September 1998

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Please note: TAAS offers a Safety Escort Service to those attending monthly meetings on the UNM campus. Please contact the President or any board member during social hour after the meeting if you wish assistance, and a club member will happily accompany you to your car.

Events

August 1998 calendar of events 13K bytes)

September 1998 calendar of events (13K bytes)

September 1998 Solar Almanac (56K bytes)

September 1998 Lunar Almanac (54K bytes)

August 1998

1   Sat  * Astronomy 101 @ Oak Flat
2   Sun
3   Mon   Uranus at opposition
4   Tue   Venus 0.8 deg. from Mars
5   Wed
6   Thu  * Board Meeting
       Neptune 2 deg. from Moon
7   Fri  * UNM
       Full Moon (8:11 pm)
       Penumbral Eclipse (Moon rises eclipsed)
8  Sat  * **TAAS General Meeting**
9  Sun
10 Mon  Jupiter 0.9 deg. from Moon
11 Tue  Moon at perigee. 57.5 Earth-radii (6 am)
12 Wed  Persied Meteor Shower
13 Thu  Saturn 2 deg. from Moon
* **Eagle Project at GNTO**
14 Fri  Last quarter moon (1:50 pm)
* **Rick and Cindy get married at GNTO (8:00 pm)**
* **Eagle Project at GNTO**
15 Sat  * **Oak Flat**
        Aldebaran 0.2 deg. from Moon
* **Eagle Project at GNTO**
16 Sun  Saturn stationary
17 Mon
18 Tue  Pluto stationary
19 Wed  Mars 4 deg. from Moon
20 Thu  Venus 3 deg. from Moon
21 Fri  New Moon (8:03 pm) Start of Lunation 936
        Annular eclipse (not visible in NM)
22 Sat  * **GNTO**
        * **Carlsbad Trip**
23 Sun  Mercury stationary
24 Mon
25 Tue  Mercury 3 deg. from Venus
26 Wed
27 Thu  * **GNTO Meeting**
        Moon at apogee. 63.5 Earth-radii (midnight)
28 Fri  * **UNM? Call Hotline to confirm**
29 Sat  First quarter Moon (11:07 pm)
30 Sun
31 Mon  Mercury at W. elongation

**Sunrise / Sunset**
For Latitude 35.08, Longitude 106.65 (Albuquerque, NM)
Sunrise = upper limb on horizon
Sunset  = upper limb on horizon

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**Planet Rise (8/15/1998)**

- Mercury  6:22
- Venus    4:49
- Mars     4:19
- Jupiter  21:24
- Saturn   23:06
- Uranus   19:12
- Neptune  18:34
- Pluto    14:16
September 1998

1 Tue
2 Wed
3 Thu  * Board Meeting
    Neptune 2 deg. from Moon
    Uranus 3 deg. from Moon
4 Fri  * UNM
5 Sat  * TAAS General Meeting
6 Sun    Full Moon (5:22 am)
7 Mon    Labor Day
     Jupiter 0.5 deg. from Moon
8 Tue    Moon at perigee.  56.7 Earth-radii (12:01 am)
9 Wed    Saturn 2 deg. from Moon
10 Thu    Mercury 0.4 deg. from Venus
11 Fri  * UNM
12 Sat  * Last quarter (7:59 pm)
     Aldebaran 0.3 deg. from Moon
     Ceres 0.9 deg. from Moon
13 Sun
14 Mon
15 Tue    Jupiter at Opposition (9 pm)
     Jupiter rises at 7:13 pm, disk size is 46.6 arc seconds
16 Wed    Pallas at opposition
17 Thu    Mars 2 deg. from Moon
18 Fri  * UNM
19 Sat  * GNTO
     * Chaco
20 Sun    New Moon (11:02 pm) Start of Lunation 937
21 Mon
22 Tue    Autumnal Equinox (11:37 pm)
23 Wed    Moon at apogee.  63.7 Earth-radii (4 pm)
24 Thu  * GNTO Meeting
25 Fri  * UNM
26 Sat  * GNTO
27 Sun
28 Mon    First quarter (11:07 pm)
29 Tue
30 Wed    Neptune 2 deg. from Moon

Sunrise / Sunset
For Latitude 35.08, Longitude 106.65 (Albuquerque, NM)
Sunrise = upper limb on horizon
Sunset  = upper limb on horizon

9/01/98   6:39 / 19:34 (MDT)
9/15/98   6:49 / 19:14 (MDT)
9/30/98   7:01 / 18:52 (MDT)

Planet Rise (9/15/1998)

Mercury   6:05
Venus      5:53
Mars      3:54
Jupiter   19:13
Saturn    21:02
Uranus    17:07
Neptune   16:30
Pluto     12:16

NOTES:
* = official TAAS Event
GNTO=General Nathan Twining Observatory. Call Gordon Pegue @ 332-2591 to confirm.
SFCC=Santa Fe Community College. Call Brock Parker @ 298-2792 to confirm.
UNM=UNM Observatory observing nights. Call the TAAS Hot Line to confirm @ 296-0549
ATM=Amateur Telescope Making. Call Michael Pendley for information @ 296-0549.

All times MST before 4/5/98, MDT after 4/5/98

Astrophotographer Dave Healy to Speak in August

On August 8, at our regular monthly meeting in UNM's Regener Hall, our featured speaker will be astrophotographer Dave Healy. Well known for the excellence of his work, he has been published quite widely, including (of course) *Sky & Telescope* and *Astronomy* — and (last but not least) the highly regarded book "Astrophotography" by TAAS member Barry Gordon.

After many years of exposing film in an 8" Schmidt Camera and 14" SCT (among other things), he now uses a CCD and 16" SCT under the dark skies of Sierra Vista, AZ.

Dave's talk will start with his earlier work with film, featuring slides of objects you can photograph better than you can see — including: eclipses, occultations, clusters, nebulae, supernova remnants, and colliding galaxies. He has also promised to let us in on some of his favorite mistakes, ranging from a shot intended for one hour and actually exposed for 1/125 of a second (an underexposure of 450,000 to one), to an investigation into foot-binaries, nose-binaries and chin-spirals.

He will then show us some of the same objects imaged by CCD—better than film in some ways, worse in others—and enlighten us on some of the technology of CCD imaging, including: what a raw image looks like; what the dark frame and flat field images look like and why they're necessary; and a step-by-step demo of image processing in the electronic darkroom.

