ROANOKE VALLEY ASTRONOMICAL SOCIETY

NEWS ABOUT AMATEUR ASTRONOMY
IN SOUTHWESTERN VIRGINIA

http://www.roavas.org

Vol. 20 No. 4 April 2003

PERSEVERANCE PAYS OFF WITH A DELIGHTFUL EVENING

RVAS and Saturn of the Roanoke Valley

Oftentimes astronomy is a hobby of opportunity. Our weather in the Roanoke area is extremely difficult to predict. The RVAS public outreach event at Saturn of Roanoke Valley was just such a case. If all went according to plan, kids from the 3rd grade class at Salem's Carver Elementary School were going to have a 2 billion mile round trip touring the moon, Jupiter and Saturn.

The morning of Wednesday March 12 brought deep blue skies to Roanoke. This weather call for the evening's Saturn observing program was going to be easy and obvious. At noon the decision was made--all systems go. Saturn was notified, Carver Elementary School was contacted and cook
out preparations were begun. Then the weather showed its usual uncooperative self. By 1:30 pm, the Roanoke Valley was under cloud cover! Stop everything? Continue and hope for the best? At times like that you wish you had a different hobby. The forecast continued to call for clouds with sun even though the skies overhead told a different story. The decision was to follow the course and prepare for the event.

At 5:30 RVAS members began arriving at the Saturn dealership. Remarkably, the skies began to clear! The kids were excited, the food was cooking, the parking lot was arranged and the telescopes were assembled. By 6:15 after helpings of hot dogs, hamburgers, chips, cut vegetables, fruit, cookies and lemon aid, the observing commenced.
For being the most obvious observing object, the moon is always a delight to see. Most of the children and their parents never had seen our closest neighbor up close. The variety of telescopes revealed its craters, mountains, and plains for all to see.

By 6:40 Jupiter was found shining above the dealership. Again, no one went away disappointed. At Mark Hodges' Schmidt-Cass, one young budding astronomer remarked, "I see a lot of colors." Yes, the atmospheric bands were easily visible along with 3 of its large Galilean moons.

Saturn, of course, was the "star" of the night. Understandably, this was something the Saturn staff wanted to see. "Can you see the rings?--WOW!!" Genevieve Goss overheard a boy telling his mother about having just seen the ringed planet, "It looked like a paper cut-out, but I knew it was real, and that man said it was real and he wouldn't put a paper Saturn in his telescope!" RVAS integrity is well known among 3rd graders.

By the end of the session, the earlier clouds were a distant memory. The 150 attendees were now thinking about the amazing sights of our solar system!

The RVAS wishes to thank Fred McElmurray and Lourice Thomas of Saturn of Roanoke Valley for having faith in Roanoke weather and supporting amateur astronomy. A thank you is in order for the RVAS participants: Paul Caffrey, Dave Godman, John and Genevieve Goss, Katherine Hix, Mark Hodges, Carol Mesimer, Jeff Suhr, Mahesh Tailor, David Thaler, and Richard Zue.

SOCIETY NEWS

New Newsletter Editor

Due to new responsibilities at home, and after nearly three years as the RVAS's newsletter editor, Dave Reese is handing the baton to Clark Thomas, who will take over as editor beginning with the May 2003 newsletter.

Like Frank Baratta who held the job for ten years before him, Dave has found putting together the newsletter to be a time consuming yet satisfying role. Dave is appreciative of the many who have helped him make the RVAS newsletter one of the best.

Particular thanks go to Frank Baratta, who trained Dave when he first started and has ceaselessly provided the monthly Astro Quiz and Calendar, as well as the monthly Sky Chart and Calendar from Abrams Planetarium for inclusion in the newsletter each month. Frank, in his role as RVAS membership chairman, also produces the mailing labels for the newsletter each month. He has now done this for the club for well over a decade.

Dave would like to recognize Dave Thomas of Lynchburg, who took over the Mystery Object column from Dave some time ago and has faithfully provided the Mystery Object and write-up each month for quite some time now. Dave continues in this role.

John and Genevieve Goss have been among the most prolific contributors and deserve special recognition and thanks. Without fail, articles from the Gosses appear in the newsletter each month, sometimes anonymously. Genevieve's Local Group column has become a regular feature in the newsletter each month.

