



# NORFOLK SKIES



The Official Newsletter of the new Norfolk Astronomical Society

Glendon L. Howell, Editor

Volume I; Number 2

February 2001

## Meetings And Events For February 2001

Date	Activity
Thu., Feb. 1	<b>Regular Meeting</b> , 8 PM, at Pizza Hut, across from Chesapeake Square Mall. Topic for the meeting will be locating new observing sites, planning trips, activities, etc.
Sat., Feb. 10	<b>Virginia Air &amp; Space Center</b> fieldtrip, 9 AM until ? Come to see the IMAX film "Solarmax" (40 minutes) at 10 AM, noon, 2 PM, 4 PM, or 5:30 PM. Cost of exhibit admission and a movie is \$9.50. For more info, visit <a href="http://www.vasc.org">http://www.vasc.org</a> .
Fri., Feb. 16	<b>NAS Observing</b> , weather permitting, dusk until ???, site to be arranged. View the myriad of deep sky splendors plus Jupiter and Saturn too. <i>Call Glen Howell (485-4242) to determine if session will be held.</i>

### Local Planetarium Shows

**THE SKY ZOO** will be shown **Thursdays, February 1, 8, and 22**, from 8 to 9 PM at the Chesapeake Planetarium, 300 Cedar Road. The program examines some of the mythology of the constellations of the Zodiac. Telescope outing immediately after the show, weather permitting. Admission free. For reservations call 547-0153.

### NAS Web Site

The Norfolk Astronomical Society now has a web site of its own, and if anyone is up to the task of helping to build the site, you are welcome to try. Our web site URL will be

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

### Events Of The December Meeting

Our first meeting was held Thursday, December 14, 2000 at Old Country Buffet in the Greenbrier borough of Chesapeake. In attendance were Dave Kratz, and Barry Ferrell. Glen Howell, who had planned to join them, could not make it due to his wife having car troubles. After getting his wife's car home, Glen joined Barry, Kent Blackwell and Wesley Jacocks at the Chesapeake Planetarium.

### Events Of The January Meeting

Last month's meeting was held Thursday, January 4, 2001 at Old Country Buffet in the Greenbrier borough of Chesapeake. In attendance were Glen Howell, Scott Justis, Dave Kratz, and Barry Ferrell. The meeting proved to be one of the most memorable evenings this editor has seen in ages. The group was so caught up in the chatter, the restaurant finally had to run us out at 9:30.

The meeting had originally been scheduled at the Chesapeake Planetarium. There, Kent Blackwell reported that Chuck Sawyer, L. T. and Mary Tyson showed up there looking for the meeting. L.T. and Mary went on into the show, while Chuck helped Kent setup the telescope for the public.

### Observing Deep-Sky Objects in Canis Major

By Kent Blackwell

As we prepare for some of the coldest months of the year stargazing hardly comes to mind as a fun thing to do, yet some of the cleanest, clearest and most crisp air occurs in January and February. I actually prefer winter observing. It's easier to dress warmly than it is to combat the insects of summer.

Some of the most beautiful stars are in the winter sky, and what single one outshines them all but brilliant Sirius in Canis Major? I once projected Sirius on a white sheet of paper some 30 feet away from my 25" scope! I thought I'd write about a few of the deep sky objects visible in this constellation, since it culminates (when it's near the meridian) about 10:00pm in the middle of the month. Many of the objects I've chosen are quite easily seen in small telescopes, but I've included a few challenges as well.

**M 41** - Certainly this is the most conspicuous of all deep-sky objects in Canis Major. In fact, it's easily seen naked-eye in a dark sky. Look about a thumb's distance below Sirius. You might even use your thumb to block the light of Sirius when locating M 41. Don't forget to view it with binoculars, but it's best with a moderate size telescope and low power. Even at somewhat high power (150x) you'll see a scattering of stars running in every direction. It's one of the loveliest open clusters in the sky, easy to locate with Sirius lying so close. My earliest notes mention viewing it with a new pair of binoculars given to me one 1967 Christmas night. I still remember how enraptured I was with this wonderful object, and this was near my home in downtown Norfolk. My how light pollution has changed things in the year 2001.

**NGC 2196** - I chose this and **NGC 2283** (see below) because of how close they lie to brilliant Sirius. It's kind of fun to see if you can find these galaxies. NGC 2196 is even closer to that star than NGC 2283, in fact it is less than a degree to the southeast. It is quite bright, but very small, even at 150x. Be sure to use high enough power to place Sirius well out of the field of view. I'd be interested if anyone can see it with an ETX-size telescope. Now that's a challenge!

