



# NORFOLK SKIES



The Official Newsletter of the new Norfolk Astronomical Society

Glendon L. Howell, Editor

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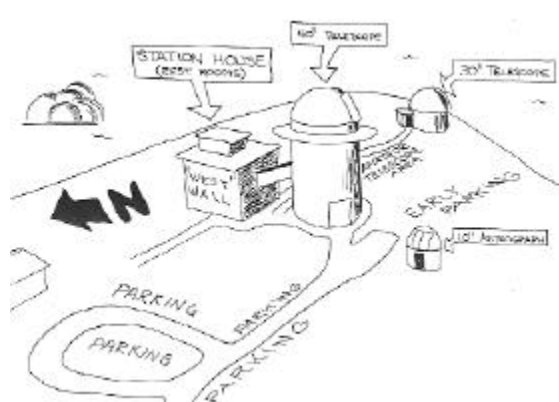
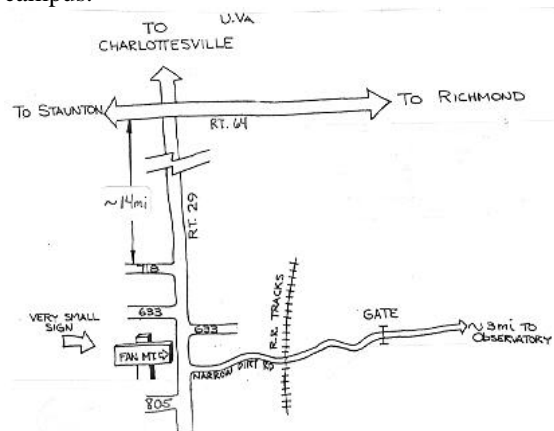
## Meetings And Events For April 2001

Date	Activity
Tues., Apr. 3	<b>The Chesapeake Asteroid Impact Crater</b> Sigma Series lecture (free) by David Powers, 7:30 PM at the Virginia Air & Space Center. For more info, visit <a href="http://www.vasc.org">http://www.vasc.org</a> .
Thu., Apr. 5	<b>Regular Meeting</b> , 6:30 PM, at the Old Country Buffet across from Greenbrier Mall. After the dinner, the meeting is expected to move to the Chesapeake Planetarium for the 8 PM show.
Thu., Apr. 13	<b>NAS Observing Session</b> , weather permitting, dusk until ???, at the home of Glen's parent's home in Gates Co., NC. <b>RSVP as space is limited. Call Glen (485-4242) for info and to determine if session will be held.</b>
Thu., Apr. 20	<b>Fan Mountain Open House</b> . Write to UVA for free required tickets. See article below.
Sat., Apr. 28	<b>National Astronomy Day</b> , noon until ? at The Waterside in Norfolk???

## Fan Mountain Open House – April 20

There will be a Fan Mountain Open House the evening of Friday, April 20. Members who may be interested in having the opportunity to observe through 30 and 40-inch observatory telescopes are encouraged to write the University of Virginia Astronomy, sending a SASE, and requesting up to 5 free tickets (used to limit attendance). The Observatoy lies about 13 miles south of Charlottesville.

Leander McCormick Observatory, which houses a 26-inch Alvin-Clark refractor, is open the first and third Fridays of each month. This observatory lies in Charlottesville on the western edge of the UVA campus.



## National Astronomy Day – April 28

National Astronomy Day is Saturday, April 28, with National Astronomy Week the week of April 23-29. If there is sufficient interest, perhaps we should consider setting up a display and telescopes? Expect discussion at our next meeting April 5.

### Local Planetarium Shows

**VOYAGE TO THE STARS** will be shown **Thursdays, April 5, 12, 19, and 26**, from 8 to 9 PM at the Chesapeake Planetarium, 300 Cedar Road. The program takes you on a tour of the universe around us. Telescope outing immediately after the show, weather permitting. Admission free. For reservations call 547-0153.

*Carl Sagan's COSMOS* will be shown weekdays at 2:30 PM, and at 11 AM, 1:30 PM, and 3:30 PM Saturday, and at 1:30 PM and 3:30 PM Sundays at the Virginia Living Museum Planetarium, 524 N. J.Clyde Morris Blvd, in Newport News. The program is based upon the TV series by Carl Sagan of decades ago. Admission \$3.00. For information call 595-1900.

### Events Of The March Meeting

Last month's meeting was held Thursday, March 1, 2001 at the Golden Corral, at Chesapeake Square Mall. In attendance were members Chuck Sawyer, Glen Howell, Dave Kratz, and Shelton Williams. Shelton mentioned he was planning a trip down to Florida in a week, and would view a Space Shuttle launch while down there. Glen brought information on the Zeta Tauri graze from David Dunham of IOTA.

