Another Close Approach!

by Barry Spletzer

You may be aware of the “Halloween Asteroid,” a newly discovered asteroid that passed within 300,000 miles of Earth last month. Hold on to your hats because there is another close approach by a much, much bigger body coming up in a couple of months. It’s been approaching us at an average speed of 500,000 miles per month since July, and in true TAAS fashion, we are going to throw a party to celebrate.

Of course, the close approach is the perihelion, the time during the year when the Earth is closest to the Sun, and the event is the Perihelion Banquet. Perihelion occurs in the first week of January each year and each January TAAS holds the annual banquet. This perihelion is on January 2 and our banquet, following our usual lunar schedule, is not until Saturday the 23rd.

We will again be at the MCM Elegante Hotel, 2020 Menaul Blvd. NE. Festivities start at 6:00 p.m. and include a full buffet, cash bar, speaker, trivia contest, door prizes, and election of officers. The cost is the same as last year at $20 per person and is open to TAAS members and their guests. One new twist this year will be on-line reservations at www.taas.org, to be ready soon. So make plans, mark your calendar, and we’ll see you there!
Advisor to NM Tech Astronomy Club.

Dr. Klinglesmith joined MRO in 2000. He is responsible for monitoring the MRO ridge environment via remote weather stations, allsky cameras, and seismographs. He also monitors the conditions within the beam-combining facility and works with the delay line team. He is responsible for education and outreach through lectures, classes, and star parties at the Etscorn Campus Observatory.

Like planets, asteroids shine by reflected sunlight. Because the distance of an asteroid to the Sun and the Earth changes as the asteroid and the Earth orbit the Sun, the brightness of the asteroid also changes with time. Apart from this easily predictable change of brightness, asteroids also exhibit brightness variations that are caused by their irregular shape and rotation. This brightness variation is called a lightcurve.

The shape of a lightcurve depends on the relative position of the Sun, Earth, and the asteroid. If enough lightcurves from different positions are available, we can determine the asteroid rotation period and spin-axis direction and acquire the shape model.

NASA's interest in characterizing asteroids is for future expeditions to approach and land on asteroids. "Whether we want to orbit and take images or land on one and take samples—or even put an astronaut on it—we need to pick a good one," Klinglesmith said.

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**Dr. Daniel A. Klinglesmith III**, is Research Scientist, Magdalena Ridge Observatory, at New Mexico Institute of Mining and Technology and Faculty Advisor to NM Tech Astronomy Club.

The Milky Way and the setting crescent moon as seen from Star Village, the main observing field for Enchanted Skies Star Party in Magdalena. Several TAAS members attended ESSP, which took place October 14–17.

**Photo: Ed Juddo**

...General Meeting News continued from page 1

Nominations for 2016 Officers

by Jim Fordice

THE TAAS BOARD OF DIRECTORS has formed a Nomination Committee that is soliciting nominations for the four officer positions (President, Vice President, Secretary, and Treasurer). The members of the Nomination Committee are Jim Fordice (Chairman), David Frizzell, and Dee Friesen. The committee's task is to prepare the slate of candidates for the election that will be held during the Perihelion Banquet/Annual Meeting on January 23.

The committee already has one candidate for each of the four positions but wants to be sure there are no other candidates before closing the slate. Please contact Jim, David, or Dee if you have a nomination.

The Milky Way and the setting crescent moon as seen from Star Village, the main observing field for Enchanted Skies Star Party in Magdalena. Several TAAS members attended ESSP, which took place October 14–17.

**Photo: Ed Juddo**
**October 10 New Moon Observing:**
See Dee Friesen’s article on this event in last month’s issue: “Rumors of TAAS members not using GNTO are greatly over-exaggerated.”

**November 2 Observing Session:**
The great late-fall weather we have been enjoying provided nine of us an opportunity to do some observing on a Monday night. Temperatures ranged from 60°F at darkness to 54°F at moonrise. The skies were very transparent (“B”) with average seeing. SQM-L darkness readings were 21.3 but the winds were 812 mph (with slightly stronger gusts) until starting to drop by 10:30 p.m. (reaching 13 mph by 11:30 with the rising moon).

