

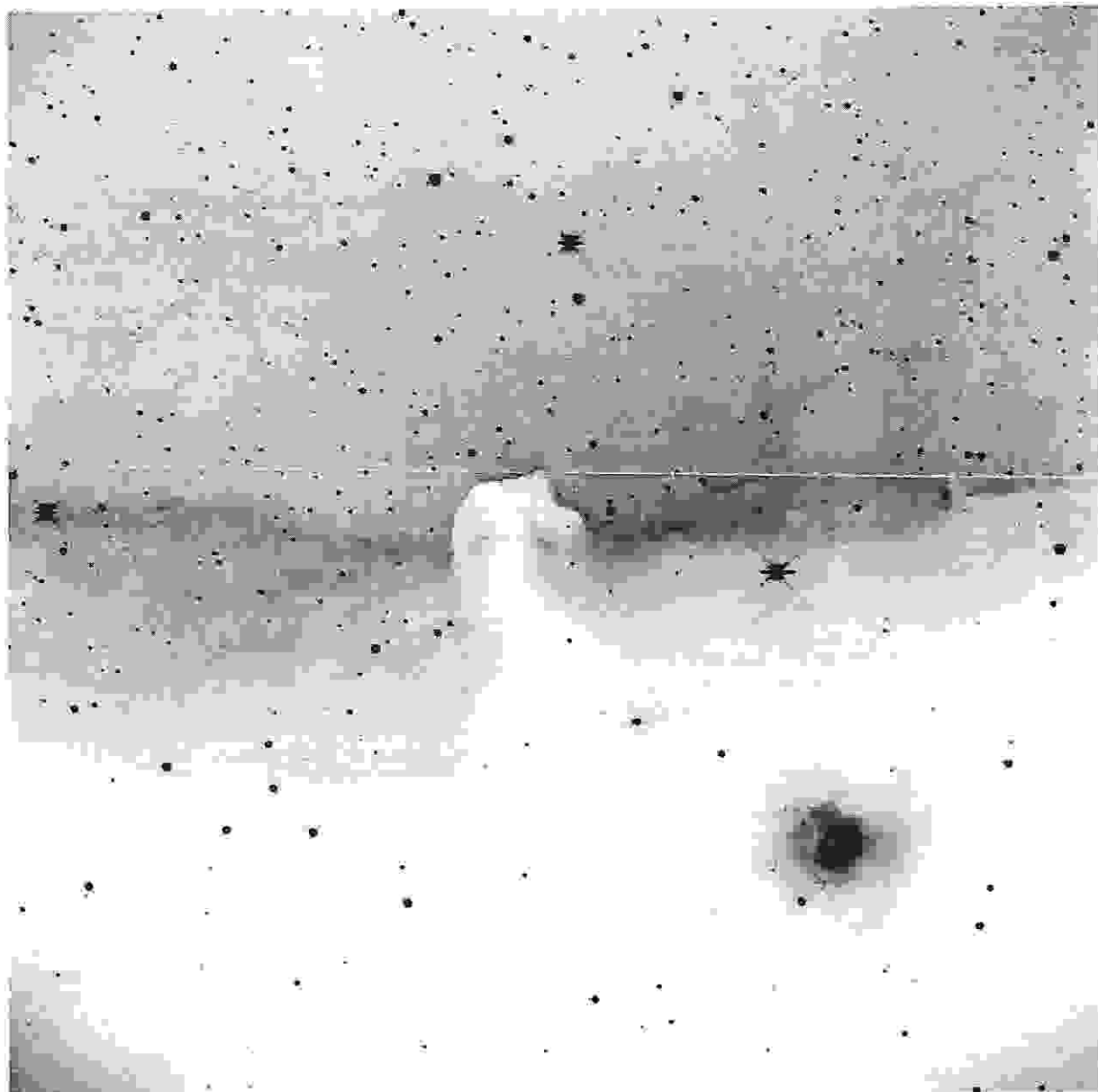


Desert Skies

Tucson Amateur Astronomy Association

Volume XLVIII, Number 1

January, 2002



The Horse Head Nebula

Calendar of Events

BEGINNERS LECTURE: Jan 4, 6:30 pm at the Steward Observatory Auditorium - Room N210. This month's topic is *The Astronomical Catalogue* by Andrew Cooper.

GENERAL MEETING: Jan 4, 7:30 pm at the Steward Observatory Auditorium - Room N210. Topic is *Tales of a Cold Universe: The Birth-places of Stars and Planets* by Craig Kulesa.

BOARD OF DIRECTORS MEETING: Tuesday, Jan 8, 7:00 pm at Steward Observatory Conference room N305.

STAR PARTIES AND EVENTS:

- Jan 3 - Astro-Photo Special Interest Group Dinner
- Jan 5 - TAAA Star Party at TIMPA
- Jan 12 - TAAA Star Party at Las Cienegas (Empire Ranch)
- Jan 15 - Valencia Middle School Star Party
- Jan 17 - Roadrunner Elementary School Star Party
- Jan 22 - Sunrise Drive Elementary School Star Party

Newsletter Schedule - Deadline for articles: Mon, Nov. 19. Printing: Mon, Nov. 26. Folding Party: Tues, Nov. 27. Mailing: Wed, Nov. 28. The newsletter is mailed at least one week prior to the following month's General Meeting.

Cover: Negative image of the horse head nebula taken with a FLI-1024S camera on a 17.5" F4.5 operating at f5.2 (w/ Paracorr). 1.8 minutes total thru a red filter, taken by Roger Tanner.