### Events Of The March 23-24 NAS Messier Marathon

Due to Kent Blackwell not being able to host his annual ECSP Messier Marathon this year due to a conflict with a cruise to Mexico, Glen Howell opted to host a much scaled back version just for NAS members at his parents home down in Gates County, NC the weekend of March 23-24. With clear skies Friday night, Glen Howell, Scott Justis, and Shelton Williams ventured down, arriving before sunset.

While Scott did some photography, Shelton did a lot of deep sky observing in the Leo-Coma-Virgo region, and Glen took a liesurely tour of the Messier list. Shelton left about midnight, while Scott and Glen continued on until twilight. By night's end Scott had taken 3-4 photos, while Glen had viewed 47 Messiers. Unfortunately, clouds Saturday forced cancellation of Saturday's activities.

### Astrophotography

By Preston Scott Justis



OBJECT : NGC 5194 / M 51  
 TYPE : Galaxy in Canes Venatici  
 EXPOSURE: 100 minutes  
 FILM : Tech Pan 2415 (hypersensitised)  
 OPTICS : prime focus, 10-inch f/6 Newtonian  
 DATE : 2/14-15/1994

Visit Scott's Web Site at

<http://home.earthlink.net/~psjustis/Astrophotos.htm>

This photo is copyrighted and appears in this issue by written permission of Preston S. Justis.

## Observing at Clark's Creek NC with Eric Honeycutt

By Kent Blackwell

Friday night, February 23 Eric Honeycutt, Jim Anderson and I met at Clark's Creek, a great observing site about 50 miles south of Nags Head, NC. I had a 25" f/5, Eric a 22" f/4.1 Starmaster and Jim a huge Meade SCT. This is certainly one of the darkest skies in the VA/NC area, and might be one of the darkest along the east coast. Once Eric had secured permission to use the property we were on our way. Both he & I sighted 7.7 magnitude naked-eye star **SAO 28038** below the bowl of the Big Dipper.

While Jim was scanning the skies with his Meade SCT Eric was locating his favorite objects, obscure planetary nebulae. Before the task of finding faint galaxies, I thought I'd take a look at the very close planetary nebula discussed here previously:

**Sh2-216** in Perseus. The skies at this observing locale are darker than Coinjock NC, where I had seen Sh2-216 a few nights before. Even in these terrific skies it's still a faint object. As I noted previously it is odd that this planetary is a bit easier without a filter. Nevertheless I tried using all filters. The OIII was best, second best was an Orion Ultra-Block, and the least of the three was the UHC. One you sight Sh2-216 scan your telescope back and forth the follow a large arc of nebulosity. Near this object is a faint galaxy, **Wein 30** - Perseus - 4h 33m 41.6s + 45 29' 43" - An ef 16.5 magnitude galaxy, very small. I could see it with averted vision at 200x, and direct vision at 360x.

**Pal 4** - Ursa Major - 11h 29m 15.2s + 28 58' 05" - Both Eric and I tested our observing skills by trying to locate this distant globular. At 14.4 magnitude one would think it would be a relatively easy target but I found it to be quite faint, with very low surface brightness. It lies WSW of a 13.9 magnitude star. Before leaving this area try sighting a few faint galaxies in the region:

**MCG+5-27-81** - Ursa Major - 11h 31m 4.2s + 29 18' 06" A pretty faint, pretty small galaxy, elongated E & W, has a bright core.

**KUG 1128+297** - Ursa Major - 11h 31m 8.6s + 29 25' 57". This is not so easy, being 17th magnitude. Eric confirmed my sighting of it, and we both agreed to call it vvf, ps, elongated. Has anyone observed this illusive galaxy?

Since we were observing very faint objects Eric showed me an exciting object I had never observed before:

**QSO 0957+561** - Ursa Major - 10h 01m 20.9 + 55 53' 50". Nicknamed the Double Quasar, also Twin Quasar and Dual Quasar, at 17th. magnitude and a separation of 6 arcseconds, the quasar is certainly one of the most distant objects an amateur will ever observe. It's hardly an easy task finding it, but Eric went right to it. I found it a bit easier to see at 215x than 400x but seeing just wasn't good enough to warrant such high power. It's a great object, if you have a 20" or larger by all means go for it. Some have seen it with a 15" scope, while some fail to see it in a 30". What you'll see are two very close companions looking a bit "fuzzier" than the surrounding faint stars. A great guidepost to locating it is the 11.5 magnitude edge-on galaxy **NGC 3079**. The quasar is about 1/2 degree to the NW of it. Fascinating object. Who has seen it? For more information see Eric Honeycutt's description at [www.icplanetaries.com/dblqsr.html](http://www.icplanetaries.com/dblqsr.html).

