



Roanoke Valley Astronomical Society



News About Amateur Astronomy
In Southwestern Virginia
<http://www.roavas.org>

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May 2004

A Poor Man's Guide to Astrophotography

By Gary Hatfield

Hello Everyone! I've been asked to write about getting into astrophotography. My journey began when I bought my first scope, an Orion XT8 Dobsonian, in February 2000 with my income tax refund. As a new amateur astronomer, I read everything I could get my hands on.

New issues of *Astronomy* and *Sky & Telescope* were eagerly awaited with drooling anticipation. One thing right off that caught my attention was all the beautiful images seen in these magazines, especially the ones in the back submitted by amateurs.

For the first three months I immersed myself into learning the night sky. Having been interested in photography for years, I thought maybe someday I could take pictures of what I was seeing through my new scope. Little did I know that I was getting ready to venture into one of the most challenging and rewarding hobbies of my

life. Now I just had to figure out how to go about it. Having no training in photography, no 35mm camera, and very little experience in astronomy, my learning curve was very steep. I purchased Michael



M42's neighborhood by Gary Hatfield

Covington's *Astrophotography For Amateurs*, and I was off and running...into walls. Suddenly I realized that I didn't have the right kind of scope to do what I wanted to do. Not only did my scope not track, I couldn't hook a camera into the focuser even if I'd had one. I was living on Bent

Mtn. at the time, and one of my neighbors and his fiancée would walk their dog down my road. One evening about dusk, they came by as I was setting up to observe, and we got to talking. They had never looked through a telescope, so they came back after dark and we observed and talked for several hours. I told them I wanted to take pictures, but didn't have a camera yet. He said he had just purchased a new digital camera for their upcoming honeymoon, and wanted to know if I'd be interested in his old 35mm. Oh boy, would I ever! He said he'd drop it off to me the next day so I could check it out.

After checking it out I asked him "How much?". Would you believe, he gave it to me. Said I could pay him by giving him a framed picture of the moon. Very cool!

Alright, now I had a camera and a scope. Since I didn't have a tracking mount, I learned all about afocal astro-

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The Mind's Eye

By Clark M. Thomas

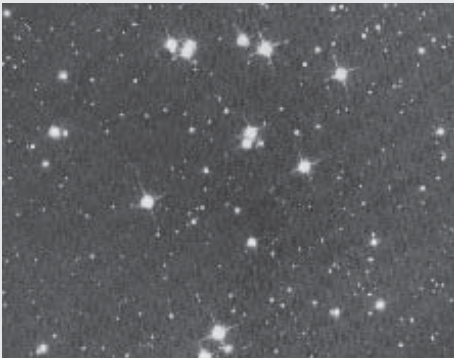
We have eyes and mental eyes. The eye, anatomically and physiologically, is a part of the brain. But that's only part of the story. The brain embraces the mind, which is our experience of the world as we know it.

Mystery Object

Get busy like a bee with your bee-noculars, or wide-field telescope, to identify this month's bee-utiful mystery object.

Bee smart, and send your best guess to Dave Thomas, our Mystery Object Columnist, at

thomasde-ka8inl
@worldnet.att.net



The mind's eye is therefore not an objective instrument like a camera lens. It is a living part of our consciousness, fed by images generated by our eyes, and formed by a lifetime of learning.

We astronomers use our mental eyes almost exclusively. Whether we are looking directly at an object, or just looking at a picture of it, our mind is busy processing what the eyeballs bring to us in light of our sometimes extensive knowledge of the object.

The totally green viewer is awed by Saturn, or by Jupiter's moons. An experienced observer might

be more awed by two distant galaxies in collision that can hardly be seen, except as faint, gray fuzzies. It is precisely because we astronomers understand the significance of these fuzzies that our minds are excited.