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

TAAA Phone Number: (520) 882-1950

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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

President's Message

With the latest storms we know that winter is upon us. Now is when we measure our true devotion (or obsession depending on point of view) with the hobby of astronomy. Who is determined to brave the cold for a winter crisp look at the sky? When I slither through three miles of icy mud to find Pat and Alleen Hiemann parked on the old airstrip at Empire with their trailer waiting for the clouds to clear, I know the answer. Some of us are that crazy.

The club holiday party was a wonderful event with much celebration of friends and comrades in the hobby, discussing the years events and looking at future projects. David Levy gave a wonderful talk and tribute to past friends. He also announced that the club raised the most money for the MDA telethon at last year's Telescopes for Telethon event and will receive a new Meade 10" GPS telescope. We will again support David and Wendy in this event with a public star party at Sabino Canyon, this year scheduled for April 19th, and a backup date of the 20th.

The calendar for the next year has been published and we are preparing another good year. Again we have two Kitt

Peak picnics planned, one spring and one fall, as well as two large public events at the Desert Museum, Mar 16 and Oct 5th. We have yet to completely pin the Park Service down on the Grand Canyon Star Party, but the dates should be June 8-15th, watch for further announcements.

The club has also inaugurated an e-mail list to be used for general announcements. Many thanks to Terri Lappin for setting this up. Look for an e-mail invitation to join. Is is completely opt-in, if you do not respond to the invitation you will not get mail from the list. Only club officers and a few select others can post to the list so it shouldn't flood your in-box, but it can be used to get information out to the membership that is more time sensitive than the newsletter.

We have much to be thankful about this year. The sky has bestowed a bounty of wonderful events this year, eclipses, comets, and meteors. A good year for the hobby, and a good year for us. I hope 2002 be just as wonderful.

Andrew

Meeting Information

Beginner's Lecture

Title: The Astronomical Catalogue

Speaker: Andrew Cooper

How do we know what is where in the sky? The history of this basic tool of astronomy, From Hevelius, Flamsteed, and Messier to Hipparchus.

Main Lecture

Title: Tales of a Cold Universe: The Birthplaces of Stars and Planets

Speaker: Craig Kulesa

A long time ago, in a part of our Galaxy far away, a star was born. That star was our Sun, 4.6 billion years ago. Despite our proximity, our knowledge of the formation of our Sun and its host of planets is surprisingly incomplete.

In this talk, we will explore the dark, cold places of the Galaxy where stars are born, cocooned and enshrouded from our view by walls of dust and molecular gas. We will learn whether the ingredients that comprise our own Solar System are also being used to build new ones today. In search of answers to these timely questions, we will dissect infrared and sub-millimeter light from the sites of star and planet formation, which will take us from Kitt Peak all the way to observatories at the South Pole.

Craig Kulesa is a finishing PhD student at Steward Observatory. Craig spoke to us in June 2000 about the various tools that professional astronomers have at their disposal for studying the nature of the universe. He presented an excellent lecture back then and we've again asked him to lecture to us. He is currently working at the South Pole, so we wish him good weather and a safe trip back to the states.

Club News

Member News

We welcome the most recent members who have joined the TAAA: Dr Richard Belli, Gary and Megan Chaplin, Mark Daniels, Russell Frank, Terry Shipp and returning members Alex Gibbs and Andrew Tubbiolo. Glad to have 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.

Calendars for 2002

There are still some 2002 calendars left for purchase.

The price is \$10 each (~\$2 off the regular selling price), or \$9 each for more than one. Our supply is getting smaller and smaller. The calendar, which features a full-color astronomical photo, image, or painting each month, has daily information about astronomical events, both historical and observational...plus space for adding important events you need to remember. Please see Ann Scott at a meeting if you want to purchase a calendar.

Proceeds from the sale of these calendars will be used appropriately as decided by the board. Thank you to all who support the TAAA through the purchase of the yearly calendars.

Club News (cont.)

"Oh, What a Night!"

By John Kalas

This seemed to be the sentiment of the sixty TAAA Members who attended the Holiday Party on Friday, Dec. 14th. Held in the Rillito Room at the Tucson Racquet & Fitness Club, the event was a resounding success; good food, good fun & good friends. Special invited guests for the evening were David and Wendee Levy and Ed and Pat Vega. Unfortunately, Ed and Pat were unable to attend. The efforts of Liz Kalas, Twila Peck, Sheila Conrad, Terri Lappin and Thom Peck were appreciated by all. The room was nicely decorated with strings of holiday lighting and festive table decorations designed and set out by Liz, Twila and Sheila. Trays of appetizers preceded a delicious chicken dinner topped off with gourmet cookies (the chocolate chip were to die for).

Following the dinner, the attendees were treated to several fascinating presentations. The keynote speaker was



David Levy who gave an inspiring talk and slide presentation about the "Mentors I have known". He concluded his talk by running his slides timed to the song "This Side of the Moon" by the group Alabama; a very poignant and artful

finale followed by the loud applause of appreciation. Wayne Johnson gave a nifty interactive talk reviewing the special astronomical events of the year and some supernova news. Ed Finney and Robert Crawford showed some spectacular Leonid Meteor slides and shared their photography secrets on how they achieved such fantastic shots. TAAA President, Andrew Cooper, gave a slide presentation

reviewing some of the accomplishments of the club this past year, emphasizing the tremendous volunteer efforts of our members. Roger Tanner presented an



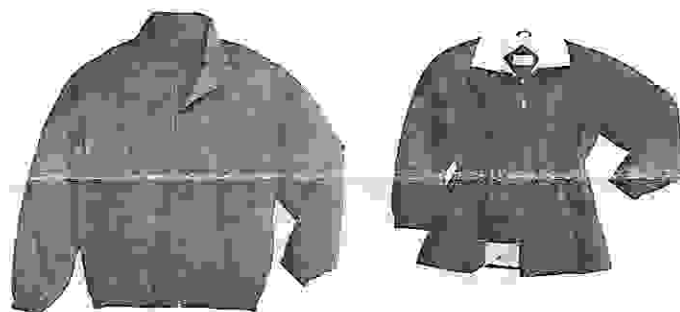
impressive animation of CCD images taken by he and Steve Peterson of Comet Linear moving through a star field.

