

Let's remember July happenings..

July is always a special month for me. Y'all probably know I grew up on a farm in Nawth Kalina...July brought the first corn on the cob, the first tomatoes, butterbeans & peas, first watermelons, the crops were all "laid by"...no more cultivating the cotton, corn or soybeans. We also began the 6-8 weeks of "barning tobacco" that normally ended around the first of September.

Astronomically speaking July is the month when the summer Milky Way begins to blaze on "dark nights"...those same dark nights are when tobacco hornworm moths lay their eggs and just two weeks later, by the next full moon, the eggs hatch and the little worms will literally eat a field of tobacco. We used toxaphene, DDT, Endrin, malathion, parathion, etc to kill the larvae. Today, the plants are engineered to produce bacillus thuringiensis (BT) which destroys the little worms. Our vegetables...corn, cabbage, broccoli, etc also are engineered to produce BT...don't worry...it is harmless to humans.

Back to astronomy...July 20, 1969...the day Neill Armstrong and Buzz Aldrin stepped onto the surface of the moon; the culmination of a twelve-year space race with the Soviet Union that began with their launch of Sputnik October 4, 1957...I remember it well. It was hot...we were in the midst of barning tobacco...but we took time off to see the very grainy TV pics of the lunar landing on a TV with rabbit ears for reception. It was truly amazing! Also amazing were the pictures from around the entire world of millions of people gathered around TV's to watch the landing. It takes a special type of person to sit on top of a Saturn V and let his team launch him into space with the moon as the destination...literally to "boldly go where no man has gone before".

Another very significant event happened July 10, 1962 - the first live transatlantic telecast via our communications satellite Telstar 1. Telestar 1, launched July 10, 1962, allowed live transmission of television pictures, telephone calls and fax images. You do remember FAX, don't you? This was the beginning of a communications revolution that has bought us a landscape dotted with cell transmission towers, cell phones for the entire world and every driver and GPS units to track our every movement.

July 29, 1958 was also the beginning of NASA...the bill creating NASA was signed by President Eisenhower.

But, the skies are the best of the month of July. On the fam, we regularly began our day during July and August at 2:00 AM to "take out a barn of cured" tobacco before 6:00 AM so that we refill it during the day with green tobacco. The July sky from 2-4 AM is fantastic on a dark and clear night with no city lights. We used only a kerosene lantern in the barn and no lights outside...so it was dark - there were none of the ubiquitous security lights we see today.. Using today's products to describe the view...think of black Velcro with cotton snagged onto it...that's what the Milky Way looked like in July 1969 from our tobacco barns.

So, this month find a dark site on a dark night and enjoy the Milky Way displaying all of its splendor. The Teapot, Scorpion, Scutum star cloud, Cygnus & Aquila, Lyra...they will never be better. Enjoy them and their summer "jewels"

See you there.

Don...

Finding Planets among the Stars

by Dr. Tony Phillips



Strange but true: When it comes to finding new extra-solar planets, or exoplanets, stars can be an incredible nuisance.

It's a matter of luminosity. Stars are bright, but their planets are not. Indeed, when an astronomer peers across light years to find a distant Earth-like world, what he often finds instead is an annoying glare. The light of the star itself makes the star's dim planetary system nearly impossible to see.

Talk about frustration! How would you like to be an astronomer who's constantly vexed by stars?

Fortunately, there may be a solution. It comes from NASA's Galaxy Evolution Explorer, an ultraviolet space telescope orbiting Earth since 2003. In a new study, researchers say the Galaxy Evolution Explorer is able to pinpoint dim stars that might not badly outshine their own planets.

"We've discovered a new technique of using ultraviolet light to search for young, low-mass stars near the Earth," said David Rodriguez, a graduate student of astronomy at UCLA, and the study's lead author. "These M-class stars, also known as red dwarfs, make excellent targets for future direct imaging of exoplanets."

Young red dwarfs produce a telltale glow in the ultraviolet part of the electromagnetic spectrum that Galaxy Evolution Explorer can sense. Because dwarf stars are so numerous—as a class, they account for more than two-thirds of the stars in the galaxy—astronomers could reap a rich bounty of targets.

In many ways, these stars represent a best-case scenario for planet hunting. They are close and in clear lines-of-sight, which generally makes viewing easier. Their low mass means they are dimmer than heavier stars, so their light is less likely to mask the feeble light of a planet. And because they are young, their planets are freshly formed, and thus warmer and brighter than older planetary bodies.