Our club's outreach efforts need to involve both education and time at the eyepiece. In my recent visit to a neighboring Ruritan club I preceded time at my eyepiece with an explanation for why we astronomers are divinely crazy. I spoke of the poetry in faint fuzzies, and then led these green observers outside. All left with better mental vision.

Astro-Quiz

We think of years as symmetric, with each season having 91 days — but there are seven more days from the beginning of spring to the beginning of autumn than the other way around. What causes this asymmetry?

Answer to Last Month's Astro-Quiz: Before formulating his laws of planetary motion, Johannes Kepler had a revelation he called the "Cosmic Mystery." Kepler believed the five "platonic" solids, whose sides are all regular polygons, ruled the spacing between the orbits of the six then-known planets. Inscribing or nesting one solid within another defined the distances of the planets from the Sun. He labored long and hard to prove his elegant vision, but the observed orbits did not agree. As often happens, Kepler decided the observations were incorrect. He was wrong, of course. But his conclusion led him to accept a position with Tycho Brahe, the Danish nobleman-astronomer with perhaps the most accurate planetary data then available. The rest is history.

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to 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 is \$25.00; student membership is \$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.

RVAS web page: <http://www.roavas.org>

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); Clark M. Thomas, Newsletter Editor (427-1873, clarkt7@cox.net). Dave Thomas, Mystery Object Columnist (thomasde-ka8inl@worldnet.att.net).

Election Scheduled for Officers

By Paul Caffrey

On July 1 of even numbered years, the RVAS installs a new body of club officers. Current RVAS President **Paul Caffrey** formed a nominating committee to seek interested individuals who would lead the club over the next two years. The Committee has reported its *recommended slate of candidates for the 2004-2006 bien-nium*:

President:
Katherine Hix
Vice President:
Mike Overacker
Secretary:

Mark Hodges

Treasurer:

Lynn Slonaker

Member-at-Large:

Sherwin Brady

RVAS bylaws allow other individuals who were not selected by the Nominating Committee to submit their names for the elections. To do so, they must petition the Society by having signatures of at least 10% of the voting members. In this case, that number would be 9.

The petition must be submitted within 15 calendar days after the publication of the

Nominating Committee's proposals. That date is May 15.

However, if no one offers their name to run against the Committee's recommendations, then the above slate of officers will be elected by acclamation at the June 21 RVAS general meeting.

Nomination petitions should be physically sent to the current RVAS President, and must be postmarked by May 15:

*Paul Caffrey, President, RVAS
1825 Sheffield Rd
Roanoke, VA 24015*

Last Month's Mystery Object

The mystery sky object for the month of April was NGC7635. Also known as the Bubble Nebula this huge bubble of matter is being blown into space by a star forty times more massive than the Sun.

Located in Cassiopeia near the open cluster M52, this nebula is expanding at a rate of four million miles per hour. It is six light-years wide, and 7,100 light-years from Earth.



The Local Group

By Genevieve Goss

Now that warm weather has lured you outside, you may be more aware of the encroachment of bad lighting. What can you do? *First*, report 'light trespass' (the glare of neighboring lights onto your property) to your local Zoning Administrator. Even if a lighting ordinance is not in existence, there may be some remedy for annoying lights. At the very least, it should alert the Zoning Administrator that light pollution is a growing concern. *Second*, if the light happens to be a "dusk-to-dawn" mercury vapor lamp, notify your power company. If they are the provider of the fixture, ask them to attach

a light shield or dark paint on the offending portion of the light. You might, in your least threatening voice, ask your neighbor to consider installing a shielded fixture. One remedy is the Hubble Sky Cap, a shield for mercury vapor lamps manufactured in Christiansburg.

RVAS holds a membership to the *International Dark-Sky Association*, an organization of over 10,500 members worldwide which seeks to educate and remediate concerning the problem of light pollution. The vanguard of their membership should come from amateur astronomers, since we have the most to gain from the

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From the Earth to Mars and Back Again: the First Steps

By Buck Rogers,

Strolling in the warm evening after the RVAS April meeting, several club members could be heard saying, "I didn't know that the government spends that amount on space," and "I thought for a trip to Mars all you needed was a BIG rocket." What on earth were they talking about?