Thanks go to Kevin and Emily Hamilton, whose family folded, stapled, stamped, labeled, and mailed untold thousands of newsletters over a period of time when the number of mailed newsletters was much higher than it is currently.

Dave would also like to thank Mahesh Tailor, who provided a printer, the Microsoft Publisher software from which this newsletter is created, and other tips on newsletter production. Of course, Mahesh also dutifully converts the newsletter to PDF and posts it on the club's website each month.

Thanks also go to Michael Good, who has been a continuous source of articles and CCD images over the years Dave has served as editor.

Dave also expresses his sincere thanks to Paul Caffrey, Katherine Hix and all who have contributed to the newsletter over the past three years.

Dave also thanks his wife Laura for her loving support. Not only has she endured nights babysitting and time away from her husband's fellowship, but when the number of mailed newsletters was reduced to about 40 she took over the job from the Hamiltons of copying, folding, stapling, labeling, stamping, and mailing the newsletter.

Finally, as the newsletter is a direct reflection of the club, articles should be provided by the membership each month. The editor should not have to write articles! That is not his/her responsibility!

So please give your wholehearted support to Clark Thomas as he begins his new role as RVAS newsletter editor. His ability to enjoy and continue in the job, producing a quality newsletter each month, will depend chiefly on each of us club members to be prolific in support

Mystery Object

Can you identify the below object?

E-mail your guesses to Dave Thomas at thomasde-ka8inl @worldnet.att.net

Astro-Quiz

The star 25 Arietis is not exactly an attention getter. But it helps remind us that stars do move. In what way does it serve as a reminder?

Answer to Last Month's Astro-Quiz: Though we tend to do so, it's not true to think of the plane of earth's orbit as the plane of the solar system. The other bodies of the solar system revolve around the Sun only roughly in the same plane as earth. Actually, the plane of the solar system is defined by the total angular momentum of the solar system. This is known as the *invariant plane of the solar system*. The solar system's angular momentum is more a property of the planets than the Sun. Since Jupiter is the dominant planetary body, the plane of the solar system is nearly the same as its orbit.

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to the pursuit of observational and photographic activities. Meetings are held at 7:30 p.m. the third Monday of each month at Center in the Square Roanoke. Meetings are open to the public. Observing sessions are held one or two weekends a month at a dark-sky site. Yearly individual dues are $20.00 (Family membership: $25.00; Student membership: $10.00). For information, call the RVAS Message Line at 540-774-5651. Articles, quotes, etc. published in the newsletter do not necessarily reflect the views of the RVAS, its editor, officers, or individual members.

Officers/Executive Committee: Paul Caffrey, President (345-2847); Katherine Hix, Vice President (334-2443); Carol Mesimer, Secretary (334-1177); Lynn Slonaker, Treasurer (774-5695); Dennis Stevens, Executive Committee Member-At-Large (989-8801); Dave Godman, Immediate Past President (774-3337); Dave Reese, Newsletter Editor (366-8775, dereese@mindspring.com), Dave Thomas, Mystery Object columnist (thomasde-ka8inl@worldnet.att.net), RVAS Message Line: 540-774-5651, RVAS Web page: http://www.roavas.org

MARCH MEETING REVIEW

The RVAS Meets the Inflationary Big Bang

The March meeting of the RVAS brought descriptions of quite a few night sky wonders and a great talk by a long time member. There was something
for everyone!

Constellation Corner

The constellation menagerie is full of lions, birds, fish, reptiles, insects and people. Winter skies contain two familiar groupings, Canis Major and Canis Minor and these two dogs account for 1/2 of the canines in the heavens. The Spring sky harbors two more: Canes Venatici, the hunting dogs. Jack Horkheimer challenges you to find all 4 on an early
April evening.

The longest of the 88 constellations is Hydra which appears from late winter to early summer. Katherine Hix introduced her new "Constellation of the Month" feature by spotlighting Hydra with its numerous deep sky objects that the amateur can enjoy. M48, the missing Messier, is a large open cluster with at least 50 stars to the 13th magnitude. Globular clusters are not to be left out with M68 near the center of the constellation. The large spiral galaxy M83 is found midway along the constellation's southern boundary. If you appreciate multiple stars, Epsilon Hydrae will be well worth your effort. Its 3.8 and 4.7 magnitude components are separated by 2.7". Look for these targets on the next clear April night.

