

STAR GAZER NEWS

NEWSLETTER OF THE DELMARVA STARGAZERS

November 2002

WWW.DelmarvaStarGazers.Org

Volume 10 Number 5

At the October Meeting... Don Surles brought the meeting to order at 7:15 with 10 members and guests attending.

New Member: Rick Kurek Quantico, VA

Aurora of September 7th

Don showed slides which he had taken of the Aurora on September 7th. He shortened his exposure in these shots to capture the *spikes* and also shot above the horizon to eliminate the green yellow hue and get more of the reds.

Constellation of the Month: Aquila (uh-KWILuh) Presented by Terry Young.

Mythology- Aquila, the eagle, was the divine bird of Zeus and the bearer of the sacred thunder. It

Monthly Meeting, Tuesday, November 5

Barlows and Their Use

Don Surles and others

7:00 p.m. First Presbyterian Church, Smyrna

was Aquila who delivered the youth Ganymede to Olympus to become the cup bearer of the gods. Assisting Zeus in his battle against the Titans, it was Aquila who carried out the punishment of the Titan Prometheus, for having given man fire. He eternally devoured the liver of Prometheus, which of course, regenerated itself the next day. It was also Aquila who swooped down and killed Ophiuchus with one of Zeus's arrows. In one version Hercules, in order to save Prometheus, kills Aquila with the poison arrow represented by Sagitta.

Astronomy- Stars

Altair (Alpha Aquilae) This spectral type A7 star is 16 light years away and is the 12th brightest star in the sky. A rapidly spinning star with a period of 10 hours, it acquired some pop notoriety this summer when the 14% equatorial bulge was confirmed with NASA's new Test Bed Interferometer.

Alschain (Beta Aquilae) This magnitude 3.7 G8 star at 42 light years away, may be used as a comparison star for the nearby cepheid variable, Eta Aquilae.

Tarazed (Gamma Aql) is a magnitude 2.7 K3 giant star at a distance of 280 light years.

Eta Aquilae, a cepheid variable is 1400 light years away. After Polaris and Delta Cephei, it is the brightest Cepheid variable star, ranging from magnitude 4.1 to 5.3 every 7.2 days.

Van Biesbroeck's Star This M3 V red dwarf star has the lowest known luminosity of any star.

Double Stars

The double stars in Aquila are too numerous to list here but below are 2 easy ones, suitable for small apertures.

15 Aquilae is an optical double of a magnitude 5.4 yellow giant star and a purplish magnitude 7.2 companion star with a separation of 38.4 arc seconds. It is easily visible in small telescopes.

57 Aquilae is also an ideal double star for small telescopes, consisting of a bluish magnitude 5.7 star with a magnitude 6.5 companion. The separation is 36 arc seconds. They are 590 light years away.

Deep Space Objects

NGC 6709 is a loosely scattered cluster of medium bright stars lying in a fine field. This cluster is not for small apertures.

NGC 6781 is a large bright planetary nebula. An OIII filter improves the telescopic view and reveals the circular nature of the nebula.

Nova Aquilae 1918 This was the brightest Nova observed in the prior 300 years. First discovered on June, 8, 1918, it rose from magnitude 7 to -1 and after 20 days dwindled to magnitude 4 and a year later was under magnitude 6.

Program- Buying the Christmas Telescope Don Surles & others

To determine the correct scope to give someone, Don asks the following questions:

Who's going to use it?

Age and experience are considered here. Someone under 10 years old is probably better off with a department store scope such as a 2" altazimuth refractor. As age and / or proficiency increase, a 6" Dobsonian could be considered. For more advanced observers, an equatorial mounted Newtonian or one of the many Catadioptric designs might be considered.

What's it going to be used for?

For general astronomical observation at nominal

cost, it is hard to beat an 8" Dobsonian. It is easy to set up and transport, and allows direct slewing to the target. As you get more specific activities, the requirements change. For **deep space observing** you would want at least 12" of aperture. Don reminds us that light gathering increases exponentially with each inch of aperture. (A one-fold increase of aperture gives a fourfold increase of light gathering.) For **astrophotography**, the favorites are the fork mounted 8" Schmidt Cassegrain and/or an 8" equatorial mounted Newtonian. **Double stars, planets and the Moon** are best viewed with a good refractor for razor sharpness and higher contrast.

Where do you buy it? The choices are local or mail order. The best choices and prices will probably be mail order but at this date you might be too late for Christmas delivery.

