

NOVAC

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Sky Sweep by Kevin B. Jones

Almost directly overhead on the crackling cold winter nights of the new year stands the constellation Gemini, the Twins. Situated just above the plane of the Milky Way, this constellation is home to many star clusters and nebulae.

At the constellation's eastern edge are its two brightest stars, Castor and Pollux. Castor, the more northern of these two stars, is a nice double star for small telescopes. The two components, of magnitudes 2.0 and 2.8, are currently separated by about three arcseconds and orbit each other with a four hundred year period. A third, fainter star known as Castor C is also visible. This star is in a slow orbit around A and B, taking tens of thousands of years to complete a single orbit. It is 73 arcseconds to the south of A and B and shines at magnitude 9.1. Castor A, B, and C are each also spectroscopic binary stars, making Castor a six star system.

Roughly ten degrees south of Castor is NGC 2392, the Eskimo Nebula. This 8th magnitude planetary nebula is almost one-third of the Moon's diameter across in the sky, is resolvable as a disk with amateur telescopes. On dark, transparent nights the 10th magnitude central star can be spotted easily. Additionally, larger telescopes may reveal the fuzzy outer ring of nebulosity which makes up the Eskimo's "Parka."

Near the foot of the twin named Castor, the open cluster M35 waits to be observed. This sixth magnitude cluster is an easy object for most any telescope or pair of binoculars. Upon close examination, I have found M35 to be donut-shaped, with the thickest concentration of stars being roughly annular. This may or may not have had anything to do with the half-eaten box of donuts next to my telescope at the time... You may notice a small 11th magnitude fuzzy ball in the same field as M35. This ball is NGC 2158, another open cluster. This cluster is about six times more distant than M35, being located on the outer fringes of the Milky Way. Visually, this cluster is difficult to resolve into stars-magnitudes of this cluster's component stars hover near 16.

Keep a Thermos of a hot beverage at hand and make the most of those transparent winter skies!

Clear skies to all in 1996. □

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The Recreational Astronomer: Using a Telrad

By Jon Stewart-Taylor

This column introduces the Telrad Reflex Sight, a device used as a finder for telescopes. I'll start with a brief description of the Telrad, then give a short summary of its advantages and disadvantages. Then I'll describe using a Telrad to find 2 deep-sky objects.

Meet the Telrad

The Telrad is a plastic rectangular box about 8" x 2" x 2", with a triangular protrusion extending about 3" higher at the back. The box is mounted on a telescope via a plastic base-plate, to which it attaches with a pair of plastic thumbscrews. Telrads weigh less than half a pound with 2 AA batteries installed. See Figure 1.

The triangular bump has a small glass window mounted at a 45 degree angle. A red bulls-eye with three rings is projected on the window, appearing to float among the stars when you are looking through the glass. The inner ring is 1/2 degree in diameter, about the field of view of most telescopes. The middle ring is 2 degrees, and the outer ring is 4 degrees. Three nuts on the back of the box align the rings with the field of view of the telescope, and a switch on the side varies the brightness of the rings.

