Volume 27 Issue 4

April 2013

The Observer

East Valley Astronomy Club

The start of the year has been a difficult one for the officers and board of EVAC. David Douglas has resigned as President and Ed Thomas has resigned as Vice-President. At the February meeting I was elected as Interim Vice-President, so I am attempting to complete that task at the April meeting where we will elect a new President and Vice-President. I will not go into the motivation for Dave and Ed's decision; both have sent emails to EVACONLINE that explain their reasons. They deserve our gratitude for their service. In addition, Peter Argenziano has decided to end his long standing service as our Newsletter Editor. He has done a great job over the years, and his skills will be greatly missed. If anyone is interested in this position you can also let me know.

If you are interested in standing for election to either office or position, please email me at vp.evaconline.org. We will also accept nominations from the floor, but it would help to plan for the election. I would encourage anyone interested in serving to read the Constitution and Bylaws that are published on the EVAC website. I would also encourage general members to do the same. The officers and board have begun to look at potential revisions of the Constitution and Bylaws, and it important that members understand the current rules of operation.

If anyone has questions or comments, please email me at the vp address above or call my cell at 480-221-5792. I am travelling over the next few weeks, but will answer as soon as I can. While I encourage open discussion, I do request that we not use EVACONLINE for general emails concerning these vacancies or the operation of the club. It is not a good forum for effective discussion, and many individuals who are not club members are on that list.

I was certainly pleased to see so many EVAC members at the Messier Marathon. It reaffirmed why we are members of EVAC, and our commitment to the hobby.

Keep looking up
Claude Haynes
Acting Vice-President

Upcoming Events:

Feathered Friends Festival - April 6

Local Star Party - April 6

Public Star Party - April 12

Deep Sky Observing Night - April 13

General Meeting - April 19

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

Inside this Issue:

The Backyard Astronomer

The Lion Sleeps Tonight

by Bill Dellinges

When we see Leo the Lion arching up in the east as darkness falls, it's a sure sign spring has sprung.

The Lion is the dominant constellation of spring. Its only competition is Ursa Major in the north.

In Greek mythology, the Lion was the offspring of Zeus and the deity Selene, goddess of the moon. The Lion fell to Earth and for reasons unknown began to terrorize the city Nemea in ancient Greece. The beast had a tough hide impervious to sword or arrow and claws that could pierce armor.

As one of Hercules' Twelve Labors, he was tasked to kill the Lion. His weapons being useless, he resorted to strangling the big Nemean cat.

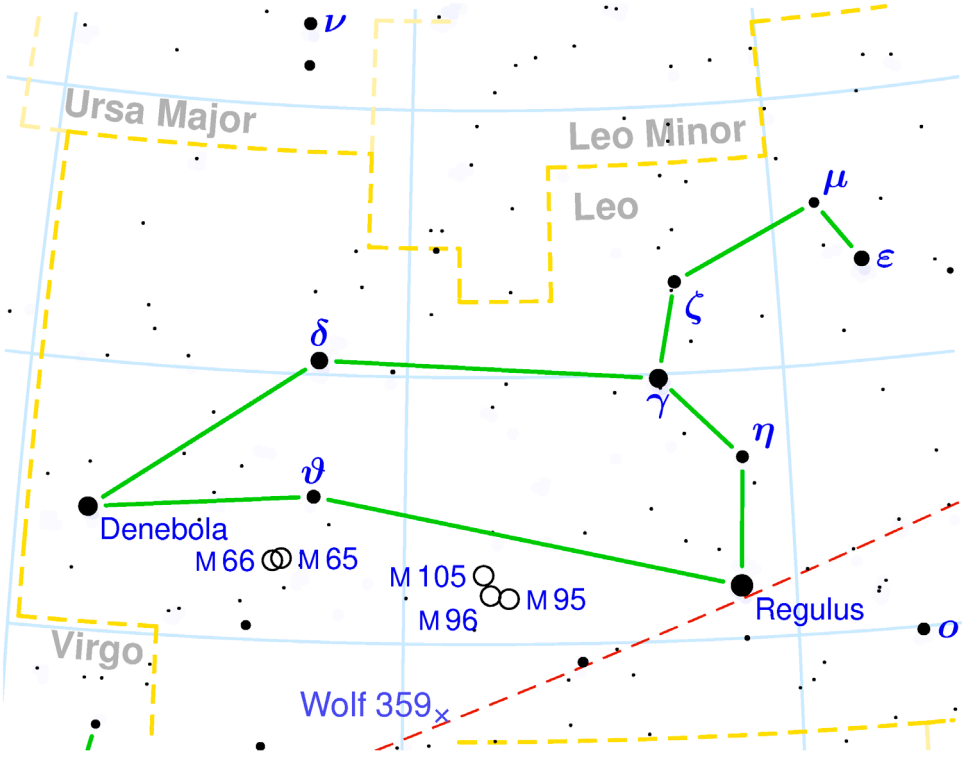
The constellation has a distinctive appearance, being one of the few that resemble its mythological counterpart. The western half, or front of the Lion, looks like a backward question mark with Regulus ("Little King"), its brightest star. This asterism

Continued on page 4

The Backyard Astronomer

Continued from page 1 has also been called the "Sickle." The eastern half of the Lion is composed of three stars forming a right angle denoting the hip and tail. The eastern-most star of the triangle is Denebola ("The Lion's Tail"). Leo is loaded with galaxies.