After these faint deep-sky objects we felt we all needed a break, so we each slewed our telescopes to **M 51**. It was the best I have ever seen it. Rarely have I detected so much minute, fine detail in the spiral arms, particularly the faint arm extending southward. It was just simply stunning. I wish I had of tried to locate galaxies **IC 4277** & **IC 4278** shown on page 151 of Vicker's CCD Atlas North which are in the same field of view, but just didn't think to do so. Next on the show objects list were M 3 and M 13, each displaying their magnificent structure better than ever before. We joked each looked more like an open cluster than a globular.

I could go on with superlatives about this particular observing night but I'll spare boring you with all the details. I'm just too excited not to share some of the views with others. If you have observed any of the objects mentioned please let me know.

## Observing Double Stars

Observing double stars is an interesting phase of star-gazing that can be done with any telescope or pair of binoculars. The beginner should start with easy doubles, e.g., 10 seconds of arc more separation with a comes (companion) star no fainter than eighth magnitude. It should be noted that close doubles near the limit of resolution for a particular telescope can be split only when seeing conditions are excellent. Make Mizar your first double. It is easy to find, with Alcor alongside supplying positive identification.

A fundamental rule in telescope optics states that the true angular field of view multiplied by the magnification equals the apparent angular field of view. This rule can also be applied to any part of the field. For example, the popular double star Mizar is separated by 14 seconds of arc. This is the true field angle, the same angular separation as you see the stars with using your unaided eye. The human eye can't "split" 14 seconds of arc, so you have to magnify. A magnification of 43x will increase the angle to about 10 minutes of arc ( $14'' * 43 = 602'' / 60'' =$  a little over 10'), which you can see quite easily.

About the closest star separation that the eye can distinguish is 4 minutes of arc (240 seconds of arc). Twice this distance, or an 8-minute (480-second) apparent field angle, is a more practical value for comfortable viewing. In cases where the comes is more than five magnitudes fainter than the primary, you will need a wider separation: 20 or 25 minutes of arc, nearly the width of the moon seen with the naked eye. Note that Mizar and Alcor are separated by nearly 12 minutes of arc and should be easily split by the naked eye.

The table below gives the power needed for an 8-minute (480-second) apparent field. Try half the power to test your eye, your equipment, and the seeing conditions. To calculate quickly the power needed, divide 480 by the angular separation.

Angular Separation (")	Power Needed (X)	Star
1	480	35 Comae Berenices
1.2	400	Zeta Cancri
1.5	320	Mu Cygni
2	240	Xi Ursae Majoris (Alula Australis)
2.5	192	Alpha Geminorum (Castor)
3	160	Zeta Aquarii
4	120	Gamma Leonis (Algieba)
5	96	Gamma Virginis (Porrina)
6	80	Pi Bootis
7	68	32 Eridani
10	48	Gamma Andromedae (Almach)
11	44	Eta Cassiopeiae
13	36	8 Monocerotis
14	34	Zeta Ursae Majoris (Mizar)
18	26	Alpha Ursae Minoris (Polaris)
20	24	Alpha Canum Venaticorum (Cor Caroli)
22	22	8 Lacertae
24	20	Zeta Piscium
25	20	61 Cygni
30	16	Iota Cancri
35	14	Beta Cygni (Albireo)
40	12	16 Cygni
45	12	Zeta Lyrae
55	10	67 Ophiuchi
65	8	Tau Tauri
90	6	Epsilon Sagittae
95	6	Gamma Leporis
100	6	Delta Bootis

Objective Diameter (mm)	Dawes Limit (")	Working Value (")
25	4.6	8.0
50	2.3	4.0
60	1.9	3.3
90	1.3	2.2
100	1.2	2.0
200	0.6	1.0
250	0.5	0.8
300	0.4	0.7

The resolving power of your equipment is limited by the diameter of its objective lens(es). A star is a mathematical point, subtending an angle of 0.05 second of arc or less. No telescope can show such a tiny object as it really is, but instead expands the angle to form a small disc of light, known as a diffraction disc. The smaller the diffraction disc, the better the resolution. Resolution means simply the ability to show fine detail, and an exact measure of this is offered by close double stars.

The value called "Dawes Limit" does not call for actual separation, since it recognizes only the bright center of the star image. The "Working Value" is the approximate minimum for complete separation. The Dawes Limit is calculated by dividing the value 115.8 by the diameter of the objective in millimetres. The Working Value uses the value 200.

### ALCON 2001 Pre-Registration Deadline Nears

The Norfolk Astronomical Society is now one of the newest member societies of the Astronomical League. Our number is ME7104, which denotes we are also a member of the Mid-East Region of the AL. In a future issue I hope to cover some of the benefits of League membership.