He will tell about a whole different array of disasters produced by the CCD, but he will also tell how you can do things that are utterly impossible on film, like an image of twenty-fifth magnitude galaxies achieved by electronically stacking thirty-two one-half-hour exposures taken
on five different nights. He will also touch on searching for asteroids with the CCD —

demonstrating blinking images of the same star field, taken one-half hour apart, showing two
different "hoppers" in the same field.

Finally, he will tell why his latest efforts are better than anything he could do with film with the
same equipment, and why retaking his favorite objects in color with the CCD is his number one
objective for the foreseeable future.

The meeting starts at 7:00 pm and will conclude with the usual social hour (don't forget to bring
some goodies to share).

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**Presidents Update**

*by Mike Pendley*

Not to be outdone by Lisa Wood's *AstroBlast Gossip* (page 13) I offer the following TAAS
gossip:

**Ellie Gates** who served as a TAAS board member, Treasurer, web master, guest speaker (and
lots more stuff) was back in town on July 14 to defend her thesis. She was successful and should
now be referred to as Dr. Elinor Gates. Way to go Ellie!!! (oops... I mean Dr. Gates).

**Steve Snider**, past board member, Secretary, and BBS sys-op, moved to Hastings, Michigan at
the beginning of the month. On July 7 he checked in and reported "I successfully navigated
across the country and am up to my ears in boxes." A follow-up message on July 14 stated that
he had been offered—and had accepted—the position of Executive Director of Human
Resources at Lansing Community College. For those of you not familiar with the college, its
2000 employees serve approximately 30,000 students. Those that wish to stay in touch with
Steve can e-mail him at slsnider@im4u.net.

**Dave Blair**, our resident asteroid hunter, is a member of the Minor Planet Section of Lunar and
Planetary Observers and has been reporting data since mid 1995. Dave recently bagged his 100th
conformation—most of which were observed with apertures of 4.5 inches or less. See page 15
for more info.

Dave also granted permission for the Lake County Astronomical Society (Illinois) to reprint his
"A Photon's Miracle" story published in the July '98 issue of *The Sidereal Times*. More LCAS
information is available at [http://homepage.inter-access.com/~purcellm/lcas.htm](http://homepage.inter-access.com/~purcellm/lcas.htm).

**Brock Parker**, who has served as our large event coordinator and PIG (Public Information Guy)
for quite some time now, has decided to retire from the position and take a well earned rest. A
partial list of the events Brock coordinated includes: Saturn Safari in '94, Jumpin Jupiter in '96,
Be-Bopp with Hale-Bopp in '97, AstroBlast in '98 and 3 (or is it 4?) years of Astronomy Day
celebrations at Coronado Mall. Thank you very much Brock.
AstroBlast: As I recover from AstroBlast, I am getting a better idea of who did what that day. Art Jones took control of the luminarias and worked with Girl Scout Troop 3901 to get them set up. Those of you that were there at the time remember the wind was blowing so hard the bags would hardly stay in place.

As darkness approached, it was clear that the organization we had planned to handle parking was not going to show. Dave & Jamie DeLaRue and Dave & Donna (Johnson) Brown took charge and parked well over 2500 cars! You guys were life savers.

Others that need to be recognized are Dr. Q for supplying the sound system, Lisa Wood for providing John Dobson with a place to stay, Boy Scout Troop 496 for building the luminarias, and, of course, the city of Rio Rancho (Larry Moritomo and Ed Chismar) for handling more things than I can list here.

Random Acts of Kindness:

One reason TAAS has not had to raise the price of annual dues for so long is generosity of the general membership. To date, $930.50 has been donated to various funds. Here is a list of this year's Stars (arranged by date):

Education Fund—$309.00

- Gordon Pegue
- Wade Douglas
- Ric Thiem
- Thomas Lea Jr.
- Robert Semrad
- Robert Smith
- Sam Norris
- Katherine Rust

Observatory Fund—$185

- Norm VanGulick
- Dan Richey
- Robert Smith
- Sam Norris
- Steve Rottler
- Jay D Miller, III

General Fund—$436.50

- Jeff Bender
- Gregory Doria
- George Pellegrino
- Ruth Pendley
New Members:

On behalf of the Board of Directors and the general membership, I would like to welcome the following new members to TAAS:

Tom Buchanan
Tom Pannuti
Brad Steward
Brian and Rene Bone
Eric Buchet
Larry Cash
Charlie and Nancy Dodge
Mark Evans
Joseph Garcia
Mary Ann and Samuel Wells
Avie, Ben, & Stephen Wender

We hope your membership in TAAS is pleasant and rewarding. Please contact any board member if you have any suggestions or if you would like to become more involved in Society activities.

Total membership is now 420, up 6 from last month.

Board Meeting

by Kevin McKeown, Secretary

The July 8, 1998 Executive Board meeting was called to order by President Mike Pendley at 7:00 pm. In attendance were Dave Blair, Carl Frisch, Barry Gordon, Alan Green, Bruce Levin, Gordon Pegue, George Pellegrino, Ruth Pendley, Robert Ortega, Dave Sukow, Robert Williams, Lisa Wood, and Kevin McKeown. Also in attendance, as observers, were Tom Pannuti (of Lodestar and the Physics and Astronomy Department, UNM), Dee Friesen, and Jason Vargas.
Mike started the meeting by thanking Tom Pannuti and UNM for the Campus Observatory docent pizza party.

The minutes of the June 4th Board meeting were read by Kevin McKeown, and approved, without changes, by the Board.

Robert Williams updated the Treasury. Total funds on deposit were $8,652.73, a decrease of $366.70 from June 1998. Education funds on deposit were $2,491.00, an increase of $80.00. Observatory funds on deposit were $6,221.81, an increase of $225.00. General funds on deposit were ($60.08), a decrease of $671.70.

Robert Ortega gave the GNTO Committee report, and he summarized the July 2nd GNTO committee meeting. Per recent upgrade plans on the 16 inch Isengard reflector, Robert said that new rotating rings have been ordered from Scope City. The need for saddle blocks (for the rings) will be determined upon disassembly of the present mount. July 25th has been set for painting, and other annual repairs, to be done by TAAS members. August 14th and 15th is set for (Eagle Scout candidate) Ted Schuler's field work at GNTO. Robert said volunteers are needed especially for August 14th, when concrete and gravel will be delivered for Mr. Schuler. Robert next updated the PNM plans to install power to GNTO. Mike Pendley met with Cary Lane of Energia, Inc., on July 1, at GNTO, to review the needs of the Observatory. Cary will review wind data to determine whether a wind energy, or solar energy method best suits GNTO. Mike also received an update from PNM discussing what is required for the second round of proposals (which are due August 14th). PNM will make a decision by late September or early October.

