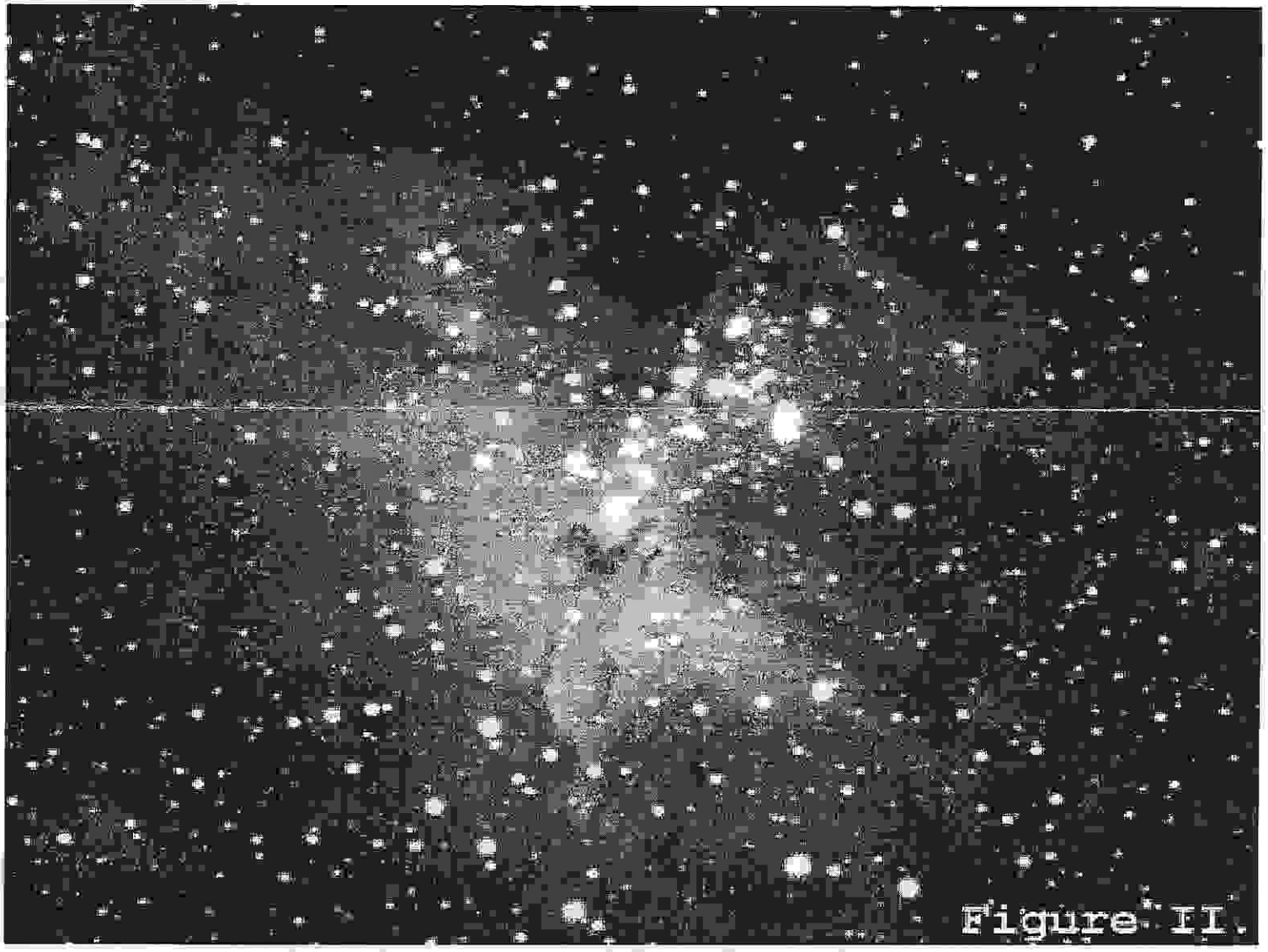
Desert Skies

Tucson Amateur Astronomy Association

Volume XLVIII, Number 8 August, 2002



M16 and the Eagle Nebula

Cover Photo: Imaged by Alfredo Garcia, Jr. A composite of three 10-minute exposures using an 80mm f/5 Orion Short-Tube Refractor piggybacked on a 10" f/6.3 LX 200 taken with a Starlight X-Press MX5C CCD camera.