Below Theta Leonis in the hind quarters of the Lion are M65 and M66, two galaxies 20 million light years away. They both easily fit in a 0.9 degree field along with NGC 3628, a nice edge-on galaxy to their northeast. A group of dimmer galaxies, M95, M96 and M105, can be found just under the Lion's "belly." They are spread out more than 65/66/3628 and will require slewing around a bit to scoop them up.



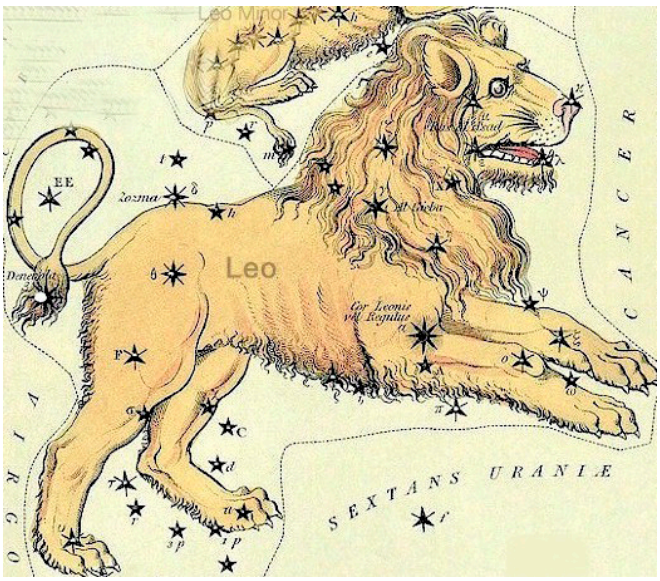
An interesting galactic specimen is NGC 2903, just south of Lambda Leonis. The galaxy is bigger than the above Messier galaxies and only slightly dimmer. It's strange Messier and his contemporaries missed it.

A couple of showpiece double stars in Leo are Algieba (Gamma Leonis) and 90 Leonis. The former, located in the "sickle" above Regulus, is a relatively close pair of yellow stars of magnitude 2.3 and 3.6 with a separation 4.4" arc seconds. About 100x should split them. The two stars orbit one another every 500 years. Their true separation is 125 Astronomical Units. Before leaving the Lion's den, you'll want to check out the pretty triple star 90 Leonis in the aforementioned right angle forming the Lion's hind quarters, between Beta and Delta Lionis.

It's interesting to note there are two huge "voids" either side of Leo. These areas are occupied by the faint constellations of Cancer and Coma Berenices, west and east of Leo respectively and thus appear at first glance to be empty.

But staring at them will eventually reveal two smudges, M44, the Beehive Cluster in Cancer and Mel 111, another open star cluster in Coma Berenices. In dark skies the unaided eye can actually begin to resolve stars in the clusters. Both objects are very large (M44 = 1.5 degrees and Mel 111 = 5 degrees) and thus better suited to binocular observation. The cat used to be bigger. Around 2700BC, M44 was the cat's whiskers and MEL 111, the tuft of hair at the end of the Lion's tail.

A few other interesting morsels in the area worth visiting are the bright Planetary Nebula NGC 3242, the "Ghost of Jupiter" in Hydra just south of Mu Hydrae. M3 in Canes Venatici is certainly one of best globular star clusters in the sky - don't miss it. A line through Gamma and Beta Comae Berenices points directly at it. Or push your GOTO button!



Before calling it a night, you would be remiss in not taking advantage of observing the galaxies M81 and M82 while they are culminating high in the northern sky. M81 is nice, but M82 really steals the show with it odd lenticular shape.

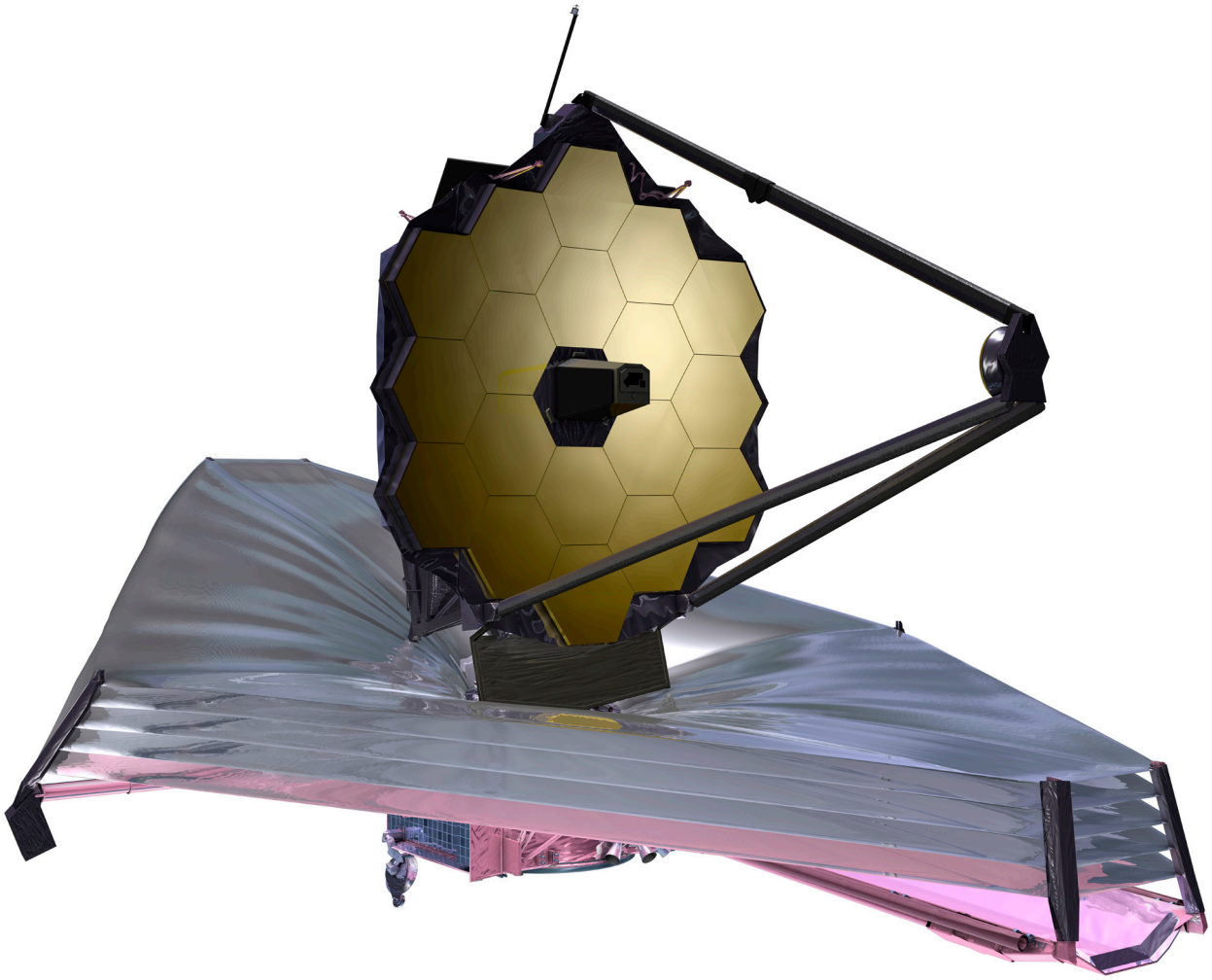
But whatever you do, don't wake up that Lion!