How much to Pay for it? This is a very rapidly changing market; you might want to consult with the stargazer members who keep on top of such things. Also there are a lot of one time deals out there.

Accessories You'll probably need eyepieces, and you'll want a Telrad (even if you already have a finder scope) and finally be sure to get a planisphere, especially if you're a beginner.

From the President's Desk

Back in 1988, my family and I had the pleasure of meeting Clyde Tombaugh at Stellafane. At the time it didn't register that Dr. Tombaugh was the only living person to discover a planet in our solar system – and probably the last person to do so. Today, I look back on the occasion as one of those experiences that one remembers – forever. This past weekend, I had a similar experience. While visiting my son, Matt, in Lexington, KY, I had the pleasure of meeting Harrison "Jack" Schmitt. Who is Jack Schmitt, you ask. Well, he is the only scientist to have visited the moon. Jack went to the moon on Apollo 17, December 11, 1972. He is a geologist; he participated in examination and evaluation of lunar samples after each mission and finally stepped onto the moon – the last of the 12 astronauts to do so. Dr. Schmitt's presentation recounted his trip to the moon and kicked off Earth Week for the University of Kentucky.

Although I was very much alive in the late 60's and early 70's, the Apollo program was not a high priority item in my day-to-day activities. Attending and "staying in" college, the Vietnam War, body counts, demonstrations and riots on our campuses and in our streets, assassinations, and working for funds to pay for college...all these put the Apollo program very low

on my list of "musts". Today, I read about the tremendous efforts of our nation in the space race and wonder how I could have missed 10 years of mankind's best performance. I also wonder why we have no program of such importance in progress today – we don't even talk about "going forward". What a rut to be in!

Here are some tidbits of information about Apollo 17 and the race to the moon I jotted down during Dr. Schmitt's presentation:

- * Gene Cernan wore an extremely loud pair of plaid pants while driving the Lunar Rover in Arizona – and my wife bought me a pair similar to them about 1971-72 but I could never get the courage to wear them in public

- * The velocity required for Earth orbit is 18,000 MPH and 25,000 MPH for a trajectory to the moon – Apollo 17's trajectory was nearly perfect and required very few adjustments – the ship was "rolled or spiralled" continuously to avoid overheating the sunward side

- * The lack of color on the moon is due to a lack of water – without water there is no oxidation of the minerals and thus no rusty reds or corroded greens...

- * The American flag stands out because it had a curtain rod holding it outstretched

- * The backup firing mechanism for the ascent module was a set of jumper cables – if the ascent rockets failed to fire, the commander would exit the ascent module, locate the jumper cables in the descent module, connect them to a battery in the descent module, re-enter the ascent module and connect the other end of the cables, and push the "start" button. This procedure was never tested on the moon...

- * There were approximately half a million people working for NASA during the race to the moon – approximately 1/3 government and 2/3's contractors

- * Most of the people (2/3's-3/4) working for the Apollo program were less than 30 years old.

I hope history remembers this period and the tremendous effort and courage of those committed people who made the lunar landings, and returns, one of the crowning events of our existence.

Back to reality – our 8th No-Frills Star Party is history. We all had a good time and after several days of hot, muggy weather we welcomed Saturday morning's clear sky and promise of a great Saturday night. No one was disappointed with Saturday night! We will dissect this party and make a few notes for possible improvements for the next one.

Attention: Star gazing at Tuckahoe for November is scheduled for November 1-2. We have been invited to use the Equestrian Center grounds. Here are directions to the Equestrian Center: from the entrance to the camping area (where we normally stargaze) – follow Cherry Lane to the stop sign and turn right onto Crouse Mill Road – go past the lake (on your right) –

the road will split just after passing the lake – take the left fork and look for the entrance to the Equestrian Center on your right (approximately 200 yards). We will meet in the field behind the buildings.

The Leonids: we will meet at the ball field for the Leonids , Monday night, November 18. The moon will not be an asset but this is supposed to be the last chance of significant showers for several years. Dance for clear weather...