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

Office/Position	*Name*	*Phone*	*E-mail Address*
President	Andrew Cooper	795-3585	acooper@pobox.com
Vice President	Thom Peck	327-7825	thomas.peck@optics.arizona.edu
Secretary	Jane Tongate	623-4056	triton@dakotacom.net
Treasurer	Terri Lappin	579-0185	tklappin@earthlink.net
Member-at-Large	Robert Callanan	818-1315	tucsonbac@aol.com
Member-at-Large	Bill Lofquist	297-6653	wlofquist@aol.com
Member-at-Large	Steve Peterson		swpeterson@theriver.com
Chief Observer	Wayne Johnson	586-2244	mrgalaxy@juno.com
AL Correspondent (ALCor)	Doug Smith	889-3675	dsmith71@ix.netcom.com
Astrophotography SIG	Dean Ketelsen	293-2855	ketelsen@as.arizona.edu
Computers in Astronomy SIG	Roger Tanner	574-3876	rtanner@seds.lpl.arizona.edu
Newsletter Editor	George Barber	822-2392	barbergj@flash.net
School Star Party Scheduling Coordinators	Maggie & Jeff Buzek	760-4578	jeffbuzek@aol.com
School Star Party Volunteer Coordinator	Rob Wilson	744-0263	rasjwilson@aol.com

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:

George Barber
TAAA/Desert Skies Editor
15940 W Ridgemoor Ave
Tucson AZ 85736

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

Monsoons have come, the skies cloud over, and the scopes are put away For our equipment as well as the big scopes it is time for maintenance and cleaning. At least two members mentioned to me that they have sent their CCD cameras in for maintenance or upgrade. I wonder if the people at SBIG were asking why all their cameras in Arizona showed up for the new USB upgrade in July.

So the schedule is light and we have time to prepare for the coming fall season of events. As usual in September we can expect the school star party schedule to pick up again. I feel lost without at least a couple school star parties on my monthly schedule, something is missing.

While we made a start at expanding our school star party program this spring we will do more this fall, we hope to offer a beginner's lecture on school star parties at the beginning of the season this time, and put in place better follow through on mentoring new volunteers.

The rain has come and the fire closures have begun to be lifted, the BLM has opened Las Cienegas as well as the rest of their territory in SE Arizona. The Forest Service has likewise opened most areas, excepting those recently damaged by fires, this opens observing sites like Whipple Astronomy Vista. So we can return to favorite haunts when the clouds again leave and we can enjoy our clear Arizona skies.

Meeting Information and Calendar of Events

TAAA MEETING DATE: Friday, August 2 at the Steward Observatory Auditorium - Room N210

BEGINNERS LECTURE: 6:30 pm
Title and Speaker to be announced.

GENERAL MEETING: 7:30 pm
Title: The Spacewatch Survey for Hazardous Asteroids
Speaker: Robert S. McMillan, PhD

Spacewatch operates two telescopes on Kitt Peak to search for asteroids and comets. Progress is being made in estimating the hazard of impacts of asteroids on Earth. Spacewatch's contributions to that campaign include estimating how complete the surveys have been and that so far they have only been "picking the fruit from the lower branches of the tree". The remaining undiscovered Near-Earth Objects (NEOs) will be harder to find. Toward that goal, Spacewatch detects fainter NEOs than do the other surveys, finding and tracking smaller and more distant NEOs. The new Spacewatch 1.8-meter telescope and an exciting upgrade to the 0.9-meter Spacewatch telescope, a mosaic of CCDs covering 3 square degrees of sky area, will be described.

The lecture will be presented by Bob McMillan, PhD. Dr McMillan is an Associate Research Scientist holding a joint appointment at both Steward Observatory and the Lunar and Planetary Laboratory, University of Arizona. Dr McMillan began observing at a young age. At the age of twelve he observed with his 6-inch reflecting telescope in a cemetery to take advantage of the dark conditions. He began his astronomical career in high school as a volunteer assistant at the Ralph Mueller Planetarium of the Cleveland Museum of Natural History and at the Warner and Swasey Observatory in Cleveland, Ohio. In 1972, he received a B.S. degree in astronomy with honors from Case Institute of Technology, Cleveland, Ohio. His M.A. in astronomy was received a couple years later, followed by a PhD in 1977, both from the University of Texas at Austin. Along with Tom Gehrels, he founded the Spacewatch Project in 1980 and has been involved with the project since. In November 2000, Dr McMillan discovered the minor planet Varuna, one of the largest Trans-Neptunian Objects. He is currently the Principal Investigator for Spacewatch.