One event of note is this year's ALCON 2001 convention, set for **July 25-28** in Fredrick, MD. Speakers, exhibits, door prizes, observing and more are planned. A deadline of **May 1** has been set for early registration, which will save you some money. For up to date information on this convention, visit the League's website at <http://www.astroleague.org/>.

### Ask Uncle Sol: A Little Humor

Dear Uncle Sol,

I read that an 8-inch f/8 scope used with a 26mm eyepiece is equivalent to an 8-inch f/4 scope used with a 13mm eyepiece. This is definitely not true! I frequently take my 8-inch f/4 out into the countryside for star parties, using a 13mm eyepiece. But even with a 26mm eyepiece, my 8-inch f/8 won't fit in the car! --- Lance Reventlow, Morristown, TN.

Uncle Sol answers: Lance, you have made a common beginner's mistake. The two scopes, with those eyepieces, are equivalent outside the car. But when you try to put the f/8 inside your car, your automobile's own optics come into play. Until you adjust them, your car cannot benefit from the new eyepiece.

You must first learn to identify the car's primary or objective lens (so called because while you are driving, you can see your objective in it).

While sitting in the driver's seat, you will notice a small mirror, known as the secondary. If your car is a Schmidt Cassegrain, the secondary is attached to the primary lens; if your car is a Newtonian, the secondary is attached to the primary holder, just above the primary.

Now that you've located your car's primary lens, you must adjust the car's focal length to match the change in the telescope. Since auto primaries are zero magnification (technically, they are corrector plates) this is a simple task. Just tap with a 16 oz. ball pein hammer on the primary until it has deformed into a concave hemisphere, or even better, popped out.

Your f/8 now fits in the car!

But before you drive off, you must collimate the car's optics. Climb onto the trunk and, with your head on the car's center axis, look through the ocular lens into the secondary. Have a friend adjust the secondary until the image of your face is centered in it. (Hint: this will be easier if you've painted a black dot on your nose.) Once your face is centered in the secondary, have your friend adjust the position of the 8-inch on the rear seat until it occults the black dot.

If you cannot do this, your nose is not aligned with your visual axis.

Tap your nose with an occulting bar while you twirl around in right ascension. If you hit your nose hard enough, you will see stars. When you are aligned, these stars will describe concentric circles: "Oh, there's a pretty blue circle with a 7-inch radius, but it's not half as pretty as that red one with an 8-inch radius. Say, they both have the same center!"

If you find these adjustments difficult, you may want to invest in an auto collimating eyepiece.

*Ask Uncle Sol is a monthly feature by Sheldon Cohen in The Smoky Mountain Astronomical Society Bulletin.*

## Norfolk Astronomical Society Astronomical Calendar

March 2001							April 2001							May 2001						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2	3	1	2	3	4	5	6	7	6	7	8	9	10	11	12
4	5	6	7	8	9	10	8	9	10	11	12	13	14	13	14	15	16	17	18	19
11	12	13	14	15	16	17	15	16	17	18	19	20	21	20	21	22	23	24	25	26
18	19	20	21	22	23	24	22	23	24	25	26	27	28	27	28	29	30	31		
25	26	27	28	29	30	31	29	30												

All times are EDT

<http://groups.hamptonroads.com/NAS/>

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
2:00 AM Daylight Savings Time (EDT) begins 6:49 AM First Quarter Moon		7:30 PM "The Chesapeake Asteroid Impact Crater" lecture at VASC		6:00 AM Moon perigee 6:30 PM NAS Regular Meeting at OCB Greenbrier	5:00 PM Mercury 10 degrees S of Venus	11:22 PM Full Moon
<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
				10:00 PM Mars 1.3 degrees S of Moon	6:00 PM Observing Session in Gates County	
<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>
12:00 AM Ceres 0.9 degrees S of Moon 11:31 AM Last Quarter Moon	10:00 AM Jupiter 5 degrees N of Aldebaran 12:00 PM Neptune 3 degrees N of Moon	2:00 AM Moon apogee 7:00 PM Uranus 3 degrees N of Moon			4:00 PM Venus 10 degrees N of Moon 7:00 PM Fan Mtn Open House	12:00 AM Lyrid Meteor Shower
<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>
	11:26 AM New Moon		12:00 PM Saturn 1.4 degrees N of Moon	9:00 AM Jupiter 1.8 degrees N of Moon		12:00 PM National Astronomy Day
<b>29</b>	<b>30</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	1:08 PM First Quarter moon	12:00 PM ALCON pre-registration deadline	12:00 AM Moon perigee		2:00 PM Venus reaches greatest brilliancy 7:00 PM Eta Aquarid Meteor Shower	