



ROANOKE VALLEY ASTRONOMICAL SOCIETY



NEWS ABOUT AMATEUR ASTRONOMY
IN SOUTHWESTERN VIRGINIA

<http://www.roavas.org>

Vol. 18 No. 10

October 2002

LOTS OF FOOD, LOTS OF OBSERVING

Tropical Storm Isidore Clears Way for Picnic

The question all week was “Will it be rain, shine or just clouds on Saturday?” Each day the forecast changed. Our president, Paul Caffrey was worried that we would have an unwanted and uninvited guest with the name of Isidore. When will he arrive and when will he leave? Well, he left on Friday after giving the Roanoke area much needed rain. Saturday turned out to be one fine day--clear and pleasantly warm!

RVAS picnics always have plenty of food and this one was no different. Grill duty was assigned to Paul Caffrey and Lynn Slonaker who cooked up bunches of great hamburgers and hot dogs. Trays of food were positioned just right on a long row of picnic tables: pasta salads, potato salads, baked beans, crisp vegetables and, of course, a mouth watering array of deserts. This year 36 picnic goers helped themselves to this feast.

Door prizes held center stage directly after dinner. Members of the younger set were treated to “planet earth” balls, nifty earth erasers, and space stickers. Books and toys were presented to some lucky ticket holders. Every one of these kids came away a winner!

Next came opportunities for the adults in the crowd. In honor of Tropical Storm Isidore, Dave Thomas, brought complimentary rain gauges! Members Vince Talley, Carol Mesimer and Paul Caffrey all donated books, posters, or shirts for the occasion. All the winners greatly appreciate your generosity! Astronomy Magazine, Sky and Telescope and the RVAS provided

books and calendars for a few fortunate participants. The Grand Prize of the evening was an 8.8mm Ultra-Wide Angle eyepiece donated by Meade Instruments. A very surprised Genevieve Goss won!

Telescope observing began long before dinner began. Paul Caffrey and Dave Thomas gave others the opportunity to closely examine the sun. But once the sun sank below the horizon, the solar filters came off and the scopes were aimed at the heavens. As an extra treat, and precisely at the predicted time of 7:53, the International Space Station passed directly overhead shining at -1 magnitude.

lining the observation field were ten scopes, giving great views of lots of different objects. Clark Thomas has jumped into the Messier list knocking off 6 items including M11 and M71 along with Herschel’s most famous find, Uranus. The faint glow from the south end of the field was from the setup of Mike Good. His main quarry for the evening was imaging the Trifid Nebula, M20. Bob Young and Matt Maness found that the sky was clear enough and dark enough for sweeping photographic views of the southern Milky Way. Hopefully, we’ll see their efforts at an

upcoming club meeting. John Goss concentrated on finding the obscure object at the beginning of Dryer’s famous compilation: NGC 0001. This small 13th magnitude galaxy near Alpha Andromedae was elusive indeed. Ooohs and ahhs could be heard coming from the direction of Frank Baratta’s 15 inch Dobsonian. M13 always presents a stunning view! One of Frank’s



No one came away hungry.

favorites, the Owl (or ET) Cluster, found in the northeast, was a pretty splash of stars.

Dew was the main worry of the evening. The high humidity and large degree of radiative cooling gave the perfect formula for early dew formation. Dew shields and dew zappers were a necessity for all SCTs. In the end, everyone had damp sweatshirts and star charts. In this case, that’s a sign of a successful observing run! Promptly at 10 pm, scattered clouds began moving across the skies

Mystery Object

Can you identify this object?

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



Last Month's Mystery Object

The September Mystery Object is NGC 6925 in Microscopium. NGC 6925 is a Magnitude 11.3 spiral galaxy at Dec. - 31 degrees 59'. The galaxy is 4.7' x 1.3' but appears slightly smaller in amateur scopes. The core is bright. The spiral arms are just visible at higher magnifications.

Dave Thomas



Notices

- ☛ Mid-Atlantic Star Party: October 29 – November 4. Robbins, NC. See the website for details: www.masp.org.
- ☛ Fan Mountain Observing: October 12. With the Charlottesville Astronomical Society. Contact Paul Caffrey for details.
- ☛ VAAS 2002: October 5. Randolph-Macon College, Ashland, VA. See Richmond Astronomical Society website for details: www.richastro.org.

October Meeting of the RVAS

One of our club members has been very busy this summer. He has re-searched extragalactic globular clusters, looked through giant telescopes in the southwest, and accepted the Jack Horkheimer Award for Exceptional Service by a Young Astronomer.

Please mark your calendars for our October 21st meeting and join us for a lecture by Isaac Campbell on all these exceptional activities!

Web-Link

An excellent web site outlining deep sky object as well as other items of astronomical interest can be found at <http://www.seds.org>. Check out the planetarium software under the SEDS Member Bill Arnett's page.