The western April skies contain winter favorites such as the open clusters M35, 36, 37, and 38. Leo with it galaxies M65 and M66 is reaching culmination while the great galaxy cluster in Virgo is rising. In his "What's Up," Paul Caffrey urged members to try their luck with these celestial offerings. Take advantage of warm clear April nights!

Dr. Frank Munley Presents the Inflationary Big Bang

Attendees were then asked to put on their thinking caps. Long time RVAS member Dr. Frank Munley of Roanoke College spoke on the Inflationary Big Bang Theory for the night's feature program. Dr. Munley began by giving a brief overview of the history of modern cosmology by touching on George Gamow's thoughts about the expansion of the universe. The easily confusing Big Bang theory was made clear by Dr. Munley's concise explanation of its key points. He described the importance of the theory's accounting of the hydrogen to helium ratio, the microwave background radiation, and the measured Hubble Constant. Difficulties were not ignored, either. For instance, in the "smoothness problem" Inflationary theory needs to explain why there are "lumps", ie. galaxies, in the observable universe. It is simply amazing what can be ascertained with current detector technology aboard orbiting spacecraft--from measuring 0.000001º variations in the cosmic background temperature to imaging the appearance of the universe over 10 billion years ago.

TriStar Report

By Katherine Hix

March 2003 came in like a lion, but undaunted, six RVAS members traveled to Jamestown, N.C. for the second annual TriStar (Triad Starfest). John Goss and Bill Jones (in John's words, "the cool people") traveled together, while Paul Caffrey drove the rest of us (by process of elimination, the "uncool people"): Matthew Manness, Clark Thomas and me. For the uninitiated, amateur astronomer gatherings are not public displays of coolness. It's pocket-protector city, so those of us who are uncool are also unrecognizable as such.

First up was Dr. Anthony Crider, who obtained his Ph.D. from Rice University and is now associate professor of physics at Elon University. Dr. Crider addressed the historical predictions of the end of the world and the possibilities of future cataclysmic events from astronomical causes, in a talk entitled "It's the End of the World as We Know It."

Historically, people have been afraid, sometimes rightfully so, of comets, meteors, eclipses, and other astronomical events which they did not understand. Sometimes their fears have been encouraged by those who appear to have knowledge about such events. Crider gave an example of a French astronomer and science fiction writer, Camille Flammerion, who incited fear of Halley's Comet during its appearance in 1910. He believed that the tail of the comet was made of poisonous gas and that it would kill those who encountered it.

To digress a bit, I did a brief Internet search on Flammerion; according to what I found, he founded the Astronomical Society of France, and appeared to be a prolific writer of astronomical material. I located a site that displayed the first pages of several chapters of a work entitled Le Fin du Monde (The End of the World). One of the chapters of this work was entitled "La Comete," and I asked my daughter to translate the first page of this chapter from the French. In "La Comete," Flammerion says:

> The foreign visitor arrived slowly from infinite depths. Rather than appearing suddenly, it has been observed more than once with large comets, whether when a long series of these stars arrive suddenly in view of the Earth after their passage around it, or when a long series of cloudy nights possibly illuminated by the moon prevents observations by those seeking to observe them, the floating vapor remained in telescopic spaces...

He hadn't gotten to the poisonous gas part, but I think he was working up to it.

Crider also made mention of the 1997 Heaven's Gate incident, when almost 50 people believed that if they committed suicide, they would be transported to a UFO that was behind Comet Hale-Bopp.

On the realistic side, there isn't much to fear from astronomical events during our lifetime. According to Crider, if a supernova occurs within 300 ly of Earth, there can be some damage to life, and evidence exists that such an event occurred approxi-

(Continued on page 4)

TriStar Report, continued

(Continued from page 3)
mately 2 million years ago during a supernova 130 ly away in the Scorpius-Centaurus region. At the time of that supernova, there was a clean extinction of some tropical sea life, and it is believed that this was caused by the UV radiation and wiping out of some ozone.

Crider also discussed gamma ray bursts (not really a threat) and people being hit by meteors, or the earth being hit by asteroids. He stated that according to periodicity of extinction theory, life is wiped out on earth every 26 million years, and that we have 10 million years left before we need to worry about it.

