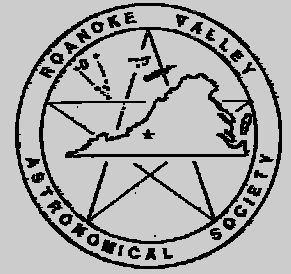




ROANOKE VALLEY ASTRONOMICAL SOCIETY



NEWS ABOUT AMATEUR ASTRONOMY IN SOUTHWESTERN VIRGINIA

<http://www.roavas.org>

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February 2002

2002 ASTRONOMICAL LEAGUE CONVENTION

Head West, Young Astronomer!

Ah, winter! The perfect time to plan your summer vacation...so grab the ol' Rand McNally, fire up the computer, and consider this: Salt Lake City, the Olympic Village from the 2002 Winter Games, some of our nation's most impressive scenery---ALCON 2002!

The 2002 Astronomical League convention (ALCON) will be held from July 31 to August 3 in Utah. The planning and preparation already completed by the host organization, the Salt Lake Astronomical Society, is astounding and should guarantee an event that will delight both amateur and professional astronomers and their families and guests.

As with most vacations to distant destinations, travel will probably be the most expensive item. Salt Lake City is 2000+ miles from Roanoke requiring air travel for those hoping to avoid a replay of National Lampoon's Vacation! Connecting flights are available from Roanoke (ROA), Greensboro (GSO), Charlotte (CLT), Raleigh (RDU) and Dulles (IAD), so start watching your favorite travel site (such as Travelocity, Expedia, etc.) for a bargain. Currently, most discounted flights must be completed by June 7, but that should soon be expanded to include summer dates. Plan to check with Southwest Airlines or America West--2 airlines that have recently offered great rates to western destinations.

Lodging at ALCON will be a deal, as rooms will be available at the Olympic Village on the campus of University of Utah. The college food courts should

provide some quick and economical choices for daily meals, as you save your food cravings for the Western Barbecue at Pioneer Heritage Park and the Gala Awards Banquet at the University Ballroom.

ALCON 2002 already boasts an impressive list of speakers including Nagin Cox from JPL, whom several RVAS members heard discuss her work on the Galileo mission when she spoke at Southern Star. Workshops in topics such as CCD imaging, observing and telescope technology will be provided, but even more enticing is the list of field trips: a star party sponsored by the Ogden Astronomical Society on Antelope Island (located in Great Salt Lake!), the SPOC II Star Party (Stansbury Park Observing Complex II) sponsored by the Salt Lake Astronomical Society offering the use of their new 37 inch telescope, a trip to Kennecott Copper's Bingham Canyon Mine (the largest man-made excavation in the world and a national historical site), a tour of the Hill AFB Aerospace Museum, a visit to the Golden Spike NHS where on 5/10/1869 the Union Pacific and Central Pacific railroads met to complete the nation's first transcontinental railroad, and a tour of Evans & Sutherland, makers of high-end computer graphics and planetarium programs.

The final persuasion for attending ALCON 2002 comes in perusing a list of national parks within driving distance of Salt Lake City: Zion, Bryce Canyon, Arches, Canyonlands, Capitol Reef and (in nearby Arizona) the Grand Canyon. Throw in a few national monuments such as Rainbow Bridge, Timpanagos Cave, Cedar Breaks and Natural Bridges

and the problem won't be deciding if you are going to Utah, but making yourself return home!

RVAS members Lynn Slonaker, Vince Talley and Roger Pommeranke can provide you with first-hand experiences of their visits to Utah. If club members plan to attend ALCON 2002, perhaps Lynn can be persuaded to share some of his slides of park scenery. He also is privy to inside information about a back road out of Moab at Arches National Park! Vince Talley started to tell me of his last trip to Utah during the time of Comet Hyakutake, but hesitated when he realized that there was a story-within-the-story! Roger Pommeranke was busy skiing in Utah and hadn't quite mastered observing and skiing at the same time!

Don't forget: as members of RVAS, you are also members of the Astronomical League. So, check out the web site at <http://www.alcon2002.org> and get ready to attend your convention!

The RVAS would like to thank Genevieve Goss for providing this information on one of amateur astronomy's premier events.