**NGC 2204** - This open cluster appears just a bit SSE of a 6th magnitude star. It can be found quite easily by drawing a line from the stars Sirius & Mirzam. Extend that imaginary line just about 1/3 the distance further west. My 4" Unitron shows N2204 as a beautiful nebulous patch of stars.

**NGC 2207/IC 2163** - I have included this for those with apertures larger than 6". These galaxies are interesting because they are an interacting pair. Actually the last time I observed NGC 2270 was in the 1970's with a 4" telescope. At that time my notes don't indicate seeing IC 2163. It would be interesting to hear from anyone who is able to see IC 2163.

**NGC 2283** is very easy to locate, being only a degree or so south of Sirius. However, it is quite faint, and also lies within a tiny little cluster of stars. It's difficult to tell whether the glow is the cluster or the galaxy. My earliest observations of it were with a 12-1/2" Newtonian. It's a real favorite of mine, and I'd be very interested in hearing from anyone who can spot it with small apertures. Write or email me if you see it.

**IC 2165** - Since almost every other type of deep sky-objects is discussed in this article I might as well include a planetary nebula. My only notes of IC 2165 were on January 16, 1997 with a 16" telescope, where I noted it was bright, but extremely small. Sure enough, it's about 10th magnitude, but only 9" in size. Use low power at first, then step up to at least 100x. Those with nebula filters might try the "blinking" trick; that is hold the filter between your eye and the eyepiece and quickly remove it. By flashing the filter back and forth the planetary nebula will appear to blink, as other stars in the field of view appear to almost disappear. Once you find it try using about 30x per inch of aperture for a better view.

**PK 229-2.1** - Ok, if you were able to see IC 2165 try this even more difficult planetary nebula. In the 25" it's faint, and quite stellar. The only way I could see it was to use an OIII filter and the blink

method described above. The nebula forms the apex of a triangle with two stars of equal brightness. Good luck on this difficult object.

**NGC 2327** - An interesting nebula extending north from a faint double star. It reminds me of the more famous NGC 2261 in Monoceros (Hubble's Variable Nebula) because of the wedge-shaped extension. Most sources list it as a bright emission nebula but I question that. Emission nebulae "emitting" their own light generally look considerably brighter in the telescope when using specific line, or nebula, filters. NGC 2327 does not brighten; therefore I suspect it might be a reflection, rather than emission nebula. When you find it look at the faint star just a bit eastward, in the same field of view. It too is nebulous, though fainter and more difficult.

**NGC 2359** - This emission nebula is absolutely stunning in a large telescope, especially if fitted with a Lumicon OIII nebula filter. I find it odd that it is seldom listed in observing guides, especially since it's visible in almost any telescope. Just to see how small an aperture could see it I fitted an OIII filter over the objective of my 1.5" finder and managed to see it! Having several nicknames, the one most aptly suited in "Thor's Helmet". In a large telescope the helmet is easily visible, as are both horns of the helmet. Try stepping the magnification up to about 150x once you find this magnificent object.

**NGC 2360** - An open cluster just off the head of Canis Major, and only minutes east of a 5th magnitude star. Visible in a 40mm finder, NGC 2360 is simply gorgeous in a 3" or larger telescope. You'll see a beautiful scattering of 11-13 magnitude stars, making it magnificent in any size telescope. I find it surpassed only by M 41.

**NGC 2362** - Located at the tail of Canis Major is this wonderful open cluster surrounding 4th magnitude star Tau Canis Major. Tau is suspected of being a member of this less than one million years old cluster, making it one of the youngest star clusters known. If Tau is indeed a member it's easily one of the most brilliant stars in our galaxy. Once you find the cluster try using high power and look for the two small, faint companions just east of Tau.

**NGC2380** - 2-1/2 degrees SE of NGC 2362 is NGC 2380. It appears fairly bright, and very round, and in fact looks more like a distant unresolved remote globular than a galaxy.

**vdB 96** - Just north of NGC 2362 is this very, very faint reflection nebula. To me it looks like a faint version of the Merope Nebula in the Pleiades. I could see the brighter portion extending north and east from the 3 primary stars associated with it. VdB is best reserved for apertures 10" and larger.

Though Canis Major is not a particularly large constellation it nevertheless contains some marvelous deep sky object due to its proximity to the Milky Way.

