



INSIDE THIS ISSUE:

THE OBSERVER

East Valley Astronomy Club

From the Desk of the President by David Douglass

I know it is only June, but the time is at hand for our members to consider the upcoming election of officers for 2011. The nominations will open at the October meeting, with the actual election held at the November meeting.

Our four elected officers, being President, Vice-President, Secretary, and Treasurer, as well as the five elected Board Members, are all subject to a two-year term limit. This year, the elections will pick a new President, Secretary, and three new Board Members. Eligible to continue for a second term are our Vice-President, Bill Houston,

and our Treasurer, Silvio Jaconelli, as well as Board Members Ray Heinle and Ed Thomas.

Officers and Board Members that have reached term limits are eligible to seek office for any of the available positions (all positions are "available"), except the office that they held last.

Other changes are in the winds too. Peter Argenziano has been handling the Newsletter Editor position for many years, as well as the Observing Programs Coordinator position. He has asked us to find someone who can take over the Observing Programs Coordinator function, and

Marty Pieczonka has stepped forward and volunteered for that duty.

Due to personal needs, Randy Peterson, our long time Events Coordinator has asked us to find a replacement as well. Lynn Young has agreed to cover that function for the time being.

It takes volunteers to run an organization like EVAC. Lots of them. Our executive committee, consisting of the elected officers, elected board members, and committee chair persons total 16 people. There is a continuous need for "fresh blood"

Continued on page 12

The Backyard Astronomer Who is the Backyard Astronomer? by Bill Dellenges

As the "Backyard Astronomer," I've been sharing astronomical tidbits with EVAC readers for a number of years now. But who is this guy and where did he come from? Allow me to introduce myself.

I was born in 1943 in San Francisco. The War was beginning to favor the Allies, barely. Dad was on a supply ship in the Pacific. He returned home safely, and soon Mom and Dad produced two new brothers for me. Our post-war family went along its 1950's "Leave It to Beaver" way, if not so idyllic. As a junior high school student in 1955, I came across an astronomy book in the school library. I was transfixed by the photographs of planets, stars, nebulae and galaxies. From that day on, I was star-struck.

I created a table of Solar System statistics that became the basis for an astronomy class I taught for the neighborhood kids. I wrote Lick Observatory for tickets to their public night observing program on the 36" refractor, then showed them to Dad and told him we should go! Surprisingly, he went for it. He would later curse me for making him drive the notorious 19 mile winding narrow road from San Jose to the summit. I saw Saturn in the venerable refractor and it looked as big as a basketball to me! Now I was really hooked.

Dad helped me finance the purchase of a telescope. After considerable research, I chose the \$45 (in 1955 dollars) Criterion 4" Dynascope reflector.

Continued on page 2

<i>Eta Carinae</i>	3
<i>June Guest Speaker</i>	5
<i>Classified Ads</i>	6
<i>Meeting Maps</i>	7
<i>Calendar</i>	8
<i>Membership Form</i>	9
<i>NASA's Space Place</i>	11
<i>If It's Clear...</i>	12
<i>New Members</i>	13
<i>Deep Sky Object of the Month</i>	14
<i>EVAC Treasurer's Graphs</i>	15

Upcoming Events:

- Local Star Party - June 5*
- Grand Canyon Star Party - June 5*
- Public Star Party - June 11*
- Deep Sky Star Party - June 12*
- Monthly General Meeting - June 18*

Check out all of the upcoming club events in the Calendars on page 8

The Backyard Astronomer

Continued from page 1 tor! To this day, I can still remember the smell of its Bakelite tube. I was dead set on becoming an astronomer. However, in high school I discovered that mathematics and physics weren't my cup of tea. So began a life-long love for the hobby of astronomy. Oh, well, at least there wouldn't be pressure to publish.

After a four year stint in the Air Force, I began my 35 year airline career that put bread on the table and provided flight passes that allowed me to travel the world and visit many observatories.

In 1970, I purchased a Unitron 4" refractor. This fine instrument would be a much needed shot in the arm for my hobby, which had waned somewhat during the psychedelic '60's. Other telescopes began filling my home: a C5, C8, C14, and several Newtonians; one, a homemade F4, 8" that required 35 hours of mirror grinding and polishing (an interesting experience but NEVER again!). Bay Area light pollution required me to observe at dark sky sights away from my home. I have many fond memories of all nights at Lick Observatory's Mt. Hamilton, Dad's summer home north of San Francisco and the San Jose Astronomical Association's dark site at Fremont Peak near Monterey.

Around that time I began subscribing to S&T magazine and taking astronomy classes at college. My favorite instructor was Andrew Fraknoi, a charismatic teacher who was also Executive Director of the Astronomical Society of the Pacific. The 80's were an exciting decade for me. In 1983, at age 39, I finally got married! For several years I was fortunate to assist the late Dr. William Kaufmann at a Lake Tahoe observatory equipped with a rare Celestron 22" telescope. My job was to provide my C14 to students waiting their turn on the C22.

During the 1986 Halley's Comet craze I presented my Halley slide show to thousands of school kids and adults. In March 1986, my wife Lora and I took a two week Halley's

Comet tour to the Australian Outback with a group hosted by Patrick Moore, the noted English amateur astronomer.

By the '90's, we felt we needed a change of scenery. I had the advantage of being able to transfer with my airline to another station. We flew to several in the west and in 1993, decided on Phoenix after visiting the area and scouting out towns on its periphery.

We had always been fond of our visits to the American southwest deserts. Though I wasn't aware of it consciously, the desert was in my DNA as a result of childhood cowboy and science-fiction movies, often set in deserts. I had also spent most of my Air Force enlistment at Roswell, New Mexico. You can never shake out all the desert sand from your shoes. On a map of Phoenix metro, I drew a 35 mile radius circle around Sky Harbor airport (the distance I was willing to commute from a relatively dark site) and checked out every city it ran through. We decided on a location at the base of the Superstition Mountains east of Apache Junction. It was pretty dark with no street lights, allowing me to fulfill a lifelong dream of having an observatory in my backyard. We moved into our house in August 1994. The following year Roadrunner Observatory was up and running. Its original telescope, my old C14, was replaced in 2006 with a CPC 11.

For several years I had the pleasure of teaching astronomy and stargazing to Elderhostel groups until Central Arizona College discontinued the program. Since 1997, I've given monthly night sky talks at Lost Dutchman State Park as a volunteer during the high season.

I had joined EVAC our first year in Phoenix, and I've found it to be the best astronomy club I've been in – a great bunch of people. My first article for the club was written in 1995. Their frequency grew until the "Backyard Astronomer" appeared in December, 1998. The column began appearing pretty much monthly in 2004. It amazes me how I can keep coming up with ideas for the next column. Hey, I thought I said there's no pressure to publish in amateur astronomy?!