THE SMITHSONIAN COMES TO TOWN

The Local Group

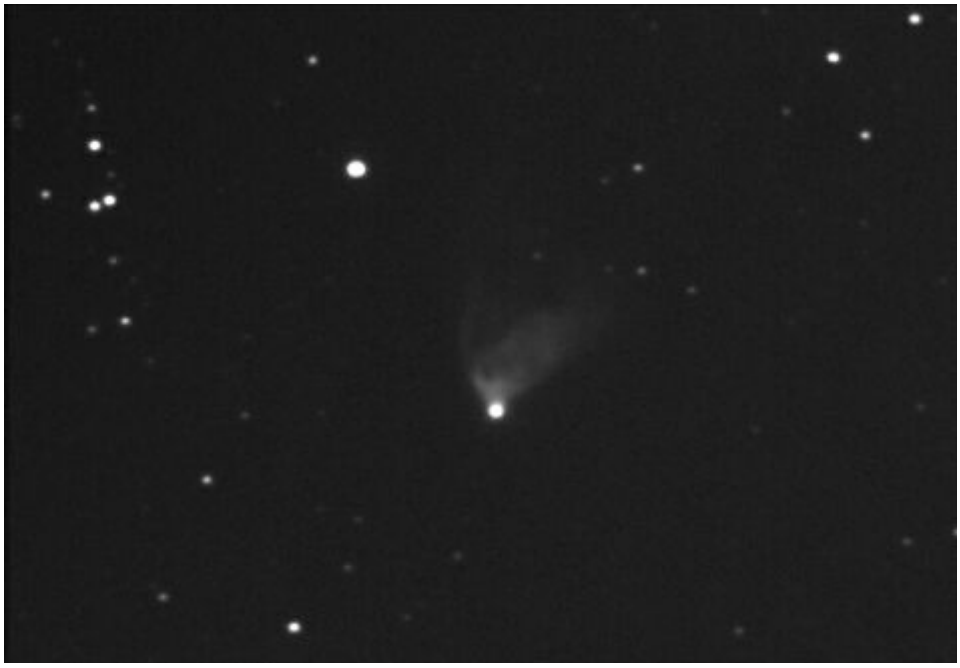
For those of us who grew up with Elroy Jetson zipping around in his jet backpack or those who played Buck Rogers with toy ray guns or even those who remember a time when cell phones were a novelty, the Salem Museum (www.salemmuseum.org) has an exhibit that might elicit a few nostalgic chuckles. Yesterday's Tomorrows: Past Visions of America's Future, a traveling exhibit from the Smithsonian Institution and the National Museum of American History, will continue at the museum through April 23. The exhibit, which is free and quick to view, gives visitors a chance to examine some of the technological predictions of the past 100 years. Some are amazingly close to reality and others are hilariously inaccurate! My favorite was a 1950 Popular Mechanics promise of housework accomplished by a simple hose-down, thanks to the remarkable plastics of the future.

Space exploration played a big role in these predictions. In keeping with the reality of actual achievements, the exhibit includes uniform patches from an earlier flight of the space shuttle Columbia. Plans show cars resembling rockets and cities whose transportation modes remind
viewers of the concession film trailer at the local cinemaplex!

The Salem Museum is located on East Main Street near Longwood Park. If you miss this exhibit (or if you live in Alleghany County), the exhibit will return to the area next Christmas at

MEMBER CCD IMAGING

Hubble's Variable Nebula, NGC 2261



Michael Good used his Meade 10" LX200 at f6.3 (1575mm focal length) to capture this image of Hubble's Variable Nebula in Monoceros. His CCD camera is an SBIG ST-237. The image is actually the result of forty-four 10-second images, taken yielding 7.33 minutes of exposure for luminance, but keeping only about 1 in every 5 images (the best) for the sharpest final product. Light Lucy-Richardson deconvolution was used to reduce/sharpen the Gaussian envelope around stars and nebular detail. The field of view is cropped from the small 10.26 x 7.86 arc min FOV given by the ST-237 at f6.3. The plate scale is just shy of 1" per pixel. Reference: http://heritage.stsci.

THE MESSIER LIST

Conquering the Virgo-Coma Region of Galaxies

Once you become interested in amateur astronomy, you'll quickly run across Charles Messier's list of 110 deep sky objects. In fact, many names were probably already familiar--the Crab Nebula (M1), the Andromeda Galaxy (M31), the Orion Nebula (M42/43), the Ring Nebula (M57) and perhaps the Hercules Cluster (M13). Our spring skies contain many galaxies in the Virgo-Coma Berenices region with 15 of them appearing on Messier's list. How do you go about finding and identifying them in an area so small? Galaxies are hard enough to hunt by themselves but with so many, including numerous non-Messier objects, how do you avoid becoming frustrated in the search?