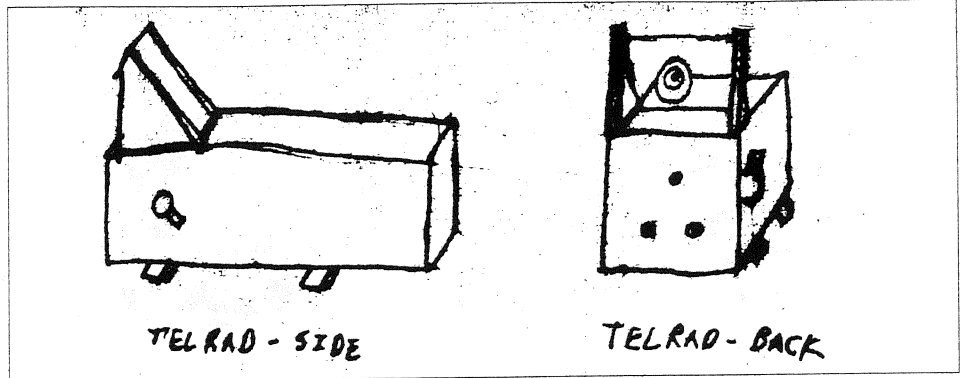


Figure 1: Sketch of Telrad

Pros and Cons

A debate seems to rage around Telrads, with one side claiming they're much better than conventional finders, while the other argues the reverse. The Telrads and conventional finder-scopes aren't really competitors, since each has capabilities the other does not. My ideal setup would be to have both, and use which ever worked best for the particular conditions and objects at hand.

That said, the major disadvantages of a Telrad are that it provides no extra light gathering ability (in fact, since you're looking through a piece of glass, the limiting magnitude through a Telrad is slightly brighter than with the naked eye), and doesn't magnify the field of view at all.

On the other hand, Telrads are relatively inexpensive. Most people find them very easy to use, because unlike most finders, they give a normal view of the sky rather than an upside down or reversed view. Perhaps the most important advantage is that the rings can be used as a scale for measuring one's way across the sky.

In fairness (and with a nudge from Al Boldt) I should point out that installing an erecting prism and illuminated reticule eyepiece on conventional finders gives the best of both worlds in a single finder. But neither the prism nor the eyepiece are cheap, and it may be more cost effective to buy a Telrad and a regular finder than a regular finder, prism, and eyepiece.

Telrad 101

To find a bright object, center it within the inner Telrad ring. If you've aligned the Telrad properly, the object will be in the field of view when you look in the 'scope. But, what if the object you're looking for can't be seen through

