



THE OBSERVER



The Astronomy Club of Tulsa's Newsletter Published Since 1937

Regional Star Parties

Land Tidbits

Events Schedule

ACTOMART

Steve Chapman Reviews AT6RC

Globe At Night

TUVA's Bart

Much More

STEVE CHAPMAN

**REVIEWS THE ASTRO-TECH 6"
RITCHEY-CHRETIEN A \$299 MAS-
TERPEICE FROM OKLAHOMA**

**RON WOODS MAKES HIS OBSERV-
ER DEBUT WITH A GUIDE TO BART
(BIG ASTRONOMICAL REFLECTING
TELESCOPE)**



www.astrotulsa.com

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APRIL 2011



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FROM THE EDITOR



This months cover represents a continuation of our new look and the scope for the cover was picked because this little scope from Astronomics seems to be popping up every-

where. I even have one.

I pestered Steve Chapman all month to write a review for the club because they are still available on www.astronomics.com for \$299. They tell me once this current run is finished they will not make the 6" anymore. I do not know how many more scopes they will produce to complete the run and I wanted all of our members to get a fair shake if they are thinking about buying one.

This month also represents a great addition to our newsletter as Ron Wood has kindly agreed to write a monthly column for us and he has started with a great article about TUVAs very own 24" BART.

There are still a few slots open for a those of you who wish to write a monthly column and as always we welcome occasional submissions. Simply send me your article by email in any format you like. Mays cut off is

Featured

4 *Our very own Steve Chapman reviews the popular AT6RC From Astronomics.*

The Observer welcomes Ron Wood as a regular and looks forward to many more.

5 *Here he tackles his now famous BART 24" Telescope*

John Land races to be the first to measure the cosmos, well if not that then to review a book that does. Parallax



March 15, 2011 Conjunction of Mercury and Jupiter Photo submitted by Stan Davis

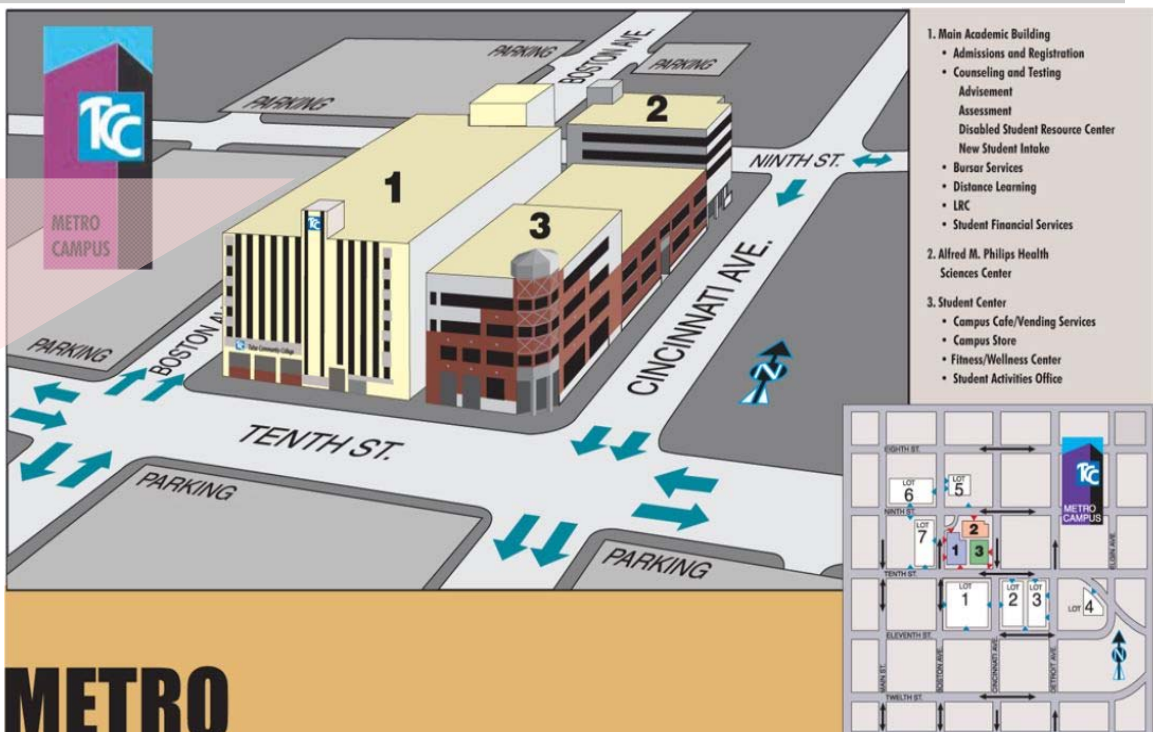
RECENT NEW MEMBERS

1. Kenneth Weikel
2. Cody Lawson

EVENTS

EVENT	PROGRAM	WHERE	DATE	TIME
April Meeting	No confirmed speaker as of this printing. 4-8-2011 check website for up to the minute changes	TCC Metro Campus	4-15-2011	7:00 PM
Sidewalk Astronomy	Public Observing	Bass Pro	4-16-2011	8:00 PM
April Public Star Party	Monthly Star Party	ACT Observatory	4-22-2011	8:00 PM
May Star Party	Members Night	ACT Observatory	5-06-2011	8:00 PM

TCC Metro Campus - Philips Auditorium Located in Building 2 at the corner of 9th and Cincinnati. Park in Lot 5 to the north on Boston Ave.



Presidents Corner

Message From The President



No Message
Submitted
This Month



Submitted By: K C Lobrecht

“Were I to write out one prescription designed to alleviate at least some of the self-made miseries of mankind, it would read like this:

“One gentle dose of starlight to be taken each clear night just before retiring.” Leslie Peltier

Co-founder of the Astronomical League, Dr. Harlow Shapley, described **Leslie Peltier** as "world's greatest non-professional astronomer"

<http://www.aavso.org/leslie-c-peltier>

ASTRONOMICS

AT6RC

BY: STEVE CHAPMAN



I recently purchased an Astro Tech AT6RC. After waiting several months for delivery, it finally arrived in mid December. (Then of course there

was the obligatory 3 to 5 weeks of cloudy skies, snow and bitter cold weather,) The first thing I noticed when unpacking it, was that it came double-boxed and nicely protected by the form fitted Styrofoam. I was very impressed by how nice it looked -fully baffled, quality dual speed crayford focuser, and the fit and finish all seemed top notch.