Astronomers know of more than five hundred distant planets, but very few have actually been seen. Many exoplanets are detected indirectly by means of their "wobbles"—the gravitational tugs they exert on their central stars. Some are found when they transit the parent star, momentarily dimming the glare, but not dimming it enough to reveal the planet itself.

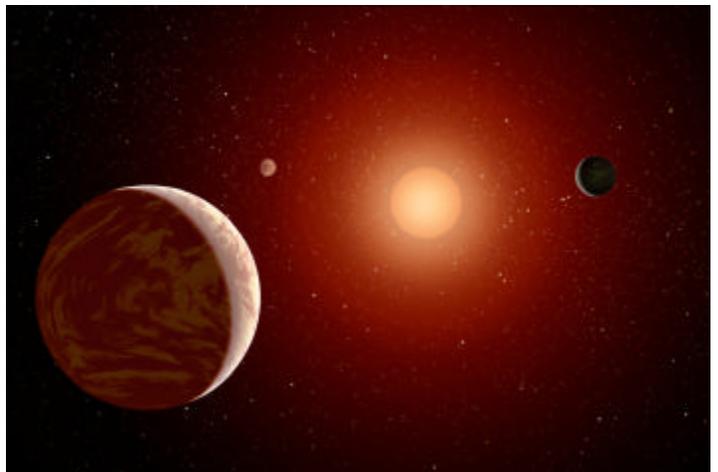
The new Galaxy Evolution Explorer technique might eventually lead to planets that can be seen directly. That would be good because, as Rodriguez points out, "seeing is believing."

And it just might make astronomers feel a little better about the stars.

The Galaxy Evolution Explorer Web site at <http://www.galex.caltech.edu> describes many of the other discoveries and accomplishments of this mission. And for kids, how do astronomers know how far away a star or galaxy is? Play "How Old do I Look" on The Space Place at <http://spaceplace.nasa.gov/what-older> and find out!

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

Exoplanets are easier to see directly when their star is a dim, red dwarf.



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Take the Next Step

Tom Koonce

Lancaster, California

The moderate summer evenings are finally here and the best time of year to observe the sky has arrived. I have written at length in the past about how to get started in amateur astronomy, but this month we'll step it up a few notches with a discussion of what I think a beginner needs to take observing to the next level. I have no business association with any of the companies mentioned in this article, but have extensive experience to back up each of my recommendations below. I'm calling it as I see it. Your actual mileage may vary.

First, get a *Telrad* for your telescope. This "1X spotting scope" is the most useful accessory you'll get and many star guides, maps and books are written that use its illuminated 0.5, 1.0 and 2.0 degree centering circles. I also recommend installing a "blink" kit on the Telrad to cycle the red illumination on and off to help your night vision when locating very dim deep-sky objects. There are other 1 X finders on the market that you can use, but I think the Telrad holds up the best over time.

Next, you're going to be considering getting eyepiece filters and maybe even a new eyepiece. Here's what I think are the essentials and I list them in priority order.

Get a *Thousand Oaks Solar Filter* for your telescope. By doing so, you will have instantly doubled the utility of your scope because you'll also be able to observe during the day with your telescope. The Sun is our nearest star and a high quality glass solar filter will last you many years.

Make sure that you have *decent quality eyepieces* that will yield magnifications of approximately 50X through 200X. I recommend TeleVue, Meade or Celestron Super Plossls. It's essential that you have great eyepieces to match the great telescope that you are using. Go to a Star Party with your telescope and set up next to someone who can lend you several different eyepieces for you to try out. Find ones that you really like and buy ones just like them. Don't buy any eyepiece that you haven't had a chance to use. On the question of whether or not to buy 1 1/4" or 2" eyepieces, I'll say that if you really enjoy amateur astronomy, you will eventually be buying 2" eyepieces, but they are expensive and you need to have a good idea of the kind of observing you will be doing most of the time. Eyepieces hold their value very well, so hold off on buying the 2" eyepieces for now and get the best 1 1/4" eyepiece that you can afford. If you've been reading my articles over the years, you'll know that I recommend that buying eyepieces that are in excellent shape from amateur astronomy-based websites like Astromart.com and build up your collection, but you should also consider companies which offer great prices for brand new eyepieces such as Woodland Hills Telescope and Oceanside Pacific Telescope.

Get a high quality *O-III* (pronounced "Oh-three") *narrow band-pass filter* that screws into the base of your eyepieces. This is the most useful deep sky filter. If you enjoy observing deep-sky objects like the Ring Nebula, Swan Nebula, or would like to observe the Veil Nebula, then get the O-III before you buy a light pollution filter, a set of color filters, or a moon filter.