Eta Carinae

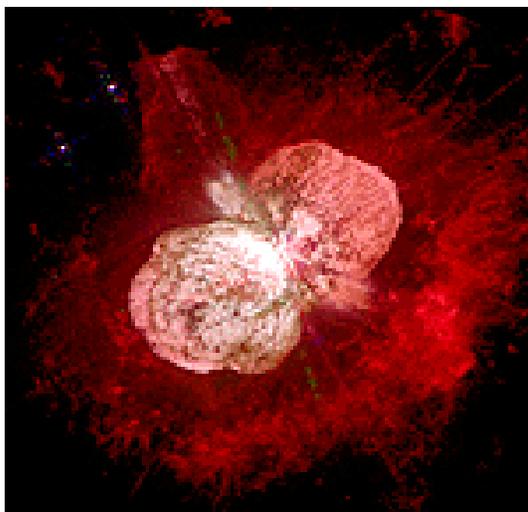
by Henry De Jonge IV

Now that we have studied massive stars and their variable ends I would like to discuss one massive star in particular, Eta Carinae. Close enough to be studied in 3-D detail and full of surprises, it is one of the youngest and most luminous, massive, stars in our galaxy. It has a mass estimated to be 100-150 solar masses with a luminosity about 6 million times that of the sun. Eta Carinae has a good historical record, massive ejecta, and highly variable winds with energetic outbursts that make it a unique and exciting star to study.

It is the brightest IR source in the sky aside from objects in our solar system. This is due to the surrounding material absorbing visible and UV radiation from Eta Carinae and remitting it in the IR. It thus serves as a sort of thermometer of the star. Unfortunately Eta Carinae can only be seen in the southern hemisphere, (below 30 degrees north latitude). It is lying in a region of active, massive, star formation with about 60 additional massive O type stars nearby.

The star

It was cataloged by Edmond Halley in 1677 as a 4th magnitude star and its variable nature was noticed as early as 1827. During the course of the centuries its magnitude has varied many orders. Currently it shines at about 6-7th magnitude.



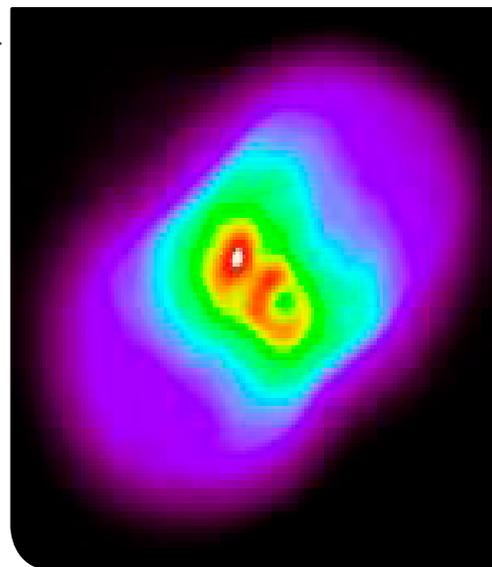
An optical view of Eta Carinae

Its radius is thought to be anywhere from 60-240 times that of the sun. Eta Carinae is classified as a luminous blue variable, (LBV).

That it is actually a close, massive, binary star system with a period of 5.54 years was discovered in 1996, (from the distinctive multi-wavelength variability cycle) with the last low period of output seen in 2009. This binary system has a relatively large eccentricity of about 0.9 and they orbit each other with a separation distance of about 20au. It lies about 8,000 light years away, and is encased in a large nebula called appropriately enough the Eta Carinae nebula, (NGC 3372). This binary interaction and structure has directly influenced the shape of the nebula surrounding it.

Many models have been suggested to explain the varied behavior and properties of Eta Carinae. As mentioned the best explanation is that the main star is a luminous blue variable, (LBV). This is usually a post main sequence star on its way to becoming a Wolf-Rayet, (WR) star. Soon afterwards it would be expected to go SN. It is also not unusual for such LBV to have ejecta in the 10 solar mass ranges. These extremely massive stars thought to be somewhat similar to the very first stars in the universe and have relatively short lifetimes usually about 1-2 million years. Time will tell.

It is estimated that only a few dozen of stars of this mass currently reside in our galaxy. As we have studied earlier, Type II SN are often associated with such massive stars, outbursts, energies, and other characteristics like that of Eta Carinae so that it is expected that in the astronomically near future Eta Carinae will experience such a SN explosion.



An IR view of Eta Carinae

During some of its luminosity increases it was thought to have gone SN, but this was later shown to be untrue, (sort of a false SN) however that gives some idea as to the brightness changes and energy outputs that have been recorded by this unusual star.

The nebula itself shows a lot of structure including the bright homunculus reflection nebula and the dark keyhole nebula. It is the brightest nebula in the sky showing at a magnitude of 1.0.

Questions about how such a high mass star could form in the first place and what exactly drives its huge mass losses are still under discussion. It is thought to be very unstable as is usual in such a high massive star. I would love to see it with the naked eye or thru a scope!

The Great Homunculus

Prior to the 1830s Eta Carinae was a 2nd magnitude star and then began brightening to about -1 magnitude. In 1833 it began to vary in brightness and increase until it was second only to Sirius in magnitude. This brightness period caused a major mass loss of about 3 solar masses and spewed forth much dust and gas, very metal rich.

In the 1840s, (1847 +/- 4-6 years according to the best estimates) Eta Carinae experienced a massive ejection of material called the Great Eruption. About 10-20 solar masses were expelled during this eruption. It was about 1/1000 the energy of a SN, (false SN). The nebula formed was called the Great Homunculus in the 1950's by astronomers because it resembled a small plump man in the photographs. Another smaller eruption in the 1890s expelled about 1/2 a solar mass, (the little Homunculus). How stars like Eta Carinae even survive outbursts like the Great eruption is still an open question and the full understanding of such outbursts is still unknown. It is expected that these types of outbursts occur every few thousand years or so. The Great Eruption formed the huge, bipolar, Great Homunculus nebula and is still expanding.

The planes of the lobes of the Great Homunculus are aligned fairly well with the orbital plane of Eta Carinae and its small companion. It has a double lobed structure

Continued on page 4

Eta Carinae

Continued from page 3 with an expansion velocity of about 30km/sec near the center and about 1000 km/sec near the outer edges. The two lobes are comparable in size each to our own solar system, (>40au). It is estimated that this nebula contains about 10 solar masses of material. Since the mid 1900s Eta Carinae has increased in brightness as the extinction by dust decreases. Strangely enough the interior of this great nebula is largely hollow and it contains mostly relatively cool low ionized gas, molecules, and dust.