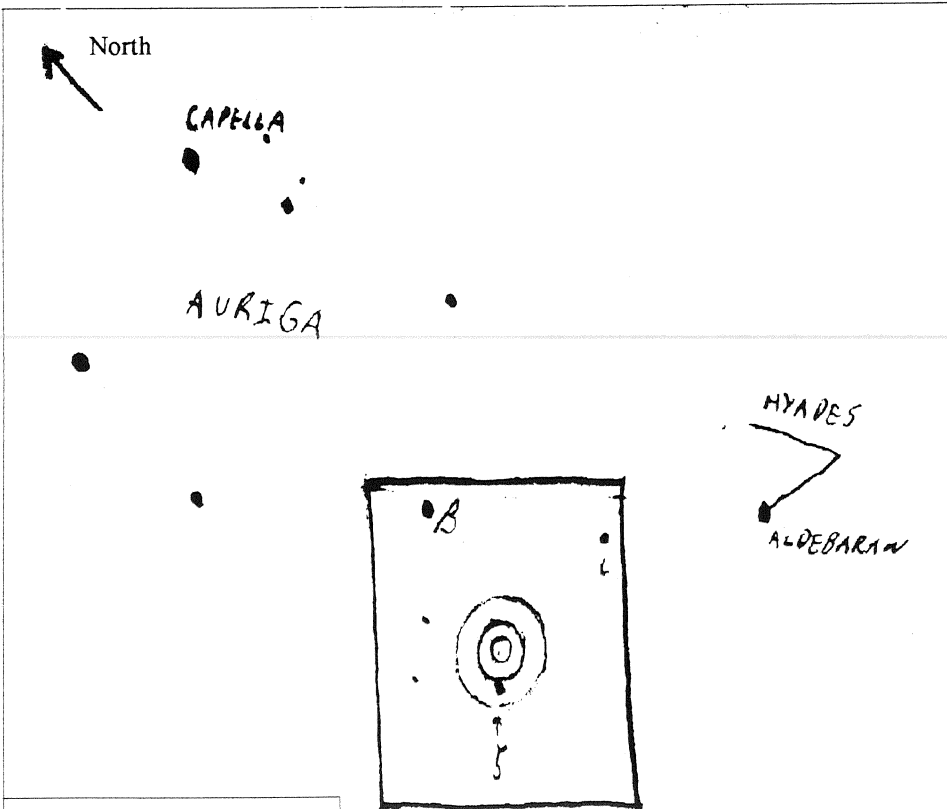


Figure 2: Telrad View of M1

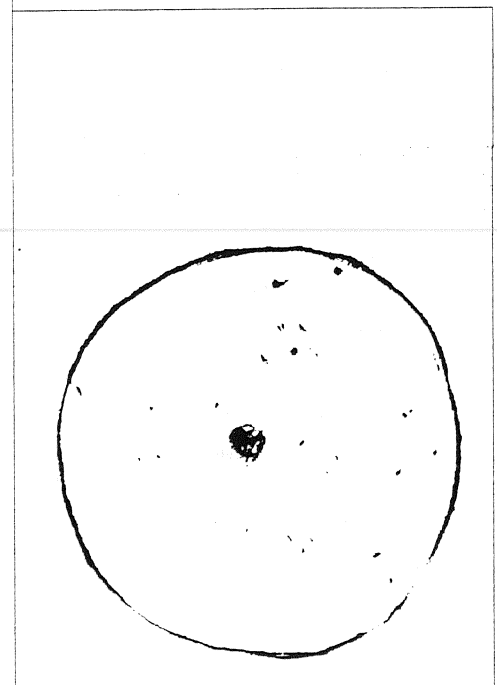


Figure 3: Eyepiece View of M1

the Telrad window? That's where the rings are used, and why the Telrad is better for use as a telescope finder than reflex sights which project only a dot or a single ring.

Because you know exactly what diameter the rings are, you can use them as a ruler to measure your way across the sky from a visible starting point to an invisible destination. Sometimes this will involve stopping at several intermediate destinations along the way. As you become more familiar with the Telrad you can often position the rings directly on the object, even though you can't see it.

To help match what you see on the chart to the view through the Telrad, you'll need an indication of how the Telrad rings relate to the chart. If you're willing to draw on your chart, simply take a compass and draw circles of the right size in the appropriate places (set the compass to the 2-degree radius of the circle). Otherwise, make a field-of-view gauge from transparent plastic, or wire bent into a circle which corresponds to 4 degrees on your chart. For some atlases there are commercial scales with the Telrad rings inscribed on them. The scale for Tirion's Sky Atlas 2000 is a clear plastic triangle with little felt feet, and costs about 7 bucks.

Finding M1

M1 (the Crab nebula) is located about 1 degree north-west of the 3rd magnitude star Zeta Tauri. Since the middle Telrad ring is 2 degrees in diameter, when the middle ring just touches Zeta and the center ring is north-west of Zeta, M1 should be in the field of view. This is how it looked through the Telrad, and through my 27mm eyepiece (which gives a field of view of about 1 degree, larger than the inner Telrad ring). See Figures. 2 & 3.

Finding NGC 2392

NGC 2392 (the Clown or Eskimo nebula) is a planetary nebula located about 3 degrees east-south-east of 3.5 magnitude Delta Geminii. In a dark sky, Delta is easily visible through the Telrad, and finding 2392 is a matter of positioning the Telrad's outer ring a little east of Delta, and moving south about half the middle ring. I tried it at Parsells (which has a limiting magnitude of about 5), and here's what I saw through the Telrad: See Figure 4.

However, in my town-house back yard Delta may not be visible, so I often start at the 3rd magnitude Epsilon. From Epsilon to Omega is about 4 degrees, so put the edge of the outer ring on Epsilon, with the inner ring to the east-south-east. Then center the inner ring where the eastern edge of the outer ring was, to get Omega in the eyepiece. Since Omega is only a 5th magnitude star, it may take some practice to identify it against the background.

Next repeat the same process to get from Omega to Delta. Put the north-western edge of the outer ring where Omega was. Continue in the same direction put the edge of the outer ring where the center ring was, and Delta should be in the field of view. Now that Delta is in the eyepiece, you can look through the Telrad and position it the same way as for M1, but using the remembered location of the center of the inner ring, instead of Delta.