The specs on the scope are 6"/F9. It weighs 13lbs without any accessories (diagonal—finder scope—eyepieces). It is 19.6 inches in length and it is Ritchey-Chretien design.

In spite of all the bad weather early on, I did get a few quick looks at the Moon and Jupiter, mostly at moderate magnifications and was impressed with the razor sharp views.

I was finally able to get out under decent skies during our TUVa Marathon in early March. I was curious to see how wide of a view I could

get with this new scope. My lense choice was a 40mm Pentax XW eyepiece (34X). Despite the scope's moderately long focal length, I was able to see the entirety of the Pliades Star Cluster (M45) which is about one degree across. I also used an Ethos 17mm eyepiece(80X) to look at the Orion Nebula (M42) –it was a very nice wide field of view and great magnification with nice round stars out to the edge of the eyepiece.

A few weeks ago I decided to do some planetary work with the scope and of course Saturn was the obvious target. This time I went for the highest magnification possible without noticeable degradation of the image. With a 10.5mm Pentax XL eyepiece (130X) Saturn still had a very sharp look to it. With a 7mm Pentax XL eyepiece (195X) the image was just starting to fuzz up a bit – not too bad for a 6 inch scope.

Although this scope was primarily designed for astro-photography I have found it works well for visual observing. Although it is not my biggest scope, it may see more use because it is much easier to transport and seems to be fairly resistant to dew. When used with the CG5 mount it has very good stability in windy conditions plus the added bonus of Goto.

A GUIDE TO BART

BIG ASTRONOMICAL REFLECTING TELESCOPE

BY RON WOODS

The Astronomy Club of Tulsa is proud to welcome TUSA's own Ron Woods who has graciously consented to contribute his vast astronomical knowledge here in the Observer. Ron will be a monthly regular .



Ron Wood inspects Bart as he prepares for a night of gazing.

There is an old joke in the amateur community which defines "astronomy" as the study of telescopes. I think there is enough truth in that joke to justify a brief study of my favorite telescope: BART (Big Astronomical Reflecting Telescope)

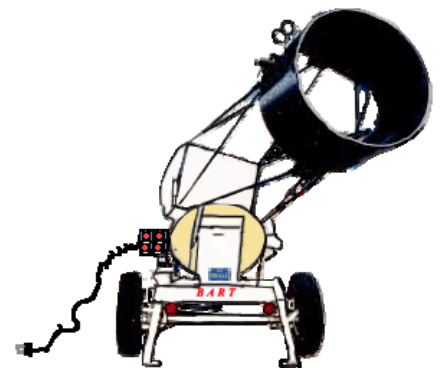
which is famil-

iar to ACT members who have attended the annual Messier Marathon held here at Tuva observatory near Lake Eufaula for the past twenty years.

Bart is a 24-inch, f/5, fork mounted Newtonian telescope. It is integrally mounted on its own two-wheeled trailer to be towed on the highway. It was built in 1992 by several members of the Tuva Astronomy Organization under the direction of Byron Meland. It is the second of two such scopes built by By-

ron. The first, called Mira, was designed by members of the Pomona Valley Amateur Astronomers Club who held day jobs at the nearby Jet Propulsion Laboratory. In recent years Mira was owned by David Chandler who is well known for his planisphere "The Night Sky" and his observer's log program "Deep Space." Mira is extensively described in volume #17 of "Amateur Telescope Making" and is also pictured on page 82 of the August 1983 issue of "Sky and Telescope" magazine. Mira and David attended the 1993 Texas Star Party just the year before Byron and I took Bart in 1994.

Like Mira, Bart has all homemade components and is largely made of salvaged materials. In 1994 at the Texas Star Party, Bart won the award for best use of materials which was the same award won by Mira in 1982 at the Riverside Telescope Makers Conference in California. The axle, wheels and torsion bar were salvaged from the rear of a Renault Alliance; a front spindle and bearings from an eighteen wheeler became the polar axis, and the two rear legs which provide stable support when the trailer is jacked up for use, were cut from an automo-



bile drive shaft. The fork arms and trailer frame were fabricated from heavy rectangular steel tubing and the mirror box from sheet steel. The Serrier truss assembly is made of one-inch aluminum tubing which was one of the more expensive material costs. The homemade reflex finder works on the same principle as the commercial telrad and works equally well. The focuser, also homemade, is a modified Crayford design with a 3-inch diameter copper drawtube from a plumbing supply. Focusing is extremely smooth and precise. The spider and the 18 point flotation mirror cell are also homemade, simple and effective.

Bart has an unusual drive which is patented by Byron. It is very accurate and easy to construct requiring only one precision part, which by a clever technique, was fabricated using only hand tools and a machinist's dial indicator. Furthermore, it is a friction drive, eliminating the need to fumble in the dark trying to tighten and loosen clutches such as are used on many commercial scopes. The drive uses a surplus one rpm synchronous motor costing six dollars at a surplus outlet. Gearing down the motor was easily accomplished using only a few pieces from a large fifty-dollar box of assorted gears. The output shaft was fitted with a chain sprocket driving a Walls #35 chain which fits like a saddle around the smooth edge of a ¼-inch thick steel disk mounted on the polar axis. When the telescope is slewed, the disk slips inside the chain, but while viewing, the friction between the chain and disk is sufficient to drive the scope. The diameter of the steel disk was chosen so that it perfectly complements the output speed of the driving chain sprocket to give the desired one revolution per day drive rate. Note that this approach allows great flexibility in the initial choice of gears for the drive train.

The steel disk was rough cut .1 inch oversized by a commercial shop. It was then mounted

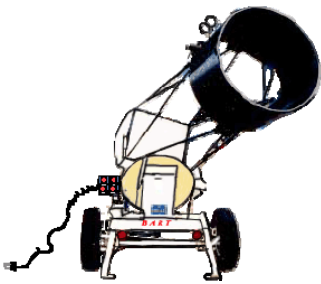
on the polar axis along with the fork arms but without the mirror box. With the disk in place I slowly rotated the fork arms and disk while Byron ground the last .1 inch off the edge of the disk bringing it exactly to the desired radius. This technique required several hours but guaranteed that the disk was precisely centered with a uniform design radius that varied by only .003-inch. A temporary bracket was used to steady the hand grinder and to mount a machinist's dial indicator which monitored the variation in the radius as the disk was turned.