Another "fun" part of the activity was the door prize raffle. John Kalas reviewed the 27 terrific gifts that were donated

by seven stores or individuals. *Starizona* supplied the computer astronomy program *Starry Night Pro* with several great books. *Sky Works* donated ten items including the *Sky Map Pro* and *The Sky* astronomy programs, a pair of Meade 7x50 binoculars, a Meade Electronic Eyepiece and a Moon brooch. *Stellar Vision* donated four \$20. gift certificates. TAAA Member *Pat Heimann*, maker of *Chart-Markers*, supplied a Telrad finder. *David and Wendee Levy* brought three "Let's Talk Stars" tee shirts and two copies of their book "Making Friends With the Stars". The *Discovery Channel Store* in the Park Place Mall donated a Meade Electronic Eyepiece and a book. *The Nature Company* in the Tucson Mall supplied an astronomy book. Everyone thoroughly enjoyed the raffle and appreciated the support of the donors. It was a fun night.

Club Logo Jackets

Advance sales will be made during the January meeting for light-weight jackets with the TAAA club logo. Delivery is expected at the February meeting. Both men's and



women's styles will be black with tan trim. Cost for the men's jacket is \$32, and the women's jacket is \$35. Samples will be shown at the January meeting.

Beginners Lecture Speakers Needed

Have you ever considered giving the Beginner's lecture? It's not as hard as you might think. 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, Ray 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 Ray a call at 294-1197, or e-mail at raywal-lace@altavista.com.

Newsletter Cover Photos Needed

Perhaps you've noticed that every month, the cover of the newsletter prominently displays a photograph, either documenting a club activity, or which ties in with the main lecture for the month. We have our usual contributors, and a few new ones. Thanks to them for their

Club News (cont.)

contributions! But, sometimes no one has an appropriate photo and we have to scramble. I would like to build a library of photos, which could be used in our newsletter whenever we needed a specific subject. If you would like

to contribute, please send your photo to the newsletter editor. Be sure to include your name, so we can credit you, as well as details on how you obtained the photograph.

Items of Interest

WEBSITES: TRIPS ON THE INTERNET SUPER-SKYWAY

by Rik Hill

Linear astronomy

It's been a while since we had a comet you could see with the naked eye. Our last two, only a year apart as spectacular naked eye apparitions, were Hyakutake (), and Hale-Bopp (). But for the next couple weeks we will have one, Linear WM1. It is presently just naked eye bright and brightening and heading south rapidly. By Christmas Day it will be so far south (about 10 deg. due south of Fomalhaut) as to only be visible from a mountaintop, like Mt. Lemmon. This one will not become as spectacular but still is visible and worth a look every few nights. But in order to find it you will need a good ephemeris. You can find one at the IAU Comet page:

<http://pluto.harvard.edu/iau/Ephemerides/Comets/>

The specific page for Linear WM1 is at:

<http://pluto.harvard.edu/iau/Ephemerides/Comets/2000WM1.html>

with a daily ephemeris for Linear at:

http://pluto.harvard.edu/iau/Ephemerides/Comets/2000WM1_1.html

For more information on the comet you can start with the

Sky & Tel. comet page:

<http://www.skypub.com/sights/comets/comets.shtml>

There are good detailed orbital plots at:

<http://www.aerith.net/comet/catalog/2000WM1/2000WM1.html>

with good recent photos and charts at:

<http://encke.jpl.nasa.gov/index.html>

The last time I looked this comet was just barely naked eye. Images are being posted on a number of websites. Among the best are:

Chris Schur's page

<http://www.psiaz.com/schur/astro/latest24.html>

Gary Kronk's page

<http://cometography.com/index.html>

Now it's your turn. Take photos, make drawings or just go and gawk, but get out there and enjoy this comet before it dives below the southern horizon.

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

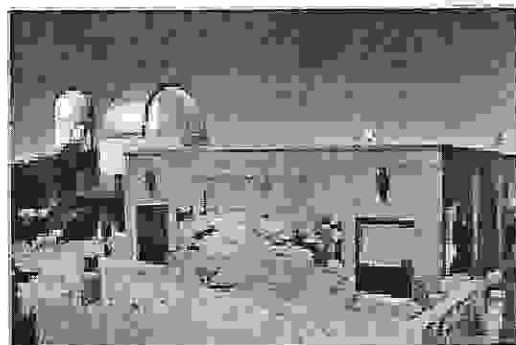
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Items of Interest (cont.)

Steward Observatory Public Evening Lecture

Since 1924 Steward Observatory has hosted public evening lectures in astronomy. Dr. Hans-Walter Rix will present this semester's first lecture on Monday, January 14th at 7:30pm. At this time the title of the lecture is not known. The Steward Public Evening Lectures are held twice a month in the Steward Lecture Hall (N210), the same room we hold our meetings. Following each lecture, the 21-inch telescope will be available for viewing the night sky (weather permitting). The lectures and the use of the telescope are free of charge and open to the general public. Go to http://viking.as.arizona.edu/~taf/pubeve/pub_lect.html for additional information. The complete schedule should be posted in the near future.