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Our program this month is “Choosing and Using Barlows”. We will answer questions of what, why, which one, how much, etc – come and learn all about barlows. Bring your questions and your barlow if you have one. Lyle will tell us all about Cygnus; we'll have some facts about our planet Earth, and some pics of the moon. Delmarva Star Gazers is sponsoring a mirror making seminar again this year and we will also construct the prominence scopes during the seminar. The seminar will be advertised on the internet and other websites early in December. If any Delmarva Star Gazer wants to participate please contact Lyle Jones (302-736-9842) ASAP because the spaces do not last more than a couple of hours after we list the event on the internet. For information, we have approximately 12-15 mirror making stations and 20 prominence scope positions. The costs are: Mirror making -10” = \$375, 8”= \$225, 6” = \$175, and prom scope = \$400. All supplies, instructions, meals, and lodging are included in the fees. Steve Swayze (Swayze Optical) will again be here to assist in figuring the mirrors. Dave Groski will be the instructor for assembling the prom scopes. For information, last year's seminar was a huge success. Most of the mirrors were finished to excellent figures and the prominence scopes perform very well. This is the same design that won an award at Stellafane this year.

Enuf – see you at Tuckahoe or the Church. Don...

The Editor’s Quadrant....

The Leonid Meteor Shower November 18-19

This shower caused by comet Tempel-Tuttle, will come in 2 waves the first from the 1767 dust trail and the second from the 1866 dust trail. The first will come on November 18 at about 11 p.m. EST; the second will be about 6 hours later at 5:30 p.m. EST. The morning of Tuesday the 19th should be the best, since its ZHR (zenithal hourly rate) is 6000 vs. 3000 for the 18th. Also, the full moon of the 18th will be at its highest whereas the moon of the 19th will be an hour away from setting. The ra-

diant will be in the center of Leo’s *sickle* head.

The Planets in November

Mercury is too close to the Sun for decent viewing for almost all of November. You may catch a fleeting glimpse at the end of the month when it rises 50 minutes before the Sun. **Venus** passes through conjunction with the Sun early in November and by the middle of the month is rising almost 2 hours before the Sun and 3 hours by the end of the month, reaching magnitude -4.6.

Mars remains a morning star in November, increasing very slightly in magnitude. **Jupiter** improves throughout November since it rises ever earlier as the month proceeds, and finally rising slightly before 10:00 p.m. as the month ends. The size of the planets disc increases 3 arc seconds to 40.4. **Saturn** also does nothing but improve in November as it rises ever earlier with rings open at full tilt and the magnitude reaches -0.2. As for the remaining planets in October, **Uranus** and **Neptune** can still be found in Capricornus and **Pluto** remains in the southern part of Ophiuchus but near the end of the month will be too close to the sun for viewing.

Clear Skies! Frank Sheldon *f.a.sheldon@att.net*
Club Activities...

Club Meetings- We meet in the First Presbyterian Church in Smyrna, DE (653-8000) on the first Tuesday of each month from 7-9 PM. From US 13, turn west at Wendy's and go one stoplight on Commerce Street; the church is on the right directly across from the Fire Hall.

Future Meetings...The remaining meeting dates for 2002 will be: November 05, December 03 The regular meeting format includes discussion of club activities, observing highlights and an advertised presentation. We solicit suggestions for topics and presenters.

Club Observing... Observing is (usually) scheduled for the Friday nearest the New Moon to maximize the hours of *deepnight* without the moon in the sky. Unless otherwise stated, the monthly observing site will be at the baseball field in the camping area at Tuckahoe State Park. The monthly observing days left for the year 2002 will be: November 1, and December 6. The cloud or rain date for the monthly Friday observing will be the following Saturday, but don't trust the weather man! Go outside and look for yourself or check the CNN weather link on our web page. If you still can't decide, Call Don Surles (302) 653-9445 or Lyle Jones (302) 736-9842

Delmarva Star Gazers Officers for 2002-2003

President.....Don Surles 302 653 9445

Vice President.....Lyle Jones 302 736 9842

Secretary.....Keith Lohmeyer 410 482 6077

Treasurer.....Kathy Sheldon 302 422 4695

Moondark for November: One picture is worth a zillion numbers

Extrapolating from the old adage, I am convinced that one picture is worth many times its supposed number of words. Top-of-the-line commercial digital cameras now come with 5 megapixel chips. [Sky and Telescope](#) advertises [2 megapixel astro CCD's](#) for the amateur. And at the extreme, the [imager for the Sloan Digital Sky Survey](#) has 30 CCD's with 4 million pixels each and produces 220 gigabytes of data on a clear night.