The parabolic mirror is 24 inches in diameter, 2 inches thick, weighs 62 lbs and has a 2 inch hole through its center. Paul Jones of Star Instruments in Flagstaff, Arizona, produced the mirrors for both Bart and Mira. It is supported by an 18 point flotation cell and is held in place by an aluminum plug which is fitted through the central hole and bolted to an underlying steel plate which forms the base of the mirror cell. The plug is wrapped with teflon tape and has a flange on top to prevent the mirror from falling forward when the scope is in a horizontal position. The mirror remains in the box while traveling and rarely needs collimation, which is effected by a pair of push/pull bolts acting on the steel



plate at each corner of the mirror box.

Bart has performed flawlessly for almost 20 years thanks to the JPL design team and Byron's masterly approach to fabrication so reminiscent of the old John Belushi character on Saturday Night Live that I call him samurai telescope maker. Bart was recently sandblasted and with a new coat of paint is now a green telescope. Thanks to a generous donation by several members of the Tulsa club the mirror also was recoated by Optical Mechanics Inc. in Iowa. Thanks again to all who contributed.



GARRETT OPTICAL
PERFORMANCE SPORT OPTICS

 **AstronomyBinoculars.com**



Garrett Optical® stocks over 50 astronomy binoculars from six different manufacturers, and we're based right here in south Tulsa.

Visit our websites
www.GarrettOptical.com
www.AstronomyBinoculars.com
for more information!



ACTOMART BUY SELL TRADE

ACTOMART is available to any member of the Astronomy Club of Tulsa free of charge and I am developing a web page for us to use so items can be traded and sold all month long between publications.

To kick off this new section of the Observer I felt it important to find something special to help our readers to see the value of having a resource where we could sell or trade equipment between ourselves. I think most of our members will agree that one of the most popular items in the club are the Garrett Optical 15X70mm Binoculars and if you have not seen or used a pair there at least 20 available to try at any star party. I wrote Zach and ask if he would run a special for ACT members only. However, because his operation has moved their warehouse to Chicago he turned me down. Later Zach came up with an idea for a coupon that can be used on the web. See the next page for a great money saving offer from Garrett Optical to The Astronomy Club of Tulsa. THANKS ZACH. For the rest of you before you list on Astromart think ACTOMART and give your fellow club members first crack.

For Sell

\$75.00

Orion 8 inch Reflecting Telescope for sale at reasonable price. This is the optics tube for an Orion Sky Quest XT 8 Intelli-Scope. Diameter 203 mm f 5.9 (OTA only)

This excellent set of optics will require you to make your own Dobsonian mount and purchase eyepieces and finder.

Contact Arden Strycker [\(918\) 337-0544](tel:(918)337-0544) rockit@ardenstrycker.com

Note: I sent email and Arden told me he was asking \$75 but double check with him because that is nearly a too good to be true price.





Garrett® Gemini 15x70 LW Binocular



10% off the Gemini 15x70 LW Binocular - Just use coupon code "ACT" during online checkout on AstronomyBinoculars.com. Orders must be placed online to qualify.

Garrett® Gemini 15x70 LW Binocular



Garrett® Gemini 15x70 LW Binocular



Garrett® Gemini 15x70 LW Binocular



HELP WANTED:
Must be fluent in Romulan and available for extensive travel.
Contact: HR at Federation International



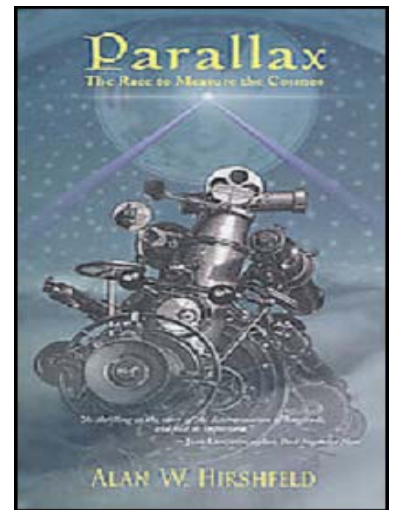
That's it for this month but if you have any items you would like to post for sale or trade send me an email with pictures and details and we will post them for other ACT members to take advantage of.

jierrym@pantherenergy.us

All items will automatically drop the following month unless we receive an email asking that they run again.

BOOK REVIEW

by: John Land



“Parallax – The Race to Measure the Cosmos”

By Alan W. Hirshfeld

Tired of setting around waiting for the skies to clear?

Here is a perfect book to wile away a cloudy night.

(WARNING: You may not be able to put it down

if the sky clears !)

We have become so accustomed to turning on our computers and seeing the latest Hubble images or news from far away spacecraft orbiting a distant planet, that we forget those who pioneered the pathways to the stars.

Close one eye - look at a pencil held out at arm’s length in front of you. Then blink your eyes back and forth. The pencil will seem to jump back and forth. You have just discovered PARALLAX – the apparent change in an object’s position caused by the motion of the observer. Even the ancient Greeks understood that if the Earth moved, the stars should appear to change position over the course of a year.

The first part of Hershfeld’s book traces the historical development of the idea of Parallax from the Ancient Greeks to Galileo. Along the way you’ll meet great thinkers such as Aristotle, Archimedes, Aristarchus, Ptolemy, Kepler, Brahe,

Copernicus and Galileo.

Once Newton had firmly established that the Earth did indeed move around the Sun,

THE RACE WAS ON !! Who would be the first to observe Parallax and therefore measure the distance to the stars? Hershfeld follows a menagerie of astronomers both well know and obscure running the race to the heavens. Along the way you’ll read of a peasant apprentice who survived being buried in the basement of a collapsed house and went on to build the finest telescopes in the world. Another youth who escaped from Napoleon’s dragoons to run through the night to freedom and become one the greatest astronomers of the era. Also a South African astronomer who had to avoid poisonous snakes and chase leopards off his observatory. Unexpected discoveries found when careful observations revealed by Serendipity new mysteries of the motions of the Earth and Stars. Well if I tired to tell you all the twists and turns in the pathways of discovery, I’d have to rewrite the book. So go get the book !

PS: I found online a couple of sites that actually have the first few chapters of the book online. But you’ll have to buy the book to get to the really good parts.