Smokers and Sparklers

By: Sharon Koerber, Skyworks

For the 4th year in a row, Steve and I stood in the Sabino Canyon parking lot looking at the Santa Catalina's and sighed. The clouds had already started to cover Tucson. There would be no meteor shower tonight. Every year it was the same thing. Clouds...no meteors. Gloomily we continued to unload our truck anyway. We promised our customers and friends that we would be in the southeast corner of the parking lot at 11p.m. on Saturday night and that we would stay there all night, no matter what.

Aside from the usual sleeping bags and lounge chairs, this year we decided to bring snacks and beverages for everyone who showed up. (Yes, a lot of it was left over from the book signing we had held a few weeks before.) We felt that our luck had to change sometime so making a food offering should do the trick.

Preparations had begun in early October when we sent out postcards, made calls to customers and friends, called the television stations to let them know where Sky Works would be on Saturday night, November 17. We wanted company. Meteor showers are a group thing!

The Helm's brought more equipment for the party, then the Hulderman's with 7 quarts of chili, bowls, crackers and spoons. A real party was materializing. Then another group plopped their sleeping bags and chairs down. By 11:30p.m. two rows of chairs stretched 100 feet from south at the snack table toward the north. We faced the northeast for the best view. Friends in trucks pulled in and chinked the cracks between our rows of vehicles. They parked with their truck beds facing northeast as well, forming a third row. Of course, we got the giggles, for the 4th year. This time though there was more laughter than in years past. What a wonderful sound to fill the darkness on a crisp fall evening!

Present were, Kay Vandermark, Janet and Steve Hulderman, Trish, Roger and Tiffany Helms, Bill and Susan Reddicker, Lancy Matheson, Paula Price, Julie Mason, The MacIntyre's, Larry Scott, the Soule's, John Sosville, John

Sosville's son, Michael, Doug Nelson, Terry Little, Nigel Kilduff from Coronado Instruments, with Amy, Holly and John Hosking, Alex (our vehicle rental agent) and his wife, Terry Simo and family, Bill Morris, and more friends we were never able to identify in the dark, we're sorry. Neither do we know the TAAA members from non-members. Since Sunday morning we have received hundreds of calls from friends, strangers telling us they couldn't find us in the parking lot but wanted us to know that they appreciated the invitation to our annual event.

About midnight someone at the north end of the line said "OOOH", as the first long tail meteor shot across the sky from Orion. All of us scurried back to our chairs and snuggled down to watch what little show there was to be seen. Then about a minute later we heard another hoot from somewhere behind us. Then another "aah" from the southernmost person in our group, Terry Little (our newest customer and friend). Then it quieted down again. People started moving around once more.

This year we discovered that the bathrooms were gone. I mean not there anymore. Blank space where once was concrete and flushing apparatus. At first, in the dark, no one could find any facilities at all. Panic set in! Yes, even the men! Every time someone scurried into a thicket of bushes, someone else would be coming out. Then someone spotted a bank of port-o-potties in the tram loop. We were saved! Life was good.

As the evening progressed, the incidence of meteors increased and the clouds dissipated but not enough to get us back to our chairs. We milled around, someone spilled chocolate on Kay's sleeping bag. We made jokes about the chili, the toilets, the lukewarm coffee, the "borrowed" pool chair from a local motel (it was returned safely), the lounge chair brought to the "party" in a Mitsubishi convertible and 1001 uses for duct tape.

Between midnight and 2:30a.m. the headlights of multiple vehicles streaming into the parking lot blinded us. In years past, at peak there were only 50 or so vehicles in the lot. By about 1:45a.m. the parking lot was about half full. By the peak it was 3/4th full. It was unbelievable. Then there was another potty problem. Lines. Life was almost good!

Then the time was 2:50a.m. Someone hooted again to the north. Then again and again as the meteors began streaming into the atmosphere. Pop, pop, pop! Flash, flash, flash! Long and short and north and south and east and west they came. Long tails and flashing dots, double tails and tails that hung in the air for almost a minute. Some with no tails at all. Colors of gold, green, red and blue. Smokers and sparklers! We counted and counted and counted. We started by saying "ooooooooh" and then when they came so fast, we were only able to say "o", "o". We laughed and giggled and clapped our hands and cheered! At peak, the count was somewhere between 1800 and 2500 per hour.

By 5a.m. we started packing up. But we lingered, this

Items of Interest (cont.)

time in a fully upright position, not wanting to miss the last of them. Finally, it was over. We won't see this again for two-thirds of a century. But that's ok. We watched what a little speck of sky debris can do on Sunday morning, November 18, 2001.

Chaco Canyon Volunteer Opportunity

By: Andrew Cooper

The National Park Service has an opportunity for an astronomer volunteer to provide public viewing and astronomy related presentations to visitors at Chaco Culture National Historic Park, New Mexico. They need someone with experience interacting with the public. For a couple hours of work each day you get the use of the astronomy facility, including a C-14 on an Astrophysics mount, a CCD camera, and a 20" obsession. They need someone who can commit to six weeks or more to enable that person to develop programs and learn the equipment.

For full details see <http://www.tucsonastronomy.org/chacovolunteer.pdf> or contact Andrew.