The whole procedure (with the centering steps omitted to avoid cluttering the diagram) looks like Figure 5.

If finding objects not visible through the Telrad seems like a lot of trouble, isn't. With prac-

tice it becomes easier to do than to describe. After a while you can make 6 to 10 degree offsets like the one from Epsilon to Delta in a single motion, without having to stop for directions along the way, although a good visual memory helps a lot.

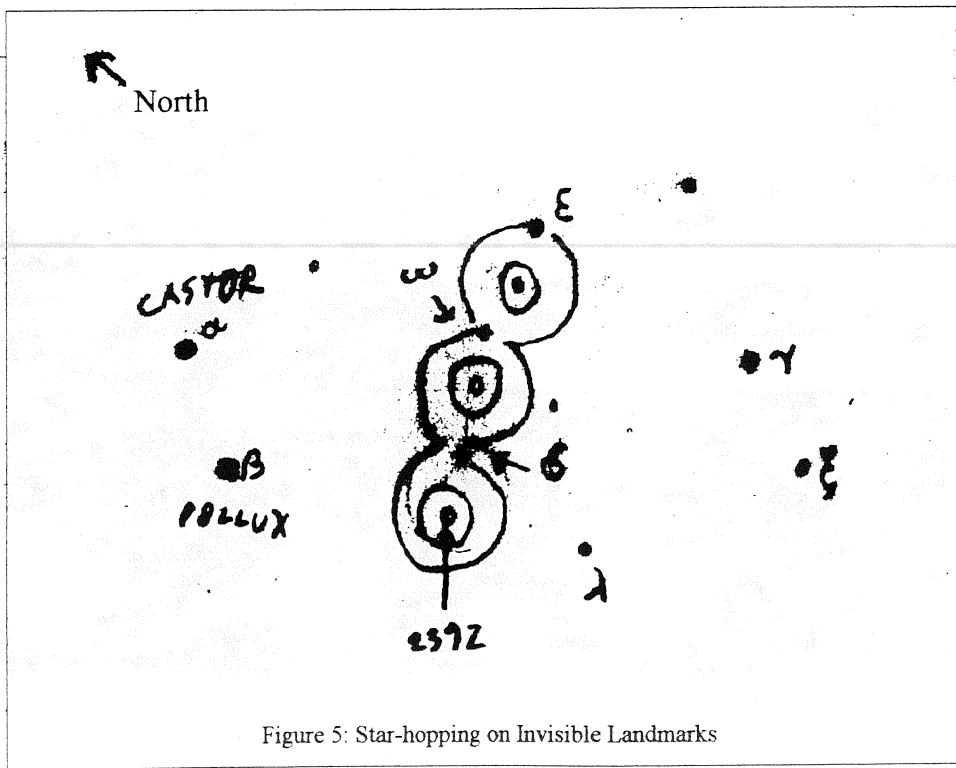
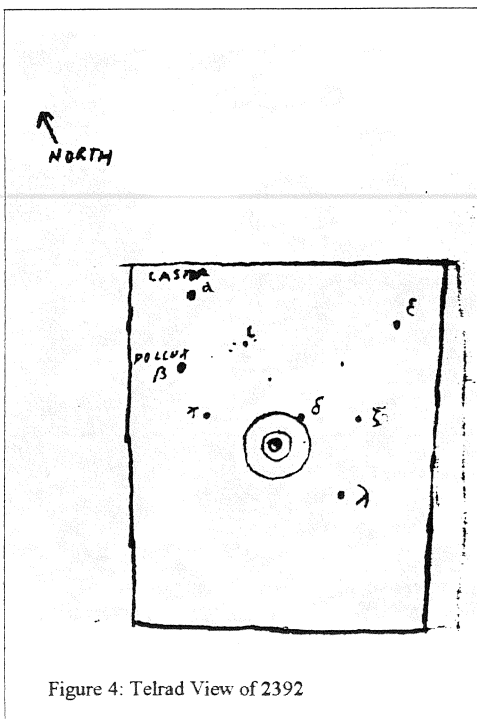
Another trick to use when looking for faint objects, or in light-polluted skies, is to use a pair of binoculars with the Telrad. Since the Telrad rings are projected at infinity, they will be visible through the binoculars. However, aligning the binoculars with the Telrad can be a neck-stiffening experience.