STAR PARTIES WITH THE ASTRONOMY CLUB OF TULSA



**SUMMER STAR PARTIES IN TULSA ARE ONE
OF A KIND.**

**MAKE PLANS TO JOIN US THIS YEAR AND
BRING THE WHOLE FAMILY.**



This 'Binocular of the Month' feature is a monthly email that highlights one of our 30+ binocular models.

Brand new design with larger prisms!

The new Garrett® 150mm F/5.9 binocular telescope is simply the biggest **90-degree** observation instrument we've ever offered. This binocular features the light gathering power of two 150mm refractors - one for each eye - and the flexibility to **interchange both 2" and 1.25" telescope eyepieces**. All this in a heavy-duty carrying case that makes for a dream portable rich field observing setup.



Every Garrett Optical binocular must pass a rigorous 14-point inspection that insures a high degree of both optical and mechanical performance, including accurate collimation. Any necessary adjustments are performed by a highly experienced technician on a U.S. Navy Mark V Collimator.

More information & pictures:

[Garrett 150mm Binocular Telescope](#)

Note: We have a single GT150-90 available at a steep discount - it has been lightly used for testing purposes. View the eBay listing here:

[Lightly Used Binocular Telescope](#)

Garrett 150mm Binocular Telescope Specifications	
MODEL	Garrett 150mm F/5.5 Binocular Telescope
OBJECTIVE LENSES	150mm F/5.85; 2 Elements, 1 Group
FOCAL LENGTH	877mm
MAGNIFICATION W/ INCLUDED EYEPIECES	27x (2'), 33x (2'), 38x (2')
EYE RELIEF OF INCLUDED EYEPIECES	21.7mm, 20.5mm, 17.5mm
EXIT PUPIL W/ INCLUDED EYEPIECES	5.5mm, 4.6mm, 4mm
APPARENT FIELD OF VIEW	65°, 72°, 67°
TRUE FIELD OF VIEW W/ INCL. EYEPIECES	2.4°, 2.2°, 1.8°
WEIGHT	48 lbs., 8 oz.
LENGTH	26.4-in.
IPD RANGE	62-76mm
COATINGS	Fully Broadband Multi-Coated/ BaK4 Prisms
LIGHT TRANSMISSION	>99.0% per surface
WARRANTY	2-year limited warranty



REGIONAL STAR PARTIES

SUMMER 2011



2011 MidStates Regional
Astronomy Convention.
May 20 to 22 near Ozark, Ark.

Set in the middle of the Ozarks, this will be an excellent opportunity to meet other astronomers and find out what other clubs are doing.

Early registration is Due by May 8th Details at.

<http://www.aogas.org/staticpages/index.php?page=convention>



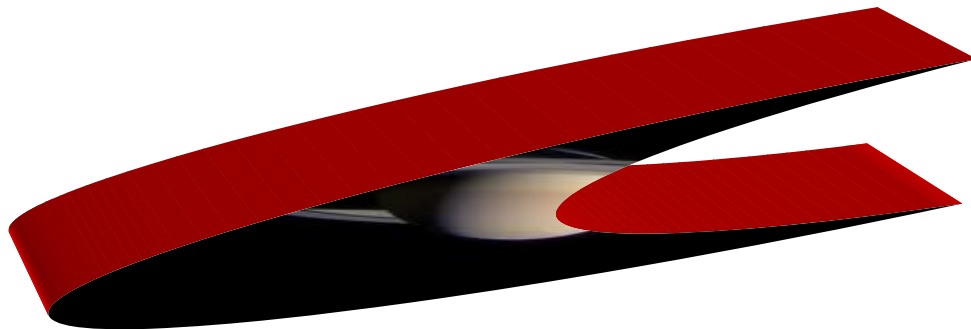
Astronomical League

National Convention

June 29 to July 2

<http://alcon.astroleague.org/>

The 2011 convention brings astronomers from all over the USA. This year's convention is held in beautiful Bryce Canyon Utah where the wonders of both earth and sky meet in one astounding place. An impressive group of speakers are lined up for this year.



Get your registration in soon. Lodging accommodations are going fast.

Star Bright – Star Light – Where shall I pitch my tent tonight?

Making plans for your summer travels. Here are a few places to pitch your tent. Actually several also have more comfortable lodgings nearby.



Okie-Tex Star Party Sept 24th to Oct 2nd

<http://www.okie-tex.com/>

Get your registrations in early.

Especially for the meals.

This is favorite fall gathering for many in the Tulsa club at the tip of the Oklahoma panhandle.

Al Nagler of Tel-Vue optics proclaimed it as one of the darkest sites in America.

Other regional Star parties include: This is by no means a complete listing.

Rocky Mountain Star Stare June 29 to July 3

<http://www.rmss.org/index.htm>

Nebraska Star Party July 31st to Aug 5th

Several of our members have attended this star party on the Great Plains.

Early registration is due by July 1st

<http://www.nebraskastarparty.org/index.html>

Heart of America Star party near Butler, MO

August 25-31, 2011 <http://www.hoasp.org/>

Their website for 2011 isn't up to date yet.

Vesta

Is it Really an Asteroid?

Credit: Science@NASA



March 29, 2011: On March 29, 1807, German astronomer Heinrich Wilhelm Olbers spotted Vesta as a pinprick of light in the sky. Two hundred and four years later, as NASA's Dawn spacecraft prepares to begin orbiting this intriguing world, scientists now know how special this world is, even if there has been some debate on how to classify it.