Robert Williams had no planetarium report. Mike learned that Target, Inc. awards small grants to non profit organizations for public education work. He suggested that we write a proposal for a small grant to be used for a new Starlab.

Robert Williams reported that the EPPC committee met on June 30th, with no conclusions from that meeting.

Dee Friesen and Jason Vargas gave a full report on the Loaner Telescope Program. Dee said that all of the loaner scopes (7 officially) have been accounted for, and that he and Jason Vargas have fully updated the records. Dee also presented a statement of procedures of the loaner program. These procedures were actively discussed and amended by the Board. Dee and Jason will revise and present the final document at the August Board of Directors meeting.

Carl Frisch had no Lodestar report, and no calendar additions, or updates. Lisa Wood, Education Coordinator, had no school star party additions to the calendar.

Ruth Pendley reports that she met with a graphic artist, and he provided her with ideas, and a sample design for a new Society T shirt. The Board provided her with input on acceptable designs.

Past events were discussed by all. Recent Oak Flat events were successful. Alan Green reported that 43 persons attended the very successful Starfire Optical Range tour of June 27th. UNM
Campus night of July 3rd was generally cloudy, but had a few participants. Tom Pannuti thanked TAAS members who volunteered at the very successful Astronomical Society of the Pacific meeting (June 25 - June 30).

For future events, Alan Green and Ruth Pendley have agreed to be the volunteer speakers at the July 18th Oak Flat Public Star party.

For future meetings, Tom Pannuti says he is ready for the July 11th Regular meeting. George Pellegrino/Barry Gordon report that astrophotographer David Healy is set for August 8th. Frank Zoretich, is a potential speaker for the September meeting (Dark Skies), and Bob Westfall was suggested as speaker for the October meeting.

For old business, the issue of the Gran Quivera Special Permit was dealt with. This permit request, and its terms, for which the Society has already paid the yearly sum of $100, has neither been issued by the Park Service, nor agreed upon by either party. Gordon Pegue presented the Board with a response (that he drafted on behalf of the Board) to the lengthy set of stipulations presented by the Park Service in an April 7, 1998 letter. Upon discussion of the matter, the Board felt that the terms and conditions laid out by the Park Service—and for which the response letter was written—were clearly untenable from the standpoint of stargazing procedures, and it was decided that a Special Permit should not be pursued (and the response letter of Gordon will not be sent). The motion was made to not pursue a permit, and to request a refund of the $100 paid to the Park Service. This motion passed unanimously.

For new business, George Pellegrino announced that a new astronomy club, the "Rio Rancho Astronomical Society" ("RRAS"), had been formed. A motion made by George to send RRAS a letter welcoming them to the Astronomical Community was passed.

Lastly, Mike gave out the newsletter assignments, and the meeting was adjourned at 8:55 pm.

A brief executive meeting was held after the regular board meeting.

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**Observatory Committee**

by Robert Ortega

The meeting was called to order by Chairman Robert Ortega at 7:00 pm. Members present were Gordon Pegue, Kevin McKeown, Peter Eschman, Barry Gordon, Robert Ortega, Mike Pendley, Jon Pendley, David Blair, and Robert Williams.

Discussion was held on GNTO telescope improvements. The rotating rings have been ordered. We will not order the saddle blocks or anything else we might need until we receive the rings and inspect them. We will take one step at a time.

A final date and time for painting the soffit and facia of the observatory was set for July 25, 1998 at 7:00 am.
Theodore Schuler-Sandy's Eagle Project has been approved by the Boy Scout Council Office. The work party is scheduled for August 7-8 or August 14-15, which ever is best (the date was later set for August 14-15—ed). Theodore has received several donations and things look promising. We still need lots of volunteers, though.

Mike Pendley reported on the PNM energy project. He met with Cary Lane from Energia Total, Ltd. (our technology partner) at the GNTO site. Cary inspected the site and sees no reason why we cannot proceed. Cary will look into area wind data before a final recommendation on what technology should be used.

Mike Pendley brought up to the committee that Beth Fernandez had inquired about installing a CCD camera at GNTO for educational purposes. Robert Ortega stated that is one of the committee's objectives but not until the work on making the facility user friendly is complete.

All observatory committee meetings are open to the general membership. Call Robert Ortega for location information if you are interested in attending—ed

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**July Meeting Recap**

No report this month.

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**July Meeting Preview**

See [lead story](#)

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**Observer's Page**

*by Kevin McKeown*

*David Blair submitted the following article for the October issue of The Sidereal Times. Technical difficulties prevented me from getting Kevin McKeown's Observers Page copy so I decided to run "Roids of October" early. Enjoy - ed.*

**Roids of October**

*by David Nelson Blair*

"Aster" means star, so many minor-planet observers dislike the word asteroid. Nearly 200 years ago, William Herschel knew full well that asteroids weren't stars, but he coined the term because the sun's diminutive satellites looked like stars. Real planets didn't present mere points of light—not in Herschel's telescope, anyway. After all, he had discovered Uranus because he noticed its distinct disk. But to detect star-mimicking asteroids, astronomers had to notice their motion
again

The fortnight around October's new moon offers a prime chance to catch 'em stealing among the stars. Late evening skies host six minor planets brighter than magnitude 10. All are easily visible with a 60 mm refractor—if you can find them against the background stars.

The hunt begins with 2 Pallas, the second asteroid to be discovered. As the moon wanes in early October, Pallas is shining at magnitude 8.9 in western Aquarius. A tight trio of naked-eye stars—Psi1, Psi2, and Psi3 Aquarii—point the way. On the evening of October 11, Pallas is less than a degree north of Psi1 and Psi2. The three fit easily into the field of a low-power eyepiece.

Three nights later, Pallas is less than 10 arcminutes from Psi1. It's moving southeast at just over half an arcminute per hour, so the close pass allows quick detection of the asteroid's motion. Imagine a line between Psi1 and the eighth-magnitude double star half a degree to the east. Carefully note the minor planet's position relative to that line. Can you detect movement in an hour?