Several attendees checked out their gear, snapped some pictures, or worked on various observing lists. Jim Kaminski finished viewing the Pegasus galaxy groups listed in October’s *Sky & Telescope*, which included Stephan’s Quintet and the so-called “Deer Lick Group” (perhaps better known as galaxy NGC 7331 and its six fleas, with credit to Kevin McKeown), and lastly, vestiges of the elusive Cone Nebula in Monoceros.

In addition to Jim and me the attendees were: Rick Hassi, Bill Wallace, George Friedman, Will Ferrell, Fernando Torres, Kevin McKeown, and Dale Murray.

Thanks to everyone who attended. GNTO is always more enjoyable when we have a crowd.

**Signage Improvements:**
When you visit the site you will notice the new reflectors and signs intended to make it easier to exit the site in the dark using your car’s parking lights. We need your feedback on whether you can see the signage as you exit and where other signs are needed. Please send comments to GNTO@TAAS.org.

**TAAS 200 Scavenger Hunt:**
We will hold the fall TAAS 200 Scavenger Hunt on November 14. If you are not familiar with the TAAS 200 list take a look on the TAAS website at http://www.TAAS.org/TAAS200/TAAS200intro.html. Will Ferrell is the organizer for this fun event. Plan to attend and see how many TAAS 200 objects you can find!

**New Route to GNTO:**
Due to construction of a new crosswind runway at the Belen Municipal Airport, the route to GNTO has changed. Please contact any GNTO Committee member if you need a copy of the map that shows the new route.

**New Weather Station:**
We recently installed a new Davis Weather Station at GNTO. The GNTO weather Web page has been updated to show the new weather station readings. You can find a link at the bottom of the GNTO Web page on TAAS.org or go directly to http://complex.org/~gnto/.

The information provided by the weather station can be adjusted to suit our needs. Please take a look and send any comments you have to GNTO@TAAS.org.

**Upcoming Events:**
- December 5: Third Quarter Moon Observing
- December 12: New Moon Observing

Don’t forget that the GNTO Observing Field is available for use by TAAS members anytime. Check the TAAS website for the procedure to follow. Contact me if you have any questions.

As always, check TAAS_Talk and the TAAS website for last-minute changes and updates. GNTO events are open to all TAAS members and their guests.

GNTO Director: GNTO@TAAS.org or 505-803-3640.

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**Stellarvue Raptor** 105-mm apo refractor silhouetted below the Milky Way at Star Village, the main observing field for Enchanted Skies Star Party. Several TAAS members attended ESSP, which took place October 14–17. Photo: Ed Juddo
NGC 7635—The Bubble Nebula—in the direction of the constellation Cassiopeia. The bubble is formed by the stellar wind of a large—about 15 solar masses—central star. This star, actually left-center of the bubble, is SAO 20575. NGC 7635 is between 7,000 and 11,000 light-years from Earth; the bubble is about 3–5 light-years in diameter. The image is oriented with the top slightly south of east. The bright star at the top of the image is SAO 20562, a 6.94 magnitude and class B2IV.

The data for this image was captured at GNTO on October 10 and 11, 2015, using a Celestron 11" HD Edge with f/7 focal reducer on a Losmandy G-11 mount. The camera was an SBIG ST4000XCM one-shot color camera operated at -10 C. Guiding was done using the in-camera guide chip and CCDSoft. Two hours and forty minutes of exposures were combined in DSS and processed in Photoshop.

—Vance Ley

NGC752 is a large open cluster in Andromeda about 1,300 light-years away. It is over one degree in size; you could fit nearly four full Moons in it.

Equipment: Explore Scientific ED127CF f/5.25 telescope with a reducer lens, iOptron CEM60 mount on a Tripier telescope pier, SBIG ST8300M camera and FW5 filter wheel, SBIG SG-4 autoguider on an AT72ED scope.