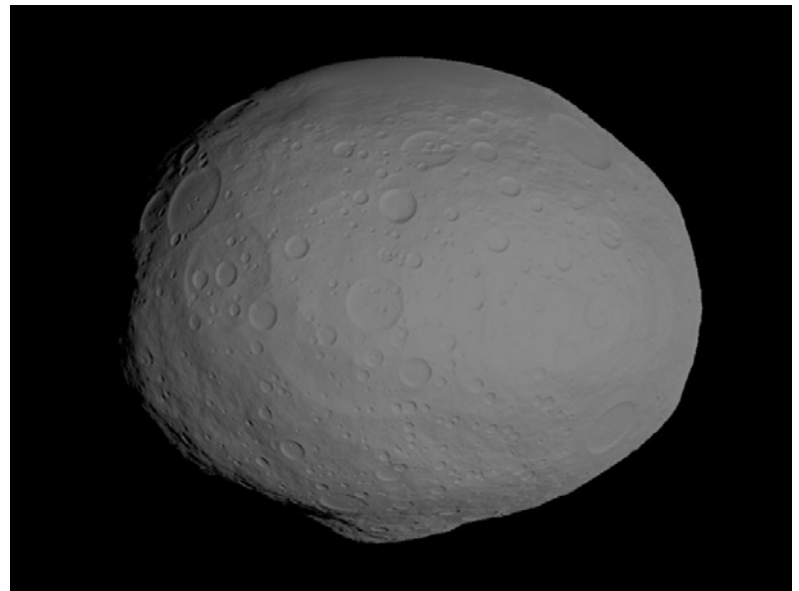
Many astronomers call Vesta an asteroid because it lies in the main asteroid belt between Mars and Jupiter. But Vesta is not a typical member of that orbiting rubble patch. The vast majority of objects in the main belt are lightweights, 100 kilometers wide or smaller, compared with Vesta, which is a 530 kilometer-wide behemoth.

"I don't think Vesta should be called an asteroid," said Tom McCord, a Dawn co-investigator based at the Bear Fight Institute, Winthrop, Wash. "Not only is Vesta so much larger, but it's an evolved object, unlike most things we call asteroids."

The layered structure of Vesta (core, mantle and crust) is the key trait that makes Vesta more like planets such as Earth, Venus and Mars than the other asteroids, McCord said. Like the planets, Vesta had sufficient radioactive material inside when it coalesced, releasing heat that melted rock and enabled lighter layers to float to the outside. Scientists call this process differentiation.

McCord and colleagues were the first to discover that Vesta was likely differentiated when special detectors on their telescopes in 1972 picked up the signature of basalt. That meant that the body had to have melted at one time.

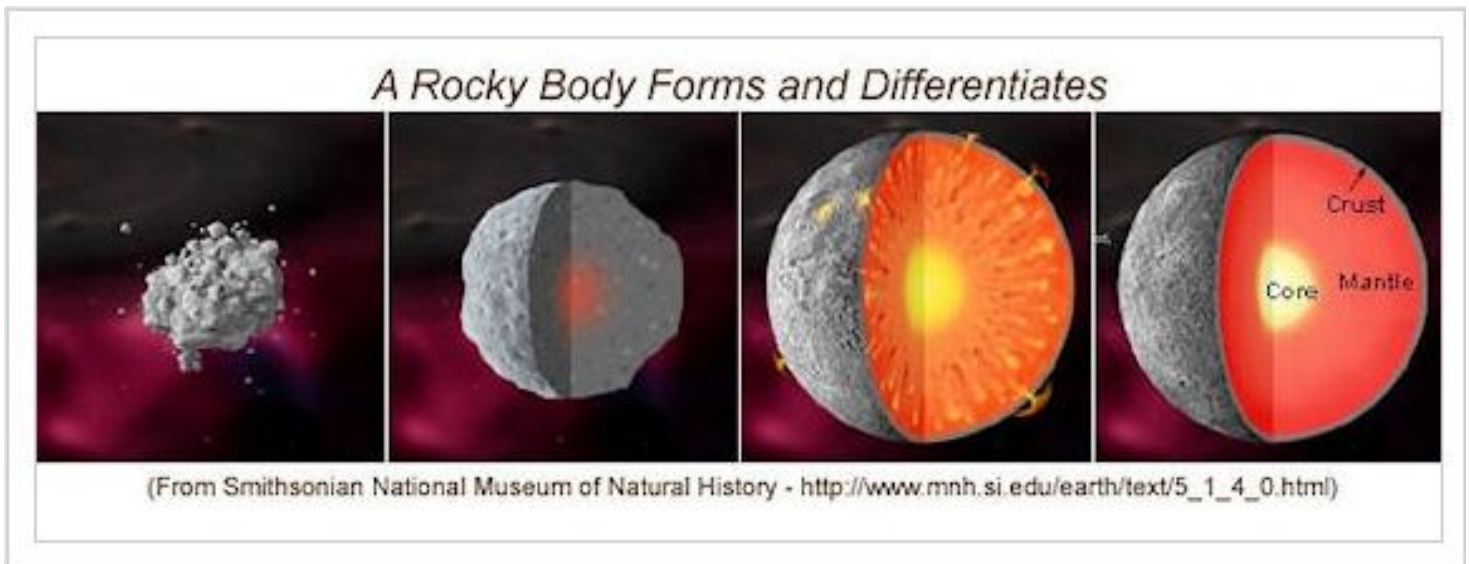
Officially, Vesta is a "minor planet" -- a body that orbits the sun but is not a proper planet or comet. But there are more than 540,000 minor planets in our solar system, so the label doesn't give Vesta much distinction. Dwarf planets -- which include Dawn's second destination, Ceres -- are another category, but Vesta doesn't qualify as one of those. For one thing, Vesta isn't quite large enough.



Dawn scientists prefer to think of Vesta as a protoplanet because it is a dense, layered body that

orbits the sun and began in the same fashion as Mercury, Venus, Earth and Mars, but somehow never fully developed. In the swinging early history of the solar system, objects became planets by merging with other Vesta-sized objects. But Vesta never found a partner during the big dance, and the critical time passed. It may have had to do with the nearby presence of Jupiter, the neighborhood's gravitational superpower, disturbing the orbits of objects and hogging the dance partners.

Dawn's scientists and engineers have designed a master plan to investigate these special features of Vesta. When Dawn arrives at Vesta in July, the south pole will be in full sunlight, giving scientists a clear view of a huge crater at the south pole. That crater may reveal the layer cake of materials inside Vesta that will tell us how the body evolved after formation. The orbit design allows Dawn to map new terrain as the seasons progress over its 12-month visit. The spacecraft will make many



Other space rocks have collided with Vesta and knocked off bits of it. Those became debris in the asteroid belt known as Vestoids, and even hundreds of meteorites that have ended up on Earth. But Vesta never collided with something of sufficient size to disrupt it, and it remained intact. As a result, Vesta is a time capsule from that earlier era.

"This gritty little protoplanet has survived bombardment in the asteroid belt for over 4.5 billion years, making its surface possibly the oldest planetary surface in the solar system," said Christopher Russell, Dawn's principal investigator, based at UCLA. "Studying Vesta will enable us to write a much better history of the solar system's turbulent youth."

measurements, including high-resolution data on surface composition, topography and texture. The spacecraft will also measure the tug of Vesta's gravity to learn more about its internal structure.