If you have a Schmidt-Cassegrain telescope, get a "Skylight" filter to seal the back of the telescope tube. Then get a high quality, 2" diagonal with a 1 1/4" adapter. I like the 2" TeleVue diagonal.



If you have a Newtonian telescope, get a quality *barlowed laser collimation tool*. 90% of all of the newtonians / dobsonians people have me look through at star parties are incorrectly collimated and are thus performing at far less than their optical potential. The collimation tool will help you attain new levels of focus with your Newtonian. I use the Howie Glatter barlowed laser collimator and am extremely pleased with it.

Get an *adjustable red light flashlight*. Make sure that the brightness can be dialed down very close to the off position so that minimum light is illuminated. Now that you're taking the next step in amateur astronomy, you're going to have to pay more attention to your night vision. After your eyes become dark adapted, most of the single switch red flashlights are too bright and are useful only to upset other observers around you. Begin to pay more attention to observing etiquette. You shouldn't walk up to other observers with your red flashlight on its cord around your neck, turned up to high, thus



affecting other's night vision. It is encouraged for you to park with your car headlights pointed away from the general observing area and to turn your car's interior dome lights off at the beginning of the evening.

Get a *polarizing moon filter*. This is made up of two polarizing filters that can rotate about each other so that you can "dial" the brightness of the moon up or down to counter the brightness when directly observing the moon. You'll find this much handier than a single neutral density filter for changing brightness of the phases.

Get a good *night sky atlas*. If you have an eight inch or larger telescope, I prefer the large "Sky Atlas 2000.0 Deluxe Laminated" atlas, with black stars on a white background. For smaller scopes, you can take a look at Sky & Telescope's "Pocket Sky Atlas". This is the right time to re-read the great book "Night Watch - A Practical Guide to Viewing the Universe".

Get a *portable table* to take with you observing. A sturdy folding card table works well. You'll need a place to put your maps and eyepieces.

Begin working on your Messier Pin. This is an observing challenge sponsored by the Astronomical League. By completing the observation of all of the Messier objects, you will truly know the night sky.

Dedicate an *old blanket, carpet, or artificial turf* to put beneath your telescope when observing. It will keep dirt and dust off of your scope, and when you drop that new eyepiece or little retaining screw out of your diagonal at 2:00 am, it will help spare those around you from hearing a staccato of four letter words punctuating the night. Not that *I've* ever done such a thing myself...

This will get you started. I didn't mention other items such as an observing stool to sit on, color filters, a warm jumpsuit, or large camp chair for taking a break. You can add these as you go forward. Advancing in amateur astronomy is not about the *equipment*, but about *honing your observing skills*. Each item I've mentioned will either enable or simplify the technical portion of observing so that you can concentrate more on the sky and less on whether or not you have the necessary resources at hand.

Clear Skies, Tom



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As a paid member of DMSG, you can sign up/renew your S&T or Astronomy mags through the club for a discount over private rate. S&T, reg. \$42.95, is \$32.95 thru DMSG, Astronomy, reg. \$44, is \$34. See Michael Lecuyer for details.

Cleaning Eyepieces...

Cleaning eyepieces...recently I acquired several, I said "several", eyepieces recently. Most of them I reluctantly put in boxes and transported home. I say "reluctantly" because they were dirty...folks, I mean they were scummy...crud should not be allowed to accumulate on fine optical surfaces and these bad boys looked like they needed to be put thru the pot-scrubbing cycle of a dishwasher. Some of the eyepiece names are Televue, Meade, Celestron, RKE, University Optics, StellarVue...so they had the potential of being valuable if I could remove the grease and grime.

I set up a cleaning station on my back porch...a box of 1000 Q-Tips (real J&J cotton Q-Tips - not Chinese sandpaper knock-offs), a bottle of diluted Windex window cleaner with a sprayer, a roll of paper towels and some Awesome general cleaner, and an LED lamp for intense directed light. I started the cleaning with a pair of military erfles from the 1940's - 1950's...if I could successfully rescue them maybe the others would have a chance.

The first cleaning was to the barrel...I used a paper towel wetted with Awesome and in most cases the result was a nice clean exterior. A few of them had some type of adhesive residue that required GooGone to remove. I guess the folks who used the EP's ate a lot of French fries or kept the EP's next to the frying pan...there was a good coating of nasty on the barrels.