Leonid meteor shower peak: late night November 16 until dawn November 17. Unfortunately, the full moon makes 2013 an unfavorable year for watching the 2013 Leonid meteor shower.

NASA Invites Media Inside World's Largest Vacuum Chamber

The world's largest thermal-vacuum chamber will be open to news media at NASA's Johnson Space Center in Houston on Thursday, April 4.

Upgrades are being made to the facility to prepare it for testing the agency's James Webb Space Telescope. Scientists plan to use the Webb telescope to see further back into history than ever before.



Attendees will be able to learn about the facility upgrades and the role they will have in preparing the Webb telescope. Media interested in attending should email Brandi Dean at brandi.k.dean@nasa.gov. International media must apply for credentials by 5 p.m., March 27. U.S. reporters should respond by 5 p.m., April 3.

Webb telescope scientists and Johnson chamber technicians will be available for interviews during the media opportunity. The site is designated a clean room, so all media entering the chamber will be provided with specialized clothing.

Johnson's 400,000 cubic foot vacuum chamber, Chamber A, was built in 1965 to conduct thermal-vacuum testing of the Apollo Command Module and Service Module. In addition to the Apollo modules, Chamber A has been used in component tests for Apollo-Soyuz, Skylab, space shuttle, International Space Station, Department of Defense communication antennas and various other large-scale satellite systems.

Since 2007, the chamber has been significantly modified to support testing of the Webb telescope the agency's successor to the Hubble Space Telescope. Scheduled to launch in 2018, it will fly in deep space orbit more than a million miles from Earth. To ensure it will function in the extreme environment of space, Chamber A will be equipped with instruments to measure and evaluate the shape and focus of the mirrors.

As the most powerful space telescope ever built, the Webb telescope will observe the most distant objects in the universe, provide images of the first galaxies ever formed, and see unexplored planets around distant stars. The telescope is a joint project of NASA, the European Space Agency and the Canadian Space Agency.

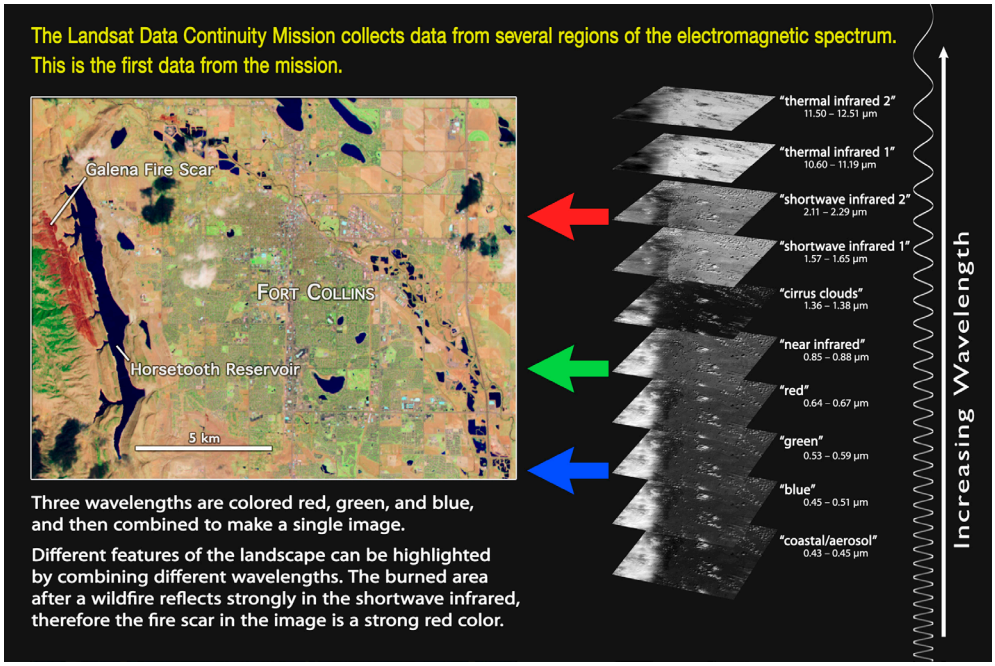
For more information: http://www.jwst.nasa.gov/

First Images Released From Newest Earth Observation Satellite

NASA and the Department of the Interior's U.S. Geological Survey (USGS) have released the first images from the Landsat Data Continuity Mission (LDCM) satellite, which was launched Feb. 11.