As in most things, first things first.

1. A star map that show stars to the 7th magnitude (8th is even better) will make the effort much easier. The Cambridge Star Atlas or Sky Atlas 2000 are good choices.

2. At first glance, these galaxies reside in an apparently vacant stretch of the sky from Vindemiatrix (Epsilon Virginis) to Denebola (Beta Leonis). However, a closer look will reveal many 5th and 6th magnitude stars. An easy way to become familiar with this area is by carefully mapping it with a pair of low power and low aperture binoculars. Birding binocu-

lars (about 8x30) are more suitable than
common household binoculars (10x50) because they won't show an overabundance of confusing dim stars. Plot all the stars, compare them with the star map and then add the Messier galaxies. Two areas will stand out: 4 dim stars around Rho Virginis and 4 dim stars near 6 Coma Berenices. Rho and 6 Coma will be important guide stars.

These stars have been plotted in figure 1. Notice that the dimmers stars have not been designated by their common names, but by their magnitudes. The decimal has been left out to avoid con-

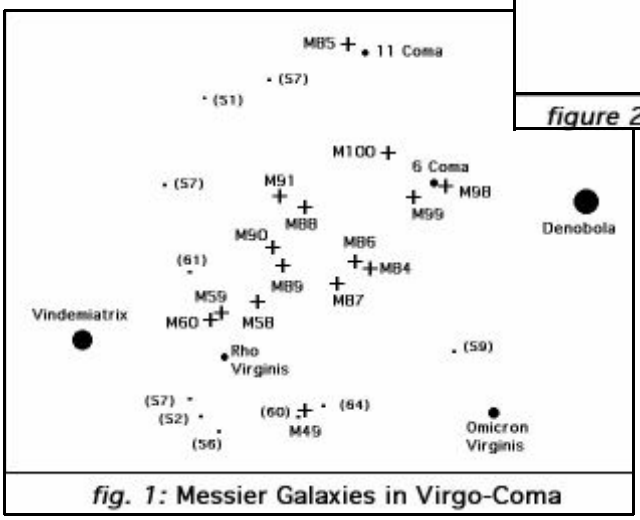


fig. 1: Messier Galaxies in Virgo-Coma

fusing it for a dim star.

3. Begin the search using a methodical pattern. Since the constellations drift across the sky in a westwardly direction, start with the galaxies M98, 99 and 100 because they will set first. Objects at low declinations spend less time each night in the sky than those at higher declinations. Therefore, if possible try working in a south to north direction.

4. Know the field of view of your finderscope and eyepieces. This will aid in triangulation and sweeping away from the guide stars to the target galaxy. When looking through your instruments, always know which ways are north and west. In most finderscopes, refractors, and reflectors, the image in the eyepiece is inverted. Therefore, north is "down" and west is "left". However, in a Schmidt-Cassegrain using a star diagonal, the view is a mirror image. In these scopes, north will
be "up" and west will be to the "left".

5. Using the two guide star regions, triangulate with your finder scope to the suspected galaxy location. For instance, to find M98 locate 6 Coma Berenices. Use your lowest power eyepiece and move to the

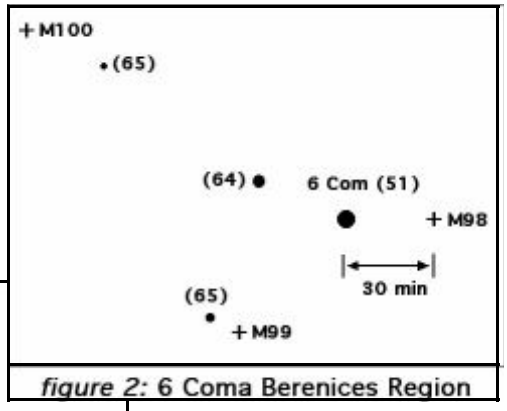


figure 2: 6 Coma Berenices Region

west about 1/2º. Bingo! Refer to figures 2 and 3 for galaxies near 6 Coma and Rho Virginis.