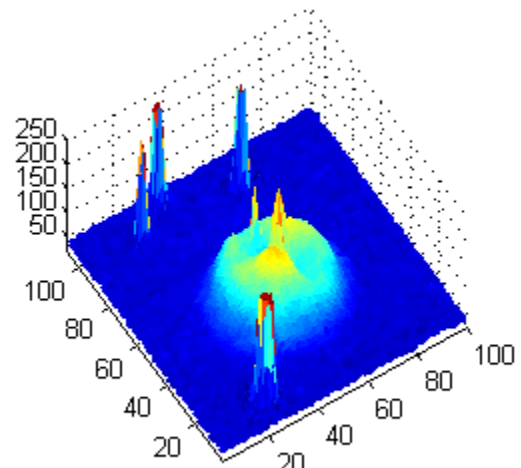
Each one of those pixels is a number. Its value represents the brightness of that exact location on the telescope's focal plane. For my Cookbook camera, there are 4096 possible levels represented as 10-bits (ones and zeros) for each of 378 x 252 pixels, not many at all by today's standards. For color imaging with a webcam, each pixel is a triplet of numbers, commonly representing how much in each of three colors, red, green and blue.

[Digital image processing](#) seems magical to me. Individual short exposures are added to be the equivalent of one much longer. Noise can be subtracted out, while unevenness in sensitivity and illumination can be divided away. Whole images can be rotated, stretched, aligned and combined to reveal movement (asteroids or a new comet?) or changes in brightness (variable stars? novae?). Images are just raw data, and visualization techniques can be used to reveal insights otherwise invisible. Aesthetics can be served as well. Techniques like those pioneered in the dark room by David Malin, unsharp masking and tri-color composites, are now available at a mouse click.

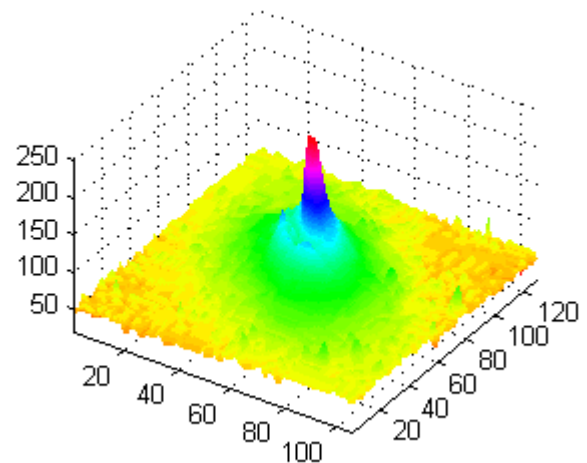
most remarkable advances have been in software. Not that the equipment hasn't evolved—it has, from tiny CCD's to mega-imagers, video chips, webcams and digicams, but without software to crunch and display, it's still just a bunch of numbers.

At right are some of my better Cookbook shots of deep sky objects depicted here in a different way. They are plotted in 3-D as if brightness represents height or topography. After each had gone through basic image calibration and cosmetic enhancement, further processing provided a three-dimensional representation that can be colored, shaded and illuminated as if it were a real, 3-D object. Peaks are bright spots (mostly stars), while dark regions are valleys and low areas. Finally, this is all collapsed back into numbers for delivery to your browser's screen. After all this processing and calculation, can you recognize any of them? (All three are famous Messier objects: place your mouse over the colored image for a look at the original.)

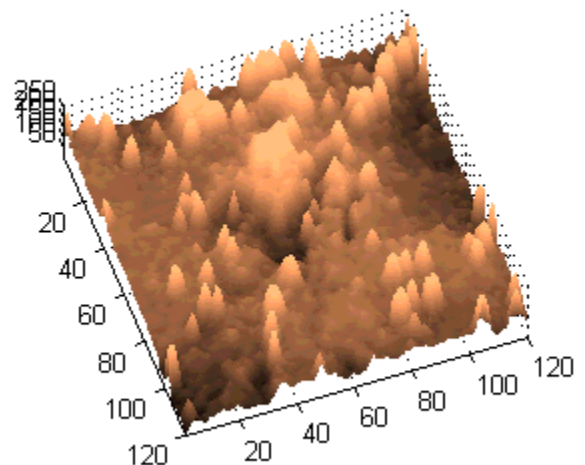
To [MATLAB](#), an image is just a matrix of numbers. Moondark is written by [Doug Miller](#), published [on the web](#), and printed in the [Delmarva Star Gazers' Star Gazer News](#). This document was last revised on 26 October 2002. All text and images copyright © 2002 Douglas C. Miller, All Rights Reserved. This material may not be reproduced in any form without prior permission.



Hint: Night fowl in Ursa Major...

