I went on a roll as an amateur scientist the week of March 14 through 20, beveling a mirror blank in TAAS's ATM workshop, bagging 6 celestial trophies, and winning 15 minutes of fame. All of which tied directly to a little obsession of mine: the pursuit of asteroids.

The hunt in progress late on the evening of Monday the 15th was fairly typical. In my backyard Sky Kiva, my trusty Uranopan stood rock steady in a light breeze as I retraced my steps through a faint star field near 61 Leonis. There I reexamined three points of light.

Two hours earlier, they had formed a faint triangle with two acute angles and the third distinctly obtuse. I had suspected the faintest of the three—less than four times as bright as Pluto—was 204 Kallisto, a 32-mile-wide rock about 150 million miles out, well beyond the orbit of Mars. I was confident of that conclusion, but nonetheless I strictly follow the first rule of asteroiding: you haven't seen one until you've seen it move.

On the follow-up observation, my three specs now formed a triangle with two acute angles and a virtually perfect right angle. Kallisto was mine. It was one of three asteroids I confirmed that night, numbers 151, 152, and 153 in the personal collection I've gathered in the past 10 years. I was pumped!

As it turned out, I wasn't the only one on a roll that night. A hundred miles to the south, the LINEAR project spotted 2004 FH, a 30-meter asteroid on a brush with the Earth.

Three days later it would pass just 4,000 miles above the level of synchronous satellites. Local television picked up on the story and focused on the fact that FH had been discovered from New Mexico. The Lodestar Astronomy Center got calls wondering if there might be someone available to comment.

"Hmmm... wondered Karen Keese, Lodestar’s operations director and a former vice president of TAAS. Can I think of a talking head well versed on the subject of asteroids?"

She did, and bless her, she briefed me well and sent me an e-mail link on the subject of FH, which was news to me when she first called.

Four hours later, literally as FH passed 26,500 miles above us, Jessica Kartalija and crew arrived at UniKac, Inc., looking for expert commentary from David Blair.

We were just west of the Sunport and decided to shoot outside, where volcanoes and low-flying planes could be compared in size to the asteroid.

Soon Kartalija, who reports for both KOB Channel 4 and KASA Channel 2, was on her way, and I went on to some UniKac matters in the conference room with my boss. Ten minutes later our receptionist knocked at the door.

"Channel 7 for David." A moment to treasure.

KOAT’s Ellen Goldberg tried some similar shots outside, but wanted more. Alas, my beloved Uranopan was 9 miles away, but we did surprisingly well pulling up some astronomy web sites from my office computer. Thus the phrase Minor Planet & Comet Ephemeris Service was destined to flash onto Albuquerque television for the first time.

"In terms of excitement, is this asteroid a 10 for you?" asked Goldberg.

"It would be if I could see it," I replied.

Not the answer she was looking for, and onto the cutting room floor it went, along with inspired comments on the resource potential of asteroids and any mention of my credentials.

On Channel 7 that evening, I was flagged only as amateur astronomer; on Channels 2 and 4, it was The Abq Astronomers Society. So we have some work to do.

On the other hand, Kartalija did use the phrase light pollution on the air, and Goldberg used some file footage of a TAAS event.

Small victories—but mostly a lot of fun.

After tapping the news, I returned to the solitude of the Sky Kiva to wrap up the week’s work. By 1:15 a.m. that Saturday, my confirmed asteroid count had risen to 156, but mostly I was still thoroughly enjoying the afterglow of the one I never saw.
In Dr. Teertstra’s own words “Suppose that an atom optical resolution than that allowed by refl ection. Dr. Teertstra explained the optical scales currently allowed (limited to about 1 wavelength of visible light). Dr. Teertstra explained theory could allow for the determination of chemical many theoretical implications, this new unifying theory of light as both particle and wave. Apart from its University of Manitoba) presented his unified model During the TAAS general meeting held on March 6th, visiting researcher Dr. David Teertstra (Ph.D. Meade, Celestron and the many other commercial telescope makers there are countless innovations concocted in the fertile minds of our intrepid family of stargazers.