The Great Homunculus has two basic shells, the thin outer shell contains about 90% of the mass and is mostly molecular gas and neutral metals like iron with an average temperature of 140 degrees K. The thicker (yet far less massive) inner shell is about 200 degrees K with ionized metals and neutral hydrogen. Much of the dust is composed up of minerals like corundum and olivine with an average radius of about 1um. The gas to dust mass ratio is probably in excess of 100 and has broad IR emission lines. These IR emission energies vary with the orbit of the smaller companion that lies inside the vast nebula and tends to peak when the companion is closer to Eta Carinae than when furthest away. Iron and Nickel emission lines come from within the nebula, (nuclear reactions)

while hydrogen molecules and dust seem to dominate the outer edges of the nebula, (as it reacts with the ISM). Nitrogen rich organic molecules have also been detected within the Homunculus

It is still thought to be losing mass at about the average rate of 3 solar masses every 1,000 years to the nebula. We see

how important mass transfer is in such massive stars and binary systems. Studying the Great Homunculus has given astronomers much insight into many aspects of this complex process.

Conclusions & Questions

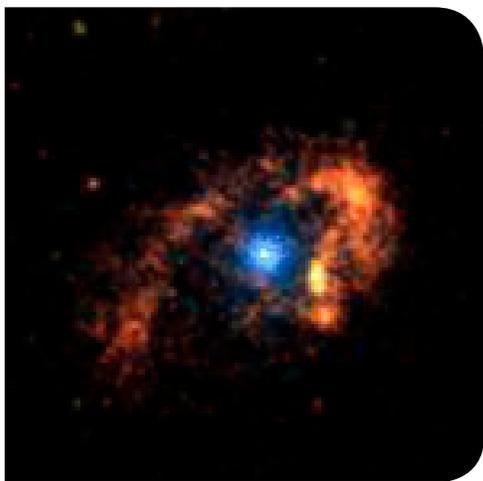
Stars of this mass and activity are thought to die as SN, most likely forming a remainder BH from the core. It should be on the HN or GRB scale of energy release when this occurs many thousand of years in the future. Hopefully the rotation axis will stay the same the blast will not point directly at the Earth.

Eta Carinae is teaching us a great deal about dust and gas surrounding massive stars and binary star systems such as were formed in the early universe. There are still many questions to be answered. How the flows and energy emission change with the orbit of the smaller companion, what is the exact composition and how does it change as the temperature changes within the nebula? What is the cause of the bipolar shape? What, (and how are they

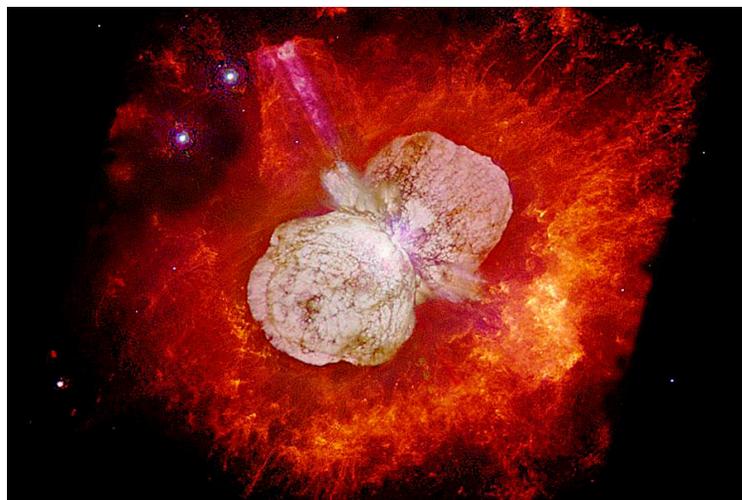
formed) are all the interior structures like globs and voids? This most studied nebula still arouses much debate in many respects.

The roughly 5.54 year cycles are seen in many electromagnetic bands, (from mm to X-ray) and this variation is due largely to the unseen companion and its effects. However it is unclear if these variations are due to the companion winds interacting with the primary winds or if they are the result of another physical interaction of the companion with the winds of Eta Carinae. For example the x-ray emissions are believed to be the result of the hot plasma created by the winds of the companion star shocking against the denser winds of Eta Carinae.

This study of dust and gas in detail has spawned many different theories to account for some of the variability seen in the different wavelengths within the nebula. This has led to different theories of how, (and what types) dust actually forms within a nebula and what roles it plays in stellar evolution, as well as its role in the ISM. It would appear that the types and amounts of dust in the nebula has changed due to the changes in Eta Carinae itself, (its mass loss rate, surface temperature, spectral output, etc). These studies will continue to develop and mature as more detailed and longer data streams are analyzed. In about 500-1000 years the structure we see now will have dissipated, (unless another eruption occurs), so that we have some time to continue gathering information. Thus we see many questions still remain about the star system and the nebula with few well defined answers. Eta Carinae has yet to reveal all her secrets!



An X-ray view



A HST view showing great detail and a beautiful image.

Astrometry

Radial velocity: -25.0 km/s

Proper motion: RA: -7.6 mas/yr, Dec: 1.0 mas/yr

Absolute magnitude: -5.45 to -5.74

Details

Mass: 100-150 M_{\odot}

Radius: 85-195 R_{\odot}

Luminosity: 5×10^6 (bolometric) L_{\odot}

Temperature: 36 - 40,000 K

Age: $\sim 3 \times 10^6$ years

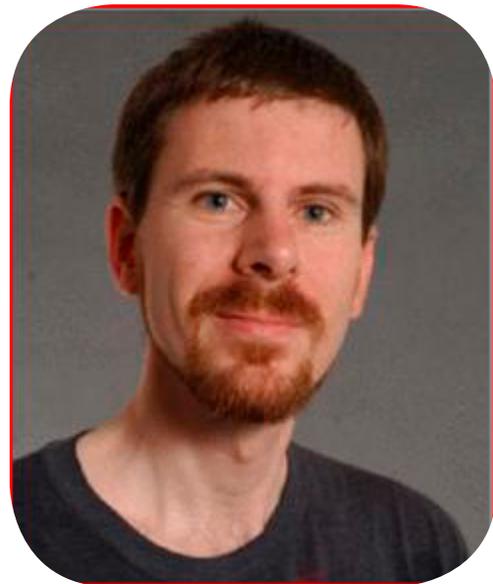
June Guest Speaker: Rolf A. Jansen

EVAC is pleased to welcome the June guest speaker, Rolf A. Jansen PhD. Dr. Jansen is a research scientist at ASU School of Earth and Space Exploration.

Dr. Jansen's talk is entitled *Why Hot Stellar Populations are Cool*

Rolf Jansen's research focuses on ground and space-based ultraviolet–near-infrared and H α surface photometry and spectroscopy of nearby galaxies. His aim is to study their content and to unravel their formation and assembly histories as a function of galaxy type, luminosity, and cosmic environment, and to track the hierarchical assembly of galaxies and emergence of the Hubble sequence by $z \sim 1$. He serves as Instrument Scientist for a NASA concept study into a next-generation UV–optical space telescope.

He also provides computer and astronomical data analysis support within the SESE Cosmology Group.