I know the secret to successful EP cleaning is to remove the crud without allowing cleaning fluid to seep into the innards of the eyepiece and create more of a problem. Also, you don't want to scratch the coating.

I carefully sprayed a very small amount of Windex on a Q-Tip and wicked away any excess liquid with a paper towel. Carefully and lightly rubbing the Q-Tip against the glass removed some of the crud and I threw the soiled Q-Tip away. Repeating this process several times revealed a nice, clean element. Then I did the bottom of the EP the same way.

Well, it took most a morning and most of the Q-Tips to rescue the eyepieces but I have to say they all cleaned up and most of them are very nice, and very clean, eyepieces.

Then, just to complete my chores, I went to my eyepiece box and looked at those TV plossls, TV Naglers and TV Widefields that have resided there for 10-20 years. They didn't have French-fry grease on them but there was a scum nevertheless and lots of "stuff" ranging from dew and dust residue to mascara remains. So, I cleaned my own eyepieces and just to make their home life a bit cleaner I vacuumed the eyepiece box. It is amazing how many dead skeeter karakases accumulate in the EP box.

Next I will tackle the filter box.

Don...

Your Summer Project

It's summer, and there's no meeting. It doesn't mean you have the summer off to just work on your tan.

Below is a list of Messier objects to look for. On pg. 8 is a chart. We've all seen them, well, most of us.

For those of us **less experienced**, just find them. Don't use your GOTO, that's too easy. Sketch them if you can. Make notes of your observation. The next day or so, look up the object and see if the image is similar to what you saw.

For you **more experienced** observers, Go back and look again. Look and see if there is some detail you've missed. Sometimes a 2nd or 3rd or 23rd look will bring a surprising feature.

And for you **astro-photographers**. Let's fill up your camera's memory card. Send any **'awesome'** pics in for inclusion in a future issue of this newsletter.

I expect some feedback to the editor from all y'all.

Messier 3 (also known as M3 or NGC 5272) is a globular cluster in the constellation Canes Venatici. It was discovered by Charles Messier in 1764, and resolved into stars by William Herschel around 1784. This cluster is one of the largest and brightest, and is made up of around 500,000 stars. It is located at a distance of about 33,900 light-years away from Earth. M3 has an apparent magnitude of 6.2, making it a difficult naked eye target even with dark conditions. With a moderate-sized telescope, the cluster is fully defined.

Messier 53 (also known as NGC 5024) is a globular cluster in the Coma Berenices constellation. It was discovered by Johann Elert Bode in 1775. M53 is one of the more outlying globular clusters, being about 60,000 light-years away from the Galactic Center, and almost the same distance (about 58,000 light-years) from the Solar system.

The **Black Eye Galaxy** (also called Sleeping Beauty Galaxy; designated Messier 64, M64, or NGC 4826) was discovered by Edward Pigott in March 1779, and independently by Johann Elert Bode in April of the same year, as well as by Charles Messier in 1780. It has a spectacular dark band of absorbing dust in front of the galaxy's bright nucleus, giving rise to its nicknames of the "Black Eye" or "Evil Eye" galaxy. M64 is well known among amateur astronomers because of its appearance in small telescopes. It is a spiral galaxy in the Coma Berenices constellation.

Messier 49 (also known as NGC 4472) is an elliptical / lenticular galaxy about 49 million light-years away in the constellation Virgo. The galaxy was discovered by Charles Messier in 1771.

Messier 61 (also known as NGC 4303) is a spiral galaxy in the Virgo Cluster. It was discovered by Barnabus Oriani on May 5, 1779. M61 is one of the larger members of the Virgo Cluster. Six supernovae have been observed in this galaxy.

Messier 65 (also known as NGC 3623) is an intermediate spiral galaxy about 35 million light-years away in the constellation Leo. It was discovered by Charles Messier in 1780. M65, M66, and NGC 3628 comprise the famous Leo Triplet, a small group of galaxies.