Pallas continues moving toward Delta Aquarii, covering nearly half the distance by the end of the month. Most asteroids don't travel so distinctly southward, but Pallas's orbit is inclined from the plane of Earth's by 35 degrees, more than any other bright asteroid.

Far to the northeast in Perseus, 15 Eunomia shows the more typical retrograde (east-to-west) motion of an asteroid or planet approaching opposition. Its brightness (mag. 8.3 in mid-October) and northern position make it an easy target for evening observers in the United States. Modest 7x35 mm binoculars can following it through the rich star field a few degrees southwest of Algol.

The evening of October 25 finds Eunomia a little more than a degree straight south of 16 Pegasi. A low-power eyepiece showing a one-degree field will neatly take in Eunomia surrounded by a trio of brighter stars (mags. 6.4-7.0). There's a ninth-magnitude star within a few arcminutes of Eunomia. Another ninth-magnitude star lies about 6 arcminutes west of the first. Compare Eunomia's position to both stars. The two stars establish both a unit of measure and a precise direction, which the eye can use to judge Eunomia's position. Can you detect motion in half an hour? But don't try watching the grass grow. The change will be more noticeable if you resist the temptation to watch during the interval.

At the Pisces-Cetus border is 44 Nysa. A small-fry among the first fifty known asteroids, it's only 42 miles across. It is prominent because its surface is highly reflective, and it reaches magnitude 9.8 at opposition on October 17. Still, it's the toughest of the six, in part because it's the faintest, but mainly because no prominent star is nearby. This can be vexing where light pollution blots out most stars in faint Pisces and Cetus.

Start by locating fifth-magnitude 89 Piscium southeast of the square of Pegasus. If your sky isn't dark, it may help to find it with binoculars before trying to center it in your finder. Confirm that
you've got the right star by checking for the brighter stars Zeta Piscium (about 4 degrees north) and Epsilon and Delta Piscium (east of Zeta).

Once you have 89 with a telescope, star hop to Nysa. It's two degrees south of the star on October 28. Keep in mind the scale of your field. Direction is equally important. If you get disoriented, particularly if your field is reversed by a star diagonal, remember that stars drift westward. When you think you've spotted the asteroid, carefully note its position. If you catch it close to a star, you may be able to see a change in an hour or two. More likely, you'll have to confirm your sighting by re-observing the next night.

To the west, 20 Massalia is hugging the ecliptic in Aries, about ten degrees south of Hamal. It brightens to magnitude 8.8 at opposition on October 26. Again there are no prominent stars in the immediate vicinity, but half a dozen sixth-to-eighth-magnitude stars stretch along just north Massalia's path. Her fortnight's journey beneath them can easily be followed with 50 mm binoculars.

Do those stars look a bit like the hat of Sherlock Holmes? Mental dot-to-dot games are invaluable in keeping you oriented. But don't rely on faint triangles; they'll get you lost faster than a wrong turn in Boston.

"It's confounding, Holmes! Every three stars up there form a triangle."

"Precisely, my dear Watson."

If you hunt only one asteroid this month, make it 1036 Ganymed. Rarely does an asteroid just 25 miles across (or one numbered in the thousands) shine at magnitude 9.5, and rarely does such a bright asteroid move so quickly against the stars. This roid takes its name from Ganymede, the youth carried to Mount Olympus to bear cups for the gods, but the final e is dropped to distinguish it from Jupiter's largest moon.

Walter Baade, who discovered Ganymed in 1924, is best known for his work on galaxies. Ironically he called asteroids "vermin of the sky." (To this day, galaxy aficionados occasionally embarrass themselves by mistaking asteroids for supernovae.) Baade's complaint had a good-natured edge, though, because two of his major discoveries were 944 Hidalgo and sun-grazing 1566 Icarus. For decades these two reigned as the outermost and innermost known asteroids.

Likewise, Ganymed strays from the beaten track. Its orbital inclination is high, almost as great as Pallas's. Better yet, it's a Mars crosser. All month, it's nearer to the sun than the red planet, giving it a proper motion of a degree a day. On October 14 it passes just 43 million miles from Earth.

Ganymed dives southward between the Hyades and Pleades, sweeping through tight patterns of stars night after night. Observers in the United States can watch it shoot through compact asterisms most nights from October 13 to 26. On the thirteenth, for example, Ganymed sweeps between a pair of ninth-magnitude stars a degree southeast of 36 Taurii. Catch it exactly between them at about 8:45 pm. MST. How many minutes pass before you spot a deviation from that line?
In contrast to the speedster, **1 Ceres** is eye-to-eye with Aldebaran on the evening of October 11. In fact, with mounted binoculars, you can find Ceres the really easy way. Center your field on Aldebaran and let the stars drift for sixteen minutes. A 2-degree hexagon of stars, all about seventh magnitude, will come to you. Eighth-magnitude Ceres stands inside the hexagon, just southwest of the center.

While Ceres is easy to identify late that evening, it's almost impossible to confirm. Quite the matador poised in front of the bull, Ceres is not moving. It's just hours past its stationary point, where normal motion (west to east) comes to a halt, and retrograde motion slowly begins. Since you haven't seen it until you've seen it move, carefully sketch its position relative to the nearest stars you can detect. Can you confirm your sighting the next night with a telescope? Two nights later with binoculars?

Like any able matador, Ceres knows when to get out of the way. In the following weeks, its pace picks up. Because the largest of the asteroids is also one of the brightest, the waxing moon won't limit the view to a fortnight. The distance between bull and matador diminishes until, on November 13, Ceres slips skillfully by, just 38 arcminutes north of Aldebaran. For a finale, the asteroid brightens to magnitude 7.0 amid the Hyades as it nears opposition on November 29.

Herschel, a keen observer, saw only the four asteroids known in his lifetime. Can you outdo him in a single month? If this game of Celestial Where's Waldo appeals to you, there are always more asteroids to track down. Every year, scores of them reach magnitude 12 and brighter.

*David ([david@lobo.net](mailto:david@lobo.net)) regularly reports asteroid positions to the Minor Planet Section of the Association of Lunar and Planetary Observers. Since mid 1995 he has observed and confirmed more than a hundred minor planets, all but a few using apertures of 4.5 inches or less. - ed.*

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**What's Up for September**

*by Kevin McKeown*

The morning of September 1st can start the month off with a bang, if the alpha Aurigid meteors undergo an outburst. Ordinarily, one to three per hour of these long pathed, very swift, yellow, streaking fireballs can be recorded by the individual observer at the short maximum, but I always monitor the night of August 31-September 1, for the Aurigids, which have been known to return with Perseid rates. Moonlight will interfere this year, however. Aurigids can be very impressive meteors!