"Dawn's ion thrusters are gently carrying us toward Vesta, and the spacecraft is getting ready for its big year of exploration," said Marc Rayman, Dawn's chief engineer at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "We have designed our mission to get the most out of this opportunity to reveal the exciting secrets of this uncharted, exotic *world*."

Production Editor: [Dr. Tony Phillips](#) | Credit: Science@NASA



NASA News

J E T P R O P U L S I O N L A B O R A T O R Y

C A L I F O R N I A I N S T I T U T E O F T E C H N O L O G Y

News release: 2011-113

April 08, 2011

NASA's Jupiter-Bound Spacecraft Arrives in Florida

The full version of this story with accompanying images is at:

http://www.jpl.nasa.gov/news/news.cfm?release=2011-113&cid=release_2011-113

PASADENA, Calif. - NASA's Juno spacecraft has arrived in Florida to begin final preparations for a launch this summer. The spacecraft was shipped from Lockheed Martin Space Systems, Denver, to the Astrotech payload processing facility in Titusville, Fla., today. The solar-powered Juno spacecraft will orbit Jupiter's poles 33 times to find out more about the gas giant's origins, structure, atmosphere and magnetosphere.

"The Juno spacecraft and the team have come a long way since this project was first conceived in 2003," said Scott Bolton, Juno's principal investigator, based at Southwest Research Institute in San Antonio. "We're only a few months away from a mission of discovery that could very well rewrite the books on not only how Jupiter was born, but how our solar system came into being."

Next Monday, Juno will be removed from its shipping container, the first of the numerous milestones to prepare it for launch. Later that week, the spacecraft will begin functional testing to verify its state of health after the road trip from Colorado. After this, the team will load updated flight software and perform a series of mission readiness tests. These tests involve the entire spacecraft flight system, as well as the associated science instruments and the ground data system.

Juno will be carried into space aboard a United Launch Alliance Atlas V rocket lifting off from Launch Complex-41 at the Cape Canaveral Air Force Station in Florida. The launch period opens Aug. 5, 2011, and extends through Aug. 26. For an Aug. 5 liftoff, the launch window opens at 8:39 a.m. PDT (11:39 am EDT) and remains open through 9:39 a.m. PDT (12:39 p.m. EDT).

NASA's Jet Propulsion Laboratory, Pasadena, Calif., manages the Juno mission for the principal investigator, Scott Bolton, of Southwest Research Institute at San Antonio. The Juno mission is part of the New Frontiers Program managed at NASA's Marshall Space Flight Center in Huntsville, Ala. Lockheed Martin Space Systems, Denver, is building the spacecraft. The Italian Space Agency in Rome is contributing an infrared spectrometer instrument and a portion of the radio science experiment. Launch management for the mission is the responsibility of NASA's Launch Services Program at the Kennedy Space Center in Florida. JPL is a division of the California Institute of Technology in Pasadena.

Additional information about Juno is available at <http://www.nasa.gov/juno>.

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NASA Headquarters, Washington
Dwayne.c.brown@nasa.gov



- **April 18 - Full Moon.** The Moon will be directly opposite the Earth from the Sun and will be fully illuminated as seen from Earth. This phase occurs at 02:44 UTC. This full moon was known by early Native American tribes as the Full Pink Moon because it marked the appearance of the moss pink, or wild ground phlox, which is one of the first spring flowers. This year, it is also known as the Paschal Full Moon because it is the first full moon of the spring season.
- **April 21, 22 - Lyrids Meteor Shower.** The Lyrids are an average shower, usually producing about 20 meteors per hour at their peak. These meteors can produce bright dust trails that last for several seconds. The shower usually peaks on April 21 & 22, although some meteors can be visible from April 16 - 25. This year, the gibbous moon will hide most of the fainter meteors in its glare. Look for meteors radiating from the constellation of Lyra after midnight, and be sure to find a dark viewing location far from city lights.
- **May 3 - New Moon.** The Moon will be directly between the Earth and the Sun and will not be visible from Earth. This phase occurs at 06:51 UTC.
- **May 5, 6 - Eta Aquarids Meteor Shower.** The Eta Aquarids are a light shower, usually producing about 10 meteors per hour at their peak. The shower's peak usually occurs on May 5 & 6, however viewing should be good on any morning from May 4 - 7. A thin, crescent moon will set early in the evening leaving dark

ASTRONOMY CALENDAR



skies for what could be an good show. The radiant point for this shower will be in the constellation Aquarius. Best viewing is usually to the east after midnight, far from city lights.

- **May 7 - Astronomy Day Part 1.** Astronomy Day is an annual event intended to provide a means of interaction between the general public and various astronomy enthusiasts, groups and professionals. The theme of Astronomy Day is "Bringing Astronomy to the People," and on this day astronomy and stargazing clubs and other organizations around the world will plan special events. You can find out about special local events by contacting your local astronomy club or planetarium. You can also find more about Astronomy Day by checking the Web site for the [Astronomical League](#).

- **May 11 -** Conjunction of Mercury, Venus, and Jupiter. The three planets will form a 2-degree long vertical line in the early morning sky. The planet Mars will also be visible nearby. Look to the east near sunrise.

- **May 17 - Full Moon.** The Moon will be directly opposite the Earth from the Sun and will be fully illuminated as seen from Earth. This phase occurs at 11:09 UTC. This full moon was known by early Native American tribes as the Full Flower Moon because this was the time of year when spring flowers appeared in abundance. This moon has also been known as the Full Corn Planting Moon and the Milk Moon.

STEVE CHAPMAN'S AT6RC PREPARED FOR A NIGHT OF VIEWING. READ STEVE'S REVIEW OF THIS SCOPE ON PAGE 4



THE TOY BOX

Here are a few new items that look very interesting. I have not spoken with anyone who has tried any of these but would welcome any review on new astronomy gear. I do plan to buy the Williams focuser to test with astrophotography. If the read out is sensitive enough it should make switching between eyepieces and camera a real snap. This is not an endorsement of any of these items and the information provided is from the respective companies website.