Software: CCDSoft v5.210, CCDStack v2, ImagesPlus v5.75a, Photoshop Elements v14.

Exposure: 10 x 3 minutes, red, green, blue filters for 90 minutes total exposure.

Location: 3 miles north of Oak Flat on my backyard patio near Tijeras, NM
Date: November 2, 2015, from 8:00 to 9:30 p.m. MST.

Note: I lost about 30 minutes of imaging due to problems with finding the sparse large NGC752 and re-calibrating my autoguider.

—John Laning
Bob Havlen guides students around the night sky.

Excited students wait to enter the planetarium.

Tom Grzybowski demonstrates “All About Comets.”

Jon Schuchardt explains craters.

Stapleton School Star Party Makes a Difference

by Trish Logan

The rainy weather didn’t dampen the high spirits of the students and their families as they enjoyed a great star party experience at Stapleton Elementary School October 20. There were too many clouds for night sky viewing, but there was still plenty for everyone to do inside. Our world-class planetarium was delivered, set up, and made ready to rock and roll by Bob Hufnagel, assisted by Judy Stanley, Dr. Dan Klinglesmith, and some willing school volunteers. Dan and Judy educated and entertained six groups of eager participants for a total of 150 people under the dome.

Tom Grzybowski created comets in his All About Comets activity, Bob Havlen’s class discussion was about the vast distances in our solar system, Jon Schuchardt gave an interesting demo of craters on the Moon, and Linda Jaramillo cruised the halls in search of photo ops. This was Linda’s first assignment as a TAAS Educational Outreach volunteer and she was much appreciated.

I never tire of all the happy and excited faces that surround us at these star parties. I know I speak for the rest of our crew when I say we make a difference! Stapleton stepped up to the plate with many volunteers of their own who helped make everything run smoothly. They also delivered a generous check to TAAS from the Ernest Stapleton PTA in appreciation of our efforts.

Thanks to all of our faithful and new volunteers. If you feel the urge to join us, just contact me or someone you know who will get you involved.

Photos: Linda Jaramillo
Cosmic Carnival at Albuquerque Open Space
November 7

SOLAR ACTIVITIES
Photos: Roger Kennedy

Hy Tran at spectrascope

Timmy, Roger, Thaddeus, Boris, Jim K., and carnival crowd

Roger, Thaddeus, Boris

Jim Kaminsky with projection scope

Timmy, Roger, Thaddeus, Boris, Jim K., and carnival crowd

Roger, Boris at CaK scope/monitor

International Dark-Sky Association Annual Meeting November 14-15
by David Penasa

IDA’s 2016 Annual General Meeting is being held November 14-15 in Phoenix, Arizona. This year’s conference theme is “One Coin ~ Two Sides: Impacts of Light Pollution to Fish and Wildlife Resources and the Mitigating Role of Emerging Lighting Technologies,” and is a must-attend event for anyone concerned about the ecological impacts of artificial light at night.

It is being held at the Embassy Suites Hotel Phoenix-Scottsdale, minutes from the Phoenix Sky Harbor International Airport in Scottsdale’s resort community.

To learn more about the conference and how to register, go to http://darksky.org/annual-general-meeting-2015/.

Observe – Educate – Have Fun
Bright as the Full Moon:
How Much to Light Up the Night?
An analysis from the Illinois Coalition for Responsible Outdoor Lighting at http://www.illinoislighting.org/moonlight.html

Special Thanks to the ICROL for permission to publish this article in The Sidereal Times.

We humans are biologically a diurnal species. While all of our other senses function as well at night as during the day (or perhaps sometimes even more sharply), our eyesight is limited in its low-light capabilities. For tens of thousands of years, our ancestors were restricted in their ability to function between evening and morning twilight.

The light from the flames of burning materials—from sticks, to animal and vegetable fats, to natural fossil fuels—extended their functionality into the night, especially in enclosed areas. Outdoors, another light source was commonly made use of to conduct activity outdoors at night: moonlight.