September 6th sees the moon drift just below the planet Jupiter. This should be quite a pretty sight. On September 15, Jupiter reaches opposition, so the planet is big, bright, and visible all night. By late September, Mars begins to emerge high enough into the morning sky such that observations can start. Lastly, have your eggs fresh and ready for the 22nd!
Have a question? Send it to the TAAS P.O. box, call the hotline, or send the editor e-mail.

**Question:** What am I supposed to be Looking At?

**Answer:** This sounds like a simple question to those of us familiar with looking through telescopes. However, this is a question that is frequently asked to those of us serving as docents. The question makes sense particularly if the object in the eyepiece is not visible to the unaided eye. Even if an object can be seen with the naked eye, the position of the eyepiece may not be in line with the telescope tube assembly, as is the case with Newtonian telescopes or other telescopes that use prism or mirror diagonals that bring the image through the eyepiece perpendicular to the optical axis of the telescope.

Type, size, shape, uniformity, and brightness of objects are also unique to people new to this experience. "What are open clusters, globular clusters, nebulae, spiral galaxies, elliptical galaxies, irregular galaxies?" "Can you really see the rings of Saturn and the bands of Jupiter?" "Maybe YOU can see that faint galaxy or nebula, but I can't see anything?" For you "Dob" users, is the object still in the field of view? Are there any foreground or background objects or stars in the field of view in addition to the main object on the menu?

Other questions that we need to consider pertain to the operation of the telescope system. Is the object in focus for the viewer? Does the observer need to keep his or her glasses on? Is the observer's eye in the correct position to see the entire field of objects in the eyepiece? This is particularly true when looking at the filtered image of the sun. The person needs to place his or her eye at the proper eye relief distance to see the entire image of the sun—"What are those black spots or dirt or dust in the sky?, Oh, that big bright image is the whole sun!—I thought that was the sky?"

It also helps to give perspective when we share the view of objects with other observers. How many stars are in that cluster? How far is that galaxy from us? How big is the sun? How fast is that comet moving? What is that nebula made of? How bright is that star? How old is that super nova remnant? When was it discovered?
If we can be certain that the observer sees the objects in the telescope and that we can answer some of the questions that are asked and can explain what the objects are then we have been successful in sharing the astronomical experience.

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**The Kids Corner**

by Lindsay

Lindsay is on vacation this month

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**Star Myths Goes Star Facts**

by Robert Williams

One of the things that I wanted to do with this column was to pass on some of the myths and facts that I have learned in researching stars and constellations for the planetarium shows I give at the schools. The last few articles have been myths so I decided to give you some facts this month.

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**ATM Corner**

by Michael Pendley

No report this month.
In the constellation Bootes is the 4th brightest star in the night sky, "The Guardian of the Bear", Arcturus. Arcturus is about 37 light years away, making it one of the Sun's nearer neighbors. Its diameter is estimated to be about 20 million miles, roughly 25 times the diameter of the Sun, and it is about 115 times as luminous as the Sun. While all this is very interesting it is also very technical. The fun fact is that in the spring of 1933, when the "Century of Progress" Exposition opened in Chicago, the light from Arcturus was focused by telescopes on photoelectric cells. The current generated was used to activate a switch that turned on the flood-lights at the exposition grounds. Arcturus was chosen because its distance was then estimated to be 40 light years; so the light just reaching the Earth in 1933 had started on its journey about 1893 when another fair had been in progress in Chicago.

I was out at Oak Flat on July 18th for the public star party planned for that night. I had one of the club's telescopes and was planning to help with the event. I am still a novice at this, though. I am not familiar with much in the summer sky. I have been able to find the Ring Nebula and the brighter stars. Unfortunately, bright stars are not enough to hold the attention of many people, so I decided to go through my books and find some interesting objects that I might be able to find in the night sky. One of the things I found is considered to be one of the finest double stars in the sky. In the constellation Cygnus is the star Albireo at the head of the swan. Albireo is actually a double star with one of the most spectacular color contrast in the night sky. Even in small telescopes, you can split the pair and with lower power and de-focusing slightly, you can see the golden and azure tints of the stars.

I saw these two stars for the first time in my life on July 18th, and it was a spectacular sight. The fact that I was able share my excitement with several other people who were also seeing it for the first time made the experience even more memorable. I will never forget it and if you have never seen Albireo, I know you will enjoy it as much as I did.

The information for this article came from Burnham's Celestial Handbook-An Observer's Guide to the Universe Beyond the Solar System by Robert Burnham, Jr. This is a three volume set and is extremely technical. It will give you all the facts you would ever be able to use—and even more that you may never use. I have found that if you can wade through the technical stuff, you can find some interesting stories.
If you have any interest in being a UNM docent, please contact David Sukow or any other board member. We need you! You don't need a telescope — UNM has some available, TAAS docents like to share, and often people enjoy just learning about the constellations without any optical aid.

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**School Star Party Update**  
*by Mike Pendley*

The school year is over so this column will not run for the next several months. The only schools scheduled from now until the end of the calendar year are Ray Gabaldon on October 20 and Central Elementary on November 17. We will hold off scheduling any more schools until we see what our docent pool looks like in fall.

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**Astronomy 101**  
*by Robert Williams*

No report this month. Look for a follow-up of the August 1 class next month.

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**July Trivia Question**  
*by David Blair*

TAAS has a trivia contest at each general meeting. The July winner was Sidney Stone. His prize was an "antique" astronomy book.

My book De Nova Stella ("Concerning the New Star") established the term nova for an exploding star. Who am I?

A. Walter Baade  
B. Tycho Brahe  
C. Galileo  
D. Caroline Herschel  
E. Sir John Herschel  
F. Johann Kepler

Answer [Answer](#)
July 4th Picnic and Star Party
by Carl Frisch

The TAAS picnic got off to a slow start this year, perhaps because of poor weather. If that isn't bad enough the finish was almost as bad. Clouds plagued us all day and into the night. On the brighter side at least it didn't rain. Afternoon events included Frisbee tossing and Euchre playing. Highlights included an awesome variety of foods followed by Barry's great slide presentation. After dark the clouds parted just a bit to see a couple of stars and the moon. Dave DeLaRue set up his reflector and showed enthusiasts the lunar views.