William Optics

30F, No. 29-5, Sec. 2, Zhongzheng E. Rd., Danshui, Taipei 251, Taiwan

+886-2-2809-3188; www.williamoptics.com

William Optics has incorporated an innovative digital readout into its popular dual-speed 2-inch Schmidt-Cassegrain focuser. The new Digital Display Gauge (DDG) SCT Focuser (\$248) is designed to thread onto the rear cell of most commercial Schmidt-Cassegrain and Maksutov-Cassegrain telescopes. The DDG and 10-to-1 speed reduction allows precise, repeatable focus, which is displayed with an absolute reading of 0.01 millimeters. A built-in dial thermometer enables you to monitor temperature throughout the evening. The focuser, which can be rotated 360°, has two locking screws for securing the focus position when heavy cameras and accessories are attached. A 1¼-inch adapter is included with purchase.

Southern Stars

415-671-6251; www.southernstars.com



Now you can use your iPhone, iPad, or iPod Touch as a powerful telescope controller thanks to SkyWire (\$79) from Southern Stars. This adapter adds a 30-inch cable and RS-232 port to your Apple device, allowing you to control any telescope that accepts a serial connection. SkyWire works with Southern Stars SkySafari planetarium app (formerly SkyVoyager), turning your smart device into a go-to controller with an interactive sky chart and tens of thousands of objects accessible with just a few taps on the screen. SkyWire is an Apple-approved accessory that requires no modification to your Apple device. Some telescopes may require an additional cable to adapt SkyWire's standard DB9 connector.



Explore Scientific

888-599-7597; www.explorescientific.com

Explore Scientific expands its line of ultra-wide-field eyepieces with the introduction of a 20-mm 100° Series Nitrogen-Purged Waterproof Eyepiece (introductory price: \$499). Like its 14-mm predecessor, this new 2-inch ocular presents pinpoint stars across the entire field. The Eyepiece's nitrogen-purged, waterproof design prevents dust, moisture, and cleaning solutions from seeping into the inner optical surfaces, rendering the eyepiece impervious to internal fungus. Explore Scientific guarantees each purchase with a 5-year

Lunt Solar Systems

2520 N. Coyote Drive Suite 111 Tucson AZ 85745

520-344-7348 ; luntsolarsystems.com



Andy Lunt, son of the late David Lunt who founded Coronado Technology Group, is carrying on a family tradition with the launch of Lunt Solar Systems, a company dedicated to producing affordable solar telescopes and filters. The LS35TH α (\$499) is a hydrogen-alpha telescope that breaks new ground for a compact system that can show the Sun's prominences and delicate surface detail. Featuring a full-aperture, 35-mm etalon, the system has a bandpass narrower than 0.75 angstrom, and it comes with a mounting bracket and diagonal — just add a tripod and eyepiece and you're ready to enjoy our nearest star.

Southern Stars

415-671-6251; www.southernstars.com



Users of the Apple iPhone or iPod should check out SkySafari 1.6 (\$14.99). This planetarium app from Southern Stars includes a database of 300,000 stars down to 10th magnitude, 30,000 deep sky-objects, including the entire NGC and IC catalogs, and it renders the Moon and planets in detail. SkySafari accurately shows the sky from any location on Earth, at any time up to 100 years in the past or future. Users of the iPhone 3GS with built-in compass can display the sky in the same direction that you're holding your phone. Tilting your iPhone also shows the sky at the same altitude angle that you're holding your phone. The app also includes a new time-flow animation feature, and WiFi telescope control with the additional purchase of a WiFi-to-serial adapter. See Southern Stars website for a complete list of features.

AT6RC

ASTRONOMY TECHNOLOGIES

This may be your last chance to own one of these scopes. Astro-nomics reports that once the factory has run out of material for the 6" that's it for this size.

I have noticed about 5 of these scopes at star parties so I thought I would give everyone a little information from the Astronomics website since this is the last chance to purchase one of these. From my own experience with the scope it is the best value of any telescope I have ever purchased. These are \$299 while they last. Read Steve Chapman's review on page 4.

I would like to expand on Steve's review by giving some experience with the scopes astrophotography capabilities but I have not had a well suited night yet to test it. Below are 3 pictures from the website taken with this scope and a modified Cannon 450. From the left M-51 the Whirlpool Galaxy, M-104 The Sombrero Galaxy and of course our Moon.



Originally developed and introduced by Astro-Tech at a \$1295 anticipated price – and named a *Sky & Tel Hot Product for 2009* at that \$1295 price – the Astro-Tech 6" R-C was an even hotter product when it came out at an actual retail price of only \$795!

After worldwide sales in the hundreds, the manufacturer decided to close out the AT6RC at an essentially non-profit price of only \$299 and concentrate on much larger aperture astrographs.

While Astronomics is temporarily sold out of the AT6RC at this extraordinary \$299 price, having supplied happy im-

agers with over 60% of the entire worldwide supply of this exceptional value astrograph, the manufacturer informs us that he has enough components available to produce one more very limited run in early summer. Orders placed now will be put on our waiting list and will be charged and filled in order of receipt when the final production run arrives.



The Ritchey-Chrétien optical design is used in virtually every recent large mega-million dollar professional observatory telescope – including the Hubble Space Telescope. And more “affordable” true coma-free Ritchey-Chrétien optical systems made for schools and individuals by commercial R-C manufacturers typically come in large apertures and start at well over \$10,000. Their size and cost put them out of the reach of most amateur astronomers. At least, true Ritchey-Chrétiens *used to* start at \$10,000 and up.

Introducing the Astro-Tech AT6RC, an incredibly affordable Ritchey-Chrétien astrograph (a telescope designed specifically for photographing comparatively wide areas of the sky) that virtually all astronomers can afford! The concept of a small and highly-affordable 6" R-C originated with Astro-Tech, and the AT6RC was designed and developed specifically to Astro-Tech’s specifications from the very start to be the *first* 6" true Ritchey-Chrétien made.

The Astro-Tech AT6RC makes coma-free Ritchey-Chrétien imaging optics available to amateur astronomers at a price within reach and reason for nearly everyone. The AT6RC is designed for coma-free imaging using webcams, Deep Sky Imager-type cameras, and DSLRs. The December 2009 issue of *Sky & Telescope* said the Astro-Tech AT6RC is “a superb match” for the APS-C chips used in many DSLR cameras, “yielding a field almost 1° wide with very good star images in all but the corners of the frame.” It is not designed for digiscoping through an eyepiece. Featuring a true Ritchey-Chrétien optical system, this very economical 6" Astro-Tech R-C makes you wonder just what those \$10,000+ R-Cs have that makes them cost so much.