EVAC membership dues are now due
Single Membership is \$30. Family Membership is \$35.

If you have not already paid your 2010 dues, please consider visiting with the Treasurer before the meeting, or during the break. You can also make a check out to EVAC – Treasurer, and mail it to PO Box 2202, Mesa, Arizona 85214. Another option is to go online, and use the PayPal option. The link would be: http://evaonline.org/join_evac.htm

☾ LAST QUARTER MOON ON JUNE 4 AT 15:13

○ NEW MOON ON JUNE 12 AT 04:14

☽ FIRST QUARTER MOON ON JUNE 18 AT 21:30

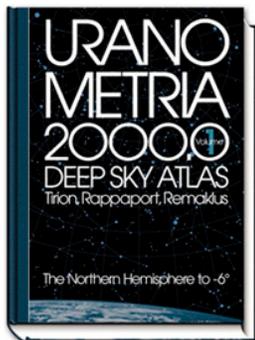
● FULL MOON ON JUNE 26 AT 04:31

Uranometria 2000.00 - Deep Sky Atlas

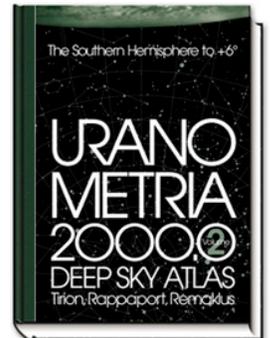
The most comprehensive stellar/deep sky atlas and data resource, the two volumes of Uranometria 2000.0 are so much more than a "Second Edition," they can only be considered the fulfillment of that process to which the first edition was but prologue. Years in development, this massive achievement affords astronomers, astrophotographers and CCD imagers the finest roadmap to the heavens yet produced at such a modest price. More than 280,000 stars and over 30,000 deep sky non-stellar objects are located with a degree of accuracy heretofore unavailable in one resource. Excellent condition.

Volume 1: the Northern Hemisphere to -6°

Volume 2: the Southern Hemisphere to +6°



Retail price is \$100... I'll let them go for \$50.
Or combine these two excellent books with Megastar (see below) for a package price of just \$100.
Contact Peter Argenziano news@evaonline.org



MegaStar 5

For the dedicated deep-sky observer or CCD imager who needs a source of interesting objects and the finder charts to go with them, MegaStar is probably close to ideal. Supercharge your telescope with the best integrated database available today. MegaStar5 interfaces with LX2000, Sky Commander, NGC-MAX, Sky Vector, Advanced AstroMaster, Sky Wizard 3, AstroPhysics GTO, Sky Wizard CTI, MicroGuider III, Bbox, Celestron NexStar/GPS.

\$60.

Peter Argenziano news@evaonline.org

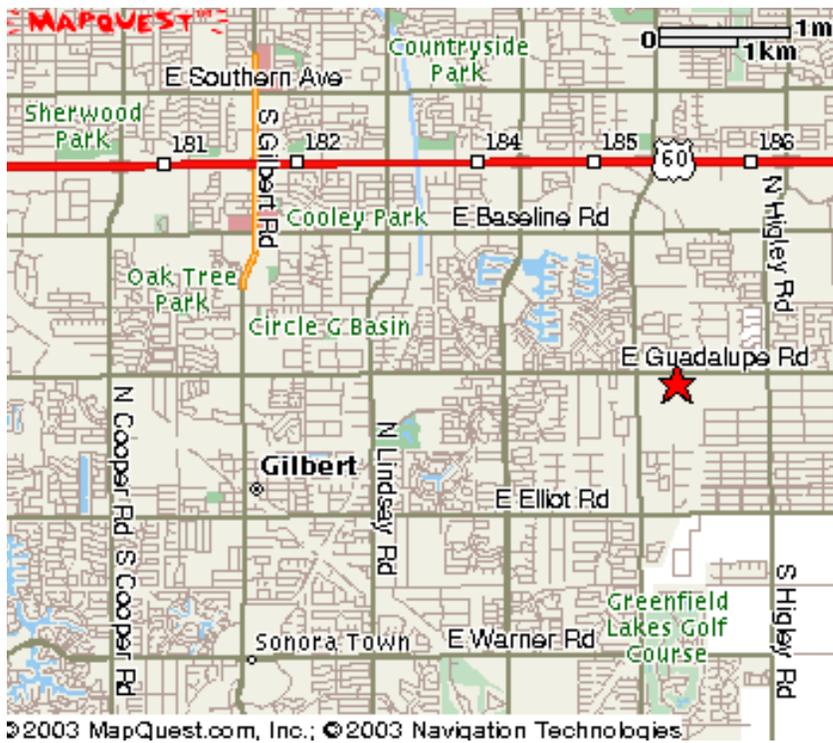
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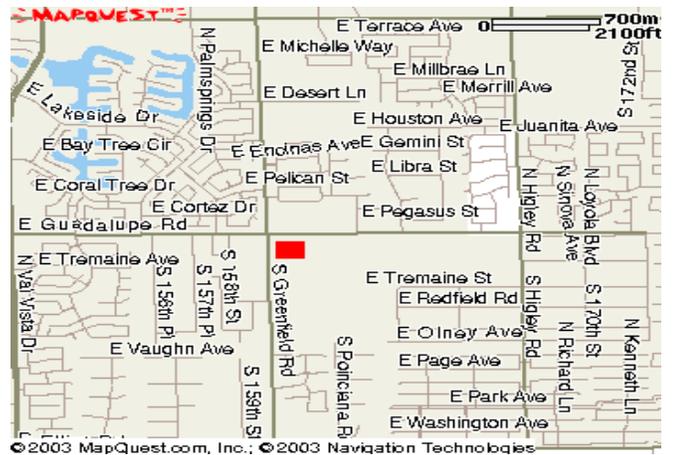


The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads.

Meetings begin at 7:30 pm.

Visitors are always welcome!



Upcoming Meetings

June 18

July 16

August 20

September 17

October 15

November 19

Southeast Regional Library
775 N. Greenfield Road
Gilbert, Az. 85234

All are welcome to attend the pre-meeting dinner at 5:30 pm. We meet at Old Country Buffet, located at 1855 S. Stapley Drive in Mesa. The restaurant is in the plaza on the northeast corner of Stapley and Baseline Roads, just south of US60.

Old Country Buffet
1855 S. Stapley Drive
Mesa, Az. 85204

Likewise, all are invited to meet for coffee and more astro talk after the meeting at Denny's on Cooper (Stapley), between Baseline and Guadalupe Roads.