Innovations are commonplace in amateur astronomy. The major innovation of the last couple of decades that revived amateur astronomy is the Dobsonian telescope mount. How amazing is it that John Dobson built a working telescope out of miscellaneous junk and started the sidewalk astronomy movement that has swept the country and fueled amateur astronomy ever since. I have been witness to many impressive innovations within the membership of TAAS. Just a couple of weeks ago I listened to the rhythmic mutterings of the distant left-over remains of a star in Cassiopeia on a radio telescope John SeFick built from an old large TV satellite dish. Barry Spletzer’s very light 17.5 inch features several innovations including curved wood and trusses that are held in place by the tension of the Spandex light shroud. Another cool feature is the protractor rulings he attached to the scope to allow it to be aimed by altitude and azimuth angles. Not only does this allow the scope to be accurately aimed at stars during the night but also stars and planets in the daylight. Sammy Lockwood used Spletzer rulings to show people Jupiter, Venus and Sirius in bright sunlight at last year’s Astronomy Day. Everyone was amazed (except for the radio astronomers from the VLA, one of them said, “We do that all the time!”). Sammy has even advanced the state of the art in Alt-Az protractor technology by adding a built-in red LED illuminated viewing port so the rulings can be read in the dark. Of course one would expect the amateur telescope makers (ATM) group to come up with some great innovations. Ray Collins’ grinding stands are things of beauty. Tubes and mounts are being made from all sorts of materials. Do not think that these telescopes are any less functional because of their humble beginnings. Many of the telescopes I have seen produced by the ATMers rival and even exceed the performance of all but the most expensive commercial telescopes. These things are sturdy, functional instruments that are a joy to use. While necessity is the mother of invention and no doubt much of the innovation developed by amateur astronomers is driven by necessity I also think much of this creativity is due to pride in craftsmanship. I can speak from experience that it brings much satisfaction to split the “double double” (epsilon Lyra) with a telescope mirror that was made by one’s own hands using nothing more than two plates of glass and some loose abrasives. So next time you see a cool custom scope ask the owner about it and you just might be amazed at how much of the scope is comprised of advances made by an amateur astronomer.

During the TAAS general meeting held on March 6th, visiting researcher Dr. David Teertstra (Ph.D. University of Manitoba) presented his unified model of light as both particle and wave. Apart from its many theoretical implications, this new unifying theory could allow for the determination of chemical and structural characteristics of materials well below the optical scales currently allowed (limited to about 1 wavelength of visible light). Dr. Teertstra explained how refraction of light around individual chemical ions can be measured, thereby enabling a much higher optical resolution than that allowed by reflection. In Dr. Teertstra’s own words “Suppose that an atom actually has a fuzziness of position – as opposed to a maximum uncertainty of measurement – then it could never return to its original position. The Heisenberg Uncertainty Principle is thus a statement of the second Law of Thermodynamics: the atom is an eternal wanderer, defining a direction of time.”

There was of course much theory and physics background referenced throughout the lecture and much of this was beyond my understanding. However, the fact that Dr. Teertstra was also such an accomplished artist, designer and telescope maker gave me new appreciation for just how universal light theory really can be.
Our most recent GNTO committee meeting was held on February 21, and was attended by Larry Cash, Ray Collins, Karen Keese, Dale Murray, Gordon Peggue and Pete Eschman. We reviewed some of the previous GNTO events and planned for our March and April events. Our battery bank is working well, although our storage capacity is somewhat reduced with fewer batteries in the bank. Roof work on the main dome is progressing, and we hope to have it completed within the next month or so. We are waiting to hear on the status of grant requests to Home Depot and to the PNM Foundation, and we are planning to initiate a new grant request to Intel for equipment related to our video imaging program. We have scheduled a work session for GNTO on Sunday March 28 to do some maintenance that is needed before our spring events. The work session is scheduled to start at 11:00 A.M., so please come and help.

Recent events at GNTO included an observing session on February 21 and our GNTO Open House/Equinox Picnic/Training session on March 13. The first event was very sparsely attended, probably due to dismal cloud cover over Albuquerque. Dale Murray and I drove down to find John Setick waiting at the observatory. John’s radio telescope had fallen over in the strong winds over the previous days, so we all worked to set the radio disk back up. John mended a minor bend in the side of the dish, then treated Dale and I to some very interesting celestial sounds. As sunset approached, we marveled at the lack of clouds overhead, so it was time to wander upsteps and prepare the Isengard for viewing. Dale, John and I had some really great views of Saturn using Dale’s Denkmeier binoviewer, before the clouds rolled in around 9:30. At that point we packed up and headed home. I can easily say that I had the best views of Saturn I have ever seen, so the trip was well worth it. The moral, if there is one, is you should never underestimate the possibility of a clear spot at GNTO, even when Albuquerque is looking bleak.

Our turnout for the Open House/Equinox Picnic/Training session on March 13 was a little smaller than usual, but those who made the trip had a great time. I would like to thank Larry Cash and Nancy Davis for making two passes with the road dragger on Twining lane to smooth out the bumps. Dale did a great job of cooking hamburgers and hotdogs on the charcoal grill and Karen conducted a well-attended constellation tour later in the evening. Larry and Nancy also ran a great presentation highlighting objects in the constellation Leo, and demonstrated observing techniques using the 6” GNTO loaner scope. All told, there were 9 or so GNTO regulars plus around twelve more people that enjoyed the picnic, constellation tours, and GNTO level 1 training session conducted by Dale. Viewing conditions were fairly good until around 12:30 when most of us started packing up. The newcomers to GNTO all said they had a good time, so I’m sure they will be back soon.

Our next scheduled observing events at GNTO include April 10 and April 17, with the second event being our “new moon” viewing opportunity. Our next Training Session is scheduled for May 15.

If you are thinking about coming down to GNTO, please remember that our two loaner scopes are on easy to use dobsonian mounts, and our Isengard 16” is providing some really great views these days. Since we have all this great equipment at our facility, you do not need have your own equipment to enjoy GNTO. The comfortable heated Ortega Building is available for socializing and our Guest Trailer is available for coffee, hot chocolate and any snacks you want to share.