References

Measuring across the sky and field-of-view gauges are describe in more detail in the Sky Publishing pamphlet *Backyard Astronomy*. The pamphlet used to be included in new subscriptions to *Sky and Telescope*, and is also available directly from Sky Publishing. It contains a lot of other good introductory material for beginners as well.

The basic ideas behind using a Telrad to find objects you can't see directly are the same as those used for binocular or finder-scope star hopping. Star hopping is described in many sources, including Alan MacRoberts *Star Hopping for Backyard Astronomers*.

If you've never used a Telrad, do: you may find it suits you very well. If you're not willing to buy one on speculation, ask to try somebody else's at an observing session or star party. Most amateur astronomers are amazingly generous with their equipment, time, and knowledge, so let them help you. □



No Wonder We Are All gaining Weight

From physnews@aip.org Mon Dec 18 21:35:05 1995

Received: from aip.org (pinet.aip.org [192.58.150.10]) by cpcug.org (8.6.12/8.6.12) with SMTP id VAA26659 for <edfein@cpcug.org>; Mon, 18 Dec 1995 From: physnews@aip.org (AIP listserver)

Message-Id: <9512181822.AA07900@aip.org>

Subject: update.252

Status: RO

X-Status:

PHYSICS NEWS UPDATE

The American Institute of Physics Bulletin of Physics News Number 252 December 18, 1995 by Phillip F. Schewe and Ben Stein

INTERPLANETARY DUST PARTICLES (IDPs) are deposited on the Earth at the rate of about 10,000 tons per year. Does this have any effect on climate? Scientists at Caltech have found that ancient samples of helium-3 (coming mostly from IDPs) in oceanic sediments exhibit a 100,000-year periodicity. The researchers assert that their data, taken along the Mid-Atlantic Ridge, support a recently enunciated idea that Earth's orbital inclination varies with a 100-kyr period; this notion in turn had been broached as an explanation for a similar periodicity in the succession of ice ages. (K.A. Farley and D.B. Patterson, Nature, 7 December 1995.) □

Internet Users

Here is your opportunity to have your Internet address published. Send a message containing your Internet address and requesting inclusion in the NOVAC Internet Directory to Brenda Jones at 74723.3263@compuserve.com. We will publish the addresses in the March/April NOVAC Newsletter and also include it in the annual Membership Directory.

Questar for Sale

Questar Duplex 3.5 telescope with Zerodur Mirror; Broad-band & Low Reflection Coatings; 16mm & 24mm eyepieces; Moon Map and Star Chart; Full aperture Solar Filter; Up-Grade Leather Case; Swivel Coupling; Cost new in July 1991: \$4172.00; will sell for \$2900.00; I would be willing to meet at an observation site to allow interested people a chance to use the telescope. I have all of the original packing, invoices, receipt, and warranty information. Call Mike at (703) 241-7787.

Sky Calendar

by Luke Ward
will return next issue.

Call for Articles

Here's your chance to see your name in print! Be the first one on your block. Write an article for the NOVAC Newsletter describing your observing experiences: good, bad, or indifferent. Tell us how you liked observing sites both local and distant. Tell of your experiences buying telescopes and accessories.

Planisphere Tricks

From jstewart@telenet.com d, Subject: NOVAC: Stupid Planisphere Tricks...

Found this on s.a.a and thought other folks might like it:

From schuttmh@nampak.co.za Wed Nov 22 17:01:14 EST 1995

Need to calculate sidereal time to within a few minutes? If you have a planisphere handy then you don't need to calculate it. To work it out, align the current date with the current time as you would use it normally. Then just read the time indicated at the date of 21st September - that is the current sidereal time! The trick works because on the 21st September solar and sidereal time are the same. It should work for any planisphere even if it's not correct for your latitude.