Denny's
1368 N. Cooper
Gilbert, Az. 85233



JUNE 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

June 5 - Local Star Party at Boyce Thompson Arboretum

June 5 - Grand Canyon Star Party (June 5th - 12th)

June 11 - Public Star Party & SkyWatch at Riparian Preserve

June 12 - Deep Sky Star Party at Vekol

June 18 - General Meeting at Southeast Regional Library

JULY 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

July 3 - Local Star Party at Boyce Thompson

July 9 - Public Star Party & SkyWatch at Riparian Preserve

July 10 - Deep Sky Star Party at Vekol

July 16 - General Meeting at SE Library

East Valley Astronomy Club -- 2010 Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

New Member
 Renewal
 Change of Address

New Member Dues (dues are prorated, select according to the month you are joining the club):

<input type="checkbox"/> \$30.00 Individual January through March	<input type="checkbox"/> \$22.50 Individual April through June
<input type="checkbox"/> \$35.00 Family January through March	<input type="checkbox"/> \$26.25 Family April through June
<input type="checkbox"/> \$15.00 Individual July through September	<input type="checkbox"/> \$37.50 Individual October through December
<input type="checkbox"/> \$17.50 Family July through September	<input type="checkbox"/> \$43.75 Family October through December

Includes dues for the following year

Renewal (current members only):

\$30.00 Individual
 \$35.00 Family

Magazine Subscriptions (include renewal notices):

\$34.00 Astronomy
 \$33.00 Sky & Telescope

Name Badges:

\$10.00 Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC

Payment was remitted separately using PayPal
 Payment was remitted separately using my financial institution's online bill payment feature

Name: <input style="width: 95%;" type="text"/>	Phone: <input style="width: 95%;" type="text"/>
Address: <input style="width: 95%;" type="text"/>	Email: <input style="width: 95%;" type="text"/>
City, State, Zip: <input style="width: 95%;" type="text"/>	<input type="checkbox"/> Publish email address on website URL: <input style="width: 95%;" type="text"/>

How would you like to receive your monthly newsletter? (choose one option):

Electronic delivery (PDF) *Included with membership*
 US Mail **Please add \$10 to the total payment**

Areas of Interest (check all that apply):

<input type="checkbox"/> General Observing	<input type="checkbox"/> Cosmology
<input type="checkbox"/> Lunar Observing	<input type="checkbox"/> Telescope Making
<input type="checkbox"/> Planetary Observing	<input type="checkbox"/> Astrophotography
<input type="checkbox"/> Deep Sky Observing	<input type="checkbox"/> Other

Please describe your astronomy equipment:

Would you be interested in attending a beginner's workshop? Yes No

How did you discover East Valley Astronomy Club?

PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org

All members are required to have a liability release form (waiver) on file. Please complete one and forward to the Treasurer with your membership application or renewal.

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC") I hereby affirm that I and my family agree to hold EVAC harmless from any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), which may directly or indirectly be connected to EVAC and/or my presence on the premises of any EVAC Star Party and related areas.

I further agree to indemnify any party indicated above should such party suffer any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), caused directly or indirectly by my negligent or intentional acts, or failure to act, or if such acts or failures to act are directly or indirectly caused by any person in my family or associates while participating in an EVAC Star Party.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance.

EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Please print name here

Date



Please sign name here

**PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org**

Ancient Supernova Riddle, Solved by Dr. Tony Phillips

Australopithecus squinted at the blue African sky. He had never seen a star in broad daylight before, but he could see one today. Was it dangerous? He stared for a long time, puzzled, but nothing happened, and after a while he strode across the savanna unconcerned. Millions of years later, we know better.

That star was a supernova, one of many that exploded in our corner of the Milky Way around the Pliocene era of pre-humans. Australopithecus left no records; we know the explosions happened because their debris is still around.

The Solar System and everything else within about 300 light-years is surrounded by supernova exhaust - a haze of million-degree gas that permeates all of local space. Supernovas are dangerous things, and when one appears in the daytime sky, it is cause for alarm.

How did Earth survive? Modern astronomers believe the blasts were too far away (albeit not by much) to zap our planet with lethal amounts of radiation. Also, the sun's magnetic field has done a good job holding the hot gas at bay. In other words, we lucked out.

The debris from those old explosions has the compelling power of a train wreck; astronomers have trouble tearing their eyes away. Over the years, they've thoroughly surveyed the wreckage and therein found a mystery--clouds of hydrogen and helium apparently too fragile to have survived the blasts. One of them, whimsically called "the Local Fluff," is on the doorstep of the Solar System.

"The observed temperature and density of the Fluff do not provide enough pressure to resist the crushing action of the hot super-

nova gas around it," says astronomer Merav Opher of George Mason University. "It makes us wonder, how can such a cloud exist?"

NASA's Voyager spacecraft may have found the answer. NASA's two Voyager probes have been racing out of the solar system for more than 30 years. They are now beyond the orbit of

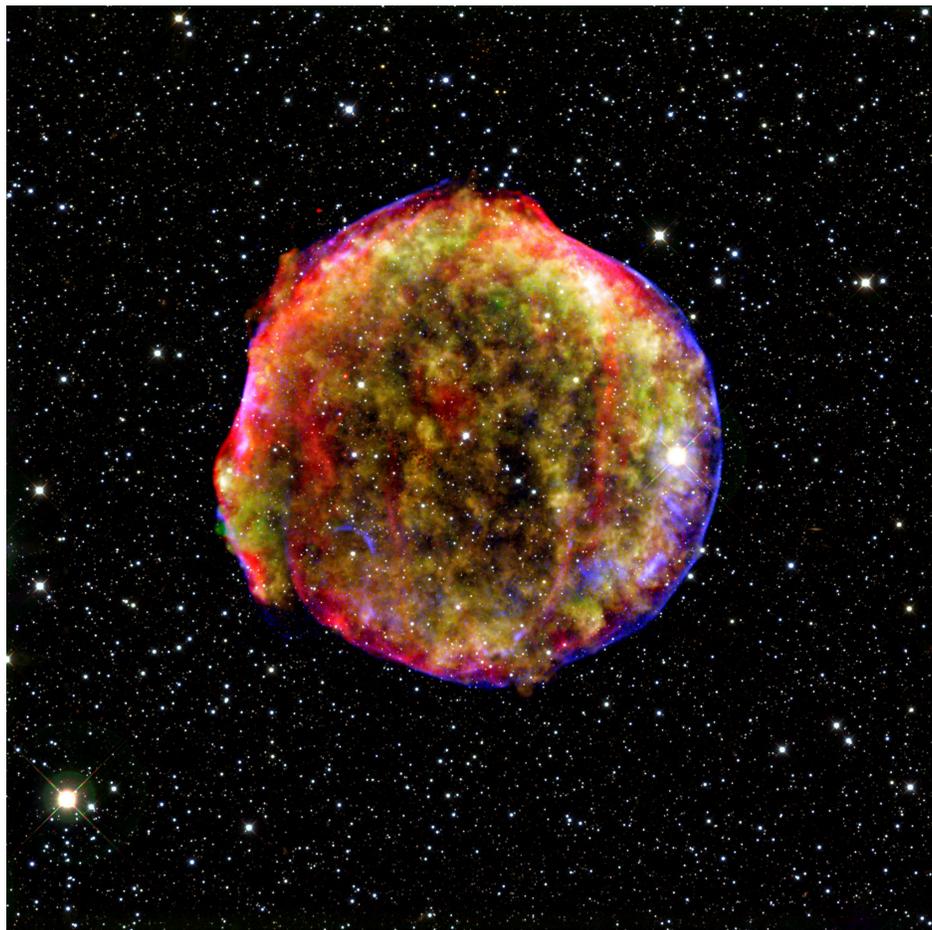
Pluto and on the verge of entering interstellar space. "The Voyagers are not actually inside the Local Fluff," explains Opher. "But they are getting close and can sense what the cloud is like as they approach it."