BOARD OF DIRECTORS MEETING: Tuesday, August 13, 7:00 pm at Steward Observatory Conference room N305.

STAR PARTIES AND EVENTS:

03 Aug - TAAA Star Party at TIMPA
08 Aug - Astro-Photo Special Interest Group Dinner
10 Aug - TAAA Star Party at Las Cienegas
16 Aug - Pima County Natural Resources Star Party
24 Aug - U of A Optical Sciences Center Star Party

Newsletter Schedule: Deadline for articles: Mon, Aug 19. Printing: Mon, Aug 26. Folding Party: Tues, Aug 27. Mailing: Wed, Aug 28. 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: Mark Hamel, Edward Mattila, Mark Mismash, Jim Mitello and Karin Marusek, Marcos Nunez, Alan L Strauss, and Bob Sweet. 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.)

New Member Needs Transportation – east side

New member Bob Sweet is looking for transportation to meetings and star parties. He is 72 years old and no longer drives, but offers to pay his way to anyone able to drive him to our events. He recently purchased his first telescope, a Meade ETX-70AT and is learning how to use it. His astronomical background is in celestial navigation, but is looking forward to getting involved with observational astronomy. He lives on the eastside near Broadway and Kolb. His phone number is 240-2736 and email sinbad149@cox.ne. Please contact him if you can offer him assistance.

Are You Hungry?

If you enjoy the refreshments that we have after our monthly lecture, you should read on. After several years of feeding the troops, Susan and Mark Chambers have stepped down from this important service. We all thank them for their dedicated service. We are on the lookout for someone (or two) to step into this position. It entails purchasing finger foods, drinks, and supplies, bringing them to the meeting, setting it all up and cleaning it up. The TAAA reimburses the expenses provided receipts are kept. This can usually be taken care of at the monthly meeting, so you aren't out cash for long. If no one steps into the position we may need to discontinue this worthy social function. Please contact Terri Lappin if you want to try it out. If we get a few volunteers, maybe the duties could be rotated monthly or quarterly.

Astronomical League Correspondent Needed

We are looking for someone to take over the Astronomical League Correspondent (ALCor) responsibilities for the Tucson society of the Astronomical League (TAL). The ALCor is very important as he or she serves as the contact between the Astronomical League and the club, providing information to our members regarding AL benefits. These benefits include the observing awards, regional and national conventions, and any other League information that is received. Most importantly, the ALCor is responsible for keeping the AL informed of membership changes by sending a complete list of TAL members to the AL 4 times a year. This information is obtained from the TAAA treasurer, but it is the ALCor's responsibility for getting it to the AL.

If you want to learn more about the position, go to http://www.astroleague.org/al/general/alcors/dutyalcr.html or talk to Terri Lappin (contact info on page 2). You must be a member of the TAL to hold this position.

(Members of the TAAA may join the TAL which will entitle you to receive the quarterly publication the *Reflector*, participate in the AL Observe program, purchase astronomy related books at a 10% discount (with no shipping and handling charges), and to take part in other AL benefits. All this will cost you only $3.50. For more information about the Astronomical League, go to http://www.astroleague.org.)

Astrophoto SIG

8 August, 2002
China Rose, NE corner Speedway/Rosemont

Just a quick reminder that we've moved the Special Interest Group for astrophotography to the Thursday after the monthly general meeting. That means that in August it will be on 8 August at 7pm. It is always a great time, so come check out the photography over a Chinese buffet meal. Call Dean Ketelsen for questions, 293-2855.

Beginners Lecture Presenters Needed

Have you ever considered giving the Beginner's lecture? The club is always looking for someone who is willing to share the benefit of their experience. And, if you can't come up with a topic, Andrew has a number of topics, which would greatly benefit those who are new to astronomy, as well as the seasoned astronomer. This gives you a chance to learn something new, as well as help others. So, step up to the spotlight! Give Andrew Cooper a call at 2795-3585, or e-mail at acooper@pobox.com.