### Deep-Sky Astrophotography

By Preston Scott Justis



OBJECT : NGC 2362  
 TYPE : Open Cluster in Canis Major  
 EXPOSURE: 50 minutes  
 FILM : Tech Pan 2415 (hypersensitised)  
 OPTICS : prime focus, 10-inch f/6 Newtonian  
 DATE : unknown

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.

**ADS 5951**

By William N. "Chuckwagon" Gray

*"Chuckwagon" Gray, Secretary of the now defunct "Astronomical Society of Tidewater", and Editor of its newsletter for many years sadly passed away last February 2000. This editor shall always remember him for his gentle, warm manner and for always having a good cup of fresh brewed coffee and snacks available at all the AST events. Scott Justis describes him as one of the nicest amateurs he's ever known. The following article is reprinted from his January 1981 issue of "Between The Stars".*

On a cold night last January (1980), Dr. Scarr and I stumbled onto a beautiful little cluster of stars, just south of Sirius, in the constellation of Canis Major. It's a very impressive little group, with about 30-40 little 10<sup>th</sup> magnitude stars, all bunched up around this bright 4<sup>th</sup> magnitude star. A very attractive cluster, even in a small telescope, and it's magnificent in a larger one. It's known as NGC 2362.

Now that was a year ago, so recently, while scanning through that same part of the sky, I decided to take another look at it. And, as I moved around in the general area of where it was supposed to be, I ran across this very pretty double star! Now double stars are not unusual, but the colors of these two were. One was bright red, while the other appeared to be light blue!

Thinking that this must be some well known binary, I checked several references to see if I could identify it. I was quite puzzled to note that my "Atlas Of The Heavens" showed its position, but had no number or name to show what it was. Norton's also showed it, and here it had been given a Herschel number (h3945). It had been discovered by John Herschel while he was at the Cape of Good Hope. "Burnham's Celestial Handbook" also lists it with Herschel's number.

It is also known as ADS 5951. This means that it is listed as double star number 5951 in "Aitken's Double Star Catalog", which was published in 1932 by Robert Grant Aitken (1864-1951) of Lick Observatory. It contains some 17,180 listings!

Now all of this was interesting enough, but not being "into" double stars, I was not concerned about going any farther with it. In fact, I had almost forgotten about it, until several days ago, when I came across another reference to it, in which it was stated that the dimmest of the two stars (the blue one) is a type of star known as an "F0" star, which are yellow-white. And all "F0" stars are yellow-white!

Now, if this is an "F0" star, and it is supposed to be yellow-white, why does it appear blue? And I know it appears blue, because I looked at it! At this point, I decided to contact John Franke, who always seems to know about things of this nature. And sure enough, he knew all about it!

He told me that this is what is known as a "contrast phenomenon". And it is not something that is taking place within the star itself, or in space between us and the star. Nor is it an effect that is associated with the telescope.

It is an "illusion" created by the eye itself, by which the message sent to the brain is not exactly what the eye perceives, and as a result, the brain tells us we are seeing one thing, when we know we should be seeing something different.

And he stated if the blue star was off to itself in space, and not near the red star, it would appear as it is supposed to be --- a yellow-white star! The dark sky surrounding the two stars only helps to emphasize this contrast.

Anyway, it's a pretty little double star, and it's located only a short distance (less than 2 degrees) from NGC 2362.

<b>OBJECT</b>	<b>RA 2000.0</b>	<b>DEC 2000.0</b>	<b>TIRION</b>	<b>URANOMETRIA</b>
NGC 2362	7h 18m 48s	-24° 57'	19	Vol. 2, Chart 319
ADS 5951	7h 16m 36s	-23° 19'	19	Vol. 2, Chart 319

## IOTA OCCULTATION BULLETIN

*The following information is an excerpt of occultations that are visible locally or nearby, taken from an email from David Dunham of IOTA.*

### Asteroidal Occultations through early March 2001

DATE	Day	EST	Star	Mag	Asteroid	dmag	Dur	Ap.	s	in.	Location
Jan 26	Fri	22:58	TYC24511980	11.7	Etheridgea	2.7	7	8			DC area
Feb 13	Tue	1:08	SAO 100028	7.7	Pythia	4.7	6	1			Mississippi
Feb 15	Thu	23:25	SAO 080084	9.1	Beatrice	2.9	10	3			Florida
Feb 16	Fri	0:10	SAO 098586	8.9	Phaedra	3.8	5	3			MD - PA border
Feb 19	Mon	20:22	TYC08191063	10.8	Gunloed	3.2	4	7			Virginia
Mar 4	Sun	1:28	TYC19581580	10.8	Mombasa	4.9	5	7			Virginia
Mar 6	Tue	2:08	SAO 138387	9.5	Hypatia	3.2	11	5			Georgia