Turn out was light, perhaps two dozen TAAS members, a couple of rangers and volunteers, and only a couple of attendees from the general public. By press time the July Oak Flat star party will have come and gone, so a follow up will appear next month. But don't forget the August 15th event; hopefully by then the monsoons will be history.

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Starfire Optical Range Tour
by Allan Green

On the night of June 27th, 43 TAAS members met at the Kirtland Air Force Base gate in Albuquerque where a bus was waiting to transport us to the newly installed Adaptive Optics array for the 3.5 Meter telescope of the Starfire Optical Range.

Our hosts, Sharon Rogers and Dr. Robert Fugate, explained the concept of Adaptive Optics technology and how this invention takes land based telescopes into new areas of observational astronomy that were not possible to attain just a short time ago. He showed us some incredible views of the trapezium area of the Orion nebula where the resolution was greater than any (non-
adaptive optic) land based telescope has been able to produce. Comparisons with the same field produced by the Hubble Space Telescope were almost identical. After an explanation of the optical principles applied to adaptive optics, we went to the dome of the 3.5 meter. Its not really a dome, but a series of great cylinders which fit inside each other much in the same way that a boy/girl scout drinking cup is designed. This enormous housing was lowered and the large barn doors of the telescope were opened to reveal the 3.5-meter (eleven foot) mirror.

We adjourned to the control room where we observed the telescope in operation. The adaptive optics could be engaged/disengaged instantly, and we could clearly see the difference between the display with and without the adaptive optics applied.

Turning to more familiar sights, the scope acquired M13 in Hercules . . . however, not quite familiar because we found ourselves inside the core of the cluster where only 15 stars were observed in an area of only 2 arc seconds. The Hercules cluster is said to contain more than 300,000 stars . . . we continue to be amazed . . .

Our heartfelt thanks to Dr. Fugate and his staff for hosting this tour. We all learned a bit more, not only in the field of astronomy, but also in human relationships.

You can access the Starfire Website at [http://www.sor.plk.af.mil](http://www.sor.plk.af.mil)

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**The Disciples**

*by David Blair*

In recent years, I observed from a ridge a mile from the Delaware River. Swamp-humid eastern Pennsylvania is no place for desert dwellers, so Scorpio seemed sadly out of his element. The celestial scorpion struggled through summer nights just to keep his head above the cascade of light flowing from Philadelphia. His tail, peeking only briefly through breaks in the tree line, barely penetrated the glow. So perhaps you'll forgive me for never bothering with the southernmost Messier object until I came to New Mexico.

Then, during a Priest Canyon expedition this June, M7 took me completely by surprise—one of those stunning moments of discovery that revive the thrill of the night sky.

I spotted it with the naked eye without ever hunting for it. A compact patch outshining the star clouds of Sagittarius had me wondering: is that the center of the galaxy? Well, no—but binoculars resolved a gorgeous open cluster. (Note to docents: it's a low-power showpiece for star parties. At the Oak Flat party a month later, it drew oooohs from viewers using my 10x50s.)

The cluster surprised me twice. Why, I asked, does it have no name beyond Messier 7? (I've never encountered one, anyway. Has anyone else?)

So I have christened it the Disciples.
Judeo-Christian tradition awards special status to 7, the cluster's Messier number, but more to the point, its fainter members swarm around a distinct cross of prominent stars at its center. In dark skies, the image is striking.

Frankly, I'm glad I never took in the watered down version back east.

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**TAAS Telescope Loaner Program**  
*by Dee Friesend and Jason Vargas*

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**Free Telescope Offer**

What's that? Did you say free? That's right FREE! Any TAAS member can use this coupon to borrow a TAAS telescope. Call Dee Friesend at 856-1586 or Jason Vargas at 452-9098 and receive a loaner telescope absolutely free. You can choose from scopes with apertures ranging from 6" to 13". Call soon because they'll be going fast!

Some restrictions apply. Offer is first come, first served. Latecomers will be put on a list. Neither TAAS nor the telescope owners will be held liable for any loss, theft or other problems arising from the use of TAAS scopes. Offer only valid for current TAAS members. Borrowers are required to enjoy these scopes.

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**Astronomy at Chaco**  
*By Carl Frisch*

Yes, due to popular demand, Chaco is again on our agenda. If you haven't attended one of the many past Chaco star parties, this may be your last chance this summer. Those of you that attended the Memorial Day star party can attest to the dark skies and great accommodations. Come and experience the mystery and observe under the darkest skies around September 19. Or why wait; contact GB Cornucopia in Chaco @ (505) 786-7145 or myself to get checked out on the observatory almost anytime.

To get to Chaco take Highway 44 west from Bernallio to about 47 miles past Cuba. Turn south at the signs for the last 21 miles. From Albuquerque it's about a three hour drive. I recommend daytime travel since the scenery is great and the last 16 miles is a dirt road. Any vehicle can make it, although the dirt part is a bit "washboardy" in places. Park and camping fees are waived for TAAS members and there may be shower and cooking facilities available. Any questions may be directed to GB or myself.

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**Carlsbad Caverns Astronomy Trip Planned**  
*By Brice Levin*

Arrangements have been made with the National Park Service for volunteer members of our Society to stay over the weekend of August 22nd at Carlsbad Caverns to share the evening sky
with the park visitors and staff. The length of the stay is flexible and can be worked out once we
know who is going.

A short slide show presentation will be given by one of our members just after the bat flights and
just before observing. We typically stay at one of the research huts and have an opportunity to
take in guided off trail trips at the park during the day. This is an excellent time of year as the
dusk bat flights are in full force and the day time temperatures are not too hot.

Several members have already expressed interest in this activity. If you are interested in
participating in this worthwhile event, please contact me as soon as possible (preferably before
August 12th) so that I can make sure that all the logistics are set up for us. I will give you further
details when I hear from you.

Clear Skies!

Bruce Levin (505)299-0891

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**Astronomical Society of the Pacific (ASP) Conference in Albuquerque**

*By Tom Pannuti*

The Astronomical Society of the Pacific (ASP) is a major society of educators, professional and
amateur astronomers, and other astronomy enthusiasts dedicated to research and public education
in astronomy, and its membership spans the entire globe. Each summer, the ASP holds its annual
conference at a location in North America, and this year the event occurred here in Albuquerque
at the Hyatt Regency. The conference featured two major sessions (one on education and the
other on adaptive optics), in addition to the Universe '98 exhibit session during the weekend
intercession. The conference as a whole was a tremendous success for ASP and UNM (one of the
participating institutions), and part of the success is owed to volunteers from TAAS who
participated in conference events and helped ensure that everything ran smoothly.