Items of Interest

WEBSITES: TRIPS ON THE INTERNET SUPER-SKYWAY

OUR NEIGHBORS TO THE NORTH - Pt.2
By Rik Hill

This month I'll wrap up a synopsis of astronomy clubs to the north of us.

Have you heard of the East Valley Astronomy Club? Believe it or not there are TAAA members that have not. They are an active group that hold their star parties near Florence Junction southeast of Phoenix. If you live in the northwest Tucson area, this is not a bad drive for you and may even take less driving time than a star party in Vail or Benson! You can check out their activities with their on-line newsletters and announcements at: http://www.eastvalleyastronomy.org/

The third astronomical society in the Phoenix area is the Phoenix Astronomical Society, also an active group with regular star parties and events. You can keep up with their activities at: http://pastimes.homestead.com/pastimes.html

Items of Interest (cont.)

The Northern Arizona Astronomy Association (NAAA) is the astronomy club of Northern Arizona University, in Flagstaff. It is associated with Atmospheric Research Observatory there and was first established in 1952. Their main facility is a 24-inch Cassegrain reflector, designed to observe in the infrared wavelengths built by J.W. Fecker Inc. Regular open house nights are every cloudless Friday evening from 7:30 to 10:00 PM. Their website is: http://www.phy.nau.edu/~naaa/. Be sure to go and see the cute animation of their observatory at: http://www.phy.nau.edu/~naaa/.

There is another astronomy club in the larger Coconino County called the Coconino Astronomical Society and their website is found at: http://www.lowell.edu/cas/. The CAS is a club of star-gazing enthusiasts located near Flagstaff, in northern Arizona. They have monthly meetings with guest lecturers, star-gazing sessions as well as sidewalk star parties in downtown Flagstaff.

Just south of Flagstaff is the Prescott Astronomy Club and their website is: http://www.pacorg.net/. This club was founded in 1974 and is a diverse group of naked eye star-gazers to vocational researchers. I would encourage you to go to their "Members Telescopes" page at: http://www.pacorg.net/memtel.htm. There are some interesting home made and modified telescopes there.

Lastly, there is a new club called the Pinetop-Lakeside Union of Telescopic Observers (PLUTO). But due to the fires they may be off-line at the moment. You can find some information about them at: http://www.wmonline.com/communit/clubs/Astronomy.htm or send an email to: pluto@wmonline.com

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

Grand Canyon Star Party 2002

The Sirius Lookers club has a Trip report and pictures on their website www.siriuslookers.org under Trip Reports (for both) and linked on the Photos page.

The McMath-Pierce Sundial

By Robert Wilson
Photo by Paul Brown

In addition to its claim as the world's largest solar telescope, the McMath-Pierce now has another distinction: it is the world's largest sundial. Sundial mavens might argue that the distinction depends on how the dial is measured. Apparently the sundial in Jaipur, India has the edge in height, but the McMath-Pierce takes the record for the area of the base and the length of the gnomon - that is the angled piece that casts the Shadow.

John Carmichael, a professional sundial maker, and five volunteers labored for three days to mark the on hundred eighty-two time points, six seasonal points, two style change points and one high noon point, totaling one hundred ninety-one points. Because they would have to do the actual marking correctly on the summer solstice, the group wisely spent June 20 refining their techniques. The move paid off, and with the arrival of two additional volunteers, they place all the marks accurately despite numerous interruptions from visitors. For all the effort the group expended to mark the sundial, it is very inconspicuous. The critical spots were marked with 2-inch flat-head roofing nails with bright orange 1-inch washers. Eventually, Public Outreach intends to mark the spots in a manner that will impart a more finished appearance to the sundial and make it easier to use.

Additionally, a functional, weather-resistant model has been proposed for the site to serve an interpretive purpose for visitors who tour the facility on their own.

Mr. Carmichael also created the Equation of Time charts so visitors can check their watches against the sundial,

Items of Interest (cont.)

which runs slower or faster at certain times of the year because of the Earth's slightly elliptical orbit. The charts will be available in the Visitor Center.