And the answer is... "Magnetism," says Opher. "Voyager data show that the Fluff is strongly magnetized with a field strength between 4 and 5 microgauss. This magnetic field can provide the pressure required to resist destruction."

If fluffy clouds of hydrogen can survive a supernova blast, maybe it's not so surprising that we did, too. "Indeed, this is helping us understand how supernovas interact with their environment - and how destructive the blasts actually are," says Opher.

Maybe Australopithecus was on to something after all. Opher's original research describing Voyager's discovery of the magnetic field in the Local Fluff may be found in *Nature*, 462, 1036-1038 (24 December 2009).

The Space Place has a new Amazing Fact page about the Voyagers' Golden, with sample images and sounds of Earth. After all, just in case one of the Voyager's ever meets up with ET, we will want to introduce ourselves. Visit <http://spaceplace.nasa.gov/en/kids/voyager>.



Left-over cloud from the Tycho supernova, witnessed by Tycho Brahe and other astronomers over 400 years ago. This image combines infrared light captured by the Spitzer Space Telescope with x-rays captured by the Chandra X-ray Observatory, plus visible light from the Calar Alto Observatory in Spain.

If It's Clear...

by **Fulton Wright, Jr.**

Prescott Astronomy Club

JUNE 2010

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is 1/2 degree or 30 arcminutes in diameter. All times are Mountain Standard Time.

This is a good month to look for Comet C/2009 R1 (McNaught). Look for articles and finder charts in the June issues of Sky & Telescope (p. 60), and Astronomy magazine (p. 42).

On Tuesday, June 1, after 9:04 PM when it rises, you can see the asteroid 1 Ceres (magnitude 7.5) passing just south of M8, the Lagoon Nebula. Sky & Telescope magazine, June 2010, p. 62, for a finder chart. At 10:10 PM, Titan (magnitude 8) moves in front of Saturn. Actually, at 9:30 PM Dione (magnitude 10) also moves in front of the planet, but this may not be observable.

On Friday, June 4, it is last quarter Moon which doesn't rise till 12:47 AM (June 5).

On Sunday, June 6, from about 8:30 PM to about midnight, you can see Mars (magnitude 1.2) within 1 degree of Regulus (magnitude 1.4).

On Friday, June 11, it is new Moon, so you have all night to hunt for faint fuzzies. Start your observing about 9:00 PM by looking low in the west-northwest for Venus (magnitude -4) lined up with

Pollux (magnitude 1) and Castor (magnitude 2).

On Thursday, June 17, it is first quarter Moon, which set at 12:16 AM (June 18). This and the next few days are a good time to check out the northern limb of the Moon because libration tips that part toward us.

On Friday, June 25, the full Moon rises at 7:28 PM (18 minutes before sunset) spoiling any chance of finding faint fuzzies all night. However, later that night (much later, actually the 26th) you have a chance to see a partial eclipse of the Moon. Here is the schedule:

- 1:55 AM Moon enter the Earth's penumbra (not observable)
- 2:30 AM the effect of the penumbra may just become visible
- 3:17 AM partial phase begins (the Moon starts into the umbra)
- 3:32 AM astronomical twilight begins (first light of dawn in the east)
- 4:12 AM nautical twilight begins (the constellations start to disappear)
- 4:38 AM maximum eclipse occurs (54% of Moon's diameter in umbra)
- 4:49 AM civil twilight begins (the brightest stars fade out)
- 5:18 AM the Sun rises
- 5:22 AM the Moon sets, still in partial phase

This is not a great lunar eclipse or a great time to view it. Later this year, on the night of December 20, we will have a better opportunity to view one.

From the Desk of the President

Continued from page 1

in the group, to keep things going in a positive direction. EVAC needs its members to be willing to step forward and be willing to serve.

I encourage all of you to think about the above positions, and if interested, discuss our functions and duties with the officers and members, to see if you might find a job that you could handle next year. October is not that far away.

Bob Birket's multi-month training series on DSO Imaging is scheduled to begin at the June meeting. These training sessions run from 6:10 to 7:10 PM, followed by the General Membership meeting at 7:30 PM. Members Bernard Miller and John Matthews are both going to try and make videos of these presentations, and then we can make DVD's available to our members should they wish. This series of training lectures promises to be a major event for EVAC. Hope to see you there. Until then, KEEP LOOKING UP!