Space medicine authority and club member **Dwight Holland** presented the April RVAS feature program describing a few of the many complications extended space flight has on human physiology. Its lengthy title perfectly summed up his presentation, *A Systems Case Study Examination of the Near-Catastrophic MIR-Progress 234 Collision with Emphasis on the Human Factor Issues Surrounding this Mishap*.

Every April 15, we are all acutely aware of how our government finances its many programs, including NASA. We hear of the billions being spent on the International Space Station, the shuttle program, and the many robotic missions to the planets.

But how much of our federal tax dollar actually goes for these efforts? Dwight opened the eyes of the 30 people in attendance by producing the figure of 0.4%! Slashing NASA would not dramatically reduce

any Federal deficit, nor your income tax bill. And to top it off, spending on the space program could be considered an investment of sorts. Dollars that are spent by NASA generate dollars from its many research spinoffs. Money truly is the lifeblood of the space program.

"No bucks, no Buck Rogers," quipped Dwight. If safe space flight is wanted, then money must be spent effectively, and it must not be done on the cheap. A case in point occurred during the last few years of the Russian MIR station. It was a situation of an overworked crew living in a cramped, hot, humid, and noisy environment with polluted air. The stress was constant. Something had to give and, sure enough, something did. A misguided supply craft smacked into the station, nearly destroying it. Lesson learned: a well rested crew is essential to a successful long term mission.

The problems that confront the ultimate space mission - a roundtrip to Mars - will be many. The estimated 18 month journey to the Red Planet means that engineering design solutions will need to be found for, among others, bone demineralization, inner ear destabilization, and radiation exposure. They will not be easy, nor cheap, but necessary if humans are to make

the trip safely.

What will NASA come up with? How will NASA handle the human problems as well as the design problems? Hopefully, we will soon see what else is needed besides a big rocket!

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The Local Group

efforts of IDA. Your individual membership can be accepted on-line at <http://www.darksky.org>, or by mailing \$30 to International Dark-Sky Association, 3225 N. First Avenue, Tucson, AZ 85719.

At the IDA website, you can find sample lighting ordinances for you to use in contacting your county or city Zoning Board. In the section called 'Resources,' you can download information which will increase your knowledge concerning light pollution. There are specifications for good lighting fixtures and better lighting practices which can save money while providing safer, more effective lighting.

Thanks to one of our generous club members, RVAS has both a movie and slide set about light pollution which would make an excellent presentation to an interested civic group. There are several club members who would be able to assist with such a presentation.

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Photo Guide

photography. Afocal astrophotography is pretty easy. All you have to do is focus the telescope with an eyepiece as if you were going to observe, then hold the camera up to the eyepiece, and snap the picture. Well, almost!

You still have to get the exposure settings right. In the back of Covington's book are tables of exposures with different speeds of film. The different phases of the moon, the sun, the planets, and lunar & solar eclipses are all covered. One thing I kept reading was to "bracket" your exposures. What's bracketing you might ask?

Bracketing is taking a shot with one or two exposures below, and one or two above, the recommended exposure for the object you are shooting. Okay, no problem. So I shot, and I shot, and I shot. And it worked!

With my first roll of film I actually had several pictures of the moon, with craters. WOW! Now these weren't like what you'd see in the maga-

zines, but that didn't matter. I was hooked! So I spent the next few months taking afocal shots of the moon.

While I attempted many shots of Jupiter and Saturn, I didn't have much success. At that time, digital cameras were not only expensive, but choices were very limited. Now, if you don't have a digital camera people look at you funny. One thing's for sure though, they can make you an almost instant astrophotographer.



I now have an Orion XT10. Last summer I used a little 2 MegaPixel Sony Cybershot for some afocal shots, and got the best images of the moon I have taken since I got into this hobby. (See above photo.)