We find references to the use of moonlight for nocturnal activity in many places in both the historic record and in folk wisdom. The moon provides its most substantial illumination of the landscape at the time of full moon (see below); full moons are particularly associated with nocturnal activity. The name “Harvest Moon”, for the full moon occurring nearest to the autumnal equinox, refers to the fact that the moonlight at that time is bright enough (and moonrise occurs in conjunction with sunset) to allow harvesters in the northern hemisphere to continue their work in the fields into the night. The same effect gives us the name of the following full moon, the Hunter’s Moon. Moonlight gardens, designed to be enjoyed during the night, were enjoyed in the orient for centuries; the 17th Century Taj Mahal in India featured a large garden meant to be visited during the cool of night. In England, some of the greatest creative minds of the 18th Century formed the Lunar Society of Birmingham; they met to discuss natural science and philosophy each month on the evening of the Monday nearest the full moon, so their members could travel home safely after dark by moonlight.

How much illumination does moonlight provide to the landscape, and can we use this information as any sort of guide as to how much illumination we need to provide artificially, when moonlight isn't available?

As it turns out, the level of illumination to the landscape provided by the moon varies greatly. Besides the clarity of the air (including the presence or absence of clouds), the two main variables are the phase of the moon (the percentage of the visible moon face illuminated by sunlight) and the elevation of the moon in the sky.

One of the best analyses of the level of illumination provided by the moon which we’ve found was created by C.D. "Kit" Courter, and is available on his webpage, How Bright is Moonlight?

Above is a graph of results from Mr. Courter’s work (reproduced here with his permission). The vertical axis is the level of illumination that the moonlight provides on the ground on Earth (in foot-candles). The horizontal scale is the phase of the moon, noted in “quarters” on the top, and phase angle on the bottom (the latter being equivalent to the sun’s position relative to a line through the moon and Earth; zero degrees equaling the sun being “behind” Earth, and the moon at full phase; 180°meaning the sun “behind” the moon, and the moon at new phase). The colored plot lines are for different elevations of the moon in the observer’s sky: Z=0 (the top/black plot line) puts the moon directly overhead (at the zenith); the colored lines indicate the level of illumination with the same moon lower in the sky, by the number of degrees indicated (Z=60, for instance, places the moon 90 minus 60, or at 30°in elevation above the horizon).

The moon’s surface features the interesting property of retro-reflectivity; the lunar surface tends to reflect light directly back in the direction it came from. So the moon appears brighter in the sky as it get full not only because a greater percentage of its Earth-side face is illuminated, but also because the light source, the sun, gets close to being in line behind the observer on Earth. This effect creates a sharper peak in the illumination provided by the moon in the days and even hours around full moon than the increased percentage of illuminated lunar face would on its own.

What do we find from this work? The moon reaches a peak brightness for a short time around its full stage, and illuminates the ground by a varying amount through the night, as its elevation in the sky changes. Just two days either side of full brings the illumination down to ½ of the maximum it reached at full. There is a lot of variation from full moon to full moon, depending on the peak elevation it reaches in the sky, and the distance from the moon to Earth (the moon's orbit isn’t a perfect circle, and its apparent size in the sky varies, causing as much as about 30% change in the illumination it provides). What we see is a theoretical peak in the illumination the moon could provide of around 0.03 foot-candles.
...Bright as the Full Moon
continued from page 7

(exactly full moon, directly overhead), but that what most people
(including our friends in the Lunar Society) would consider to be
“full” probably averages half that at most, around 0.015 f.c.

How does this relate to modern lighting practices? Most current
common illumination practices far exceed “full moon” lighting lev-
els. For example, the IESNA recommends that an expressway, away
from an interchange and with low potential for pedestrian conflict,
be illuminated to 0.9 foot-candles. This is sixty times brighter than
the average for bright full moon light we derived above. Is there
a rationale for this? Two factors come into play: The nature of
human visual response, and the methodology used to develop the
recommended lighting practices.