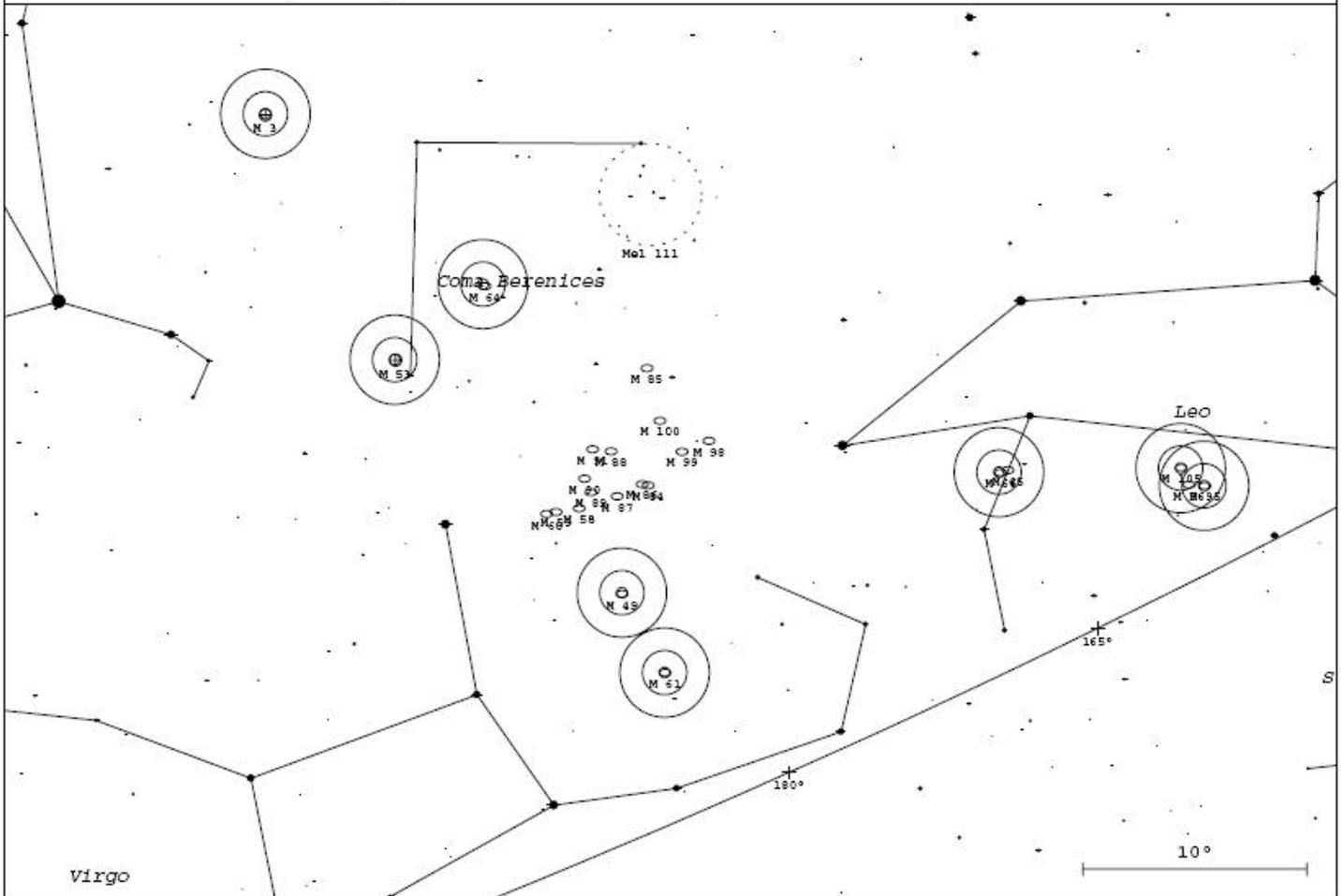
Messier 66 (also known as NGC 3627) is an intermediate spiral galaxy about 36 million light-years away in the constellation Leo. It was discovered by Charles Messier in 1780. M66 is about 95 thousand light-years across with striking dust lanes and bright star clusters along sweeping spiral arms. M66 is part of the famous Leo Triplet, a small group of galaxies that also includes M65 and NGC 3628.

Messier 95 (also known as NGC 3351) is a barred spiral galaxy about 38 million light-years away in the constellation Leo. It was discovered by Pierre Méchain in 1781, and catalogued by Charles Messier four days later.

Messier 96 is the brightest galaxy within the M96 Group, a group of galaxies in the constellation Leo also includes the Messier objects M95 and M105, as well as at least nine other galaxies. The M96 galaxy has asymmetric arms and a displaced core, probably caused by the gravitational pull by the other nearby galaxies.

Messier 105 (also known as NGC 3379) is an elliptical galaxy in the constellation Leo. Messier 105 is known to have a supermassive black hole.

[Chart 5] M3, M49, M53, M61, M64, M65, M66, M95, M95, M105



How to Join the Delmarva Stargazers: Anyone with an interest in any aspect of astronomy is welcome

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Moondark is on hiatus this month. The column should return soon. Look here or keep an eye out on the [Moondark web site](#)).