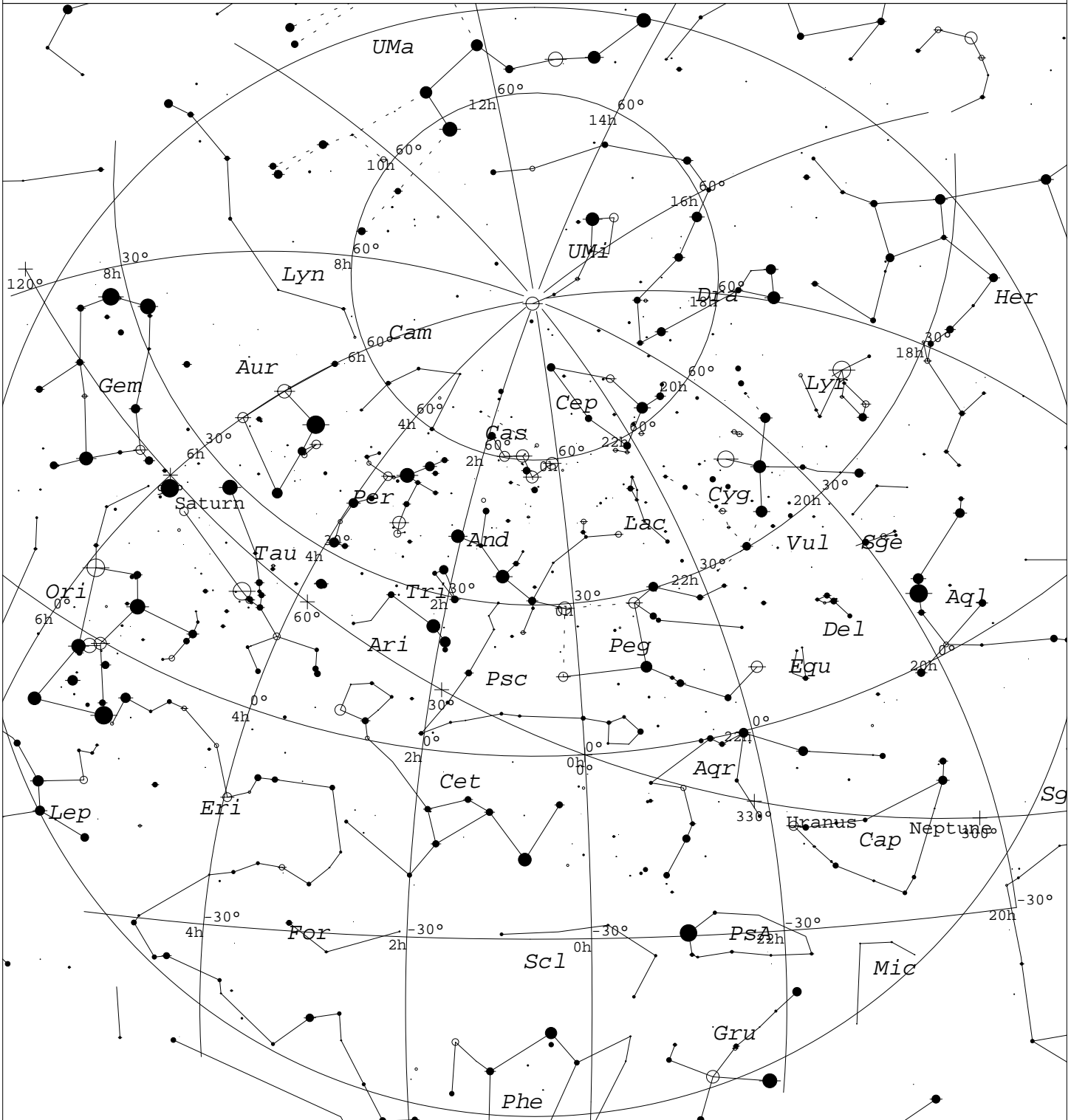


Once upon a time in Coma Berenices....



Raptor cloud in Serpens Cauda...