New EVAC Members in May

Brad and Cecilia Sanders - Phoenix

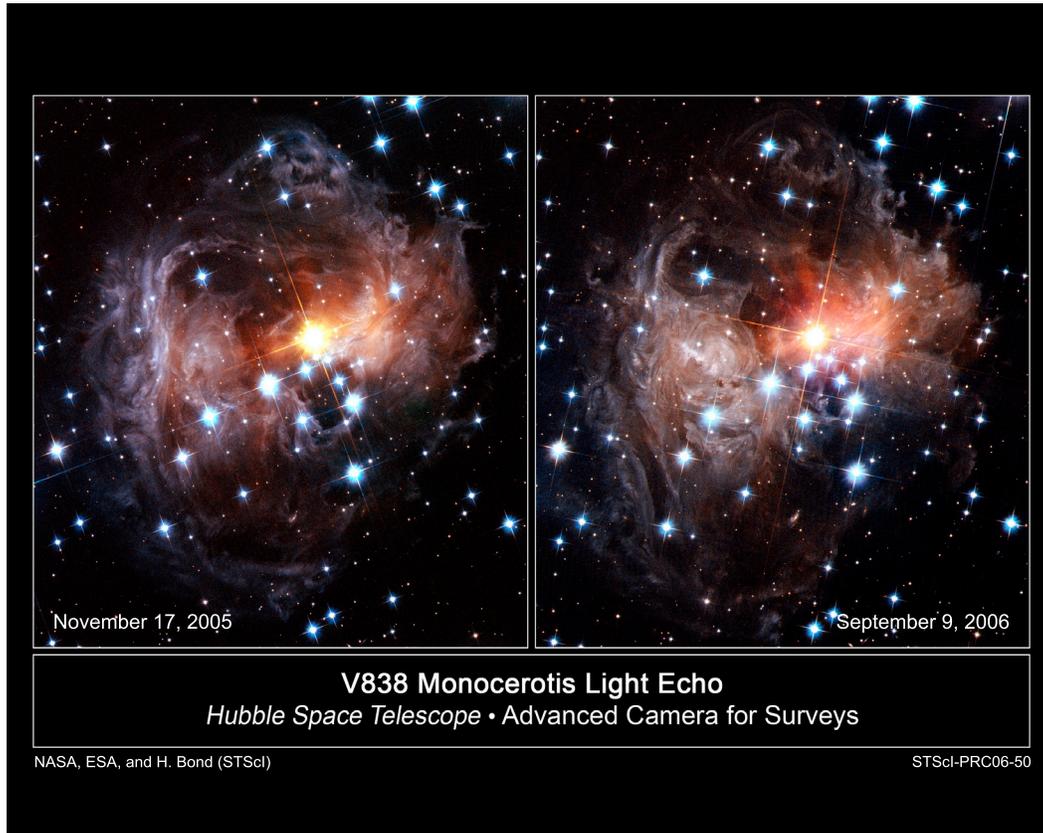
Michael Morgan - Maricopa

Michel Skokauckas - Chandler

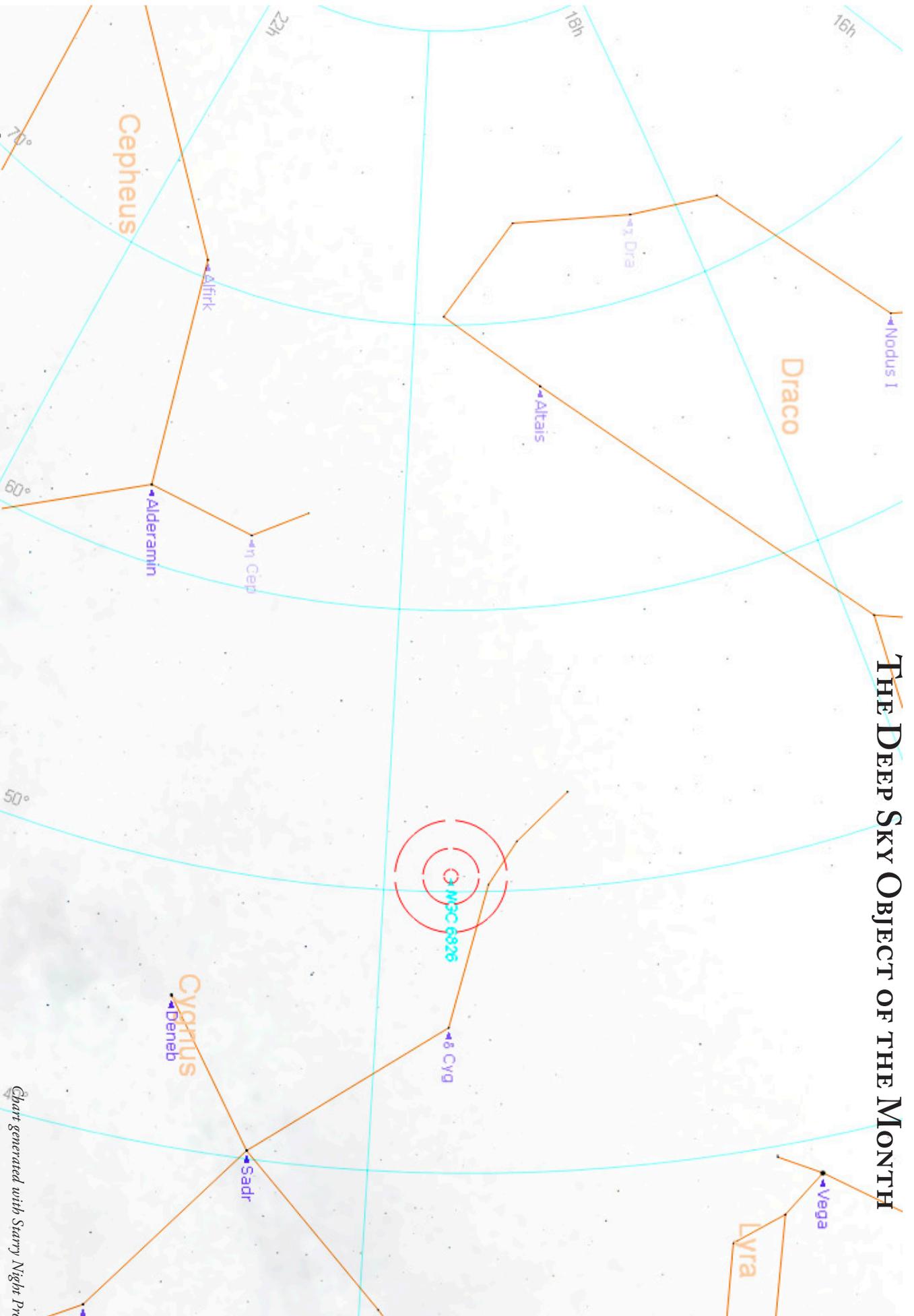
EVAC Cash Flow Summary

Four months ending April 2010

CASH AS OF DEC. 31, 2009		\$11,500
INCOME		
Dues	\$2,400	
Star Parties	\$100	\$2,500
EXPENDITURES		
TuffShed and cabinet	\$2,600	
Liability insurance	\$500	
Speaker fees plus meals	\$300	
IDA	\$100	
Board meetings	\$300	
Monthly meeting refreshments	\$100	(\$3,900)
HOLDING ACCOUNTS		
Newsletters, magazines, RASC, calendars, GRCO internet	\$100	
GRCO donations	\$400	\$500
CASH AS OF APRIL 30, 2010		\$10,600