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]

Currently looking for volunteers for
Evening talks – ½ hour lectures
Afternoon presentations – 15-20 minutes
Afternoon demonstrations – to small groups, possibly repeatable
(e.g. for beginners, how to collimate your scope)

Provide a written title and brief description. Email to chartmarker@cox.net. Deadline for submission, Sept. 30, 2002

Star Parties & Events

TAAA Star Party at TIMPA

August 3 (Saturday)

Come out and enjoy the early summer skies! What makes this event special is that our novice members can get help with observing issues or equipment problems. There will be experienced members present who would be more than happy to help. If you don't own a telescope, don't worry. There will be lots of scopes set up and everyone is invited to look through them. This is a great way to check out the different telescope designs before you make that all-important decision to buy. There is no scheduled talk for this activity. Just come out with lots of questions and we'll do our best to get you the answers you need. If you have friends who might be interest in amateur astronomy, bring them along. Directions to the TIMPA site are located on the outside flap of this newsletter.

TAAA Star Party at Las Cienegas (Empire Ranch)

August 8 (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. 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, you're missing the best part of belonging to the TAAA. See the directions to Las Cienegas on the outside flap of this newsletter.

Pima County Natural Resources Star Party South

August 16, Friday No. of Scopes: 3-4

This is the last of three star parties that Wendy Burroughs of the Pima County Natural Resources has requested (for now!). The last one, in July, had to be cancelled due to a terrific thunderstorm that hit the Catalina area. This star party is being held at the Littletown Recreation Center and is located at 6465 S. Craycroft Road. Take Alvernon Way (or Palo Verde Road) south from 22nd Street. Proceed to Valencia Road and turn left (east). Proceed approximately 1.3 miles and go under the I-10 overpass. Go another 1/3 mile and look for a sign on the right for Littletown Road, which is a quick right turn off Valencia. Stay on Littletown Rd for ½ mile. You'll come to a stop sign at Craycroft Rd. The Rec Center is located on the northeast corner of this intersection. The set up area is on the basket ball courts that are visible from the parking lot. Set up is at 7:00 with viewing from after 7:30 to 9:30 or so. A Star Party leader is needed for this event and a sign up sheet will be available at the August meeting.

U of A Optical Sciences Center Kitt Peak

August 24, Saturday No. of Scopes: 5-6

This star party is to support the graduate students of the U of A Optical Sciences Center. The viewing location is at none other than one of our favorite locations, Kitt Peak! It is suggested that you check out the Kitt Peak web site at http://www.noao.edu/outreach/kpvc/Directions.html for complete directions and other information. Students and guests will begin arriving at 5:00 pm. Dinner will be provided to all TAAA volunteers beginning at 6:00 pm. Set up should begin around 7:00 pm if you haven't already done so by then. Viewing is from 7:30 pm to 9:00 pm. The set up area is located near the ramada in the picnic area. A star party leader is needed for this event and a sign up sheet will be available at the August meeting. This promises to be an extremely fun event! Considering the ever-changing weather conditions on the mountain, it is advisable to bring some extra layers in addition to some wet weather gear.

Dark Skies for August 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

We/Th	31/ 1	20:55 - 23:42	Su/Mo	11/12	21:36 - 4:16	Th/Fr	22/23	FULL MOON
Th/Fr	1/ 2	20:54 - 0:13	Mo/Tu	12/13	22:10 - 4:17	Fr/Sa	23/24	- - -
Fr/Sa	2/ 3	20:53 - 0:48	Tu/We	13/14	22:45 - 4:18	Sa/Su	24/25	- - -
Sa/Su	3/ 4	20:51 - 1:28	We/Th	14/15	23:22 - 4:19			
			Th/Fr	15/16	0:02 - 4:20	Su/Mo	25/26	20:23 - 20:48
Su/Mo	4/ 5	20:50 - 2:16	Fr/Sa	16/17	0:47 - 4:21	Mo/Tu	26/27	20:21 - 21:15
Mo/Tu	5/ 6	20:49 - 3:12	Sa/Su	17/18	1:37 - 4:22	Tu/We	27/28	20:20 - 21:42
Tu/We	6/ 7	20:48 - 4:12				We/Th	28/29	20:18 - 22:11
We/Th	7/ 8	20:47 - 4:13	Su/Mo	18/19	2:32 - 4:23	Th/Fr	29/30	20:17 - 22:44
Th/Fr	8/ 9	20:45 - 4:14	Mo/Tu	19/20	3:30 - 4:24	Fr/Sa	30/31	20:15 - 23:22
Fr/Sa	9/10	20:44 - 4:15	Tu/We	20/21	- - -	Sa/Su	31/ 1	20:14 - 0:05
Sa/Su	10/11	21:01 - 4:16	We/Th	21/22	- - -			