GNTO committee meetings are open to all interested TAAS members and our next scheduled meetings are on March 25 and April 22. We meet at 6:30 P.M. at the Village Inn restaurant on San Mateo just north of Academy. If you have questions about access and availability of GNTO, please contact me (Pete Eschman, gnto@taas.org, home phone: 873-1517). I hope to see you soon at our observatory.
## May 2004

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### News Flash: Stop the Presses
Breaking News: Messier Marathon Dress Rehearsal

Over forty people attended last night’s (March 20th) gear-up for the Messier Marathon. Equipment was dusted off, vehicles were loaded, and checklists were completed... unfortunately the wind did not cooperate! Complementary wind checks were issued for April 17 (a wind check is like a rain check, only much drier). So hang on to those charts and checklists, because the event has been rescheduled for our “new moon” observing session on April 17-18.

### Event #1: FIVE EASY PLANETS

**WHAT:** Telescope viewing of Mercury, Venus, Mars, Jupiter, and Saturn; new planetarium shows featuring the planets; entertaining activities for kids; and planetary fun facts. Telescope viewing, along Mountain Road and in the observatory, is weather-permitting; all other programs are rain-or-shine. The Café Sensations restaurant and the StarWorks astronomy gift shop will both be open.

**WHERE:** LodeStar Astronomy Center, at the Museum of Natural History, 1801 Mountain Road NW, Old Town.

**WHEN:** Saturday, March 27, 6:30 to 9 P.M. Mercury is only visible until 7 P.M. Planetarium shows begin at 7, 7:30, and 8 P.M.

**COST:** $5 for adults, $2.50 for kids ages 3 to 12.

### Event #2: NIGHT OF THE TRANSITS

**WHAT:** A star party featuring telescope viewing of the shadow-transits of three of Jupiter’s major moons. Each moon’s shadow may be observed as it moves across Jupiter’s surface. The event ends with a triple-shadow-transit, where all three moon shadows may be seen simultaneously, weather-permitting.

**WHERE:** UNM Campus Observatory, Yale just north of Lomas

**WHEN:** Saturday, March 27. The shadow-transit of the moon Callisto begins at 10 P.M.; the shadow-transit of the moon Io begins at 12:30 A.M.; and the triple-shadow-transit begins at 1 A.M. when Ganymede’s shadow-transit begins.

**COST:** Free

For information on either event, call 841-5972 or 261-0040.

The LodeStar Astronomy Center, located in Old Town Albuquerque, is a University of New Mexico project in partnership with the New Mexico Museum of Natural History & Science. The Center includes a planetarium, motion-simulation theater, observatory, exhibit gallery, and astronomy store. For information, call 505-841-5955.

The Albuquerque Astronomical Society (TAAS) is a non-profit organization and one of the largest amateur astronomy groups in the country. Its history dates back to the 1990’s. The mission of TAAS is public astronomy outreach and education. For information, call 505-254-TAAS.
### June 2004

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#### ATM Workshop

Ray Collins/Mike Pendley
atm@taas.org

The Amateur Telescope Making Workshop meets the first and third Wednesdays of each month at Valley High School, 1505 Candelaria—the north side of Candelaria, just west of 12th street. The meetings begin at 7 P.M. and are in Building E, Room #3.

#### TAAS General Meeting

Saturday, April 3, 2004
7:00 P.M.
Regenar Hall, UNM Campus

Subject & Speaker to be announced

#### Notes


GNTO = General Nathan Twining.

GNTO Training = GNTO Observing and Training.

UNM = University of New Mexico Observatory. Call the TAAS hotline @254-8227, or the UNM hotline @ 277-1446 to confirm, or unmn_coordinator@taas.org.

ACSA = Albuquerque Coffee Shop Astronomers. Contact Sammy Lockwood for information or visit www.taas.org and select sidewalk astronomy.

ATM = Amateur Telescope Making. Call Michael Pendley for information @ 296-0549, or atm@taas.org.

P & A = UNM Physics and Astronomy. Corner of Lomas and Yale.

= School Star Party.
After waiting over 2 months while on backorder, TAAS Educational Outreach now owns a Coronado MaxScope 40, H-alpha telescope. This two pound, unpowered scope, sets up in minutes, and provides fantastic, high contrast views of solar details.

The scope was purchased with funds provided in a grant from Sandia Labs, and will primarily be used for Educational Outreach. Solar shows are already planned for Madison Middle School and Griegos Elementary.

Please Join us on Thursday, April 8th, at Kit Carson Elementary, 1921 Byron Avenue SW, and again on Thursday, April 15, at Alameda Elementary, 412 Alameda NW, for our last events of the year. Because of the late sunset, a solar filter would be handy at these events. Maps and directions are posted at www.taas.org.

In addition, we have tentatively scheduled an event a Hope Christian School for Thursday, April 22, at the request of Jay Harden. The website will have updates on the Hope Christian event.