The natural-color images show the intersection of the United States Great Plains and the Front Range of the Rocky Mountains in Wyoming and Colorado. In the images, green coniferous forests in the mountains stretch down to the brown plains with Denver and other cities strung south to north.

LDCM acquired the images at about 1:40 p.m. EDT March 18. The satellite's Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) instruments observed the scene simultaneously. The USGS Earth Resources Observation and Science Center in Sioux Falls, S.D., processed the data.



"We are very excited about this first collection of simultaneous imagery," said Jim Irons, LDCM project scientist at NASA's Goddard Space Flight Center in Greenbelt, Md. "These images confirm we have two healthy, functioning sensors that survived the rigors of launch and insertion into Earth orbit."

Since launch, LDCM has been going through on-orbit testing. The mission operations team has completed its review of all major spacecraft and instrument subsystems, and performed multiple spacecraft attitude maneuvers to verify the ability to accurately point the instruments.

The two LDCM sensors collect data simultaneously over the same ground path. OLI collects light reflected off the surface of Earth in nine different regions of the electromagnetic spectrum, including bands of visible light and near-infrared and short-wave-infrared bands, which are beyond human vision. TIRS collects data at two longer wavelength thermal infrared bands that measure heat emitted from the surface.

By looking at different band combinations, scientists can distinguish features on the land surface. These features include forests and how they respond to natural and human-caused disturbances, and the health of agricultural crops and how much water they use. Data from LDCM will extend a continuous, 40-year-long data record of Earth's surface from previous Landsat satellites, an unmatched, impartial perspective that allows scientists to study how landscapes all across the world change through time.

"These first scenes from the new Landsat satellite continue the remarkable output from the Landsat program with better, more useful imagery and information," said Matthew C. Larsen, associate director for climate and land use change at the U.S. Geological Survey in Reston, Va. "We are gratified that this productive partnership between USGS and NASA has maintained the continuity and utility of this essential satellite tool, providing the foundation for land and water management around the globe."

As planned, LDCM currently is flying in an orbit slightly lower than its operational orbit of 438 miles (705 kilometers) above Earth's surface. As the spacecraft's thrusters raise its orbit, the NASA-USGS team will take the opportunity to collect imagery while LDCM is flying under Landsat 7, also operating in orbit. Measurements collected simultaneously from both satellites will allow the team to cross-calibrate the LDCM sensors with Landsat 7's Enhanced Thematic Mapper-Plus instrument.

"So far, our checkout activities have gone extremely well," said Ken Schwer, LDCM project manager at Goddard. "The mission operations team has done a tremendous job getting us to the point of imaging Earth." During the next few weeks, this team will calibrate the instruments and verify they meet performance specifications.

After its checkout and commissioning phase is complete, LDCM will begin its normal operations in May. At that time, NASA will hand over control of the satellite to the USGS, which will operate it throughout its planned five-year mission life. The satellite will be renamed Landsat 8. USGS will process data from OLI and TIRS and add it to the Landsat Data Archive at the USGS Earth Resources Observation and Science Center, where it will be distributed for free via the Internet.

For more information on these first LDCM images, visit: http://go.nasa.gov/13cHhFJ

For more information on the LDCM mission, visit: http://www.nasa.gov/landsat

April Guest Speaker

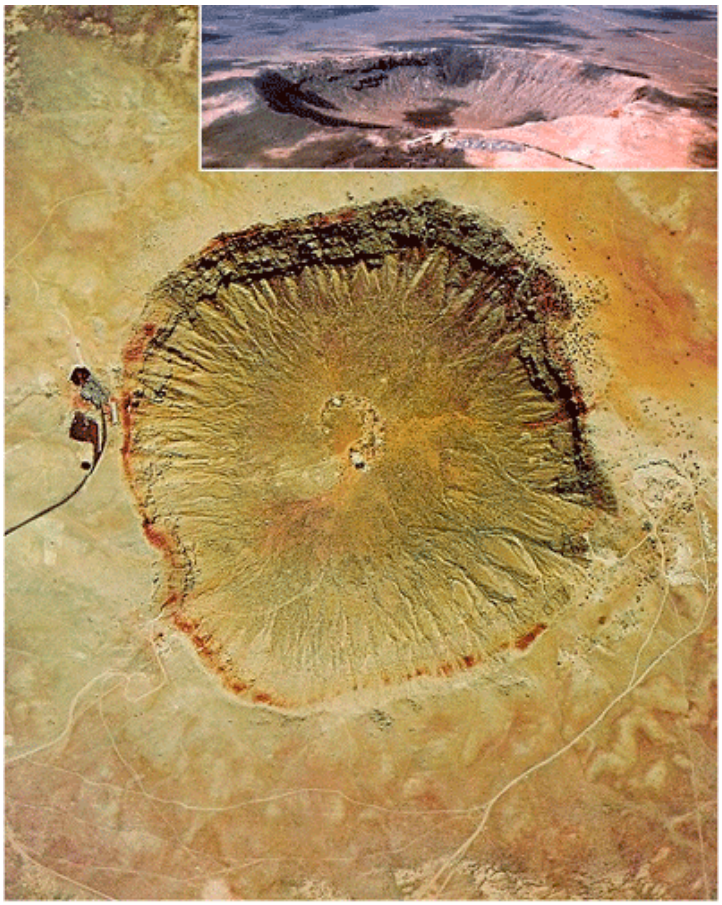
EVAC is pleased to welcome this month's guest speaker, Melissa A. Morris, Ph.D.