Pretty slick. □

***A dark sky
is a terrible thing
to waste!***



OUCH!

*Join the International Dark-Sky Association
3545 N. Stewart Tucson AZ 85716*

Celestial Citings by Jeff Stetekluh

Sun and Moon Rise and Set Times: Semi-monthly

(times are EST & EDT)

Date	Sun Rise	Sun Set	Moon Rise	Moon Set	% Full
1/01/1996	7:24 AM	4:57 PM	2:08 PM	3:30 AM	87
1/15/1996	7:23 AM	5:10 PM	1:55 AM	12:45 PM	28
2/01/1996	7:12 AM	5:29 PM	3:09 PM	4:47 AM	93
2/15/1996	6:57 AM	5:45 PM	3:52 AM	2:16 PM	13
3/01/1996	6:37 AM	6:01 PM	2:48 PM	4:07 AM	89
3/15/1996	6:16 AM	6:15 PM	3:27 AM	2:16 PM	16
4/01/1996	5:49 AM	6:32 PM	4:25 PM	4:23 AM	96
4/15/1996	6:32 AM	7:45 PM	5:04 AM	5:32 PM	5
5/01/1996	6:11 AM	8:00 PM	6:13 PM	4:59 AM	97
5/15/1996	5:57 AM	8:14 PM	4:54 AM	6:31 PM	2
6/01/1996	5:46 AM	8:27 PM	8:16 PM	5:43 AM	100

6/15/1996	5:44 AM	8:35 PM	5:36 AM	8:07 PM	0
7/01/1996	5:49 AM	8:37 PM	8:52 PM	6:26 AM	99
7/15/1996	5:57 AM	8:32 PM	6:02 AM	8:17 PM	0
8/01/1996	6:11 AM	8:18 PM	9:39 PM	8:46 AM	91
8/15/1996	6:24 AM	8:02 PM	7:35 AM	8:30 PM	3
9/01/1996	6:39 AM	7:37 PM	10:08 PM	10:55 AM	78
9/15/1996	6:52 AM	7:15 PM	9:19 AM	8:44 PM	9
10/01/1996	7:06 AM	6:50 PM	10:07 PM	11:42 AM	74
10/15/1996	7:20 AM	6:33 PM	10:14 AM	8:46 PM	12
11/01/1996	6:38 AM	5:11 PM	10:19 PM	11:49 AM	63
11/15/1996	6:53 AM	4:58 PM	10:56 AM	9:28 PM	27
12/01/1996	7:10 AM	4:51 PM	10:52 PM	11:37 AM	62
12/15/1996	7:21 AM	4:51 PM	11:06 AM	10:40 PM	34

Sun and Moon Rise and Set Times: Daily

(times are EST & EDT)