### Grazing Occultations through early March 2001

DATE	Day	EST	Star	Mag	% alt	CA	Location
Jan 18	Thu	7:21	30 Librae	6.5	31- 37	12S	Lexington, VA; Sun -3 deg.
Feb 3	Sat	22:17	ZC 0760	6.6	76+ 57	2S	Westminster & Bel Air, MD
Feb 3	Sat	23:40	106 Tauri	5.3	76+ 43	1N	Harrisburg, PA (no DC exped.)
Feb 27	Tue	19:52	ZC 0306	6.8	19+ 26	7S	Emmitsburg & MD Line(I83), MD
Mar 3	Sat	18:05	zeta Tauri	3.0	59+ 71	10S	Back Bay, VA, Sun -2 & Cary, NC

#### Notes:

**Jan 18:** This graze is useful since it occurs in the same general region as one observed in the Netherlands last month that showed a large north shift. Observations of this graze could help define the profile in that area of the Moon. Unfortunately, the Accuweather forecast calls for overcast, with some freezing rain, around the time of the graze in the Lexington area, so no expedition from the DC area is planned.

**Feb. 3, ZC 760:** Bob Stewart is planning to observe this graze near US 15 north of Frederick. That may be the only expedition for this graze from the DC region; contact Bob at e-mail [rhshrs1@msn.com](mailto:rhshrs1@msn.com), cell phone 703-328-7548; contact him if you are interested in trying this graze, rather difficult since it will be mostly among sunlit features of a highly gibbous Moon.

**Mar. 3:** Back Bay is south of Virginia Beach. Unfortunately, this conflicts with the monthly NCA meeting, but will be worth the weekend trip if it is clear; it's the brightest star grazed in the region this year and should be spectacular even with the bright twilight. In fact, we will try it farther west, into western N. Carolina or even eastern Tenn., in daylight (but with the Sun low), if the weather prospects are much better to the west (remember the 1984 May solar eclipse!), since it should still be easy to observe if clear under those conditions.

### Total Lunar Occultations

The better total lunar occultations through early March 2001 visible from throughout the Washington-Baltimore greater metropolitan area are listed below. Many can be accurately timed by aiming a camcorder into a low-power eyepiece of your telescope and recording WWV with the audio.