Dr. Morris is the Assistant Director, Center for Meteorite Studies, Faculty Research Associate, School of Earth and Space Exploration at Arizona State University.

Her interests are in star and planet formation, in particular the use of astrophysical modeling to determine conditions during the birth of planetary systems. She is especially interested in continuing the improvement of radiative transfer models of protoplanetary disks during planet formation, mainly through the application of mineralogical data of planetary materials.

She is also very interested in meteoritics. The oldest known material in our own planetary system can be found in meteorites, and an understanding of the conditions that existed in the early solar nebula and exist in disks today can be achieved through a combination of the meteoritic data and the results of astrophysical modeling.

Dr. Morris' topic is Meteorites 101.



◑ Last Quarter Moon on April 2 at 21:38

○ New Moon on April 10 at 02:36

◑ First Quarter Moon on April 18 at 05:31

● Full Moon on April 25 at 12:58

Upcoming Meetings

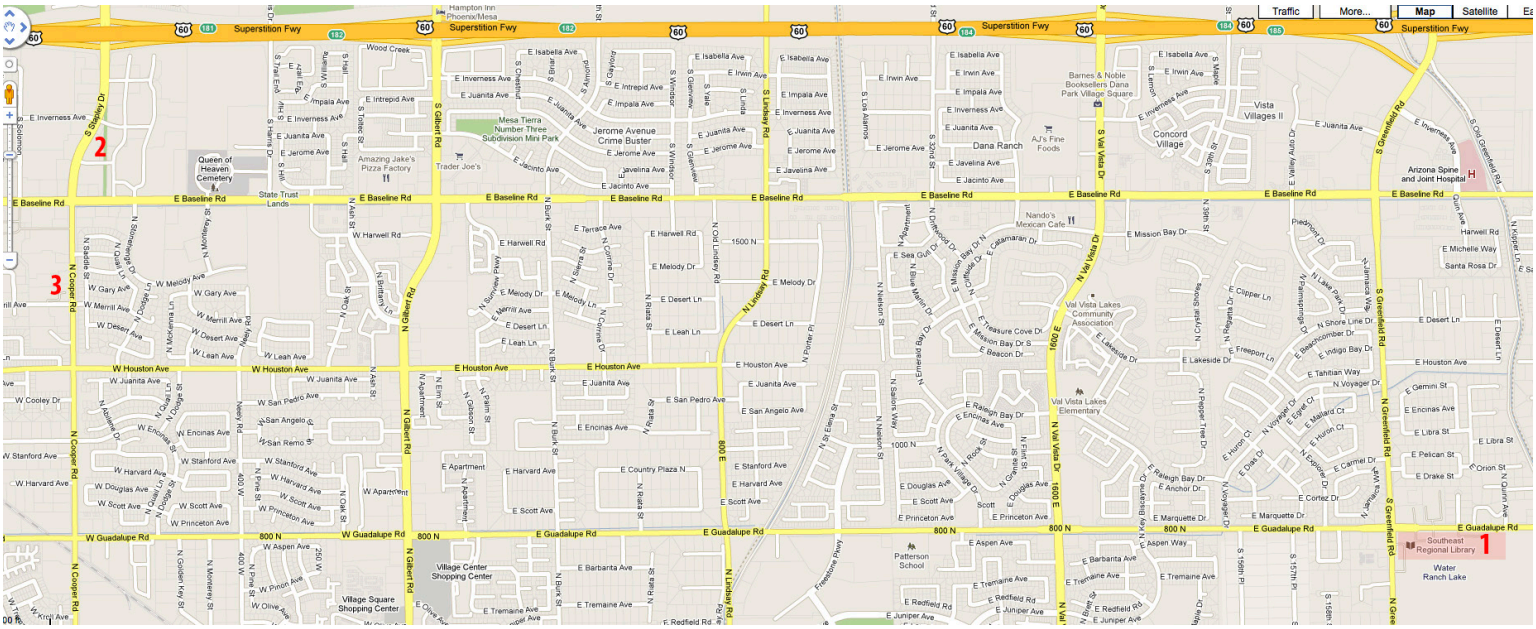
April 19
May 17
June 21
July 19
August 16
September 20

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.

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.

Visitors are always welcome!