Weekend	Sun	Sun	Mercury		Venus		Mars		Jupiter		Saturn	
Sa/Su	Set	Rise	Set	Vi	Set	Vi	Set	Vi	Rise	Vi	RiseVi	Vi=Visibility
3/ 4	19:18	5:39	20:06	7	21:25	-3	19:28	-	4:45	5	2:08 1	-3 brilliant
10/11	19:11	5:44	20:10	5	21:15	-3	19:14	-	4:25	3	1:44 0	0 conspicuous
17/18	19:04	5:48	20:08	5	21:03	-3	Rise		4:05	1	1:19 0	3 moderate
24/25	18:56	5:53	20:02	5	20:51	-3	5:30	-	3:44	0	0:54 0	6 naked eye limit
31/ 1	18:47	5:57	19:50	5	20:38	-3	5:24	-	3:24	-1	0:28 0	9 binoculars limit

By Erich Karkoschka

Desert Skies Classified

FOR SALE: Arizona Observatory/Home/Land for Sale in Cochise County House: 28'x52' doublewide on 167 acres, fenced; well; underground utilities; r.v.site with full hookup; barn/garage. Observatory 14'x14'; two panel roll off roof; adjacent warm room. Altitude 4500 feet. Telescopes: Two C-14's; one on Losmandy G-11 mount, with installed CCD camera from SW Cryogenics (Roy Tucker), 13.1" binocs. Contact Jim Kessel (jwkessel@mac.com) 520-384-3637 fax: 520-384-3282, 6650 Covered Wagon Road, Willcox, AZ 85643 (10/02)

FOR SALE: Meade ETX-90E 3.5" telescope. Includes AutoStar controller, deluxe field tripod, hard carry case, 2 eyepieces (26mm and 9.7mm), Barlow lens, moon filter, 8X25 right-angle finder, 8X21 erect image viewfinder, owners manual. New condition. Cost $1300 in 2000, will sell for $650. Call Wes or Rene Ellingson at 586-9292 (located in J-six area near Benson, AZ). (09/02)

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: Mint condition Celestron C-5+ with excellent optics and JMI Minimax computer/database installed. Hardshell Celsestron case, finder, metal bayonette dewcap, off-axis solar filter (50mm) hand controller, tabletop wedge, diagonal, and all manuals. Original owner. $825.00. Contact Frank at 743-0018 or Fcathell@aol.com (11/02)

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.

TAAA Board of Directors Meeting - 9 July 2002

Board members present: Andrew Cooper, Terri Lappin, and Bill Lofquist
Members present: John Polacheck, Deborah Cooper

1. Changes to Agenda; added 4th avenue and Astronomical League.
2. Schedule; very light schedule this month due to monsoons, no school star parties, the next Las Cienegas star party was not moved in the hope that the BLM would lift the fire closure before Aug 10th.
3. Treasurer's Report; presented and accepted by the board
4. IDA Proposal; John Polacheck presented a proposal for light pollution educational presentations at all TAAA star parties. He wished to include all school and paid star parties. The board agreed that getting the light pollution message out to a broader audience was a worthwhile goal but this may not be appropriate in all settings. The consensus was to help the IDA distribute material, possibly up to and including presentations if material could be developed and provided to the TAAA that would allow a good and appropriate presentation to be made. For other

TAAA Board of Directors Meeting - 9 July 2002 (cont.)

situations it might be more productive to educate our volunteers with material that would allow them to have the answers when these subjects are addressed in conversation with the public, a very common conversation at public star parties. It was left with John and the IDA to develop and provide such materials with input from the TAAA to see that this is properly setup to be appropriate and effective in the star party setting, a beginner's lecture slot was offered for the presentation of such material to the general membership if needed.