On behalf of the Institute for Astrophysics at UNM, I would like to thank the following TAAS
members for volunteering to assist with this conference and for showing so much enthusiasm and
dedication to the event: Bruce Levin, Kevin McKeown, Roger Geer, Granvil Morgan, Lisa
Wood, Dee Friesen and Jim Palmer. Thanks for all that you did—the conference could not have
run as well as it did without you!

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**6 Fabulous Reasons To Become a TAAS DOCENT**

*By Lisa*

D is for—Don't you want to have a good excuse for languishing under a star filled sky once or
twice a month?
O is for—One in a million is your perspective on the night sky. Wouldn't you like to share it?

C is for—Children are so much fun to work with—their Curiosity, Charm and Cleverness will Captivate you.

E is for the—Enthusiasm you'll recapture by sharing your love of the universe with others.

N is for the—Knowledge that you'll gain by working with some of the most experienced amateurs in the state (The K doesn't count—it's silent).

T is for the—Terrific headache you'll get after someone has bumped your object out of the eyepiece for the seventh time in one night. But it will be worth it!

We are currently in need of three types of docents. No telescope or knowledge is necessary—we'll teach you what you need to know and outfit you with the necessary equipment. This is a great way for new members to get involved and quickly learn the sky. Please call any of the following or e-mail us (see back of newsletter)

Star Party Docents—Lisa

StarLab Docents—Robert Williams

UNM Campus Observatory Docents—David Sukow

Not sure which you are interested in? Call any one of us and we'll help you find your niche.

61 Cygni: A Note to Docents

By David Blair

Are too many telescopes focused on the same object during TAAS summer star parties?

An alternative to the popular double Albireo is 61 Cygni. Unlike Albireo, it's a true binary with a period of 650 years. The components are 30 arcseconds apart, easy for novice viewers at modest power. At magnitude 5.2 and 6.0, they dominate a rich Milky Way star field. Quite a sight!

But just as good is the history. 61 Cygni, eleven light-years away, was the first neighbor of the sun to have its distance measured.

Italian astronomer Giuseppe Piazzi (who also discovered Ceres, the first-known asteroid) noticed that 61 Cygni had a high proper motion, 4.1 arcseconds per year. In other words, it was covering the angular diameter of Jupiter every eleven years—quite the stellar speedster.

A generation later, this was still the greatest proper motion known, so German astronomer Friedrich Wilhelm Bessel assumed (correctly, it turned out) that Cygni 61 was among the closest
stars. He attempted to spot its apparent wobble, caused by the motion of the earth in the real motion of the star. He knew the diameter of the earth's orbit, so if the star's wobble could be measured, simple trigonometry could be applied to determine the star's distance.

The idea of measuring stellar distances this way wasn't new. Astronomers had been trying in vain to measure parallax for centuries, but the distances were so great that the wobble was minuscule.

Bessel finally succeeded, measuring a wobble of 0.29 arcseconds.

Ever split the closer component of Epsilon Lyrae? Cygni 61 wobbles just one-eighth that distance. Yet Bessel managed to make the measurement visually many decades before the advent of CCD cameras and adaptive optics.

He published his findings in 1838.

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**A Perseid Wedding at GNTO**

*By Mike Pendley*

In early July I received what has probably been the most unusual piece of e-mail addressed to TAAS. Cindy Carlson and Rick LaBorde—both TAAS members—asked if it would be possible to get married at the General Nathan Twining Observatory (GNTO) on August 14/15 under the Perseid meteor shower. A few e-mail exchanges later I learned that there was another TAAS tie to Rick and Cindy's romance. It seems that their second date was at the E.G. Ross Elementary School star party last November. Rick reports that Cindy got a look at Saturn through a good scope and was hooked. Both joined TAAS soon after.

The ceremony is scheduled to start at 8:00 pm. This should result in wedding related traffic
to be cleared out by 10 pm.
Those wishing to observe the Perseid shower from GNTO (which includes Rick and Cindy) should not be effected.

Rick tells me that this is not a formal wedding and any TAAS member that would like to attend is more than welcome.

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**AstroBlast Gossip**
*By Lisa*

Now that you've probably read the "official" account of AstroBlast, here's the straight scoop for your inquiring minds out there, at least from my vantage point.

Several stellar personalities in the world of astronomy were on hand despite the event being the windiest and grittiest I have personally experienced:

Al Nagler, eyepiece manufacturer extraordinaire, was seen sporting a white baseball cap and a coterie of admirers. I have now personally shaken his hand, and am available for autographs upon request.

David and Wendee Levy, astronomy's hottest couple, (they were married just over a year ago) were seen schmoozing and signing autographs. David was dashing in a pair of purple silk running shorts (hey, it's a pun!), while Wendee was more subdued in a pantsuit of classic design. I had a chance to briefly discuss asteroid and comet hunting with David, at which point he reminded me how hard these searches are, and his words certainly bore the ring of truth about them.
Tom Bopp, co-discoverer of Comet Hale-Bopp, was also signing books and memorabilia. This was my first encounter with him, and he informed me that he was quite enthusiastic about the prospects for young people going into the sciences these days. He also assured me that he and Alan Hale (perhaps due to confusion over some superficial physical similarities) are, in fact, two separate people.

Patti Kurz from Astronomy Magazine was spotted on several occasions flitting about the vending areas. Clad in dusty shorts and T-shirt, she blended in well with the hordes of attendees who were soon indistinguishable from one another due to an overabundance of dust (far more than would be found in the interstellar medium, I'm positive).

UNM notables, Prof. John McGraw and grad student Tom Pannuti, were present to add a bit of the professional aura to the scene.

John Dobson and his able assistant, Barry Hirrell, were busy all day creating a solar telescope for the winner of a raffle coordinated by TAAS members. Barry Hirrell, seen sporting a "Sirloin Stockade" T-shirt, sure to become a fashion statement well remembered, worked in the searing heat hour after hour grinding and polishing the blank that would serve as the primary for the sun scope. (Rumor has it that store-bought grit was unnecessary, since TAAS members simply shook out their clothes on the blank whenever called upon—although this has not yet been confirmed.) Barry's humor and grace were appreciated by all, and I only wish I could have tape recorded the charming descriptions he gave of his work as he chatted with the children who approached him. He was also heard to exclaim, "Robert Ortega is the unsung hero of this project"—(thought you'd like to know).