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

Southeast Regional Library
1 **775 N. Greenfield Road**
Gilbert, Az. 85234

April 2013

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				

April 6 - Local Star Party at Picketpost Trailhead

April 6 - Feathered Friends Festival

April 12 - Public Star Party & SkyWatch

April 13 - Deep Sky Observing Night

April 19 - General Meeting at SE Library

April 20 - Astronomy Day

April 26 - Roosevelt Elementary Star Party

April 27 - Mesquite Elementary Star Party

May 2013

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	

May 4 - Local Star Party at Boyce Thompson

May 10 - Public Star Party & SkyWatch at Riparian Preserve

May 11 - Deep Sky Observing Night

May 17 - General Meeting at SE Library

East Valley Astronomy Club -- 2013 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):

☐ **$30.00 Individual** January through March

☐ **$35.00 Family** January through March

☐ **$22.50 Individual** April through June

☐ **$26.25 Family** April through June

☐ **$15.00 Individual** July through September

☐ **$17.50 Family** July through September

☐ **$37.50 Individual** October through December

☐ **$43.75 Family** October through December

Includes dues for the following year

Renewal (current members only):

☐ **$30.00 Individual** ☐ **$35.00 Family**

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: ☐ Phone: ☐

Address: ☐ Email: ☐

☐ Publish email address on website

City, State, Zip: ☐ URL: ☐

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):

☐ General Observing ☐ Cosmology

☐ Lunar Observing ☐ Telescope Making

☐ Planetary Observing ☐ Astrophotography

☐ Deep Sky Observing ☐ 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.evaconline.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

Your Daily Dose of Astonishment

by Diane K. Fisher

As a person vitally interested in astronomy, you probably have the Astronomy Picture of the Day website at apod.nasa.gov set as favorite link. APOD has been around since practically the beginning of the web. The first APOD appeared unannounced on June 16, 1995. It got 15 hits. The next picture appeared June 20, 1995, and the site has not taken a day off since. Now daily traffic is more like one million hits.

Obviously, someone is responsible for picking, posting, and writing the detailed descriptions for these images. Is it a whole team of people? No. Surprisingly, it is only two men, the same ones who started it and have been doing it ever since.

Robert Nemiroff and Jerry Bonnell shared an office at NASA's Goddard Space Flight Center in the early-90s, when the term "World Wide Web" was unknown, but a software program called Mosaic could connect to and display specially coded content on other computers. The office mates thought "we should do something with this."

Thus was conceived the Astronomy Picture of the Day. Now, in addition to the wildly popular English version, over 25 mirror websites in other languages are maintained independently by volunteers. (See http://apod.nasa.gov/apod/lib/about_apod.html for links). An archive of every APOD ever published is at http://apod.nasa.gov/apod/archivepix.html. Dr. Nemiroff also maintains a discussion website at http://asterisk.apod.com/.

But how does it get done? Do these guys even have day jobs?

Dr. Nemiroff has since moved to Michigan Technological University in Houghton, Michigan, where he is professor of astrophysics, both teaching and doing research. Dr. Bonnell is still with NASA, an astrophysicist with the Compton Gamma Ray Observatory Science Support Center at Goddard. APOD is only a very small part of their responsibilities. They do not collaborate, but rather divide up the calendar, and each picks the image, writes the description, and includes the links for the days on his own list. The files are queued up for posting by a "robot" each day.

The January 20, 2013, Astronomy Picture of the Day is one that might fall into the "quirky" category. The object was found at the bottom of the sea aboard a Greek ship that sank in 80 BCE. It is an Antikythera mechanism, a mechanical computer of an accuracy thought impossible for that era. Its wheels and gears create a portable orrery of the sky that predicts star and planet locations as well as lunar and solar eclipses

They use the same tools they used at the beginning: Raw HTML code written using the vi text editor in Linux. This simple format has now become such a part of the brand that they would upset all the people and websites and mobile apps that link to their feed if they were to change anything at this point.

Where do they find the images? Candidates are volunteered from large and small observatories, space telescopes (like the Hubble and Spitzer), and independent astronomers and astrophotographers. The good doctors receive ten images for every one they publish on APOD. But, as Dr. Nemiroff emphasizes, being picked or not picked is no reflection on the value of the image. Some of the selections are picked for their quirkiness. Some are videos instead of images. Some have nothing to do with astronomy at all, like the astonishing August 21, 2012, video of a replicating DNA molecule.

Among the many mobile apps taking advantage of the APOD feed is Space Place Prime, a NASA magazine that updates daily with the best of NASA. It's available free (in iOS only at this time) at the Apple Store.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

If It's Clear...

by Fulton Wright, Jr.
Prescott Astronomy Club

April 2013

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is ½ degree or 30 arcminutes in diameter. All times are Mountain Standard Time.

On Tuesday, April 2, the Moon is at last quarter phase and rises at 1:42 AM (Wednesday).

On Tuesday, April 2, in the evening, you can see some events with Jupiter's moons. Here is the schedule:
06:52 PM Sunset
07:40 PM Io goes behind Jupiter.
08:03 PM Europa goes in front of Jupiter.
09:01 PM Ganymede goes behind Jupiter.
10:17 PM Europa's shadow falls on Jupiter, near the red spot.
10:31 PM Europa moves from in front of Jupiter.
11:00 PM Io emerges from Jupiter's shadow.
11:27 PM Ganymede emerges from behind Jupiter.
11:34 PM Jupiter sets.

On Friday, April 5, in the evening, Jupiter's moons Ganymede and Europa are close together. When they set, about 11:25 PM, they are only 6 arc seconds apart.

On Sunday, April 7, in the evening, Jupiter's moons Io and Europa are close together. At about 10:30 PM when they are closest, they only 4 arc seconds apart.

On Tuesday, April 9, it is new Moon and you have all night to hunt for faint fuzzies.

