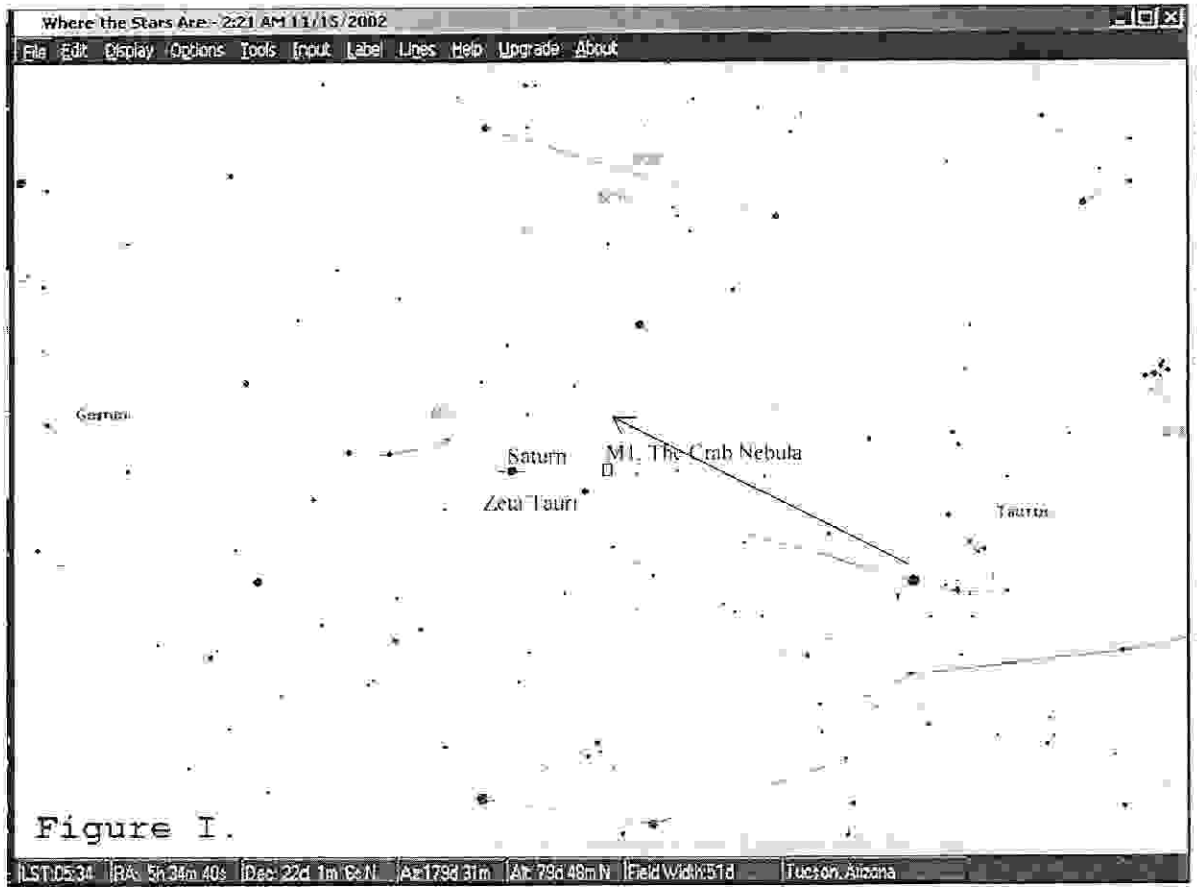



Figure I.

Since the stars that make up the constellation of Taurus are bright, you can easily "starhop" to M1's location if you do not have setting circles or an automated go-to telescope. Start by finding Alpha Tauri (or Aldebaran). From Aldebaran, go to the next two brightest stars that designate the tips of the "horns of the bull". M1 is about one degree northwest of the star Zeta Tauri on the tip of the Bull's southern horn. You will know you are in the right area, cause this year the planet Saturn, is located within four degrees of M1 (See Figure I). So "stop by" and check out this ringed wonder as well while you are in the neighborhood!

M1 is very visually subtle through a small telescope appearing only a small, oval grayish patch. If you use a moderate size telescope (>10") you can start to see some the fine filaments and faint detail that make up the nebula. But, only when it is astrophotographed or CCD imaged, does it reveal its true nature. I used a Meade 10" f/6.3 LX 200 to produce the image at Figure II. It was taken with a Starlight X-Press MX5C CCD camera and is a composite of two 15-minute exposures. I then made a negative of the composite image to allow more detail to be visible.

M1 is a very strong source of X-ray radiation. The source found in the nebula is from a region at least 2 arc minutes in size and the energy emitted in X-rays is about 100 times more than that emitted in the visual light! It is named Taurus A.

In addition, a strong pulsating radio source (the Crab Pulsar) was discovered in M1 by astronomers using the 300-meter radio telescope located at Arecibo Observatory in Puerto Rico. This pulsar was the first one which was also verified in the optical part of the spectrum and designated as CM Tauri. It is a rapidly rotating neutron star that spins about 30 times per second! CM Tauri is an extremely dense object concentrating more than one solar mass in a volume about 30 kilometers across. Its rotation is slowly decelerating by magnetic interaction with the nebula. This energy source is 100,000 times more energetic than our Sun!

So take advantage of some of the clear, moonless fall nights this month has to offer and see if you can spot and ponder upon one of the best SNRs in the sky. Good luck!