Visual Response in Low Light Conditions

The human visual system varies in response to the luminance
of the objects in the scene it is observing, which is not the same
as the illumination which is lighting up the scene, but is related to
it. While the actual luminance of objects viewed under moonlight
will vary depending on not only the aspect of the moon in the sky,
but also the angle of illumination and the reflectivity of the objects,
this 0.015 f.c. provides enough light for the eye to see a general
scene using mesopic vision (“twilight vision”, using both the
retina’s rod cells and cone cells).

Scotopic (“nighttime”) vision has different features than phot-
opic (“daytime”) vision; it is monochromatic, lacks the ability to
see sharp detail (as is needed, for instance, to read normal print
by), and gives reduced depth perception. It does provide a general
wide-field view of a scene, and is useful for detecting motion. Sco-
topic vision is also sensitive to “overload”; brighter light within the
field of vision can desensitize the rod cells, and such a loss of dark
adaptation can leave one visually impaired until the eye re-adapts
after the bright light source is removed.

Mesopic vision blends the features of photopic and scotopic
vision; visual acuity and color perception are reduced from what
is achieved under full daylight, but are better than those under the
ever dimmer, rod-cell-only scotopic vision.

Real-world Lighting Practices

The IESNA recommendation for highway illumination noted
above was based on achieving a level of illumination to detect
visual targets placed on the roadway using photopic vision in a
model scenario. This test setup relied entirely on the roadway
lighting; the fact that vehicles are required by U.S. motor vehicle
standards to come equipped with lighting to provide “adequate illumination of the
roadway” (i.e. headlights) was not included in the model. The IESNA measurements
are also only based on horizontal illumination, i.e., the level of illumination on
the ground surface (or a horizontal plane above it); objects which we need to see in

our field of view are often more (or fully) vertical, and measuring
only horizontal illumination does not give an accurate reading of
visibility. (One can see the difference when comparing streetlights
to vehicle headlights; the former tend to shine downward, providing
better horizontal illumination, while the later tend to shine
out parallel to the ground; the headlights might score lower on the
horizontal measure, but actually illuminate a vertical surface more
effectively.)

Vehicle headlights and other light sources are a feature on real
roadways. (Lighting an empty street, as shown in the first photo
in this section, is an absurd and tragic waste of energy, as we point
out on other pages of this website.) The second photo shows a
real-world situation; the highway is illuminated by overhead lights,
but the visual scene is dominated by other light sources. Beams
from headlights illuminate the lane markings in front of each ve-
hicle. The vehicles themselves are easily discerned by their marker
lights.

Signs are individually illuminated, and/or reflect the vehicle
headlights. (Indeed, most highway signage is, like the lunar sur-
face, retroreflective—it is most visible from vehicle headlight illu-
mination coming from the direction of the vehicle operator’s eyes,
not from general area illumination.) And the glare from oncoming
headlights is so severe that visual sensitivity is reduced consid-
erably, rendering even the relatively bright overhead illumination
less effective.

All in all, the modeling used to develop this often referenced
roadway illumination standard (and many similar recommended
practices) is too far removed from some of the practical realities of
the tasks we need to perform at night, from cost effectiveness, and
from the functionality of the human visual system. It also fails to
take into account how the human eye responds to light of vary-
ing wavelengths, something we’ve learned is of great importance,
especially at lower light levels.

Real-world Lighting Solutions

Another reason why even our “minimal” outdoor lighting
installations, especially on roadways, have so far exceeded the
moonlight levels which our ancestors used to be able to function
by is a vicious circle caused by the ready availability of bright
electric lighting. Once a bright light source is added anywhere
in a nocturnal scene, all fainter illumination loses effectiveness.
Lighting on signs and properties along roadways gets brighter as
new technology allows, and it gets harder to see the roadways, so
roadway lighting is increased. Vehicle headlights get brighter (they
have increased in output by more than eight times in the last 60
years), and that lights up the roadway for the operator more, but
continued on page 9...
also increases the glare for oncoming drivers, reducing their night vision ability. Even vehicle marker lights and dashboard lights have gotten brighter; again, this actually reduces night vision, and creates an impetus to bring all illumination up toward daytime levels, rather than practical night levels.