DATE	Day	EST	Star	Mag	%	alt	CA	Notes
Jan 17	Wed	4:07	R ZC 2072	6.6	40-	28	89N	Sp. K0
Jan 19	Fri	6:55	R SAO 159765	7.4	21-	29	82N	Sun alt. -6 deg.
Jan 20	Sat	5:07	R ZC 2446	7.4	14-	8	2N	Sp. B7
Jan 20	Sat	5:59	R SAO 184944	7.6	14-	16	38N	Sp. K0
Jan 30	Tue	20:32	D SAO 109952	7.4	34+	30	80S	Sp. K0
Jan 31	Wed	19:24	D SAO 110464	6.8	44+	52	71S	Sp. K0
Jan 31	Wed	21:55	D X03186	7.7	44+	26	15N	Sp. F0
Jan 31	Wed	22:17	D SAO 110502	7.6	45+	22	40S	Sp. F0
Feb 1	Thu	19:21	D SAO 93301	7.2	54+	61	63N	Sp. G5
Feb 1	Thu	20:52	D ZC 0464	6.1	55+	49	77N	Sp. K0; maybe double
Feb 2	Fri	22:42	D ZC 0610	5.9	66+	41	26N	dbl., mag. 9.3 4.4", PA 326
Feb 2	Fri	22:53	D SAO 093781	7.6	66+	39	56N	Sp. A0
Feb 3	Sat	0:34	D ZC 0620	6.1	67+	21	83S	Sp. K0
Feb 3	Sat	23:27	D 106 Tauri	5.3	77+	45	23N	Sp. A5; maybe double
Feb 4	Sun	23:03	D ZC 0928	5.9	86+	61	24N	Sp. K4
Feb 4	Sun	23:55	D TV Gem	6.9	86+	52	75S	Sp. M1; ZC 0939, range 1.3 mag.
Feb 5	Mon	1:13	D SAO 078129	6.7	86+	38	61S	Sp. K0
Feb 5	Mon	23:26	D ZC 1102	7.0	93+	67	42S	Sp. K5
Feb 6	Tue	1:08	D SAO 079285	7.8	94+	51	84S	Sp. G5; close double
Feb 6	Tue	1:29	D delta Gem	3.5	94+	47	82S	Sp. F0; ZC 1110
Feb 6	Tue	2:34	R delta Gem	3.5	94+	34	-87S	WA 266; very hard to time
Feb 6	Tue	4:27	D ZC 1125	6.5	94+	13	46S	Sp. F6; close double
Feb 6	Tue	4:54	D 63 Gem	5.2	94+	9	29S	Sp. F5; possible close double
Feb 6	Tue	22:35	D ZC 1250	5.8	98+	69	84S	Sp. K1
Feb 11	Sun	0:11	R SW Vir	7.1	79-	24	54S	Sp. M7; mag. range 1.5
Feb 16	Fri	2:39	R ZC 2401	5.6	38-	5	80S	Sp. F3; Az. 120 deg.
Feb 17	Sat	4:42	R 52 Oph	6.5	28-	6	80N	Sp. A; ZC 2529
Feb 18	Sun	5:39	R ZC 2682	7.0	20-	14	85N	Sp. G8
Feb 18	Sun	6:11	R SAO 186912	7.7	20-	18	89S	Sp. K1; Sun alt. -9 deg.
Feb 26	Mon	19:18	D SAO 109795	7.6	12+	21	72N	Sp. A5
Mar 3	Sat	17:44	D zeta Tauri	3.0	60+	66	43S	Sp. B4; Sun alt. +3 deg.
Mar 3	Sat	18:28	R zeta Tauri	3.0	60+	71	-22S	ZC 847; WA 201; Sun -6 deg.
Mar 3	Sat	19:15	D SAO 077376	8.6	60+	72	49S	Sp. F
Mar 3	Sat	19:46	D SAO 077392	8.6	60+	70	51S	Sp. K0
Mar 3	Sat	20:34	D SAO 077436	8.6	61+	64	81N	Sp. A2
Mar 3	Sat	20:44	D SAO 077438	8.6	61+	62	56S	Sp. not known
Mar 3	Sat	21:02	D SAO 077451	8.4	61+	59	60S	Sp. A0
Mar 3	Sat	21:43	D SAO 077481	8.6	61+	52	44S	Sp. A3
Mar 3	Sat	21:52	D SAO 077497	8.4	61+	50	66S	Sp. B0
Mar 3	Sat	22:04	D SAO 077505	8.4	61+	48	71S	Sp. K2
Mar 3	Sat	22:27	D SAO 077525	8.0	61+	44	55N	Sp. K0
Mar 3	Sat	22:31	D SAO 077533	8.6	61+	43	63S	Sp. K0
Mar 3	Sat	22:45	D SAO 077527	7.7	61+	40	20S	dbl., 8.4 & 8.8, sep. 0.8", PA 60
Mar 3	Sat	22:56	D SAO 077549	8.4	61+	38	69N	Sp. F0

**D** following the time denotes a disappearance, while **R** indicates that the event is a reappearance. When a power (x; actually, zoom factor) is given in the Notes, the event can probably be recorded directly with a camcorder of that power with no telescope needed. The times are for Greenbelt, MD, and will be good to within +/-1 min. for other locations in the Washington-Baltimore metropolitan areas unless the cusp angle (**CA**) is less than 30 deg., in which case, it might be as much as 5 minutes different for other locations across the region.

**Mag** is the star's magnitude. **%** is the percent of the Moon's visible disk that is sunlit, followed by a + indicating that the Moon is waxing and - showing that it is waning. So 0 is new moon, 50+ is first quarter, 100+ or - is full moon, and 50- is last quarter. The Moon is crescent if % is less than 50 and is gibbous if it is more than 50. Cusp Angle is described more fully at <http://www.lunar-occultations.com/iota>. **Sp.** is spectral type-color, O,B,blue; A,F,white; G,yellow; K,orange; M,N,S,C red

Note that my last more general message described occultations observed at the (UT) change of the millennium (early evening of December 31 EST), when it was clear across the region. Did anyone besides Tony Cook observe any occultations that evening?