5. TIMPA; approval from TIMPA has been obtained to place sliding red light covers in the bathrooms as well as coat hooks, a deficiency pointed out by a TAAA member.
6. 4th Ave. Street Fair; approval was given to apply for a charity booth at the winter street fair (Dec. 13, 14 and 15). These are awarded by a lottery process to recognized organizations.
7. Astronomical League; the absence of an ALCOR was addressed and that league programs are ineffective in the baseness of an ALCOR. No volunteer has stepped forward and Terri is handling the administrative part of this position.

Submitted by Andrew Cooper

Object of the Month by Alfredo Garcia, Jr.

This month's OTM belongs to the star cluster class of objects, in particular an open star cluster. Open clusters are physically related groups of stars held together by that powerful, governing force of the universe known as gravity. They are believed to originate from large cosmic gas and dust clouds in the galaxy and orbit the galaxy through the disk. Most open clusters have only a short life as a cluster. As they drift along in space, some members escape the cluster due to: velocity changes in mutual closer encounters; tidal forces in the galactic gravitational field; and encounters with field stars and interstellar clouds crossing their way. On average, an open cluster spreads most of its member stars along its path after several 100 million years.

Open clusters often have associated with them dark, bright, and reflection nebulae. These nebulae are extremely large structures many light-years across that have no definite outline and take on a tenuous, cloud-like appearance. They are some of the most striking objects in the sky with tremendous streams of bright and dark matter intermingled in violent, chaotic currents. If they are large and massive enough, they are often places of star formation, thus forming clusters of stars. Young stars in the cluster are often very massive and very hot. Their high-energy radiation excites the gas of the nebula (mostly hydrogen) and causes it to shine. If the stars are not hot enough, the dust in the nebula reflects their light yielding a reflection nebula. They can also contain dark nebulae.

This month's OTM is one of the finest examples of these open clusters associated with nebulae. It lies in the constellation of Serpens, the Serpent, close to the borders of Scutum and Sagittarius in an inner spiral arm of the Milky Way Galaxy known as the Sagittarius or Sagittarius-Carina Arm. The Swiss mathematician and astronomer Philippe Loys de Chéseaux (1718 - 1751) discovered it in the 1745-1746 timeframe while compiling a list of 21 nebulous objects. In 1764, Charles Messier rediscovered the open cluster and its associated nebula, which he designated as M16. The nebula associated with M16 came to be known as the Eagle Nebula (IC 4703). Often today, amateurs refer to M16 as one in the same with the Eagle Nebula, though they are two separately designated objects.

The estimated distance to M16 and the Eagle Nebula is about 7,000 light-years. M16 is about 5.5 million years old and star formation is still occurring in the Eagle Nebula. The brightest star in the cluster is about magnitude 8.2 and its angular diameter is about 7 arcminutes. At the distance estimate of 7,000 light-years, this equates to a linear size of about 15 light-years. The nebula has an apparent size of over 30 arcminutes covering some 70x55 light-years in linear dimensions.

During August, at about 9:00 PM in the southern sky, you will find M16 at an altitude of about 45 degrees above the horizon. Since the stars of Serpens are not that bright, the best way to find M16 is to first find the 4.7 magnitude star Gamma Scuti. Then look about 2.5 degrees west of the star and there you will find M16 glowing at magnitude 6.4. Since M16 may be difficult to find in less than dark skies, you may want to use setting circles or an automated go to scope. M16 and the Eagle nebula are located at RA: 18hr 18.8 min and DEC: -13deg 47min.

M16 is visually unmistakable through a small telescope or pair of binoculars. The Eagle Nebula on the other hand requires dark skies and large aperture telescopes to see it. But, when the pair is astrophotographed or CCD imaged (wide field), it becomes UTTERLY AMAZING! Only in this manner can you truly get the fantastic view we all see published in magazines and websites on the net. The **cover photo** shows the amount of detail that you can capture even with a small telescope! If you have the equipment to astrophotograph or CCD image this nebula, I recommend you do so. Your time and effort will be rewarded with an image of one of the most beautiful nebulas in the sky and one you can be truly proud of.

So if monsoons permit this August, go out and observe this amazing cluster and nebula for yourself. See if you have the "Eagle Eye" to glimpse M16 and the Eagle Nebula.