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Our Educational Outreach program concludes this month, with two events planned, and a 3rd pending.

Wrap-Up Reports

2/26/04 - Inez Elementary - An impromptu star party was arranged by an Inez parent and TAAS member Gary Harms. About 75 kids and parents attended this beautiful, warm night. Docents included Gary, Barry Spletzer, and Sammy Lockwood.

3/11/04 - S.Y. Jackson Elementary - A cloudy, windy day, turned into high-thin clouds, and a busy night of star gazing, as 250+ students and parents peered through 5 scopes. Telescope docents included John Laning, Jay Harden, Larry Cash, Dale Murray and Sam Lockwood. Demos were handled by Rebecca Purvis, Barry Spletzer, Brock Parker and Sammy Lockwood.

3/18/04 - Eastern Hills Christian Academy - An absolutely perfect night for a star party drew huge crowds and lots of TAAS volunteers for this successful event, that included TAAS, Lodestar, and Starfire. Over 350 kids and parents enjoyed views through 9 scopes. TAAS docents included John Laning, Jay Harden, Larry Cash, Dale Murray, Sammy Lockwood, Rebecca Purvis, Barry Spletzer, Brock Parker and Bob Hufnagel.

Additional photos of these events are at www.taas.org/education/
Membership Services

- Membership Inquiries
- Events Information
- Volunteer Opportunities

Contact Judy Stanley at
membership@taas.org

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

Contact Shannon Mann at
treasurer@taas.org

P.O. Box 50581  Albuquerque, NM

Dial 234 TAAS for Updates

The TAAS hotline is now bigger and better! The hotline now offers updates on TAAS monthly meetings (press 1), TAAS special events (press 2), and TAAS school star parties (press 3). If you have a special TAAS event that you would like to announce on the hotline, e-mail your announcement to sammy@taas.org

Our Next Academy Award Winner?

While I was out at GNTO I did a short digital movie entitled “Searching for ET”. This is kind of a hobby of mine. Well, it was accepted at New York International Film Festival for screening in April. I do not have the exact dates. If any of the membership happen to be in New York around that time I should have plenty of free tickets. I will let you know the exact date and time.

John Sefick

Editor’s Note

Please note that the deadline for the June 2004 issue of the Sidereal Times will be Friday, April 16th, as the finished manuscript must be at the printers before Monday, April 19th, so that you will receive it by e-mail that day or by s-nail mail the following Saturday. My e-mail address is editor@taas.org.

Full Color Sidereal Times Now Available

Barry Splettzer

In a sweeping move to provide top quality communiques to our members while conserving our precious resources, TAAS is pleased to re-announce the availability of this newsletter the Sidereal Times in full color. That’s right, catch the blush of the monthly speaker, the blue eyes and red hair of that cute 6-year-old at the School Star Party, the depth and vibrance of all the full-color illustrations.

The catch is that the full-color version is only available at our website: www.taas.org. If you prefer to download and read your newsletter on your computer rather than receive a paper copy by mail, please notify the TAAS treasurer, Shannon Mann at treasurer@taas.org to have your name removed from the Sidereal Times mailing list. This will provide you with the newsletter of your choice, save TAAS money, and earn you the undying (okay, maybe slowly dying) gratitude of our Sid Times printer – me.

Loss in Longtime Member’s Family

I regret to inform everyone that Mark Nagrodsy’s wife of 27 years, Martha, lost her battle with cancer this last weekend. As you can imagine, Mark is devastated. He asked me to pass along the news to TAAS members on his behalf.

Services were held at the Jehovah’s Witness Kingdom Hall on Los Lentes Road in Los Lunas. You are welcome to make a donation to support the building of a Kingdom Hall in Belen.

Send to: Belen Congregation of Jehovah’s Witnesses Building Fund c/o Tim Black 505 South 12th Street Belen NM 87002

Our thoughts are with Mark at this very difficult time. As many of you know, he put his telescope business, NM Astronomical, on hold for the past 3 months to care for his wife around the clock. He is hoping to resurrect it when he is emotionally able to do so.

John Sefick

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’

To convert from Degrees, Minutes, Seconds: Divide seconds by 60, then add minutes, then divide by 60 again.

For security reasons, GNTO location is available by request only, so please contact Pete Eschman for GNTO information.

Courtesy Pete Eschman

UNM Report

Jay Harden, UNM Campus Observatory Coordinator
unn_coord@taas.org

20 Feb: Becky and I arrived around 6:00P.M. under 100% clouds. Around 7:15 P.M. we gave up and left.

27 Feb: Same results as the 20th.

5 Mar: A clear but a cool night. We had 12 viewers. Docents: Becky, Dale & Jay.

12 Mar: Mostly cloudy all day but started to clear around 6:00 P.M. By 7:30 it was mostly clear with a breeze. We had 11 viewers. By 8:30 it was 100% cloudy again so we departed. Docents: Dale, Becky & Jay.
Six hours for the planned New Horizons probe... scientists on Earth take a long time to reach the... the probes we send suffer from two unavoidable... As humanity expands its exploration of the outer... Program. Autonomous Sciencecraft Experiment, and it's... is working to develop an artificial intelligence... say JPL scientists. Along with his colleagues in NASA's... Project (ST6), JPL's Steven Chien is working to develop an artificial intelligence technology that does just that. They call it the Autonomous Sciencecraft Experiment, and it's one of many next-generation satellite technologies emerging from NASA's New Millennium Program.