Phone the IOTA occultation line, 301-474-4945, for weather go/cancel decisions, and other updates and details, or check IOTA's Web site at <http://www.lunar-occultations.com/iota> which now has an asteroidal occultation section with finder charts and updated path maps. Timing equipment and even telescopes can be loaned for most expeditions that we actually undertake; we are always shortest of observers who can fit these events in their schedule, so we hope that you might be able to. Good luck with your observations.

David Dunham, 2000 Jan. 17

Phone home 301-474-4722; office 240-228-5609; car 301-526-5590.

### **Legislative Alert: HB 1033 Reintroduced As HB 2026**

House Bill 1033 mentioned last month in "Norfolk Skies" is dead. However, apparently due to the interest expressed by constituents on this bill it has been re-introduced this session as HB 2026 by its same sponsor, Del. Bloxom. Please don't hesitate if you are a constituent of any CCT committee member to contact them and express your support. See last issue for contact info. This legislation is needed for localities to be able to regulate bad outdoor lighting.

#### **HOUSE BILL NO. 2026**

Offered January 10, 2001

Prefiled January 10, 2001

*A BILL to amend the Code of Virginia by adding a section numbered 15.2-920.1, relating to regulation of exterior illumination.*

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Patron-- Bloxom

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Referred to Committee on Counties, Cities and Towns

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Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 15.2-920.1 as follows:

*§ 15.2-920.1. Regulation of exterior illumination on certain property.*

*Any locality may by ordinance provide for the regulation of exterior illumination levels of certain buildings and property. Exterior illumination shall be accomplished with standard engineering practices that will cause such illumination to be confined to the boundaries of the property. Any state project utilizing public funds shall use standard engineering practices that will cause such illumination to be confined to the boundaries of the property.*

### **HB 1630 Preservation of historical sites and architectural areas**

Introduced by Del. Vincent F. Callahan, Jr., this bill is being pushed by Scenic Virginia (<http://www.scenicva.org>), an ally of the International Darksky Association, and also deserves our support. It is currently in the CCT awaiting the result of a fiscal impact study. Light pollution is indirectly addressed as an aesthetics issue. Scenic Virginia was a speaker at both Tidewater Regional IDA events.

**HB 1630: Preservation of historical sites and architectural areas.** States the policy and purpose for existing provisions that allow localities to adopt ordinances to protect historic landmarks and other areas. Adds architectural areas to those areas that may be included in such an ordinance and defines "architectural area" to include an area where the visual impact of buildings and development can be significant on the economic, cultural, or scenic attributes of the community. Localities that adopt an architectural area district are required to adopt standards to guide decision making within the district.

Norfolk Astronomical Society Astronomical Calendar

January 2001							February 2001							March 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	4	5	6		1	2	3	4	5	6	7	1	2	3	4	5	6	7
7	8	9	10	11	12	13	8	9	10	11	12	13	14	8	9	10	11	12	13	14
14	15	16	17	18	19	20	15	16	17	18	19	20	21	15	16	17	18	19	20	21
21	22	23	24	25	26	27	22	23	24	25	26	27	28	22	23	24	25	26	27	28
28	29	30	31				28	29	30	31				29	30	31				



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>28</b> 8:00 AM Mercury at greatest elongation (18 degrees east of Sun) 9:00 AM Venus 6 degrees N of Moon	<b>29</b>	<b>30</b>	<b>31</b>	<b>1</b> 9:02 AM First Quarter Moon 8:00 PM Regular Meeting	<b>2</b> 5:00 AM Moon passes 2 degrees south of Saturn 5:00 PM Moon passes 3 degrees south of Jupiter	<b>3</b>
<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b> 5:17 PM Moon perigee	<b>8</b> 2:12 AM Full Moon	<b>9</b>	<b>10</b> 9:00 AM Fieldtrip to VASC
<b>11</b>	<b>12</b> 7:00 PM Mercury at inferior conjunction	<b>13</b>	<b>14</b>	<b>15</b> 5:00 AM Moon passes 2 degrees south of Saturn	<b>16</b> 8:00 PM NAS Observing	<b>17</b>
<b>18</b>	<b>19</b>	<b>20</b> 4:39 PM Moon apogee	<b>21</b> 11:00 AM Moon passes 6 degrees south of Mercury	<b>22</b>	<b>23</b>	<b>24</b>
<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>1</b>	<b>2</b>	<b>3</b>