But from an environmentally responsible point of view, nighttime light levels are all we should be trying to achieve outdoors at night in most situations. We cannot afford either the monetary cost of illuminating our whole planet to daytime levels, nor the waste of the immense amount of energy required to accomplish that unrealistic goal. We also simply cannot afford the cost to the health of our natural environment, nor our own physical health, of such massive disruption of the natural night.

WE MUST put an end to the rapid upward spiral of intensity in our outdoor lighting; a spiral which is not slowing, but actually continues to accelerate. We must develop better standards, and bring more uniformity to the levels of illumination both provided and allowed. We have the technology to do this, and can both increase safety and slash power consumption in the process. We can stop continually making vehicle headlights brighter, just because that “upgrade” is a showroom selling feature; we can have other vehicle lights (like brake lights) be bright in the daytime sunshine, and dimmer at night (by simply dimming them when the headlights are on). Glare from oncoming headlights can be reduced on many divided highways by installing simple barriers in the median; this can cost much less than installing general lighting (as an attempt to make up for the vision lost to the headlight glare), and have none of the perennial operating expense. We can start illuminating roadways only where there is a proven cost effectiveness for such lighting, only to levels needed for specific visual functions, and taking into account the lighting systems which vehicles themselves carry.

Many other types of outdoor lighting practice also are in real need of such analysis and clear-headed re-thinking.

We don’t have to return to the era of only going out on nights where a full moon provides the illumination, but we can learn from that era something about sensible lighting.

ILLINOIS COALITION FOR RESPONSIBLE OUTDOOR LIGHTING, ALL RIGHTS RESERVED
Next scheduled Board of Directors Meeting will be November 19, 2015.

Account Summary, October 2015
by Dan Clark, Treasurer

Total Funds on Deposit:

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Major Expenses

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TAAS General Meeting

Free and Open to the Public
Saturday, November 21, 7:00 P.M
UNM Science and Math Learning Center

The Importance of Asteroid Lightcurves

Dr. Daniel Klinglesmith III
Magdalena Ridge Observatory

Need help with your Telescope?

Attend the ATM meeting and receive assistance.

First and third Wednesday of the month.
Montano Mesa Multi-Gen Center
501 Elizabeth St SE, Albuquerque, NM
map is available at www.TAAS.org
Welcome to New or Returning TAAS Members

Katherine Belzowski
Jimm Carleton
Muriel Codwise
Paul Feketc
William Fleming
Linda Jaramillo
Ron Maestas
Gail Robertson
Raymond Scheideman

Donations to TAAS

GENERAL
Linda Jaramillo
Guy Kent
Alison Schuler
Don Southwick

GNTO
Ron Maestas

The Albuquerque Astronomical Society is a 501(c)(3) organization. Donations are deductible as charitable contributions on the donor’s federal income tax return.

Location, Location, Location

- Chaco Canyon
  6185’ elevation
  Latitude 36° 01’ 50”N
  Longitude 107° 54’ 36”W
  36.03’ -107.91’
  36° 1.83’ -107° 54.60’

- Oak Flat
  7680’ elevation
  Latitude 34° 59’ 48”N
  Longitude 106° 19’ 17”W
  34.99’ -106.32’
  34° 59.80’ -106° 19.28’

- UNM Campus Observatory
  5180’ elevation
  Latitude 35° 5’ 29”N
  Longitude 106° 37’ 17”W
  35.09’ -106.62’
  35° 5.48’ -106° 37.29’

For security reasons, GNTO location is available by request only, so please contact Jim Fordice, GNTO Director, for GNTO information.

Explanations of Dues and Membership Renewal Date

New memberships will be posted as beginning the first day of the month regardless of what day during that month the check is received. Notice of renewal will be sent out the month before the due date. You will have until the end of the month after your renewal date to send your membership check.