Events in the Sky for 2002

Compiled by Joe Orman

<http://pages.prodigy.net/pam.orman/JoeGallery.html>

January 14 (evening): Mercury 4 degrees to upper right of crescent moon, low in WSW after sunset.

February 20 (afternoon-evening): Moon occults Saturn in daylight, high in sky (disappears 4:17pm, reappears 5:14pm MST). Saturn 1 degree from moon after sunset.

February 22 (evening): Jupiter 1/2 degree from gibbous moon, very high in sky after sunset.

March 17 (evening): Mars 4 degrees to upper right of crescent moon, high in W after sunset.

March 20: Spring equinox (12:16 pm MST). Sunrise straight east (6:32am, azimuth 89.6 degrees), sunset straight west (6:40pm, azimuth 270.7 degrees). Always use proper eye protection when viewing the sun.

March 21 (evening): 1st-quarter moon occults star cluster M35, high in sky (disappears approximately 9:30pm, reappears approximately 10:15pm MST).

Star Parties and Events

TAAA Star Party at TIMPA

January 5 (Saturday)

Come out and enjoy the winter 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. Be prepared for cold weather and dress warmly. Directions to the TIMPA site are located on the outside flap of this newsletter.

TAAA Star Party at Las Cienegas (Empire Ranch)

January 12 (Saturday)

Las Cienegas (formerly Empire Ranch) has been our normal dark-sky observing site for quite a number of years. Las Cienegas is about 4000 feet in elevation, so be prepared for cold temperatures, and try to arrive before sunset. Stay as long as you like, but let everyone know when you are ready to leave; someone may be taking astrophotos. Bring a telescope if you have one, but you

don't need one to attend. Any member would be glad to let you look through their telescope. There are no restroom facilities at the site, so be prepared. 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.

Valencia Middle School Star Party [Southwest]

Jan 15, (Tuesday)

No. of Scopes: 4-5

The school is located at 4400 W. Irvington Rd. Take I-10 east to the Irvington Rd exit and proceed west (right) at the exit light. Proceed west for approximately 4 miles passing through the intersections of Midvale Park Rd and Mission Rd, both of which have stoplights. The school will be on your right. Proceed into the parking lot. The set-up area will be at the basketball and volleyball courts. Set-up will be at 6:00 pm. Observing will run from 6:30 pm to about 8:30 pm. A Star Party leader is needed for this event. A sign up sheet will be available at the January meeting. Note: Pizza and refreshments will be provided

Star Parties & Events (cont.)

to all TAAA volunteers!

the January meeting. Hot chocolate and cookies will be provided.

Roadrunner Elementary Star Party [NW-Marana]

Jan 17 (Thursday)

No. of Scopes: 5-7

The school is located at 16651 W. Calle Carmela. Take I-10 west to the Avra Valley Rd exit and proceed west for approximately 11-12 miles until you arrive at Anway Rd (there will be a Valley Mart gas station at this intersection). Turn right and proceed north for approximately 3 miles to Calle Carmela. Turn left here. The school will be on your left just after you turn. The set up area will be in a courtyard area south of the amphitheatre. Set-up will start at 5:45 with observing from 6:15pm to about 8:15pm. A Star Party leader is needed for this event. A sign up sheet will be available at

Sunrise Drive Elem. Star Party [North-Foothills]

Jan 22 (Tuesday)

No. of Scopes: 4-5

The school is located at 5301 E. Sunrise Drive. Go north on Swan Road and turn right (east) on Sunrise Drive. Proceed to the next traffic light and turn left (north) onto Suncrest. This street accesses the school. The set up area is located on a concrete patio north of the parking lot but just south of the school building. Set up is at 6:00pm with observing from 6:30pm to 8:30pm. A star party leader is needed for this event. A sign up sheet will be available at the January meeting

Star Party Schedule for 2002

Location	Event Date	Moon	Notes
TIMPA	Jan 05	Last Qtr.	
Las Cienegas	Jan 12	New 13th	
TIMPA	Feb 09	Last Qtr.	Joint TIMPA/TAAA event
Las Cienegas	Feb 16	4 day Moon	
TIMPA	Mar 02	Moonrise 2227	
Las Cienegas	Mar 09	New 13th	
ASDM	Mar 16	3 day Moon	Public star party
TIMPA	Apr 06	Moonrise 0342	Annual Club Picnic
Las Cienegas	Apr 13	New 12th	
Messier Marathon	Apr 13		Hosted by SAC
Sabino Canyon	Apr 19		Telescopes for Telethon
Kitt Peak	May 04	Moonrise 0218	
Las Cienegas	May 11	New 12th	
TIMPA	Jun 01	Last Qtr	

Dark Skies for January 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

Mo/Tu 31/ 1	18:57 - 19:03	Fr/Sa 11/12	19:05 - 5:59	Mo/Tu 21/22	1:16 - 5:58
Tu/We 1/ 2	18:58 - 20:13	Sa/Su 12/13	19:06 - 5:59	Tu/We 22/23	2:14 - 5:58
We/Th 2/ 3	18:58 - 21:22			We/Th 23/24	3:15 - 5:58
Th/Fr 3/ 4	18:59 - 22:30	Su/Mo 13/14	19:07 - 5:59	Th/Fr 24/25	4:18 - 5:57
Fr/Sa 4/ 5	19:00 - 23:37	Mo/Tu 14/15	19:07 - 5:59	Fr/Sa 25/26	5:21 - 5:57
Sa/Su 5/ 6	19:01 - 0:41	Tu/We 15/16	19:49 - 5:59	Sa/Su 26/27	- - -
		We/Th 16/17	20:45 - 5:59		
Su/Mo 6/ 7	19:01 - 1:45	Th/Fr 17/18	21:39 - 5:59	Su/Mo 27/28	- - -
Mo/Tu 7/ 8	19:02 - 2:49	Fr/Sa 18/19	22:33 - 5:59	Mo/Tu 28/29	FULL MOON
Tu/We 8/ 9	19:03 - 3:52	Sa/Su 19/20	23:26 - 5:59	Tu/We 29/30	- - -
We/Th 9/10	19:04 - 4:54			We/Th 30/31	19:20 - 20:14
Th/Fr 10/11	19:04 - 5:54	Su/Mo 20/21	0:20 - 5:58	Th/Fr 31/ 1	19:21 - 21:24