As humanity expands its exploration of the outer solar system—or even neighboring solar systems—the probes we send suffer from two unavoidable handicaps. First, commands radioed by mission scientists on Earth take a long time to reach the probe: six hours for the planned New Horizons mission to Pluto, for example.

Second, the great distance also means that data beamed back by the probe trickles to Earth at a lower bandwidth—often much less than an old 28.8 kbps modem. Waiting for hundreds or thousands of multi-megabyte scientific images to download could take weeks. And often many of those images will be “boring,” that is, they won't contain anything new or important for scientists to puzzle over. That’s certainly not the most efficient way of using a multi-million dollar probe.

Even worse, what if one of those images showed something extremely “interesting”—a rare event like a volcanic eruption or an unexpected feature like glaciers of methane ice? By the time scientists see the images, hours or days would have passed, and it may be too late to tell the probe to take a closer look.

But how can a probe’s computer brain possibly decide what’s “interesting” to scientists and what’s not?

“What you really want is a probe that can identify changes or unique features and focus on those things on its own, rather than just taking images indiscriminately,” says Arthur Chmielewski, one of Chien's colleagues at JPL.

Indeed, that’s what Chien’s software does. It looks for things that change. A mission to Jupiter’s icy moon Europa, for instance, might zero in on newly-formed cracks in the ice. Using artificial intelligence to set priorities, the probe could capture a complete movie of growing fructures rather than a single haphazard snapshot.

Until scientists can actually travel to deep space and explore distant worlds in person, they’ll need spacecraft “out there” that can do some of the thinking for them. Sciencecraft is leading the way.

Learn more about Sciencecraft at nmp.nasa.gov/st6. Kids can make a “Star Finder” for this month and learn about another of the ST6 technologies at spaceplace.nasa.gov/st6starfinder/st6starfinder.htm.
LOWELL OBSERVATORY ANNOUNCES

2ND ANNUAL STAR PARTY

The Lowell Observatory Star Party II unfolds from June 17-20 at the Observatory’s Mars Hill campus with observing at nearby Arizona Snowbowl. Highlights include observing on the 24” Clark Telescope, tours of the U.S. Naval Observatory and Lowell Observatory’s Anderson Mesa dark sky research site, special talks by astronomers, an astronomy marketplace, and Lowell’s spectacular multimedia show.

Kenneth Herkenhoff from USGS will present “Mars Rovers,” with the latest from Spirit and Opportunity, by a U.S. Geological Survey scientist directly involved. Talks by Lowell astronomers will include: “Recent Comets,” hear about two 2004 comets by expert David Schleicher; “Killer Asteroids,” by Brian Skiff, an update on the productive Lowell Observatory Near-Earth Asteroid Search; “Our Variable Sun,” an introduction to the seething world behind our Sun’s steady light by Jeffrey Hall; and “Big Stars in Small Galaxies,” by Deidre Hunter, with current research on effects of massive stars on dwarf galaxies. Project manager Thomas Sebring will present “The Discovery Channel Telescope at Lowell Observatory,” a behind-the-scenes look at building the new 4.3-meter, $30,000,000 versatile instrument.

Detailed information is available at http://kraken.lowell.edu. Mark your calendar, and please consider attending the event.

Contact:
Russell Tweed
Lowell Observatory
928-774-3358
rtweed@lowell.edu
www.lowell.edu

Desert Sunset Star Party  May 13-16, 2004

The 2004 Desert Sunset Star Party will be held at the Caballo Loco Ranch, about 11.5 miles south of Three Points, AZ, on Rt. 286, and then east for 8 miles. This RV ranch is in a secluded area of Arizona with dark skies. The telescopes of Kitt Peak are in clear view to the west. The DSSP begins on Thursday night and runs through Saturday night. We will have a speaker on both Friday and Saturday evenings along with door prize giveaways. Registration information will be posted on the DSSP website - http://chartmarker.tripod.com/sunset.htm

Santa Fe Astronomers

There is now a newly created Yahoo email discussion group called “Astronomers of Santa Fe” freely available to anyone. It’s primary goal was to group together astro imagers within Santa Fe county, but anyone is welcome to join and may benefit from astroimaging-specific topics ranging from image processing techniques to simply organizing imaging sessions with individuals around you and everything in between. We look forward to any new subscribers looking to participate such a forum. Thank you.