Well, if you expected this gossip column to be juicier than this, I can only remind you that this is astronomy after all, so this is as juicy as it gets. I thoroughly enjoyed AstroBlast and thank everyone from TAAS who put in such a great deal of effort to make it a success.

Two weeks later and finally dust free—Lisa

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Letters to the Editor
The Egg and I

In the May 1998 issue of The Sidereal Times I published the article about the possibility of balancing an egg on the vernal equinox and solicited responses from readers of the newsletter. I did not provide any answers to the question, but was seeking replies from the readership to learn if anyone had any scientific explanations. Kevin McKeown was gracious enough to submit a critical reply to the question.

For some reason, I left Kevin with the impression that I believe or want to believe "that supernatural forces are at work here". Webster's Seventh New Collegiate Dictionary defines supernatural adj as 1: of or relating to an order of existence beyond the visible observable universe, esp: of or relating to God or a god, demigod, spirit, or infernal being 2: attributed to a ghost or spirit: eerie. Personally, I believe that there are many things, situations, or events in this universe for which explanations have not been found, but I do not associate any supernatural forces or supernatural anything else as explanations to what I do not understand. I was merely seeking the truth. I am in definite agreement with Kevin's statement "just because prosaic explanations elude you, this doesn't mean that unusual processes then have to be at work!"

I quoted responses to the egg balancing problem from newspaper articles by Martha Stewart and Marilyn Vos Savant. Both of their articles essentially stated that an unadulterated raw egg that can be balanced on its end on the vernal equinox can be balanced at any other time. However, neither of them completely stated why the egg balances or what is it that makes it difficult to balance an egg. Kevin McKeown came the closest to explaining what it takes to balance an egg, but does not fully explain why a balanced unmodified egg balances on an unmodified smooth surface without any external aids like salt, glue, etc.

Since I am an eggspert at balancing raw chicken eggs on a smooth surface yet did not fully understand why I could balance them on end, I needed to attempt to balance eggs at times other than the vernal equinox or any other times associated with anything astronomically or otherwise significant. I picked one afternoon in mid May this year. I was able to balance two eggs out of two eggs that I selected from a partially filled carton of eggs. One end of one egg was broader than the other, but not excessively broader. The other egg was fairly oval, yet not stubby in length, with one end just slightly broader than the other end. I balanced each egg on their broad end. In order to accomplish this feat, particularly with the fairly oval egg, I steadily held the egg upright between my first two fingers and thumb for at least one minute. I then loosened my grip on the egg to let the egg teeter between the two fingers and thumb until the egg came to a balance. The "trick" was holding the egg stationary in a vertical position for a minute or two to allow any movement of the albumen and yoke to dampen out. As Kevin mentioned, there can be essentially no movement of the egg (internally or externally) for the egg to balance on its end. Also as Kevin stated, the eggshell is not smooth, and the "point" of balance is probably a very small or indiscernible flat spot or minimal three point stand. Any mass shift away from this precarious balance "point" will create an unopposed torque about this "point" and cause the egg to tip over. Theoretically, one should be able to balance an egg on its narrow end—I have not yet made a serious attempt in accomplishing this challenge.
In conclusion, a raw egg can be balanced on its broad end in an upright position on a smooth horizontal flat surface anytime of the year. The egg must be absolutely static when balanced. If the raw egg is the least bit dynamic, it will not come to a balance. I recommend practicing this feat until you are absolutely proficient at this skill before making wagers at the local pub.

-Bruce Levin

**Asteroid Hunting**

Because of my interest in the advancement of the art/science of dangerous asteroid hunting and in planetary defense, I am a member of the Minor Planets Section of the Association of Lunar and Planetary Observers. The last quarterly issue of our bulletin—Minor Planet Bulletin (V25N3)—featured a General Report of Asteroid Position Observations for CY 1997. There were 14 of the top asteroid finders featured in the report. They were from the US, Italy, France, and Spain. Our own David Blair was included high on this list.

He found ten times as many asteroids as the others in his telescope size group, and he frequently found objects sooner than others using much bigger telescopes. Dave is truly a world class asteroid finder and I want to commend him and call this outstanding achievement to the attention of our membership.

We can prevent most asteroid impacts on our planet. The key to prevention is early warning and accurate orbital data. Because we are starting from scratch (to develop an interception and deflection capability), we may need at least two decades to prepare, after we have identified an incoming threat. The world defense community has less than 1% of the data it needs to prepare a defense and the work being done by Dave and a small group of other dedicated institutional and private astronomers, from around the world, is central to obtaining that vital data in time.

Lisa Wood, Kevin McKeown, and others are preparing to join in the hunt, and their efforts are greatly appreciated. They have invested significant resources and time in their equipment. Also, the equipment contributed by John Sefick will help us all, tremendously. Thanks John. We need all the help we can get for this important undertaking. We cordially invite all who may be interested to join in. This is the most important technical challenge in history. This planet and our human race are truly at risk.

-A. J. Smith

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**Trivia Answer**

Our influential author is the oldest and only naked-eye observer of the bunch, (B) Tycho Brache.

At the age of 23, he observed the nova of 1572 (much later reclassified as a supernova). At the time, Galileo was an 8-year-old and Kepler was an infant. The rest belonged to the far future.
Classified Ads

For Sale or trade + cash for Celestron C5+: Meade 8" Starfinder Equatorial, Telrad, Meade #140 2x Barlow, Meade 25MM, Endcaps. Used only 15-20 Times, $775, Paul Grunwald, rubicon@nmia.com, 505-275-7313,

Wanted: I am looking to obtain, at modest cost, one or two adapters for using 1.25" eyepieces in a 2" star diagonal. If you have any extra ones, please get in touch. Also Wanted: I would also like to borrow — very briefly, like maybe 15 minutes — a "hybrid" star diagonal that will fit a .965" focuser and accept 1.25" eyepieces. I simply want to see if it will work before purchasing one. Barry Gordon, BarryGordon@compuserve.com, (505)867-6424,

Non-commercial ads for astronomy related products listed at no charge for members. To place an ad, send a message to the editor at the society PO box or send a message to mycall@rt66.com.