If you fail to pay and renew at that time, your membership will lapse. When you pay on a lapsed membership you will be reinstated in the month that the membership was originally due. (If dues were due in March and you did not renew until May or June or July, etc., the date of your renewal will be in March. If your dues are due in April and you pay in March, your membership will still be renewed in April.)

In a nutshell, if you pay late or early your membership date stays the same and your next year’s dues will be due on that date next year. —Dan Clark

Monthly Membership Report

October 2015

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Editor’s Note

The deadline for the next issue of The Sidereal Times is Friday, December 4. The newsletter editor’s e-mail address is editor@TAAS.org

Text: E-mail text as an attachment, preferably in Microsoft Word or compatible format.

Photos: Caption and credit needed. Attach photos or graphics in separate graphics files. Photos or graphics in Word files are no longer acceptable.

Membership Services

for:
- Membership Inquiries
- Events Information
- Volunteer Opportunities

Contact Bob Anderson at membership@TAAS.org

for:
- Membership Dues
- Magazine Subscriptions
- Address/e-mail changes

Contact Dan Clark at treasurer@TAAS.org

P.O. Box 50581
Albuquerque, NM 87181

The Official Newsletter of The Albuquerque Astronomical Society
# 2014 TAAS Board of Directors/Staff

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Contact Information</th>
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<tbody>
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MEMBERSHIP: You may request a membership application by sending e-mail to membership@TAAS.org. Applications may also be downloaded from the Web site. Annual dues to The Albuquerque Astronomical Society are $30/year for a full membership and $15/year for a teacher, student (grades K-12), or military membership. Additional family members may join for $5/each (teacher, student and family memberships are not eligible to vote on society matters). New member information packets can be downloaded from the Web site or requested from the TAAS Membership Services Director at membership@TAAS.org. You may send your dues by mail to P.O. Box 50581, Albuquerque, NM 87181-0581 with your check written out to The Albuquerque Astronomical Society or give your check to the Treasurer at the next meeting.

MAGAZINES: Discount magazine subscriptions to Sky and Telescope and Astronomy as well as discounts on books from Sky Publishing Corporation are available when purchased by TAAS members through our society. Include any of the above magazine renewal mailers and subscription payments as part of your renewal check. Make checks out to TAAS (we will combine and send one check to the publisher). Warning: publishers take several months to process magazine subscriptions.

NEWSLETTER ARTICLES/ADVERTISEMENTS: Articles, personal astronomical classified advertisements and advertisements for businesses related to astronomy must be submitted by the deadline shown on the Society calendar (generally the Friday near the new Moon). Rates for commercial ads (per issue) are $120 per page, $60 per half page, $30 per quarter page, $7 for business card size. The newsletter editor reserves the right to include and/or edit any article or advertisement. E-mail attachments in Microsoft Word or compatible word processor format; ASCII and RTF are acceptable. One space between paragraphs is preferred. One column is approximately 350 words. Contact the Newsletter Editor at editor@TAAS.org for more information.

Note that the Sidereal Times is no longer mailed. It is posted on the TAAS Web site, www.TAAS.org.

Send submissions or correspondence to editor@TAAS.org.

TAAS ON THE WORLD WIDE WEB:
TAAS Web site: http://www.TAAS.org
The TAAS Web site includes:
• Online Sidereal Times
• Calendar of TAAS Events
• Programs: TAAS 200,
• TAAS Fabulous Fifty
• Educational Outreach, School Star Parties, Solar Astronomy Outreach
• Equipment Trader,
• Telescope Loaner Program, and more
• Telescope Making and Maintenance
• SIGs
• Members’ Guide
• Links to Astronomy Resources and Members’ Blogs
E-mail: TAAS@TAAS.org

TAAS is honored to receive an “Editor’s Pick 2013 Best of the City” award from Albuquerque Magazine.

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CELESTIAL EDITION