SKYMAP FOR NOVEMBER 2002



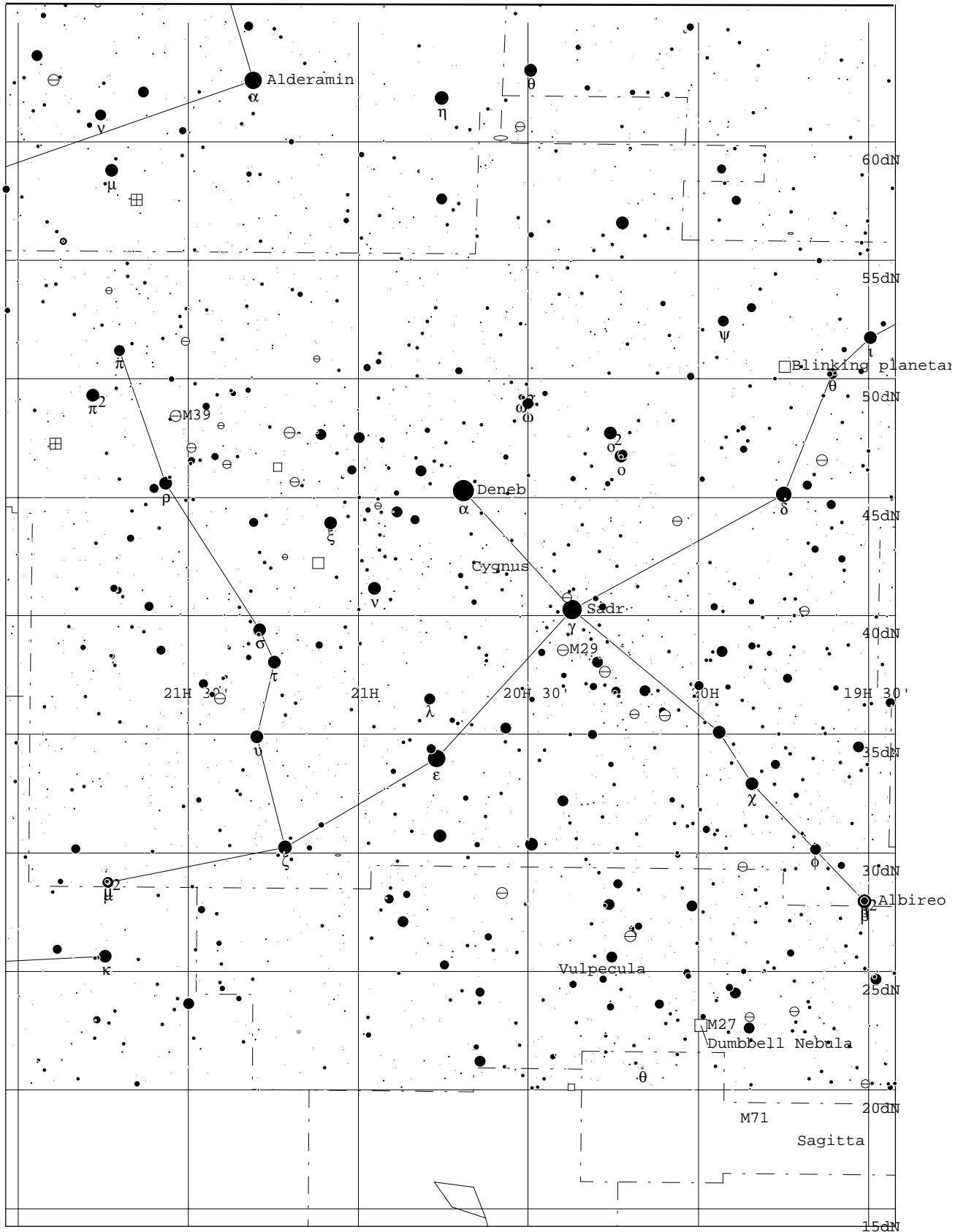
<p>STARS</p> <ul style="list-style-type: none"> ● <1 ● 1.5 ● 2 ● 2.5 ● 3 ● 3.5 ● 4 ● 4.5 ● >5 	<p>SYMBOLS</p> <ul style="list-style-type: none"> ● Multiple star ○ Variable star ☄ Comet ☉ Galaxy □ Bright nebula ■ Dark nebula ⊕ Globular cluster ⊕ Open cluster ⊕ Planetary nebula ⊕ Quasar △ Radio source × X-ray source ○ Other object 	<p>TUCKAHOE STATE PARK NOVEMBER 1, 2200 HOURS EST</p>
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Local Time: 22:00:00 1-Nov-2002
Location: 38° 59' 0" N 76° 56' 0" W

UTC: 03:00:00 2-Nov-2002
RA: 0h37m08s Dec: +38° 58' Field: 182.0°

Sidereal Time: 00:37:08
Julian Day: 2452580.6250

CONSTELLATION FOR NOVEMBER 2002: CYGNUS



Star Party No-Frills VIII