URL: http://groups.yahoo.com/group/Astro_Santa_Fe/

Southern New Mexico Star Party

The fourth semi-annual Southern New Mexico Star Party is only four weeks and one day off. This sky event is held at City of Rocks State Park which we feel is the darkest state park in southwestern New Mexico. Registration forms are available on line at www.Astronomy-National-Public-Observatory.org or e-mail me at jgilkiso@zianet.com and I will send you a current newsletter which has a registration form included with it. The SNMSP runs for three days from Thursday April 15th ending at noon on Sunday April 18th. We hold the event in the reservation area which has several camp sites, gets us away other campers, and has a clear southern horizon. We also have a large pavillion at the site which gives us a area where we store our gear incase it rains. Electric sites are a few hundred feet down the road if you want RV it. We collect for camping or day use for the event and badge vehicles and attendees for the event.

Hope we see you there.

John Gilkison
NPO President

Enchanted Skies Star Party Gets Bigger and Better

The Enchanted Skies Star Party, acclaimed for its excellent dark skies and outstanding daytime programs for the past decade, is expanding to a five-day schedule for 2004 to make room for new, hands-on workshops and a full night of observing above 10,000 feet elevation.

The Socorro, New Mexico, event scheduled for October 5-9, 2004, also offers special club and school group rates allowing attendees to save 33 percent on registration.

The new, Tuesday-through-Saturday schedule features a series of hands-on workshops on CCD imaging; using the powerful The Sky package of astronomical software; and bringing astronomy to your community through educational outreach. The educational outreach workshop will be presented by the Astronomical Society of the Pacific.

A highlight of the star party will be the night atop Socorro County’s South Baldy peak, a 10,700-foot mountain that soon will host the Magdalena Ridge Observatory, a state-of-the-art research facility now under development. Star party attendees will be able to bring their telescopes to this outstanding site and enjoy the high-quality observing conditions that attracted the builders of a $40-million optical interferometer.

Popular features from past years also will return, including the insider’s tour of the world-famous Very Large Array radio telescope; an excellent daytime lecture series featuring professional and accomplished amateur astronomers; and the now-legendary night at Socorro County’s Pond Ranch with its Southwestern pit-cooked chuck-wagon dinner, cowboy entertainment and dark-sky observing.

Attendees are automatically eligible for numerous door prizes, including the Grand Prize -- a night of observing at Kitt Peak National Observatory.

For more information on the Eleventh Annual Enchanted Skies Star Party, see the Web site, at:
http://www.socorro-nm.com/starparty

The Enchanted Skies Star Party is sponsored by the New Mexico Tech Astronomy Club, the Socorro County Chamber of Commerce, the National Radio Astronomy Observatory, the City of Socorro, and the Bureau of Land Management.

Contact: Dave Finley (505) 835-7302
dfinley@nrao.edu

The Enchanted Skies Star Party
P.O. Box 743
Socorro, New Mexico 87801

May 2004

The Official Newsletter of The Albuquerque Astronomical Society
To the casual observer, the night sky is a myriad of stars with some notable patterns like the Big Dipper, Orion, and Scorpius. To the seasoned astronomer, constellations are precise geometric constructs in the sky and coordinates like right ascension, declination, altitude, and azimuth are common lingo for locating stars and galaxies. Delving into the subject, I will explain how all this came to be, what it all means, and hopefully shed some light on what can be a confusing aspect of astronomy.

Many of the constellations began simply as people of ancient times noticed patterns in the stars. This eventually grew into mythology and legend. In fact, of the 88 current constellations, 47 were recognized by the Greeks and cataloged by Ptolemy in 127 A.D. The Greeks had one additional constellation that was divided into four constellations in modern times. The Greek constellations included almost all of the famous ones: Ursa Major, Andromeda, Orion, Hercules, etc., etc. These constellations were the last word for centuries.

From the latitude of Greece (about the same as Albuquerque) 20% of the sky is never visible. In the late 1500’s, when European explorers started navigating the southern oceans, this part of the sky became visible and was ripe for the picking for any astronomy minded sailor. About 26 new constellations were added this way. In addition, the 48th Greek constellation, Argo Navi s (the ship), was divided into 4 smaller constellations. The rest of them, like Vulpecula, Lynx, and Sextans, along with other dim ones, resulted from filling in the gaps to cover the entire sky with recognized constellations. By 1843, the list of constellations was standardized to the ones we know today but the precise boundaries were not yet drawn.

The boundaries came about in 1930 when the International Astronomical Union set out exact boundaries for each constellation. The boundaries are made up entirely of north-south and east-west lines (no diagonals) and the intent was to keep all the stars in their traditional constellations. This resulted in some pretty strange shaped constellations. For example, the boundary of the constellation Draco has 50 corners (see Figure 1). Some classic assignments did have to be undone. For example, Alpheratz, one of the stars in the great square of Pegasus, is no longer in Pegasus at all. For centuries it had been an important star in both Pegasus and Andromeda, but the modern definition of a constellation does not allow this and Andromeda won out.

The next issue of importance today and with deep historical roots is the location of the Vernal Equinox. Perhaps surprisingly, a little explanation is in order on what astronomers mean by an equinox. Almost anyone can tell you that the Vernal Equinox is a first day of spring and falls around March 21st. The astronomical definition of an equinox is very different. It is the location in the sky where the path of the Sun crosses the celestial equator. The celestial equator is defined as a line in the sky directly above the earth’s equator. Throughout the year, the tilt of the earth’s axis causes the sun to be south of the equator during our fall and winter and north during our spring and summer. The Vernal equinox is the point where the sun crosses the equator traveling from south to north.