Features of the Astro-Tech AT6RC Astrograph . . .

Optical design: true Ritchey-Chrétien Cassegrain-type two-mirror optics, with hyperbolic primary and secondary mirrors. [For more details, click on the "optics" icon above.](#)

Aperture: 6", 1370mm focal length, f/9 focal ratio.

Hyperboloid primary mirror: Made of BK-7 optical glass. Polished to diffraction-limited or better surface accuracy. Unlike catadioptric designs (SCTs, Maksutovs, etc.) that move the primary mirror fore and aft in the optical tube to focus (which can lead to image shift as the mirror position changes) the AT6RC primary mirror is fixed to eliminate both a catadioptric's image shift and the primary mirror collimation requirements of a Newtonian reflector.

Hyperboloid secondary mirror: Made of BK-7 optical glass. Polished to diffraction-limited or better surface accuracy. Mounted in a four-vane spider and fully collimatable using simple standard Schmidt-Cassegrain collimating techniques. Unlike complicated R-C designs that use motors to move the secondary mirror fore and aft to focus, the AT6RC secondary mirror is fixed and focusing is done externally.

Enhanced aluminum optical coatings: Both primary and secondary mirrors have enhanced aluminum mirror coatings, overcoated with a protective layer of quartz for long life. Reflectivity is in the 96% range, the same as those \$10,000+ R-C scopes.

Optical tube: Painted rolled steel, 7.5" o.d. x 19.25" long, with die-cast and machined aluminum front and rear cells.

Internal light baffles: Computer optimized primary and secondary baffling. Eight contrast-enhancing glare-stop baffles in the optical tube, multiple glare-stop microbaffles in the secondary mirror light shield, and four baffles in the primary mirror baffle tube provide truly dark sky backgrounds during imaging.

Dual-speed Crayford focuser: A 2" Crayford focuser is threaded onto the 90mm x 1mm pitch rear cell of the AT6RC. The non-vignetting focuser has dual-speed focusing. There are two coarse focusing knobs. The right knob also has a smaller concentric knob with a 10:1 reduction gear microfine focusing ratio. This provides exceptionally precise image control during critical CCD imaging. All focus knobs are ribbed, so they are easy to operate, even while wearing gloves or mittens in cold weather.

Mounting dovetail: a Vixen-style dovetail bar runs the length of the underside of the optical tube. The dovetail can be removed, if desired, so the AT6RC can be installed in optional user-supplied mounting rings for piggy-back mounting on a larger scope. An optional #AT6SDP Vixen-style dovetail is available for mounting on top of the AT6RC to allow you to mount an optional photoguide scope on top of the astrograph.

Finderscope dovetail: a Vixen-style finderscope bracket dovetail base is installed on the upper left side of the optical tube. It can easily be removed if not needed. It will accept Vixen-style finderscope brackets as well as red dot-type finders, such as the Astro-Tech #ATF.

Other accessories: A snap-in dust cap is standard.



Lands Tidbits – by *John Land* for April 2011

Membership rates for 2011 will be as follows.

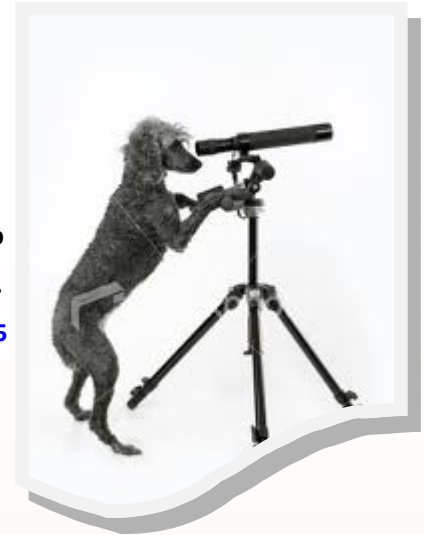
Adults - \$ 45 per year includes Astronomical League Membership

Sr. Adult \$ 35 per year for those 65 or older includes Astronomical League Membership

Students \$ 30 with League membership **Students \$ 25** without League membership.

Additional Family membership \$ 20 with voting rights and League membership. **\$ 15** without League Membership

The regular membership allows all members in the family to participate in club events but only ONE Voting Membership and one Astronomical League membership.



Magazine Subscriptions: If your magazines are coming up for renewal, try to **save the mailing label** or renewal form you get in the mail. Forms are available on the club website.

Astronomy is \$ 34 for 1 year or \$ 60 for 2 years. www.astronomy.com

To get the club discount you must go through the club group rate

Sky & Telescope is \$33 / yr www.skyandtelescope.com

Sky and Telescope also offers a 10% discount on their products.

Note: **You may renew your Sky & Telescope subscription Directly Online** without having to mail in the subscriptions to the club. **NEW SUBSCRIPTIONS** must still be sent to the club treasurer.

We now have an automated on line registration form on the website for new AND renewal memberships plus magazine subscriptions. You simply type in your information and hit send to submit the information.

<http://www.astrotulsa.com/Club/join.asp> To Join or Renew Memberships

You can then **print a copy of the form and mail in your check.**

Astronomy Club of Tulsa - 25209 E 62nd St – Broken Arrow, OK 74014

Address Corrections- Email changes – Questions:

You may forward questions to the club by going to our club website and Fill out an online form or just click on John Land and send an email. Please leave a clear subject line and message with your name, phone number, your question – along with email



Astronomy Club of Tulsa



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MEMBERSHIP INFO

Astronomy Club of Tulsa membership (\$45/year) includes membership in the Astronomical League and subscription to ACT's "Observer" and AL's "Reflector". "Astronomy" (\$34/year) and "Sky and Telescope" (\$33/year) are also available through the club. For more information contact John Land at 918-357-1759. Permission is hereby granted to reprint from this publication provided credit is given to the original author and the Astronomy Club of Tulsa "Observer" is identified as the source.

**Jim "O'Toole" Millers—Astro Words of Wisdom:
"Pointing Scopes at you neighbors house can really riel him."**

ACT welcomes your questions, suggestions, comments and submissions for publication. Please send all inquiries to act_pm@astrotulsa.com

Night Sky Network

Astronomy Clubs bringing the wonders of the universe to the public



Astronomy Club of Tulsa