Weekend	Sun	Sun	Mercury	Venus	Mars	Jupiter	Saturn	Vi=Visibility
Sa/Su	Set	Rise	Set Vi	Rise Vi	Set Vi	Set Vi	Set Vi	
5/ 6	17:31	7:24	18:50 4	7:20 -	22:38 1	7:07 -3	4:45 0	-3 brilliant
12/13	17:37	7:24	19:06 3	Set	22:35 1	6:35 -3	4:16 0	0 conspicuous
19/20	17:44	7:22	18:54 6	17:47 -	22:31 1	6:04 -3	3:47 0	3 moderate
26/27	17:50	7:19	Rise	18:01 -	22:27 1	5:34 -3	3:19 0	6 naked eye limit
2/ 3	17:57	7:15	6:16 8	18:16 9	22:24 1	5:04 -3	2:51 0	9 binoculars limit

By Erich Karkoschka

Star Party Schedule for 2002 (cont.)

Location	Event Date	Moon	Notes
Las Cienegas	Jun 08	New 10th	
Solar Eclipse	Jun 10	New	Occurs 1844 MST
Las Cienegas	Jul 06	New 10th	Possible Monsoons
TIMPA	Jul 13	3 day Moon	Possible Monsoons
TIMPA	Aug 03	Last Qtr.	Possible Monsoons
Las Cienegas	Aug 10	New 8th	Possible Monsoons
Las Cienegas	Sep 07	New 6th	Possible Monsoons
Kitt Peak	Sep 28	Moonrise 2249	
ASDM	Oct 05		Public star party
Las Cienegas	Nov 02	New	
TIMPA	Nov 09	5 day Moon	Joint TIMPA/TAAA event
Leonid Watch	Nov 16	Moonset 0439	
Las Cienegas	Nov 30	New 4th	
TIMPA	Dec 07	3 day Moon	

Object of the Month by Alfredo García, Jr.

Well, Happy New Year to you all! Here we are ready to start a whole new year of stargazing opportunities. I hope you enjoyed some of the clear skies we had last month and were able to observe Comet C/2000 WM1 (LINEAR). Though not as spectacular as Hyakutake and Hale-Bopp, it was worth observing.

This month, the OTM is a wondrous member of our Milky Way Galaxy. It was known of as far back as 1000 BC. This OTM belongs to the class of objects known as open star clusters. There are many fine examples of open star clusters in our galaxy, but January's OTM is certainly one of the best of its class to observe with wide-field telescopes, binoculars, and/or with the unaided eye.

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 has spread most of its member stars along its path after several 100 million years and only few of them have an age counted by billions of years.

Without any further introduction, I present to you the January 2002 OTM: Messier 45 or the Pleiades Cluster. For those of you who have seen M45 before, you will most certainly agree with me that it is one of the best stellar jewels in the sky. If you have never observed the Pleiades, then you are in for a treat! You have most likely seen it in the sky and wondered what it was. I have on occasion heard some folks, not familiar with the sky, mistake it for the Little Dipper.

The Pleiades are, according to Greek mythology, the seven daughters of Atlas, the titan who holds up the sky. The sisters are Alcyone, Maia, Electra, Taygeta, Celaeno, Merope, and Sterope. To add to the myth the Great Hunter, Orion, fell in love with them and chased them for seven years. There are only six stars in the Pleiades that are easily visible with the unaided eye. These include Alcyone, Maia, Electra, Taygeta, Merope, and Sterope. There are many theories about what happened to the 7th one, Celaeno. She has often been called the "Lost Pleiad" because legend has it that she was hit by lightning. Of course, Celaeno is still there and just happens to be a star at the magnitude limit that our eyes can detect. So when you observe M45 see how many sisters you can observe! Figure 1 will help you in identifying the beauties that make up the Seven Sisters as M45 is also commonly referred to.

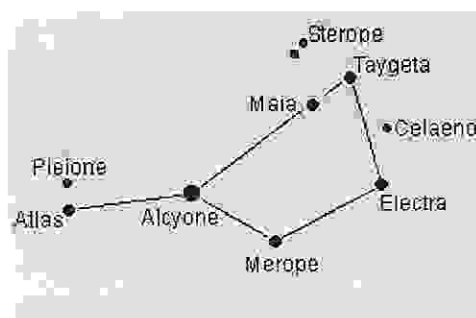
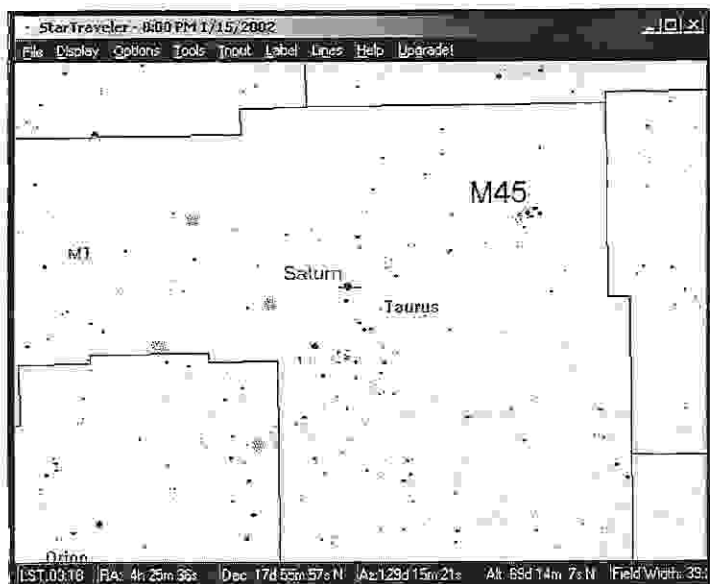