AL Space Station Amateur Telescope

The Astronomical League is designing and constructing a 12-inch SCT to be placed on the space station in the near future. Funding has been furnished by NASA and corporate America. The initial prototype is almost built and will be located in the Arizona desert. First light is scheduled for Feb. 2. John Goss is on the committee and was asked to consider this: Believe it or not, one problem the

(Continued on page 3)

A MEETING TO REMEMBER

Cold Nights, Hot Programs: January RVAS Meeting

January is the month of post holiday and mid winter blues. The weather is not conducive to comfortable observing and amateur astronomers yearn for better days (and nights). The January RVAS meeting answered this predicament with an evening packed with informative and thought provoking presentations.

Right after a January evening twilight ends, the winter triangle (Rigel, Sirius and Procyon) can be seen rising in the southeast, while remnants of last summer, the summer triangle can be found setting in the northwest. Jack Horkheimer set this picture in one of his fascinating "Star Gazer" programs to illustrate that the stars of one season can be found on the fringes of another. In the early January morning, the same summer triangle can be seen rising in the northeast giving us a preview of the stars of the

coming warmer months. January is the only month when the summer triangle can be glimpsed just after sunset and just before sunrise while the winter triangle shines above all night long.

Even though January night skies can be very cold, they can be very clear. Paul Caffrey listed some highlights for binocular and telescope users: Double Cluster, M31, the Pleiades, the Beehive, Jupiter, and Saturn. Isaac Campbell announced an observing challenge: Find and describe NGC 2261, Hubble's Variable Nebula in Monoceros. It can be seen with difficulty through binoculars and is right next to the much easier NGC 2264, the Christmas Tree Cluster. Report your impressions to Isaac. Good Hunting!

Steven Hawking Please Meet Alley Oop...

As always, Bob Smith, held the audience's attention with his imaginary con-

versation, "Hawking Meets Alley Oop." While Mr. Oop sat in the corner, Steven Hawking fired off a barrage of probing questions. "Alley, are you moving?" "Why no, of course not. Why do you need to ask?" "Ah, but you are. You are rotating around the earth, which is revolving around the sun, which in turn is speeding through the galaxy." More questions show that everything is made of incomprehensibly small particles called fermions and that the typical forces we encounter daily are composed of bosons. "Alley, can you define time without using the concept of motion?" Alley was quiet. The whole room was quiet. So, time is intimately related to motion which is relative to separate observers. With all the scientific knowledge there is today, the conversation between Mr. Hawking and Mr. Oop seems a little one sided. We all knew the answers, well at least most of them. But imagine Mr. Hawking taking the conversation even fur-

(Continued on page 5)

Mystery Object

Can you identify the below object?



Astro-Quiz

How many constellations are completely invisible from our area?

Answer to Last Month's Astro-Quiz: Which of the 88 constellations is most nearly average in terms of the area of the celestial sphere enclosed within its borders? Reaching back into deep memory, you may recall that the circumference of a circle is $2\pi r$, which equals 360° , and the area of a sphere is $4\pi r^2$. So, $r = 360^\circ/2\pi$, and by substituting, the area of a sphere equals $4\pi(360^\circ/2\pi)^2$, or about 41,253 square degrees. Thus, the average of the 88 constellations is $41,253/88$, or nearly 469 square degrees. This is just about the area within the borders of the constellation Phoenix. This constellation doesn't fully rise above the horizon at our latitudes, but Sculptor and Canes Venatici, which are slightly larger and smaller, respectively, do. Check them out on a map showing constellation borders and then take a look at them in the night sky.

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 \$15.00 (Family membership: \$22.50; Student membership: \$7.50). 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: Dave Godman, President (774-3337); Paul Caffrey, Vice President (345-2847); Carol Mesimer, Secretary (334-1177); Lynn Slonaker, Treasurer (774-5695); Bill Jones, Executive Committee Member-At-Large (962-7786); John Goss, Immediate Past President (966-4606); Dave Reese, Newsletter Editor (366-8775, dereese@mindspring.com) RVAS Message Line: 540-774-5651, RVAS Web page: <http://www.roavas.org>

ANNUAL OBSERVING CHALLENGE

CAS Messier Marathon

The Charlottesville Astronomical Society (<http://www.cvillastro.org/>) would like to invite you to the first annual Messier Marathon. This event will start as soon as it gets dark (around 6:30) on March 15 (rain date is March 16). The site (Susan Bender's house) is located south of Charlottesville off of Rt 29. Tents can be set up on the site.