It's truly amazing what technology can do to change the face of a decades old art. And what people are doing with digital cameras and the planets is truly amazing. I've

tried for over three years to get a decent picture of Saturn with film and only have two that you can tell what you're looking at. Yet with a digital camera I had one my first try. Last year's Mars opposition was truly amazing, and I got quite a few decent images with this same little camera.

So if you have a telescope, and a camera, and would like to see what you can do, give it a try! The great thing about digital cameras is you don't have to wait to get the film

developed. You can immediately look at the image you've just taken, and make exposure setting changes for the next shot. Or just leave it on its automatic setting. It's really very easy!

The next time you set up your scope to observe, get out your 35mm or digital camera, and give it a try. If the moon is not visible, try

Jupiter and Saturn. You will truly be amazed at what you might get! But take it from me, astrophotography can be habit forming. Indulge in moderation or you might just get hooked!!

Next month I'll be covering some basic short exposure tripod shots and long exposure star trails centered on Polaris. As Jack Horkheimer says, "Keep looking up!"

Dalby Donates to RVAS

By Mahesh Tailor

A hearty thanks goes out to a local stargazer, **Ms. Mary Andrews Dalby**, of Salem, VA.

Mary Dalby has donated to the RVAS her video lecture series by Professor Alex Filippenko of UC-Berkley: *Understanding the Universe: An Introduction to Astronomy*. This series consists of forty 45-minute lectures giving a broad overview of astronomy.

Here is the wonderful note that Mary attached to her donation:

*Salem, Virginia
March 20, 2004*

Roanoke Valley Astronomical Society

This series of lectures on tape by Professor Filippenko, University of California at Berkley, is presented to you with the hope that many of your members and others may participate in its use.

Watch, learn, and enjoy!

*An "old skywatcher"
Mary Andrews Dalby*

Thanks also to **Professor Frank Munley**, a longtime RVAS member, for putting Ms. Dalby in touch with me.

The video series will be available to members to view at their leisure. We'll let RVAS members know how to bor-

row the tapes at an upcoming monthly meeting and in the newsletter.

For more information about this series, point your browser to <http://www.teach12.com/ttc/assets/coursedescriptions/180.as>

Introducing Dr. Filippenko
(taken from his web site)

Alex Filippenko is Professor of Astronomy at the University of California at Berkeley. He received his bachelor's degree in physics from the University of California at Santa Barbara and earned his Ph.D. in astronomy from the California Institute of Technology. Dr. Filippenko's research ac-



complishments, documented in over 430 published papers, have been recognized with several major awards, including the 1992 Newton Lacy Pierce Prize of the American Astronomical Society and the 1997 Robert M. Petrie Prize of the Canadian Astronomical Society. In December 1998, *Science* magazine credited Professor Filippenko and his international team of astronomers with the "Science Breakthrough of 1998" for research

on exploding stars (supernovae) which seems to show that the universe is expanding at an accelerating rate.

Dr. Filippenko's many teaching awards include the Donald S. Noyce Prize for Excellence in Undergraduate Teaching in the Physical Sciences, and the Distinguished Teaching Award.

Dr. Filippenko is the co-author of *The Cosmos: Astronomy in the New Millennium*, now in its second edition, and winner of the 2001 Texty Excellence Award for best new textbook in the physical sciences.

NEAT Comet

In early May Comet NEAT will be available during the evening toward the end of twilight. After May 5th you will find it above Sirius, and below Procyon. The comet should be about second magnitude total brightness, and therefore easily visible to the naked eye at dark locations. In binoculars, on the 7th, it will appear not far above Messiers 46, 47, and NGC 2423, all nice open clusters in a rich overall star field.

Weather permitting, our public viewing of this comet and the visible planets will be held at the Devil's Backbone overlook on the Parkway, near milepost 144, on May 7th, from 8:30 to 11:00 p.m. This overlook is about seven minutes south of Cahas. See you there!