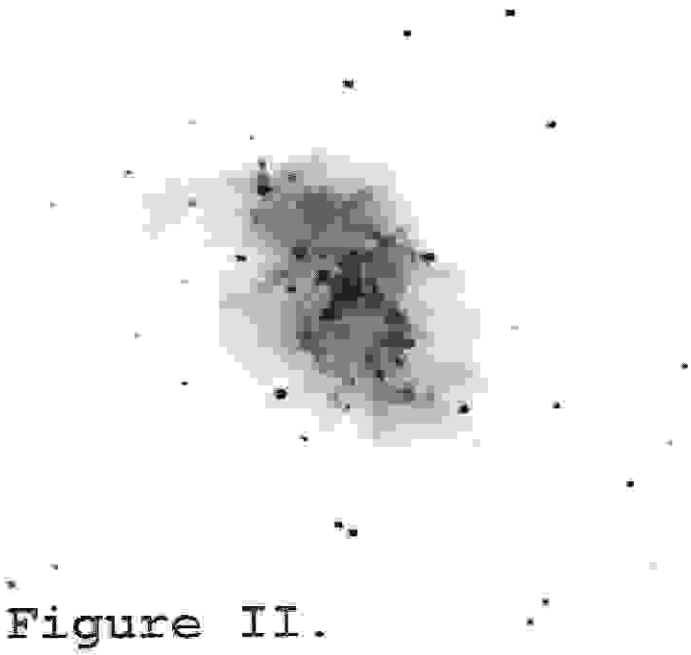


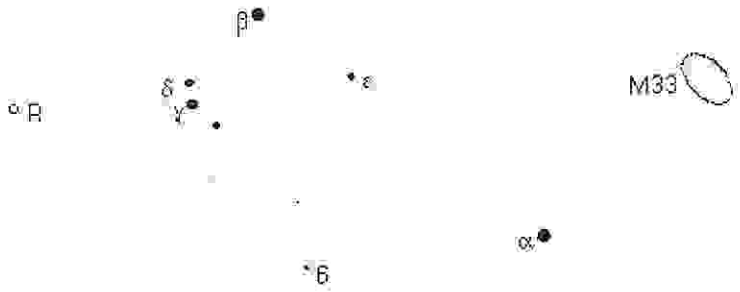
Figure II.

## Constellation Report by Chris Lancaster

Triangulum

There are many fanciful stories from mythology that those from ancient civilizations tied to the stars to explain the origins of the constellations. Triangulum, by contrast, has a more worldly derivation. Just as we see a simple triangle, so did the Romans who named this group of three stars Deltotum from its resemblance to the Greek letter Delta. Other explanations for why the stars of Triangulum caught the attention of early astronomers say that it was because the simple shape is reminiscent of the Nile delta or the island of Sicily. But no matter what the origin, it has a fitting name.

Triangulum is easy to spot near the zenith on November nights between the double arcs of stars forming Andromeda and the short hook pattern of Aries.. If Triangulum was a rock band, then it would be a one hit wonder. That's because it has an object which out-classes every other point of interest within the constellation. This is, of course, M33, or the Pinwheel Galaxy. Along with M31 (the Andromeda Galaxy), and our own Milky Way, M33 is the third large galaxy in the Local Group, which is composed of several, mostly dwarf sized galaxies within 2 to 3 million light years of each other. M33, at 2.8 million light years distant, is slightly farther away than M31, and is also smaller--50,000 light years across compared to around 100,000 for M31. And, adding to the comparison between the two, we see M33 more face on, while M31 is tilted more toward an edge-on orientation. What all this leads to is




the fact that M33 covers a large part of the sky--60'x 40', or well exceeding the area of the moon. This means that to capture the entire galaxy in an eyepiece, low power, such as 30 to 50 times, is essential. In addition, its magnitude 6 light is spread over such a large extent that dark, transparent skies are also a requirement to see its diffuse glow. It is this nature of M33 that makes it difficult to find at times.

With that said, point your telescope a bit less than 4 5 degrees west of Alpha Trianguli, the star that marks the apex of the triangle (or at RA 1h 33m 51s Dec +30d 39' 37"). M33 will show a soft glow at its nucleus which decreases gradually outward. It has two major arms which have a lumpy, convoluted structure and trace a stretched out "S" shape. With enough aperture and sky transparency, there is enough contrast to easily see its spiral form.

Once centered on M33, you can increase power to study some of the details within it. Its fat arms are knotted with star clusters and nebulae. One of the largest H II regions known in any galaxy is near the edge of M33's visible face. This is NGC604, an expansive hydrogen emission nebula and associated star cluster that is close to 1,000 light years in diameter. In medium-sized scopes, it will appear as a distinct fuzzy clump of material about 10' to the NE from the center of the galaxy. The chemistry of this region of M33 is similar to the Orion nebula. It should be easy to spot as the most prominent feature of the galaxy besides the galactic nucleus itself.

While it is easy to forget that Triangulum has other things to offer besides M33, lets mention a couple of other objects before leaving this region of the sky. A nice, close double star, 6 Trianguli, is on the opposite side of the triangle from M33 below the line connecting Delta and Alpha Trianguli. Use high power to overcome the 3.8" separation to see a magnitude 5.2 primary and 6.6 secondary. While some historical accounts of 6 Trianguli describe a yellow or gold primary and a blue or sapphire secondary, my experience with this double, which match a small sampling of others' descriptions, is of two similar pale yellow stars, with the secondary showing a slightly gray-yellow tint. The spectra of these two stars are G5 and F6, which indicate that some color difference may be apparent.

The best variable star in Triangulum is the long period variable R Triangulum, which is four degrees east of the corner of the triangle marked by Gamma Trianguli (RA 2h 37m 16.6s Dec +34d 15' 54"). It is just beyond naked eye visibility at its maximum magnitude of 5.7, and then over a period of 266 days it oscillates between that and a feeble magnitude 12.5.