Direction to Susan Benders house (3129 Old Lynchburg Road, North Garden):

At the intersection of Rt 29 and I-64 continue on 29 south toward Lynchburg. About 5 miles beyond the I-64/Rt29 intersection is a blinking yellow curve sign. Turn left here, onto Rt. 708. Go about 2.9 miles (carefully, it's a twisty road.) Take the first right, onto

Last Month's Mystery Object



NGC 1300 — Barred Spiral Galaxy in Eridanus (30' x 30')

Congratulations go to Dave Thomas of Lynchburg once again for correctly identifying January's mystery object, NGC 1300 in Eridanus. Because of his obvious expertise in identifying the mystery object each month for months on end, the editor decided it was high time to ask Dave to take over the newsletter's Mystery Object feature. Dave has agreed, so beginning in March Dave will be taking charge of the monthly Mystery Object. Thank you, Dave! Beginning with the March

For Sale

From the RVAS: Tele Vue Paracorr Coma Corrector: \$100 + postage, if any. Contact the editor.

Meade LX 6 8" Schmidt-Cassegrain telescope: Comes with two eyepieces 15mm and 20mm, an Orion dew shield, Lumicon NGC Sky Vector manual go-to computer (digital encoders), Telrad finder. The scope has been well used but optically it is sound. I am only selling it to get a telescope that is bigger, much bigger. I will show anyone who buys it how to set it up and use it in the field. I have all manuals and am asking \$1200 negotiable. —Isaac Campbell, tel. 540-890-2633, e-mail: lacerta0@aol.com

Discovery 10" f/4.5 DHQ Dobsonian telescope with Telrad and two eyepieces. List price is \$599.00 plus \$69.00 shipping, will sell for \$500.00. —Bill Keller, tel. 540-721-5633, e-mail: bkia1@aol.com

Rt. 631, Old Lynchburg Road. There's a small brick church on the right where you turn. Go 1.9 miles. Susan's house is on the left. There's a gray mailbox with the number (3129). Park along the driveway or on the grass.

AL SPACE STATION AMATEUR TELESCOPE, CONTINUED FROM PAGE 1

Astronomical League is having a lack of observing proposals! Do you have any ideas or pet projects suitable for a 12-inch robotically controlled scope under the dark skies of Arizona? If so, please talk with John about it.

Mystery Object, members desiring to guess should e-mail Dave at thomasdeka8inl@worldnet.att.net or call him in Lynchburg at 434-237-5135.

NGC 1300 is one of the most spectacular examples of a barred spiral galaxy—and for good reason, the bar in the central portion of this galaxy is larger than the diameter of our own galaxy at an incredible length of 150,000 light years across. The galaxy is approximately 75 million light years away. Allan Sandage referred to NGC 1300 in 1961 as the prototype of the pure SBb(s) spiral, using Edwin Hubble's galaxy classification system.

NGC 1300 is one of the editor's favorites and a beautifully symmetrical barred-spiral galaxy perfectly placed for amateurs in the early winter, when it is on the meridian in the mid-evening just to the west and south of Orion. Visually a challenging object, a larger telescope is in order, and dark, transparent skies are obligatory. The photograph shown is precisely 30 x 30 arcminutes (1/2 degree) across, or the size of the full moon. This is also the size of the smallest Telrad circle and approximately the field of view in a 12 or 13mm Nagler eyepiece (167X and 154X, respectively) in the editor's and the Museum of Southwestern Virginia's 17.5 inch Dobsonian telescopes. However, any telescope with a focal length of 2000mm (such as the aforementioned telescope or the Celestron or Meade 8 inch SCT) and a 12 or 13mm eyepiece would yield the same image size for this galaxy. Burnham's Celestial Handbook describes it as type SBb; magnitude 11.3; size 6.0 x 3.2 arcminutes, considerably bright, very large, very much elongated, suddenly very much brighter in the middle. An observer with a 16.5 inch reflector from the Webb Society Deep-Sky Observer's Handbook describes it as "Greatly elongated N.p., S.f. with faint extensions; x176 a nucleus is visible in nebulosity which is oval in shape." On January 4, 2002, the editor observed this object at Cahas Mountain overlook on the Blue Ridge Parkway through his 17.5" Dobsonian under less than ideal skies. Averted vision was needed, no spiral definition was seen, but the galaxy did appear as oval in shape and did have a brighter nucleus. The editor encourages other RVAS Deep-Sky observers to hunt this object down with their own telescopes and submit their observations!