Clark Thomas

Astro-Quiz

This month's question is posed by John and Genevieve Goss. Suppose you lived on a planet orbiting a star in the Andromeda Galaxy, M31, and looked up on a clear night to see the Milky Way Galaxy. Would the Milky Way be seen face-on, edge-on or somewhere in between?

Answer to Last Month's Astro-Quiz: For many, meteorites are objects of curiosity, and the earliest recovered ones are lost in the fog of mythology. A number of religious texts speak of stones from heaven, which sometimes arrive at opportune moments to smite the enemies of the authors of the texts. But at least one recovered meteorite has been an enduring object of reverence since antiquity. This sacred meteorite survives as the Ka'aba, the holy black stone in Mecca, revered by Islam as a relic from the time of the Patriarchs.

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. 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); John Goss, Past President (966-4606); Dave Reese, Newsletter Editor (366-8775, dereese@mindspring.com), Dave Thomas, Mystery Object columnist (thomasde-ka8inl@worldnet.att.net),

The Local Group

The weekend of September 6 proved ideal for observing, drawing many RVAS members to the Cahas overlook on the Blue Ridge Parkway. At least 15 observers were present on Friday evening, including **Matthew Maness, Clark Thomas, Bob Young, Frank Baratta, Paul Caffrey, Mark Hodges** (back in the saddle again), **Isaac Campbell** (did RVAS members see the write-up on Isaac's Horkheimer Award in the Roanoke Times Neighbors section?), **Michael Good** (tweaking and tinkering his LXD55 GOTO!), **Katherine Hix, Bob Young, Dave Reese** (logging in a few observing hours before fatherhood), and several non-member observers including one shorts-clad observer who discovered how chilly the Cahas site can be, even in September!

The next evening around 30 visitors gathered for **Frank's** Parks Department observing session. They witnessed an awesome treat in the form of a beautiful aurora (described by Frank as one of the best he's ever seen) PLUS a bolide. Those assembled for his Skywatch wondered at his ability to summon such a display! **John & Genevieve Goss** arrived later to observe and joined **Dave Godman** (with daughter Amy and friend), **Vince St. Angelo, David Thaler, Mark Hodges, Frank Baratta.**

The clear skies of autumn and the earlier sunset are a boon to amateur astronomers. Plan on getting out, even with binoculars, this month.

Genevieve Goss

An Observing Challenge: No Telescope Required!

Other than the movements of the planets, not much changes in the night sky. Or so many amateurs think! But if you look closely, a few stars noticeably appear differently each night. We have all heard of variable stars, but how many of us actually have taken the time and effort to examine them closely? Sometimes their changes are subtle and slow, but keen-eyed observers can indeed spot their variability.

Autumn skies provide several well-known bright variables for study. Delta Cepheus is the proto-type Cepheid variable so critical as a rung in the cosmic distance scale. This yellow giant pulsating star has a cycle of 5 days and can be easily seen varying from 3.5 to 4.4 magnitude. The Delta star can be found at lower left-hand corner of the "house" of Cepheus.

Another fall variable is the famous pulsating red giant, Mira or Omicron Ceti. It has a very long period of about 332 days and ranges between an occasional 2.0 and a telescope challenging 10.1 magnitude.

One of the most examined variables must be Beta Persei, also known as Algol, the Demon Star. This eclipsing double star has a period of slightly less than 3 days. Its brightness is always between 2.1 and 3.4.

A Convenient Variable for Leisurely Observations

There is another eclipsing variable, one that is not as well known as Algol and one that is more suitable for convenient study. Beta Lyrae is the southwestern star in the parallelogram portion of Lyra. Beta varies between 3.3 and 4.3 magnitude in almost a 13 day cycle which makes it a good choice for observing over a two week period. The difficulty with observing Algol is that its short period hampers examination during only early evening hours. Readings must be taken several times each night to generate a meaningful section of its light curve. Beta Lyrae, on the other hand, has a cycle long enough that observations can be taken at about the same time every night for 2 weeks. Of course, the weather must cooperate for this length of time. Fall is the best time of year!

The Beta Lyrae system contains several stars. The "A" component is itself an extremely close double that acts also as an eclipsing variable with a magnitude range of 3.3 to 4.3. Both stars are giants when compared against the sun, with A1 having 19 times the sun's diameter and A2 12 times. These two massive stars orbit their common center of gravity in a 12.9 day period. The orbital plane just happens to lie flat as seen from the earth. This means

that the two stars will eclipse/transit one another causing a noticeable variability in brightness.

In Beta's orbital cycle, there will be two differing minima and two maxima of the same brightness. Please refer to figure 1. As the dimmer A2 passes in front of the brighter A1, the brightness of the system will decrease causing the primary minimum. At this time, the "visible" area of A1 will be replaced by the less light emitting A2. As A2's transit ends, full brightness of the system, as seen on earth, will be restored. When A2 swings behind A1, the brightness again will drop although by not as much as before. At the secondary minimum, the brighter A1 will block the dimmer light of A2. The system again will attain maximum brightness when the eclipse of A2 by A1 ends.