Figure 1.
The Seven Sisters

Modern observing methods show M45 to be a cluster composed of at least 500 mostly faint stars spread over a 2 degree (some four times the diameter of the Full Moon) field. The stars that make up the Pleiades are blue-colored indicating that they are young, hot stars. The cluster is embedded in a blue nebula reflecting the light of the bright stars that make it up. Physically, the reflection nebula is probably part of a molecular dust cloud unrelated to the Pleiades.

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

cluster, which happens to cross the cluster's way. Furthermore, the cluster was not formed from this nebula. This as can be inferred from the fact that the nebula and cluster have different radial velocities. As a side note, the brightest of these nebulae, found around Merope, was discovered on October 19, 1859 by Ernst Wilhelm Leberecht (Wilhelm) Tempel of Venice (Italy) with a 4-inch refractor and has its own designation. It is included in the New General Catalog as NGC 1435.



The age of the Pleiades star cluster is about 100 million years. The Pleiades have an expected future lifetime as a cluster of only about another 250 million years. After that time, the stars that make up the cluster will have been spread as individual (or multiple) stars along their orbital path. The distance to the Pleiades cluster as determined by direct parallax measures by European Space Agency's astrometric satellite Hipparcos is 380 light years.

M45 is well placed for observation in mid-January being almost overhead. It's very easy to find since it is visible to the unaided eye even under a Full Moon sky due to its combined visual magnitude of 1.4. Look for the Seven Sisters in the constellations of Taurus, the Bull. And as an added bonus in mid-January, the mighty Saturn will be well within the view of the cluster as well. With this giant as your beacon, you can't miss finding the Seven Sisters.

Figure II, M45's Sky Location, From StarTraveler SW, shows the cluster's location in the sky on 15 Jan 2002 at 2000 MST.

For those with setting circles and automated go to scopes, you can find M45 at RA: 03 hr 47 min and DEC: 24 deg 07min. Though not necessary due to its overall brightness, the Pleiades are best observed from dark skies with a low power telescope or set of binoculars. Only then will you truly appreciate the immense beauty of this collection of stars.

Though M45 presents itself as a great view in a telescopic field, it is an even greater view in a wide field astrophotograph or CCD image. This author took the astrophotograph (Figure III) through an 80mm f/5 refractor piggybacked on a 10" f/6.3 Meade LX 200 on ASA 400 speed film exposed for 25 minutes. The image is a negative to allow better viewing of the nebulosity. Due to its brightness and ease to locate, this is an excellent target for beginning and advanced astrophotographers and CCDers alike. You can achieve amazing results with this cluster. Try it, you'll like it!!

Figure III.
25 Minute Exposure, 80mm f/5 Refractor

And one final note on this cluster is that it is the only cluster to have its bright stars used as an emblem on a commercial product. In Japan, the name for the Pleiades is Subaru, the same as the car manufacturer. So if you look on a Subaru car, you will find the Pleiades star cluster as its emblem. Seems the Seven Sisters are getting about town in style, though be it only economical style!!

Desert Skies Classified

- FOR SALE:** Orion Premeium Deep Space Explorer Dobsonian. 12.5" F / 4.8, 1524mm FL. Full thickness PYREX mirror with 96% enhanced coatings. 2" with 1 1/4" adapter JMI focuser. Handles on Tube for easy carrying. 9X50 Celestron finder scope. Base, and Dust cover. Price \$ 700.00 firm. Colin Butler, 8851 N. Oracle Rd # 255, Tucson AZ, 85737. (520) 877 - 8438 (02/02)
- FOR SALE:** Celestron Nexstar 8" Schmidt-Cassegrain with 40mm Plossel eyepiece. As new, used once. Includes all original packaging and manuals. \$1300 OBO. Will consider trades. Jim Berger, 744-3858. <jberger@theriver.com> (02/02)
- FOR SALE:** Meade 4" Schmidt-Cassegrain Model 2045. Clock drive with tripod table-top legs. Asking \$475, will consider trade for ETX-90 EC. Please contact Mike Saganich at 881-3919. (04/01)
- FOR SALE:** Meade LX-200 Superwedge (Asking \$250.00). Meade 10" LX-200 Tube Balancing Weights (Asking \$60.00). Please contact Chuck Amedla at (520) 574-9287 or Email at chuckamedla@earthlink.net. (01/02)
- WANTED:** Dome observatory. Minimum size 8' diameter, can be mobile or not. Please call anytime 822-5143 or email, sonskies@azstarnet.com (1/02)