CCD IMAGING

Imaging the Crab Nebula



In the past couple of months our own Michael Good used his 8-inch Meade LX-50 Schmidt Cassegrain telescope and SBIG ST-237 CCD camera to get an unfiltered "luminosity" image of the Crab Nebula, Messier 1. The telescope normally operates at f/10, but an SBIG focal reducer (telecompressor) lens was used to bring the focal ratio to f/3.75. He e-mailed his results to a number of club members. Although Michael was not really pleased with the resulting image, the editor was impressed with his work and thought it might interest club members to see it and to understand some of the details and trials that lie behind creating such an image, especially with less than ideal equipment. Michael also offered his comments on the structure of the Crab. Although the image shown is unfiltered, taking additional separate images in red, green, and blue light best captures these different structures.

The following are excerpts of Michael's conversation with the editor through e-mail:

Michael:

I fought (as usual) my RA drive axis to eek out this composite shot of M1 on Dec 21. Oblong stars and very few "spikes" visible, but I'm not giving up on better results in the future!

Dave:

That is very nice image! Good job, Michael. Thanks for sending it. When you said composite, does that mean you took several shots and combined it into one image with software? (CCDSOFT?) Can you tell me how long your individual exposures were?

Michael:

Yes - composite. My mount has no PEC (Periodic Error Correction): I am limited to 10 or 15 second exposures due to INCREDIBLE #%!^~@ mount drive errors; too slow, too fast, too slow, too fast. Should be a 2 or 3 minute periodic range, but there may be a problem with my RA motor starting to fail (I watched it in action - turns 360 deg and stops, then 360 deg and stops... it IS a stepper motor, but should not be-

have that way).

Most (normal) decent mounts will allow 30sec to 1 minute sub-exposures (for MUCH improved signal to noise ratio).

For the Crab, I fought over 2 hours, taking little composites of 60x10 seconds, but before reaching 60 exposures, it would "kick out" due to too much drive error, leaving me a pathetic image of say only 2 minutes exposure. In CCDSOFT, I took all these pathetic images, in some case not even knowing the actual exposure time, including one with noticeable RA drift (oops), and combined them all. CCD work is simply counting photons, period. EVERY image can be separately combined with other images, even over multiple nights. Some people will get a luminosity image (no filter), and then go back for R,G,B imagery on other nights. With my mount, I am REALLY constrained. I need a separate guider. I bought a cheap Apogee 80mm guidescope, and Paul Caffrey helped get a Quickcam to be an auto-guider, but it is not a very sensitive chip (uncooled), and without a barlow (further reducing sensitivity per increased focal ratio) the guider is operating at about the same f/ratio as the main scope (should be double, for proper drive corrections). Also, it is a heavy refractor for the 8" mount, screwing up the balance, so I took it all off and have gone BACK to using "Track and Accumulate" - a patented overlay technology where the CCDOPS software (from SBIG) takes little exposures, and registers the star image for you, plus moving the scope BACK to a chosen guide star. Then I use CCDSOFT for "building" final images.

Some day I hope to have a REAL auto-guider, maybe by buying the ST-7 CCD, which has a second CCD chip for guiding built in. THEN I can take a series of 10 minute exposures, only limited by skyglow, and add THOSE together. After several nights of images, you can get to limiting magnitudes equal to Palomar 200" on film, but just using an 8"

telescope with a CCD. Amazing technology.

I sure would like to get a night of RED light exposures, so I can capture the famous crab nebula "spikes", which mainly show up as ionized hydrogen emissions on the shock wave bowfronts. Then we can put both the unfiltered (luminosity) and filtered (R, or G, or B) imagery side-by-side for comparison of the structure visible.

Michael has recently ordered the Meade LXD-55 10" Schmidt-Newtonian, with a 40" focal length for wide field imagery. Perhaps this scope, along with continued patience and fortitude, will help him obtain the results he seeks.

CONTRIBUTE!

To the RVAS (YOUR!) newsletter! Share news, observations and other items of astronomical interest with the membership. Needed by the 20th of the month. E-mail preferred, but hand or type-written, xeroxed, or floppy disk materials also accepted, or call the newsletter editor.

SOCIETY BUSINESS

Member Updates

Mahesh Tailor, our webmaster, has a new e-mail address. It is mtailor2@cox.net.

Dave Thomas of Lynchburg has a new area code. His telephone number is now 434-237-5135. Also, as mentioned in the Last Month's Mystery Object column, Dave has graciously accepted the duty beginning in March of managing the newsletter's Mystery Object feature.

Also, as most already know, our web site address has changed. It is now <http://www.roavas.org>.