For years astrophysicists were puzzled by the stars of Beta. The secondary was dimmer than theories predicted. Finally a model was suggested which explained this mystery. The Beta system is actually two stars in near contact. "A1", the larger and brighter of the two, is losing some of its mass to "A2". Plasma from A is pulled into an accretion disk around "A2". This disk obscures A2's light, therefore making it darker than predicted.

(cont'd on page 4)

An Observing Challenge: No Telescope Required! (cont'd)

An Easy Method for Measuring Variability

The above brightness variation can be viewed during consecutive clear nights in October. How to determine the magnitude each night of Beta? David Levy, in his book "Observing Variable Stars," outlines an easy and effective method for establishing the brightness of Beta. Simply compare its brightness with two nearby reference stars, in this case Gamma and Zeta Lyrae. Gamma is the southeastern star in Lyra's parallelogram and Zeta is its

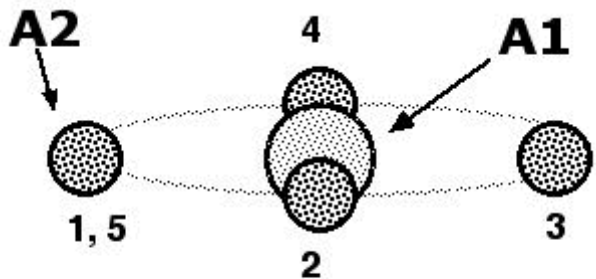
northwestern star which can be seen in figure 2.

Gamma Lyrae maintains a constant light of 3.3 magnitude while Zeta shines at 4.3. If Beta is at a similar brightness as Gamma, assign it a value of 1. If it is as dim as Zeta, then give it a 5. When it is between those two magnitudes, give it a proportional value. If you note the time and day of your observations, you can generate a brightness diagram similar to the one in figure 3. These estimates easily can be done with the unaided eye or with

binoculars. Improved observations can be made by sighting through a used paper towel tube. The tube will help isolate and enhance Beta and its reference stars.

Don't take anyone's word for it, explore the night sky! During a string of October's cool clear nights, go outside and take the time to look closely at Beta Lyrae. Estimate its brightness and plot your values. You'll be able to see the effects of this double eclipse more than 880 light years away!

John Jardine Goss



- | | |
|---|----------|
| 1: System at maximum brightness | Day 0.0 |
| 2: Dimmer "A2" transiting brighter "A1" | Day 3.2 |
| Minimum system brightness | |
| 3: System at maximum brightness | Day 6.4 |
| 4: Brighter "A1" eclipsing dimmer "A2" | Day 9.7 |
| Secondary minimum | |
| 5: Repeat the cycle | Day 12.9 |

Figure 1: Orbit of Beta Lyrae A

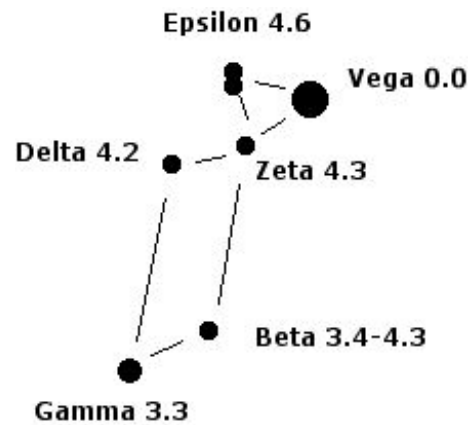
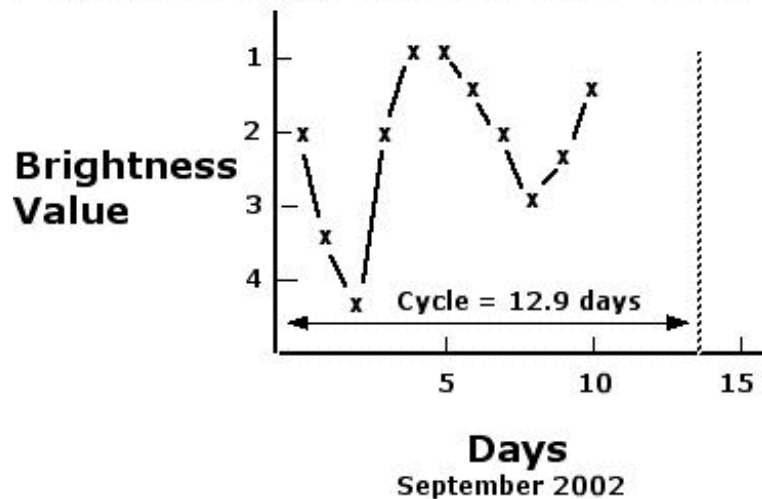


Figure 2: Lyra

Figure 3: Brightness Cycle of Beta Lyrae



Mike Good's CCD Photography



Stephan's Quintet taken Meade 10" during the first week of September at f/4 with an ST-237 CCD camera using 2x2 bin 31min integration.