Constellation Report by Chris Lancaster

Lyra

The Harp

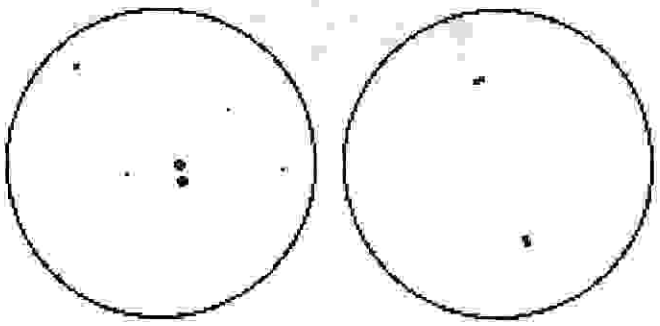
This is a small constellation, but due to its bright star Vega, it has attracted the attention of many different civilizations over the millennia. As a result, it carries many different mythical stories as well. Originally, those ancients inhabiting the Middle East saw the shape of a vulture in the stars of Lyra. The Greeks came up with the idea that the stars represented a kithara, what we would call a harp. Over the centuries these two concepts were combined so that some artwork shows the harp held by a vulture.

The Greek god Hermes is given credit for inventing the kithara. He found an empty tortoise shell, set some strings across it, and discovered that it made beautiful music. Over time, the kithara passed from Hermes hands, to Apollo's, and finally to Apollo's son, Orpheus. It was Orpheus who's talent allowed him to play the instrument the most skillfully. The wild beasts were mesmerized by the music and even the stones of the Earth stopped to listen. When Orpheus died, Zeus placed the kithara in the sky.

Asian cultures saw Vega as a princess who fell in love with and married a shepherd, represented by Altair, the brightest star in the nearby constellation Aquila. They were so enamored with each other that they neglected their duties, and the princess's father banished them to the heavens to spend the rest of time separated by the great celestial river, the Milky Way.

Vega, which means "vulture" in Arabic, is the first of the three stars forming the "Summer Triangle" to rise during the early evenings of April and May. The other two are Deneb, in Cygnus, and Altair, in Aquila. At 9pm during the middle of August, Vega and its constellation Lyra are straight overhead. Vega is a blue-white star of spectral type A0 and is a mere 26 light years from Earth.

Near Vega (a bit more than 1.5 degrees to the northeast) is an intriguing object, Epsilon (ε) Lyra. This is a double star which is commonly called the double-double. Viewing it at low power will show you a typical double star separated by a very wide 209", but using high power will show you why it has this unique name. Each component of this wide double is itself a double star, separated by about 2.7" and with position angles turned roughly 90 degrees with respect to the other.



55x magnification 500x magnification

Epsilon Lyrae

Between Beta (β) and Gamma (γ) Lyrae is the most famous object in Lyra–M57, or the ring nebula. This is one of the finest examples of planetary nebulae in our sky. It is visible in any size scope due to its strong surface brightness, and its ring shape is easily recognizable. However, it's not truly a ring. Instead, we perceive a ring structure because of the thicker expanse of material along the periphery of the gaseous bubble which is slowly expanding from the central star, which, at close to magnitude 15, is invisible in scopes smaller than 18 inches. The brightness of M57 is 9.0, and its diameter spans 2.5'. Look not quite half way from Beta to Gamma Lyrae, or RA 18h 53.5m Dec +33d 02', for this striking nebula.

Just under 1 degree east south-east of Theta (θ) Lyrae is NGC6791, a wonderfully rich galactic star cluster, 16' across and of magnitude 9.5. Since it sits in a rich part of the Milky Way, it is difficult to recognize the boundaries of this star cluster. There is a gradual increase in stellar density toward the center of the cluster of several hundred faint stars. Of course the larger the telescope you have, the more stars it will pick up, and thus the more impressive this cluster will be. You can find NGC6791 at RA 19h 20.7m Dec +37d 51'.

All by itself in the southeast part of the constellation is M56, a globular cluster weighing in at magnitude 8.3 and a size of 7.1'. This is a fairly rich, condensed globular with stars ranging in individual brightness from 11 to 14. If your telescope is accurately polar aligned, dial in this cluster at RA 19h 16.6m Dec +30d 11', or start at magnitude 4.3 Theta (θ) Lyrae and move directly south 8 degrees. (The difference in RA of Theta and M56 is only 22 seconds.)