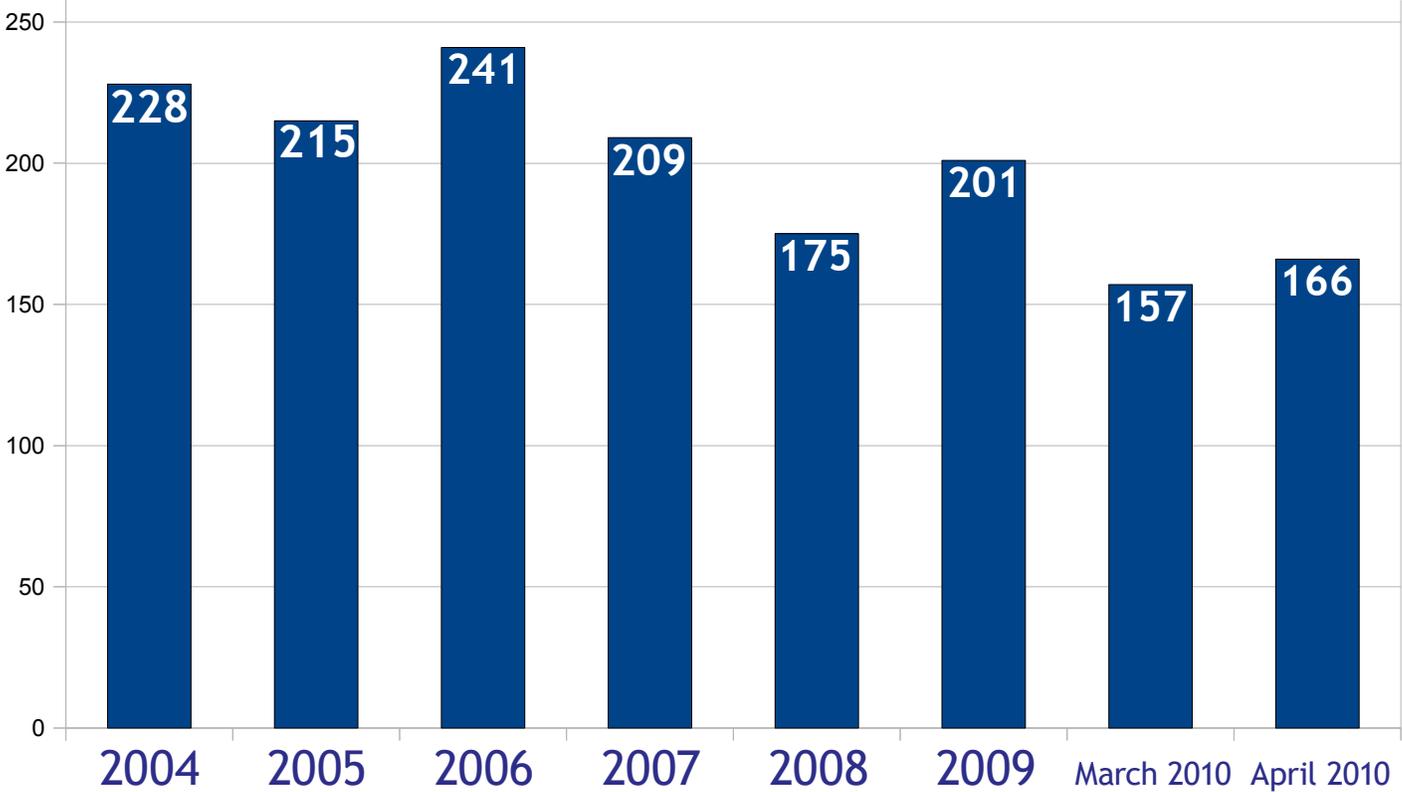
THE DEEP SKY OBJECT OF THE MONTH



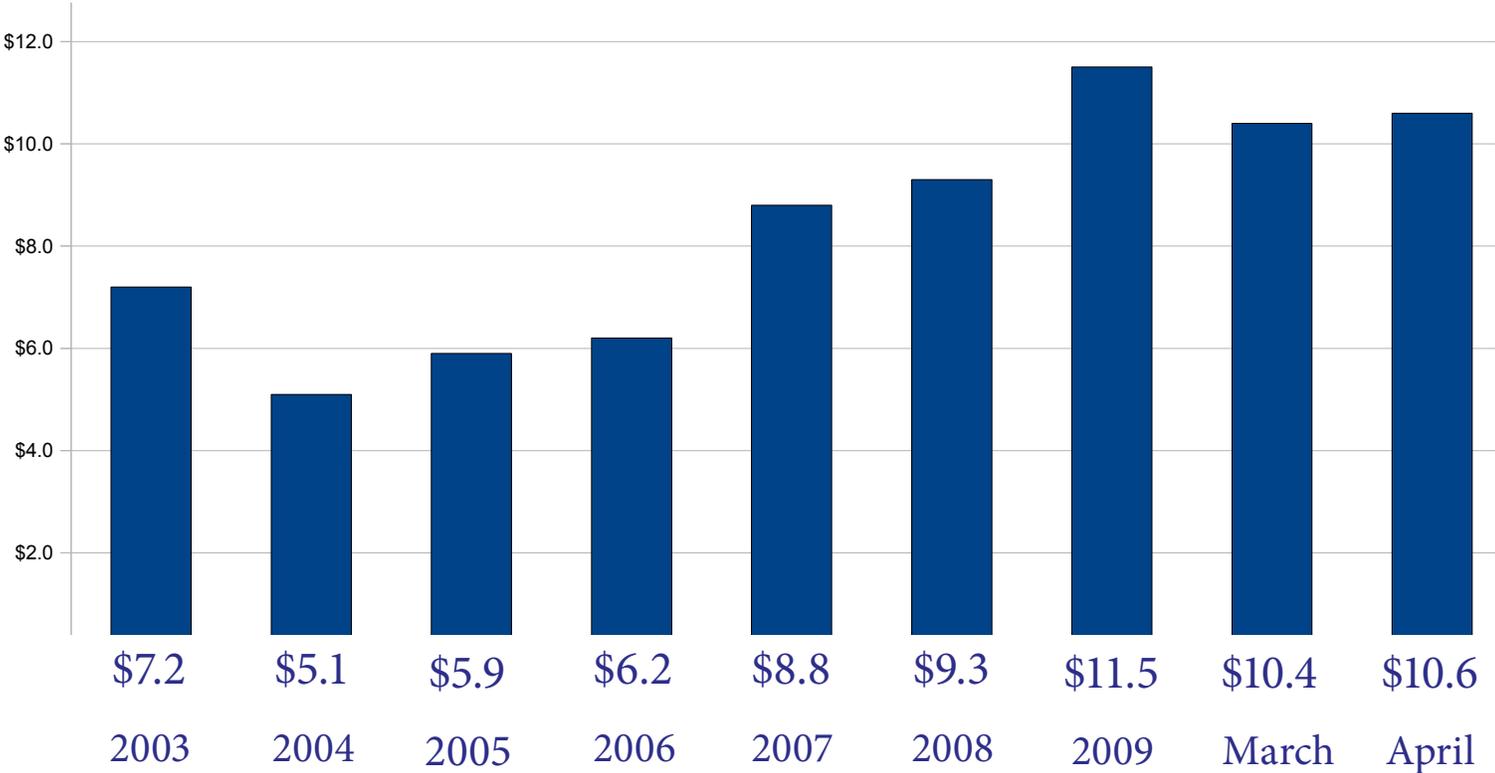
NGC 6826 (Blinking Planetary) Planetary Nebula in Cygnus

RA: 19h 44m 48.2s Dec: +50° 31' 30" Magnitude: 8.8 Size: 27.0"

EVAC Membership History



EVAC Cash Trend (\$K)



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Keep Looking Up!

East Valley Astronomy Club
PO Box 2202
Mesa, Az. 85214-2202