Astronomy Day 2004

By John Goss

(Photos by Mike Overacker)

It was a sunny day.... "Telescopes? What can you see with telescopes in the day-time? What are they looking at?" Naturally, these questions went through people's minds as they approached the RVAS Astronomy Day exhibit at *Mill Mountain Zoo's Spring Festival*.

Over 150 Zoo patrons were treated to super views of the sun, Venus, the moon and the Roanoke Valley through 8 telescopes staffed by RVAS volunteers. Meandering to the scopes, people looked at Dark Sky and Hubble displays and found out about extra solar planet hunting techniques with hands-on kits courtesy of the *Night Sky Network*.

The sun cooperated with

several feathery solar prominences as seen through **Richard Zue's** 40 mm Coronado solar scope. **Mark Hodges** and **Paul Caffrey** tackled sunspots with their scopes, a Celestron 11 inch SCT, and an

80 mm portable refractor.

Next in line were **Bruce Jones** with his ETX 90, and **Mike Overacker** with his Meade LX 200 8 inch. They were able to find the closest of the planets with telescopes that were equipped with electronic tracking devices. Observers of all ages were surprised to see Venus's crescent phase in broad daylight. "Just like the moon." Speaking of the moon, it was the final



For those who would rather keep an eye on terrestrial sights, **Katherine Hix** brought her 8 inch Dobsonian for peeking at the Valley below. This was a perfect eagle's nest!

Rounding out the assorted equipment was a bonus scope brought by **Bob Young**. His 120 mm refractor guarded the exhibit area, and gave onlookers something to dream about.

In addition to those people mentioned above, thanks go to **Sherwin Brady, Genevieve Goss, Mahesh Tailor, Fred Davis, and Sharon Stinnette** for making this outreach possible!

The RVAS thanks the friendly, helpful volunteers and employees of Mill Mountain for making the day enjoyable for all of us, and for all of the many enthusiastic visitors.



celestial quarry. After midday, our only natural satellite was high enough to leave much of the haze below, and provided glimpses of ghostly craters through **John Goss's** 10 inch SCT.

Society Calendar of Events and Activities for May 2004

MAY MEETING: *Monday, May 17th, 7:30 p.m., fifth-floor meeting room, Center in the Square, Roanoke.* The May program will consist of **(A)** the annual *astrophotography contest*: It should be your photo(s) taken during the last year. — and **(B)** *Betsy Graves, a 9th Grade student at Hidden Valley High School, will present her science project, entitled "Shooting Stars," on testing 400 speed black & white films on recording stars.*

"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, **May 7th and 8th.** Sunset is at 8:16 p.m. Astronomical twilight ends at 9:57 p.m. The Moon rises at 12:08 and 1:09 a.m., respectively. (See notice herein about Comet NEAT for May 7th.)

-- Friday and Saturday, **May 14th and 15th.** Sunset is at 8:22 p.m. Astronomical twilight ends at 10:06 p.m. The Moon sets at 4:10 and 5:10 p.m., respectively.

-- June Sessions: 11th and 12th; 18th and 19th.

FRANKLIN CO. PARKS DEPT./RVAS PUBLIC STARGAZE: Saturday, **May 8th**, 9:15 p.m., Franklin Co. Recreational Park. For Franklin County residents. RVAS members welcome to participate. Call the RVAS Message Line, 540-774-5651, for information. (Next session: August 7th, 9:15 p.m.)

ROANOKE CITY PARKS DEPT./RVAS PUBLIC STARGAZE: Saturday, **May 15th**, 9:15 p.m., Cahas Overlook, milepost 139, Blue Ridge Parkway. For City, County and other area residents. RVAS members welcome to participate. Call the RVAS Message Line, 540-774-5651, for information. (Next session: June 19th, 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.

Roanoke Valley Astronomical Society
740 Arbutus Avenue
Roanoke, VA 24014-2504