January Meeting Program, Continued

(Continued from page 2)

ther trying to describe Black Holes, Dark Matter and Space-Time. Things get "fuzzy" really fast. Ultimately, Mr. Hawking concludes by describing String Theory to Mr. Oop and the audience. The make up of the universe, according to Mr. Hawking, a.k.a. Bob Smith, is simply an assembly of infinitesimally small vibrating strings of different shapes and frequencies. Yep.

The Biggest Telescope in the World-1840s Style

Today 3 meter telescopes are quite common, at least for the professionals! But 100 years ago, the largest telescope by far was known as the "Leviathan of Parsonstown." RVAS Vice-President Paul Caffrey was fortunate enough to visit his homeland of Ireland last summer. Once he was there, he thought "Why not visit the greatest astronomical site in the country?" Off to Birr Castle he went with family in tow. Paul shared some of the history behind this optical giant. Built and designed in the 1840s by the 3rd Earl of Ross, the telescope easily became the largest in the world.

William Herschel built a 48 inch telescope in 1787 but he found it cumbersome and didn't use it as frequently as

some would think. Lord Ross wanted an instrument that would resolve those faint fuzzies that we amateurs like to track down today. He believed a much larger telescope was needed and the 72-inch Leviathan was conceived. When finished, this Newtonian design had a 4 ton mirror made of speculum metal (essentially bronze which is a solution of copper and tin). After polishing, which was required every 3 months or so, the reflectivity was about 65%. Compare that with today's mirrors which have a reflectivity in the high 90s! Everything connected with this telescope is huge. Its mount consists of heavy duty scaffolding supported by two 50 foot high stone walls. Because of its size, an equatorial mount was out of the question and the 54 foot long tube assembly ended up in a meridian alt-az configuration.

What could be seen with this biggest of all beasts? Its major mark in history was that it is the first telescope to discern the spiral nature of one of Messier's famous nebulae--M51, the Whirlpool Galaxy. During the few nights of superb seeing each year, unequalled views were obtained for M42, M27, M1, M57 and M97.

By the late 1800s, the telescope had

fallen into disuse and eventual disrepair. As with other landed gentry, the future earls were not as interested in the night sky as the 3rd Earl of Ross and, as a result, funding for upkeep and maintenance went for other concerns. During the 1980s, Ireland began a program of historical preservation and the largest telescope of an earlier era was saved from complete decay. Today, it is a tourist destination two hours from Dublin. Next time you're in the area, stop on by, then give us an update on the "Leviathan of Parsonstown!"

FEBRUARY MEETING PROGRAM

"The Moon with a View"

On February 18, our next regularly scheduled RVAS meeting, our President Dave Godman will be presenting a program centered on our satellite, the moon.

What makes this program unique is that Dave will be offering perspectives on the moon which were gained not from ground-based observations but by our astronauts during the Mercury, Gemini, and Apollo space missions. Included will be photographs with commentary by the astronauts during their journeys to and from the moon and during the lunar landings themselves. It will be an evening you will surely not want to miss.

Society Calendar of Events and Activities for February 2002

FEBRUARY MEETING: Monday, February 18th, 7:30 p.m., fifth floor meeting room, Center In The Square, Roanoke. The evening's featured program is entitled "The Moon with a View" and will be presented by RVAS President Dave Godman.

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

-- **Friday and Saturday, 1st and 2nd.** Sunset is at 5:45 p.m. Astronomical twilight ends at 7:15 p.m. The Moon rises at 10:21 p.m. and 11:30 p.m., respectively.

-- **Friday and Saturday, 8th and 9th.** Sunset is at 5:53 p.m. Astronomical twilight ends at 7:21 p.m. The Moon sets at 2:30 and 3:25 p.m., respectively.

-- **March Sessions:** 8th and 9th; 15th and 16th.

FRANKLIN CO. PARKS DEPT./RVAS PUBLIC STARGAZE: The next session is planned for March 9th, 6:45 p.m. at the Franklin Co. Recreational Park. Free for Franklin Co. residents. RVAS members welcome to participate.

ROANOKE PARKS DEPT./RVAS PUBLIC STARGAZE: Saturday, February 9th, 6:30 p.m., Cahas Overlook, milepost 139, Blue Ridge Parkway. Free. Call 540-853-2236 to register. (Next month: March 16th, 6:30 p.m., Fallon Park.)

RVAS EXECUTIVE COMMITTEE MEETING: No meeting information is available at this time.

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