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

Constellation Report by Chris Lancaster

Orion

The Hunter

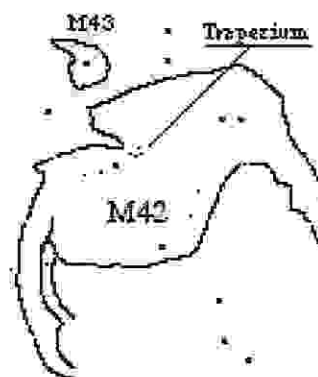
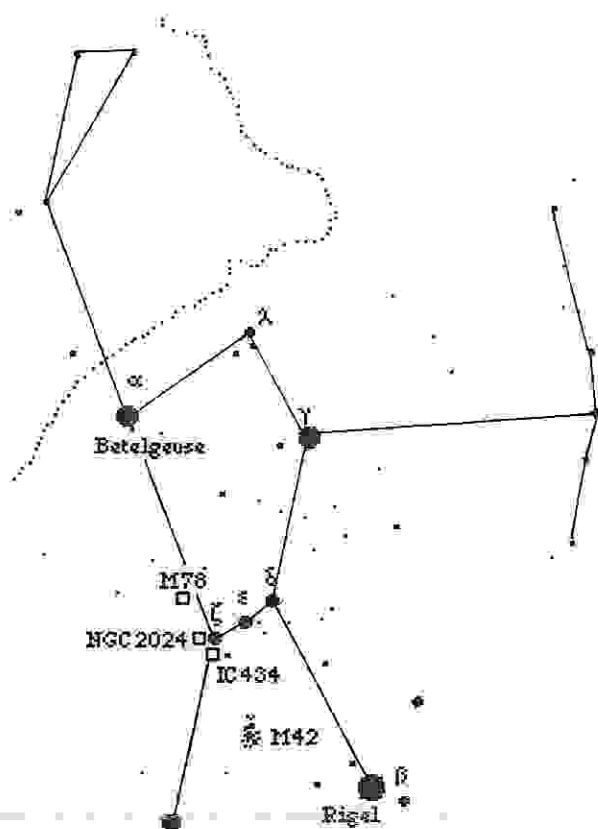
We've finally arrived at the heavyweight among all the constellations. Probably the most well known group of stars with, perhaps, the exception of the part of Ursa Major called the Big Dipper. On the celestial equator is a line of three stars forming the very recognizable "belt" of Orion. The faint stars and nebulosity below this represents his "sword", and other faint stars on each side of Orion's body show one arm raising a club and the other holding a shield against Taurus, the bull charging out of the northwest.

Mythology portrays Orion as a strong hunter. He claimed that no living thing could kill him, so to prove him wrong, the goddess Hera sent a scorpion to attack him. After falling victim to the scorpion's sting, Orion squashed the pest, but soon died from the venom. We now see this relationship between the scorpion (the constellation Scorpius) and Orion on fall and spring nights. The two characters are placed on opposite sides of the sky, so when one rises, the other is defeated and sinks below the horizon.

You can begin observing Orion before it is fully dark. Use high power to see Rigel and its magnitude 6.7 companion 9" away and holding a PA of 202°. Diagonally across the body of Orion from Rigel is Betelgeuse. This is an M2 supergiant of a striking orange color. Betelgeuse puts out an enormous amount of energy, only a fraction of which is in visible light. As a result, its outer atmosphere has inflated to make the star a truly bloated behemoth. Estimates of its size put its diameter matching the orbit of Mars or more, which also creates a stellar density of an exceedingly small nature—millions of times less than the sun.

Dark skies bring Orion's many deep-sky objects into view. His sword is home to the best region of nebulosity in the sky, M42. So prominent is this misty glow even to the naked eye that it is mentioned in some examples of 19th century literature, namely Tennyson's *Merlin and Vivien* and Poe's *The Murders in the Rue Morgue*. Binoculars show a wispy fog surrounding its central stars, 3-inch telescopes will bring out a fan shaped nebula, and 8-inch and larger scopes will show detailed knots and tendrils extending away from the main glow. The entire complex of gas is made to fluoresce by Theta¹ (θ) Orionis, called the Trapezium. Most views of this group of stars will show 4 members of magnitude 5.4 to 6.7 about 30" in expanse, but high power and large aperture will bring the total to 6. Adjacent to the main mass of M42 is M43, a roughly comma shaped object separated from M42 by a dark rift. To the north is a dusty reflection nebula with the designations of NGC1975, 1973, and 1977. It's curiously named the "Running Man Nebula" from the shape that is traced out by the dark lanes that separate distinct sections of the nebula. 10-inch apertures and larger are best for the dim glow of the "Running Man".

Another well known nebular region surrounds Zeta (ζ) Orionis. This one, however, is notorious for its difficulty to observe. NGC2024, the "flame" or "flaming tree" nebula, is not too elusive about 15' east of Zeta. Seen with an 6-inch or larger telescope, it's a circular emission nebula with branching dark lanes crossing it toward the north. Below this is the famous "Horsehead Nebula." The glowing region, IC434, is a 1 degree long spike of nebulosity pointing south from Zeta. Intruding into this is the dark nebula B33 forming the shape of the horse's head. While some claim to have seen it on dark nights with plenty of aperture, most will only capture it on film or CCD images.



2.5 degrees northeast of Zeta is M78, one of the more challenging Messier objects to find, but unmistakable when you do. It is cometary in appearance with a dusty glow surrounding a double star of magnitude 8.2. The nebula shines at magnitude 8 and covers 8.0'. Hunt down M78 at RA 5h 46m 42s Dec +00° 3'.

With all that Orion has to offer, it is easy to brave the cold temperatures of winter to spend some time with his treasures.