Stephan's Quintet of galaxies is a well-known tight grouping in Pegasus near the bright spiral NGC 7331. From the small elliptical partially in the field at the western (lower) edge, they are NGC 7317, 7318A, 7318B, 7319, and 7320. Much of the continued interest in Stephan's Quintet stems from the fact that NGC 7320 has a relatively small redshift (760 km/s) while the other four galaxies, three of which display signs of strong tidal interaction, all have redshifts near 6600 km/s. If redshift always correlates with distance, the presence of NGC 7320 is a chance foreground projection. NGC 7319 has a type 2 Seyfert nucleus.

That Was Then...

Finding the North Star

Next, as to finding the north point, or any point of the compass which will enable the observer to determine the rest. If he is only familiar with the aspect of those seven bright stars of the Great Bear which have been called the Dipper, Charles' Wain, the Butcher's Cleaver, and by other names, he can always determine the north point by means of the two stars called the Pointers, since these seven stars never set. In the explanation of each map I

have shown where the Great Bear is to be looked for on each night, the observer being assumed to have such a general knowledge of the direction of the compass points, as will suffice for the purpose of finding so marked a collection of stars. Thus the pole-star is found, and for the purpose of such observations as are here considered, this star may be looked upon as marking the exact direction of the north.

Proctor, Richard, "Half-Hours With the Stars," G.P. Putnam's Sons, London, 1887, p. 2.

This Is Now...

Even though this description is a bit verbose, it is just as true now as it was in 1887. Most people still start learning the night sky by finding the north star using the "pointer" in the Big Dipper. Richard Proctor was a well known English popularizer of the heavens in the late 19th century. He authored many works featuring subjects from beginning star maps to life on other worlds. His basic star charts can still be used by novices today.

VAAS 2002 Program Schedule

08:30 – 09:30	Registration
09:30 – 09:45	Welcome, Jim Blowers, RAS president
09:45 – 10:30	Dr. George Spagna, RMC, "C.U.R.T - the Center of the Universe Radio Telescope Project"
10:45 – 11:30	Dr. Robert Rood, UVA, "An Old Dog's Last Hunt"
11:45 – 12:30	Dr. Eric Douglass, RAS, "The Geography of Lunar Basins"
12:30 – 13:30	Lunch--on your own
13:30 – 13:45	VAAS clubs welcome & planning, Terry Barker
14:00 – 15:00	ATM workshop, Joe Hetmanski
14:00 – 15:00	Navigating to Virginia in 1611 with Captain Toby Felgate, Robert Hicks
15:15 – 16:15	Hunting for Herschels, John Goss (RVAS)
15:15 – 16:15	Comets and my catalog, Norm Guenther as Charles Messier
16:30 – 17:30	CCD class, Gary Cowardin
17:30 – 18:00	Door prizes
18:30 -- 20:00	Picnic at Poor Farm Park picnic shelters
20:00 -- ???	Keebler Planetarium observing
20:00 -- ???	Skywatch at Poor Farm Park

"When it is dark enough you can see the stars."

Charles A. Beard

Society Calendar of Events and Activities for October 2002

OCTOBER MEETING: Monday, October 21st, 7:30 p.m., fifth floor meeting room, Center in the Square, Roanoke. The evening's program will be "My Astronomical Summer Vacation" by Isaac Campbell.

"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, 4th and 5th.** Sunset is at 6:58 p.m. Astronomical twilight ends at 8:25 p.m. The Moon sets at 6:22 and 6:54 p.m., respectively.

☉ **Friday and Saturday, 25th and 26th.** Sunset is at 6:30 p.m. Astronomical twilight ends at 7:57 p.m. The Moon sets at 9:18 and 10:08 p.m., respectively.

☉ **November Sessions:** 1st and 2nd; 8th and 9th; and 29th and 30th.

FRANKLIN CO. PARKS DEPT./RVAS PUBLIC STARGAZE: Next session: Saturday, November 2nd, 5:45 p.m., Franklin County Recreational Park. Free. Call 540-483-9293 to register. (Note: RVAS members planning to attend need not register.)

ROANOKE CITY PARKS DEPT./RVAS PUBLIC STARGAZE: Saturday, October 5th, 7:30 p.m., Cahas Overlook, milepost 139, Blue Ridge Parkway. Free. Call 540-853-2236 to register. (Next month: November 23rd, 5:45 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.

**ROANOKE VALLEY ASTRONOMICAL SOCIETY
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