In astrology, the Vernal Equinox is also called the first point of Aries. By astrological tradition, the Sun enters Aries at the Vernal Equinox. This was true in about 460 BC but due to the precession of the equinoxes (there’s some astronomical jargon for you) the Sun is now in Pisces, 23 degrees from the first point in Aries, at the equinox. Of course, this means that folks who think they are an Aires are probably a Pisces. In addition, this has caused an additional constellation to enter the zodiac that wasn’t there a few thousand years ago. This is Ophiuchus. Astrology, rightly so, is still firmly anchored in the distant, superstitious, and pre-scientific past and therefore does not recognize these natural and continuing changes in the heavens. If phrases like precession of the equinoxes interest you, check back here next month. I’ll explain what causes it and the ramifications, like the North Star being only a temporary fixture.

One other obscure fact about the Vernal Equinox is how it managed to land on March 21st. Up until 1582, most of Europe used the old Roman calendar that inserted a leap year every four years. This causes the average year to be slightly too long by about one day every 130 years. Using this calendar, the Vernal Equinox kept moving earlier and earlier into the year. By 1582, the equinox fell on March 10. At this time, Pope Gregory converted Europe to the Gregorian calendar, the one we use today which is correct to about one day every 3000 years. He wanted to make up for the error in the calendar which at that time was 14 days. He only added 11 days to the calendar, causing the equinox to fall on March 21st. He chose March 21st because it coincided with the date of the equinox in 325 AD when the first ecumenical council of the Christian church in Nicaea was held.

With the equinox snugly nestled in Pisces and the celestial equator riding high above Earth’s equator, everything is in place to paint the most commonly used coordinate system onto the sky - that of right ascension and declination. On earth, locations are specified by latitude and longitude with latitude being the distance north and south of the equator and longitude being the distance east and west of the prime meridian through Greenwich, England. In the sky, things are similar. Declination is like latitude, it is the distance north and south of the equator measured...
in degrees. Positive declination is north and negative is south.

Right ascension is somewhat trickier. It starts at the Vernal Equinox and is defined as zero at that location. It is measured like longitude, but instead of using degrees, right ascension is measured in hours and minutes. The entire sky, all 360 degrees, is divided into 24 hours, amounting to one hour for every 15 degrees. It progresses from zero hours at the Vernal Equinox increasing eastward. It wraps all the way around until, at the 24-hour point, you return to the Vernal Equinox.

On earth, it’s pretty easy to keep track of our longitude because it stays the same when we stand still. Right ascension is fixed to the stars but the rotation of the earth makes the stars, and consequently the right ascension of the part of the sky we see change with time. A very handy concept is local sidereal time (LST) which is the right ascension of the meridian (the line passing straight overhead in the sky from south to north). If you know LST, you can tell whether or not a certain object is visible. Because the pattern of the stars changes once per day and once per year, it is relatively simple to derive a formula to determine your local sidereal time anywhere, anytime:

\[ LST = 4.8 + 2M + \frac{D + L}{15} - Z + T \]

Here, M is the month (e.g., January=1, October=10), D is the day of the month, T is the local time on a 24 hour clock, Z is the time zone (e.g., MST = 7, MDT = 6, CST = 6, CDT = 5, PST = 8, PDT = 7), L is your longitude in degrees. For Albuquerque or GNTO, it simplifies to:

\[ LST = 5 + 2M + \frac{D}{15} + DS + T \]

Where DS is for daylight savings (Yes=1, No=0). For example, the local sidereal time at 10 PM on February 12:

\[ LST = 5 + 2 \times 2 + \frac{10}{15} + 22 = 31.7 = 7:40 \]

The initial result, 31.7 required that 24 hours be subtracted to fall into the required 0-24 hour range. Once you know the LST, it’s easy to keep track of it throughout the night, it advances one hour each hour.

What good is all this? By knowing the LST you can tell if an object is visible. For example, Orion is at right ascension 4:30, so with a LST of 6:30, Orion is 2 hours (30 degrees) past (west) of your meridian. Of course, the farther south you go, the closer an object must be to the meridian to be visible. Omega Centauri (the spectacular globular cluster) never gets more than a few degrees above the horizon, so with its RA of 13:30 you need to look for it somewhere near a LST of 13:30. From above, February 12 at 10 PM gives a LST of 6:30. Each month, the LST advances 2 hours so 3 1/2 months past February 10 (around May 25) Omega Centauri will be visible at 11 PM (I added an extra hour for daylight savings).

Hopefully this brief foray into the coordinates of the stars has given some feel for how to find your way around the sky. As I mentioned, next time I will get into some details about how this marvelous and fixed system of coordinates may be marvelous but it is certainly not fixed.