On Wednesday, April 10, in the evening, you can barely see an entire transit of Io in front of Jupiter. The Sun sets at 6:58 PM. Io is in front of the planet from 6:55 to 9:08 PM. Io's shadow is on the planet from 7:59 to 10:08 PM. Jupiter sets at 11:09 PM.

On Saturday, April 13, from 7:47 to 10:13 PM, Ganymede's shadow is on Jupiter.

On Wednesday, April 17, the Moon is at first quarter phase and sets at 1:19 AM (Thursday).

On Thursday, April 25, at 7:26 PM (16 minutes after sunset) the full Moon rises, spoiling any chance of seeing faint fuzzies for the night.

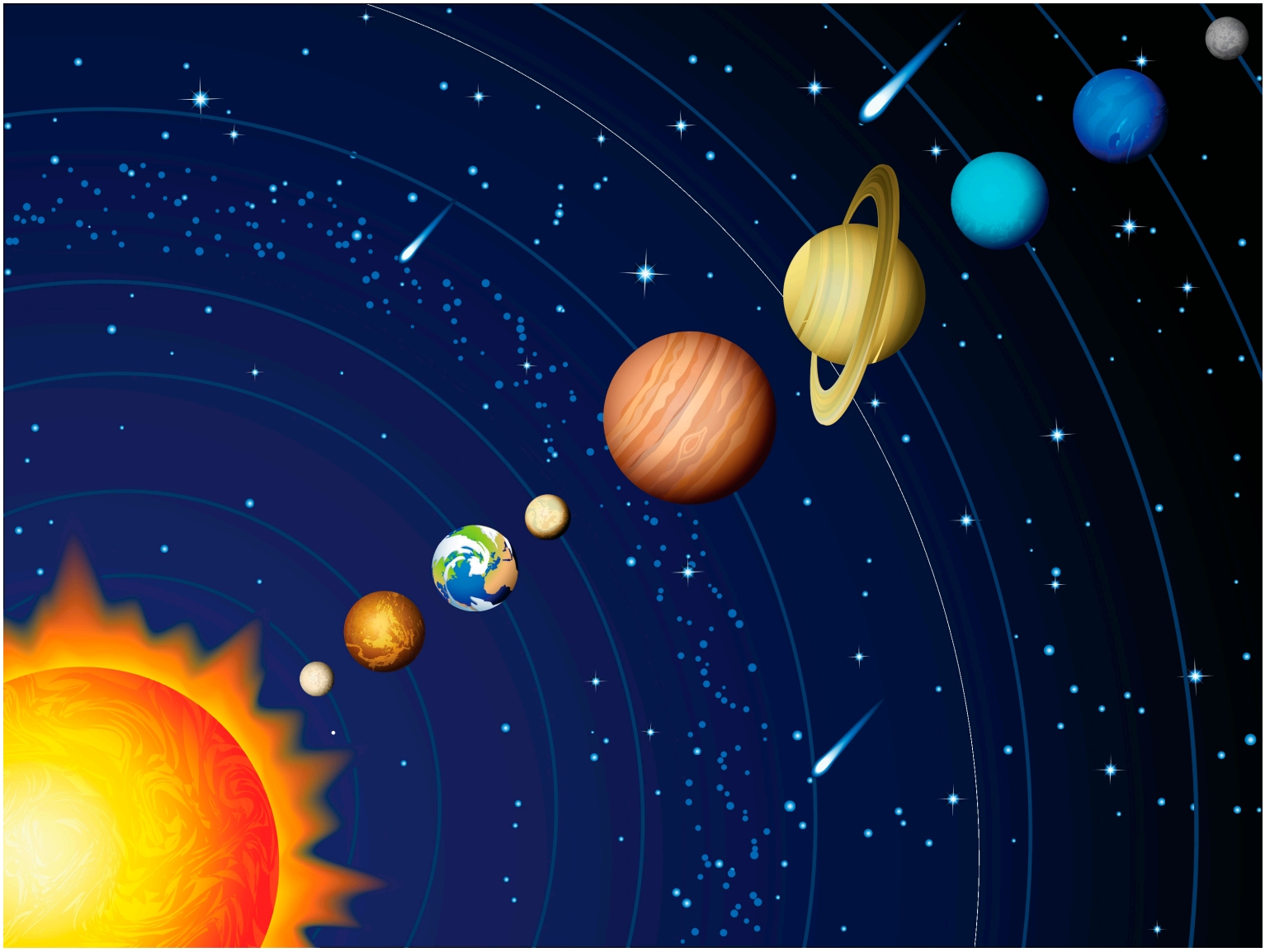
On Sunday, April 28, Saturn is at opposition and is visible all night.

Looking for that perfect weekend activity?

Why not resolve to getting involved?