6. The bright galaxies M84, 86 and 87 can be seen directly in 8x50 finderscopes. Locate them by positioning your scope half way between Vindemiatrix and Denebola. This group of dim smudges will assist in finding M89 and M90. See Chart 1.

7. Because Messier catalogued the objects that were discovered first, his galaxies are generally the brightest ones. If you have several smudges in the field, the Messier galaxy is dominant. For instance, M87 is a bright galaxy at magnitude 9.7. Scopes of at least 8 inches may reveal 12.3 magnitude NGC 4478 and 13.1 magnitude NGC 4476 only 8 and 13 minutes to its southwest.

If pursued in a methodical manner, the galaxies in Virgo-Coma will fall one by one. Happy hunting!

Chart 1: Triangulation to the Galaxies

Galaxy	Suggested Search Method
M48	1/3 between stars 60 and 64

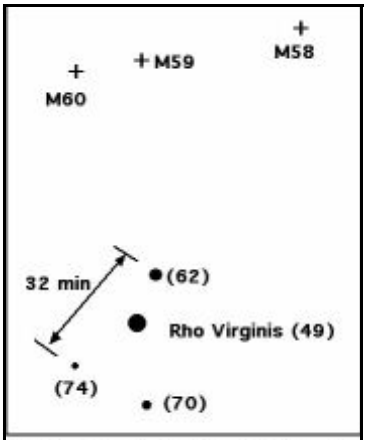


figure 3: Rho Virginis Region

M58	NW of Rho Virginis
M59	N of Rho
M60	N of Rho
M84	1/2 between Vindemiatrix and Denebola
M85	NE of 11 Coma
M86	1/2 between Vindemiatrix and Denebola

VALUABLE FORECASTING TOOL

Cahas Clear Sky Clock

The April 2003 issue of "Sky & Telescope" features an article about some Canadians who have come up with a really cool and accurate prediction system for astronomical viewing. I understand that the Canadian government has funded their computers, etc. Then another astronomer-programmer in Canada has made their maps more available to us with a unique pixelated chart for each hour of the day.

Best of all, Mr. Danko has come up with hundreds of highly localized clear skies clocks. Already he had one for Roanoke City and for Ferrum. So I emailed him, asked if he would do one for our Cahas Mountain Overlook -- and he did!

Go to http://cleardarksky.com/c/ChsMtnOvVAkey.html on the Web and bookmark this special site. It's going to be very helpful henceforth.

Society Calendar of Events and Activities for April 2003

APRIL MEETING: Monday, April 21st, 7:30 p.m., fifth floor meeting room, Center in the Square, Roanoke. Tonight is the club's Spring 2003 Social, including our annual astrophotography contest. Bring a snack to share and join us for a casual evening of food, fun and friends!

"MEMBERS ONLY" WEEKEND OBSERVING SESSIONS: Unless otherwise noted, observing sessions are held at Cahas Mountain Overlook, milepost 139 on the Blue Ridge Parkway.

- **Saturday, 19th.** Sunset is at 7:58 p.m. Astronomical twilight ends at 9:32 p.m. The Moon rises at 11:51 p.m. and 11:56 p.m., respectively. (No Friday session planned – only one hour from twilight's end to moonrise.)

- **Friday and Saturday, 25th and 26th.** Sunset is at 8:05 p.m. Astronomical twilight ends at 9:41 p.m. The Moon sets at 2:39 and 3:40 p. m., respectively.

- **May Sessions:** 2nd and 3rd; 23rd and 24th; and 30th and 31st.

FRANKLIN CO. PARKS DEPT./RVAS PUBLIC STARGAZE: The next session is Saturday, May 31st, 9:15 p.m., Franklin Co. Recreational Park. Free sessions for Franklin Co. residents. RVAS members are welcome to participate and should call the Message Line at 540-774-5651 to request details.

ROANOKE CITY PARKS DEPT./RVAS PUBLIC STARGAZE: Saturday, April 26th, 9:00 p.m., Cahas Overlook, milepost 139, Blue Ridge Parkway. Free. Call 540-853-2236 to register. (Next month: May 24th, 9:30 p.m., Cahas Overlook.)

RVAS EXECUTIVE COMMITTEE MEETING: Meetings are now held the first Tuesday of each month; contact one of the officers regarding specific location and time information.

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