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**Figure 1.** The constellation Draco with all its nooks and crannies.
Minutes of the Board

Minutes: TAAS Board of Directors Meeting, March 4, 2004

Present: Dale Murray, Heather Mann, Shannon Mann, Peter Eschman, Elizabeth Burki, Robert Hufrnage, Gordon Pegue, Rebecca Purvis, Larry Cash, Ray Collins. Excused: Judy Stanley

I. Correction to minutes: None

II. Treasurer’s Report: Shannon submitted latest account summaries. Barry Spletzer has been repaid for his “Sidereal Times” expenses and the bulk mail account has been paid up for six months. Discrepancies in subscription costs have been resolved. The TAAS membership list will be reviewed to find lapsed members who are still receiving the “Sidereal Times” newsletters. Suggestion was made to mention the names of TAAS donors at the General Meeting as a way of publicly thanking them and to encourage other members to contribute to special funds within the organization.

III. Retrospect: Los Griegos school star party was rained out. There was a low turnout for the Monte Vista star party despite having clear skies.

IV. Correspondence: Ray Collins received a phone call from the Astronomy Society of the Pacific requesting information on public educational material. Ray referred them to Judy Stanley. An astronomy group in Nepal contacted Dale Murray also requesting information on educational outreach. Dale forwarded their request to Jody Forster who has spent considerable time in Nepal.

V. Prospect: March 6th general meeting will feature a guest speaker from Canada discussing light as particles. Gordon Pegue will bring his LCD projector. It was suggested that TAAS apply for a grant to purchase an LCD projector for meeting use.

VI. Committee Reports:
   a. Membership: no report
   b. GNTO: The committee met on 2/26/04.
      i. Upcoming events: GNTO equinox picnic and training scheduled for 3/13/03. The picnic will start at 4:30; training at 5:45 and Karen Keese will offer a tour of the constellations at 7:30. The Messier Marathon is scheduled for 3/20/04 with 4/17/04 as a fallback date.
      ii. The dome improvements are going well as are the improvements to the Isengard drive-motor system. Still awaiting some parts from the distributor.
      iii. Larry Cash will find out more about commercial distribution of the screen saver. There have been mixed results with attempts to post the screen saver information on web sites, news groups and list serves.
   c. Grants and Income: Fund raising: No word as yet from Home Depot or PNM on matching-funds grants. Pete would like to re-start an Intel grant application and will contact Barry Spletzer for assistance with the application to Intel. Will also ask Barry for help with contacting Sandia Labs for grant support.
   d. Education: Becky Purvis stated that there will be a star party at Jackson Middle School on 3/11/04 and a “scopes only” outreach to the Eastern Hills Christian Academy on 3/18/04. The education laptop computer has arrived. The projector is back-ordered.

VII. Old Business: Astronomy Day. Three options were offered: Coronado Mall (Sears Court) on 9/25/04; Albuquerque Flea Market 4/24/04; joining with Explora Museum on 4/24/04 as part of their fund raiser. Decision made to go with the Coronado Mall date of 9/25/04 with another smaller exhibit at the Flea Market some time in the late spring.

VIII. New Business:
   a. We will supplement the Lodestar production on 3/27/04 with planet and transit viewing on the Yale Observatory grounds starting at approximately 9 P.M. Alas, Mercury will have set by then.
   b. A request was made for donations to support a Navajo filmmaker who is creating a documentary discussing the Navajo constellations and comparing them to the Western constellations. Decision made to ask the requestor to present a brief description of the project and request donations to the “special projects fund” during the next General Meeting.
   c. Broline Science and Engineering Fair: updated information still has not been received. There have been no reviewers for the “Sky Tools 2” astronomy observing software. We will re-announce the request at the General Meeting.
   d. Dark Sky Conference: Suggestion made that we participate in a program but not be in charge of the over-all production.
   e. Flea Market outreach: Manager of the Flea Market is more than willing to accommodate us at any time and will waive the usual “table” fees.

IX. Meeting adjourned at 9:09 P.M.

Minutes submitted by Ray Collins.
### TAAS Positions

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<thead>
<tr>
<th>Position</th>
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Borrowers are required to enjoy the telescopes.
MEMBERSHIP: You may request a membership application by sending e-mail to membership@taas.org or calling (505) 254-TAAS(8227). 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 full time student (high school or less) membership. Additional family members may join for $5/each (student and family memberships are not eligible to vote on society matters). New member information packets can be downloaded from the website or requested from the TAAS Membership Services Director at membership@taas.org. You may send your dues by mail to our newsletter mailing address or e-mail address to treasurer@taas.org with your new address should you move!! Please provide the Treasurer with your new mailing address or e-mail address to ensure that you receive your newsletter.

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ARTICLES/ADVERTISEMENTS: Articles, personal astronomical classified advertisements and business card size advertisements for businesses related to astronomy must be submitted by the deadline shown on the Society calendar (generally the Saturday 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, Italicized text, justified, no indent at paragraph beginning, one space between paragraphs is preferred. ASCII and RTF are acceptable. One column is approximately 350 words. Contact the Newsletter Editor at editor@taas.org for more information.

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