Contact Dave Coshow to join the staff at GRCO

Email: grco@evaconline.org



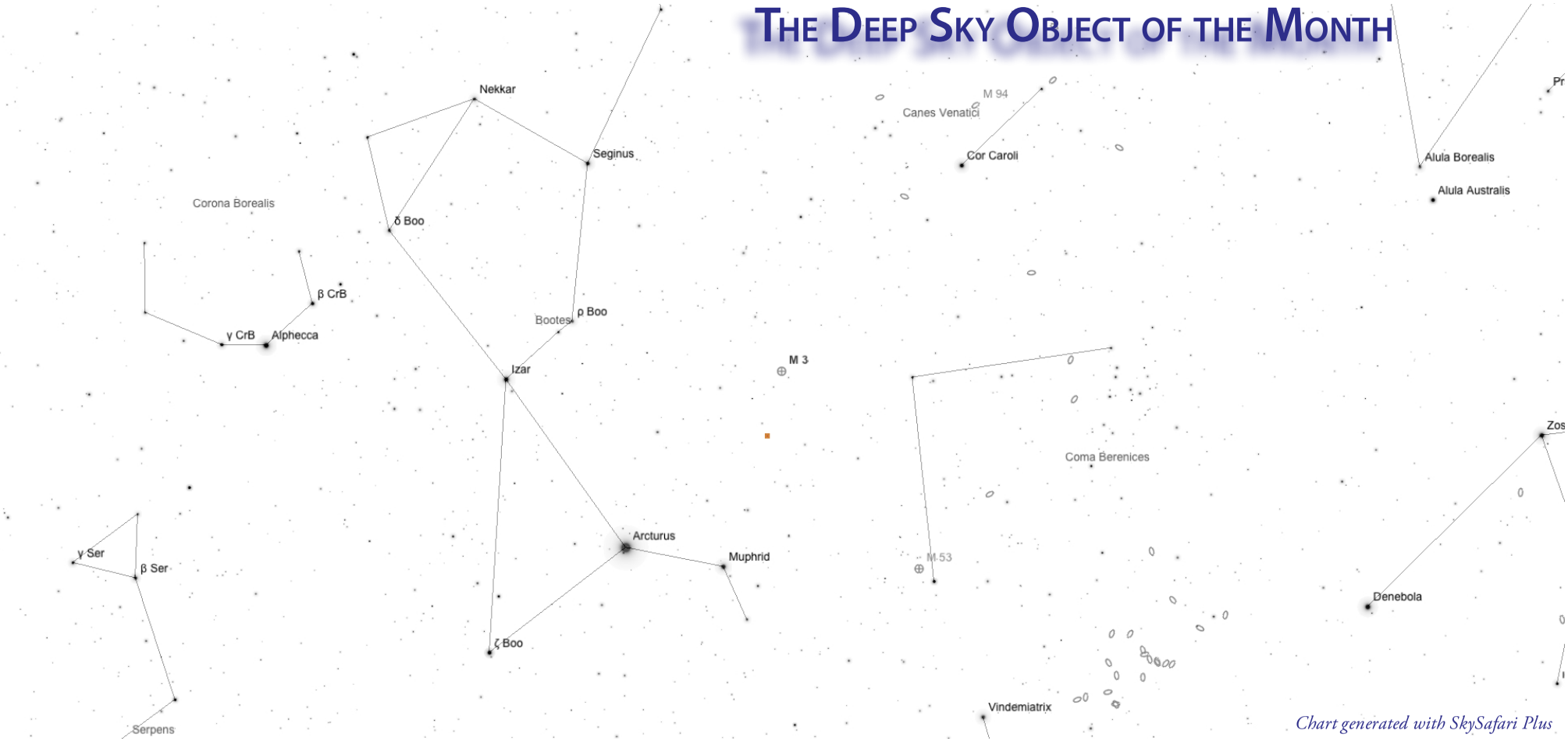
All good things must one day end, and so it is with my tenure as Newsletter Editor for East Valley Astronomy Club.

I have served the club as Board Member, Vice President, President, and as Editor for the past seven years. It is time for someone new to take the reins. Please contact one of the primary officers to volunteer for this fun and rewarding position.

I hope you have enjoyed the newsletter!

Feel free to contact me with any questions you may have at:
news@evaconline.org

The Deep Sky Object of the Month



Messier 3, in the constellation Canes Venatici, is one of the three brightest globular clusters in the northern sky. It lies on the border of Canes Venatici with Bootes, about 6° NNE of Beta Comae Berenices.
M 3 was discovered by Charles Messier in 1764, and first resolved into stars by William Herschel around 1784.

Messier 3 is one of the most beautiful and easily seen globulars. With an apparent magnitude of 6.2, it is visible to the naked eye under dark conditions - and a superb object with the slightest optical aid. In binoculars, it appears as a hazy, nebulous patch. A 4-inch telescope shows a bright compact core within a round and mottled, grainy glow, which fades slowly and uniformly to the outer edges.

In an 8-inch telescope, the cluster is fully resolved. It is a glittering ball of stars with an extremely bright, rich, elongated core measuring 1.1′ in diameter, and surrounded by an 18′-diameter halo of pinpoint stars. The stars are well resolved across the core, and radiate outward from it in curved chains. The cluster's brightest stars are of magnitude 12.7.

M3 (NGC 5272) Globular Cluster in Canes Venatici

RA: 13h 42m 48.81s Dec: +28° 18′ 36.3″ Size: 4.6′ Magnitude: 6.19

As one of the many benefits to becoming an East Valley Astronomy Club member, we have the following telescopes available for monthly check-out to current EVAC members:

8 inch Orion manual Dobsonian
8 inch Orion Intelliscope Dobsonian
60mm Tasco Alt-Azimuth Refractor

For more information, or to check out one of these scopes, please talk to:

David Hatch
EVAC Properties Director
480.433.4217

The Observer is the official publication of the East Valley Astronomy Club. It is published monthly and made available electronically as an Adobe PDF document the first week of the month. Printed copies are available at the monthly meeting. Mailed copies are available to members for a slight surcharge to offset printing and mailing expenses.

Please send your contributions, tips, suggestions and comments to the Editor at: news@evaconline.org Contributions may be edited. The views and opinions expressed in this newsletter do not necessarily represent those of the East Valley Astronomy Club, the publisher or editor.

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www.evaconline.org

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