Date	Sun Rise	Sun Set	Moon Rise	Moon Set	% Full
1/01/1996	M 7:24 AM	4:57 PM	2:08 PM	3:30 AM	87
1/02/1996	T 7:24 AM	4:57 PM	2:49 PM	4:25 AM	93
1/03/1996	W 7:24 AM	4:58 PM	3:34 PM	5:16 AM	97
1/04/1996	T 7:24 AM	4:59 PM	4:23 PM	6:05 AM	99
1/05/1996	F 7:24 AM	5:00 PM	5:14 PM	6:50 AM	100
1/06/1996	S 7:24 AM	5:01 PM	6:07 PM	7:31 AM	99
1/07/1996	S 7:24 AM	5:02 PM	7:02 PM	8:08 AM	96
1/08/1996	M 7:24 AM	5:03 PM	7:54 PM	8:43 AM	92
1/09/1996	T 7:24 AM	5:04 PM	8:51 PM	9:15 AM	85
1/10/1996	W 7:24 AM	5:05 PM	9:48 PM	9:47 AM	78
1/11/1996	T 7:24 AM	5:06 PM	10:47 PM	10:18 AM	69
1/12/1996	F 7:24 AM	5:07 PM	11:47 PM	10:49 AM	59
1/13/1996	S 7:23 AM	5:08 PM	-	11:23 AM	49
1/14/1996	S 7:23 AM	5:09 PM	12:51 AM	12:04 PM	38
1/15/1996	M 7:23 AM	5:10 PM	1:55 AM	12:45 PM	28
1/16/1996	T 7:22 AM	5:11 PM	3:01 AM	1:33 PM	18
1/17/1996	W 7:22 AM	5:12 PM	4:06 AM	2:28 PM	10
1/18/1996	T 7:21 AM	5:13 PM	5:09 AM	3:30 PM	4
1/19/1996	F 7:21 AM	5:14 PM	6:07 AM	4:38 PM	1
1/20/1996	S 7:20 AM	5:15 PM	6:59 AM	5:49 PM	0
1/21/1996	S 7:20 AM	5:16 PM	7:46 AM	7:01 PM	3
1/22/1996	M 7:19 AM	5:17 PM	8:28 AM	8:07 PM	8
1/23/1996	T 7:19 AM	5:19 PM	9:06 AM	9:15 PM	16
1/24/1996	W 7:18 AM	5:20 PM	9:41 AM	10:20 PM	25
1/25/1996	T 7:17 AM	5:21 PM	10:16 AM	11:23 PM	35
1/26/1996	F 7:17 AM	5:22 PM	10:54 AM	-	45
1/27/1996	S 7:16 AM	5:23 PM	11:30 AM	12:26 AM	55
1/28/1996	S 7:15 AM	5:24 PM	12:08 PM	1:23 AM	64
1/29/1996	M 7:14 AM	5:25 PM	12:48 PM	2:19 AM	73
1/30/1996	T 7:14 AM	5:27 PM	1:32 PM	3:12 AM	81

Date	Sun Rise	Sun Set	Moon Rise	Moon Set	% Full
1/31/1996	W 7:13 AM	5:28 PM	2:19 PM	4:01 AM	88
2/01/1996	T 7:12 AM	5:29 PM	3:09 PM	4:47 AM	93
2/02/1996	F 7:11 AM	5:30 PM	4:01 PM	5:29 AM	97
2/03/1996	S 7:10 AM	5:31 PM	4:56 PM	6:08 AM	100
2/04/1996	S 7:09 AM	5:32 PM	5:52 PM	6:44 AM	100
2/05/1996	M 7:08 AM	5:33 PM	6:48 PM	7:18 AM	98
2/06/1996	T 7:07 AM	5:35 PM	7:46 PM	7:50 AM	95
2/07/1996	W 7:06 AM	5:36 PM	8:41 PM	8:21 AM	90
2/08/1996	T 7:05 AM	5:37 PM	9:40 PM	8:53 AM	83
2/09/1996	F 7:04 AM	5:38 PM	10:41 PM	9:25 AM	75
2/10/1996	S 7:03 AM	5:39 PM	11:43 PM	10:04 AM	65
2/11/1996	S 7:02 AM	5:40 PM	-	10:43 AM	54
2/12/1996	M 7:01 AM	5:41 PM	12:49 AM	11:27 AM	43
2/13/1996	T 6:59 AM	5:43 PM	1:52 AM	12:17 PM	32
2/14/1996	W 6:58 AM	5:44 PM	2:53 AM	1:13 PM	22
2/15/1996	T 6:57 AM	5:45 PM	3:52 AM	2:16 PM	13
2/16/1996	F 6:56 AM	5:46 PM	4:45 AM	3:24 PM	6
2/17/1996	S 6:55 AM	5:47 PM	5:34 AM	4:35 PM	1
2/18/1996	S 6:53 AM	5:48 PM	6:18 AM	5:46 PM	0
2/19/1996	M 6:52 AM	5:49 PM	6:58 AM	6:56 PM	1
2/20/1996	T 6:51 AM	5:50 PM	7:36 AM	8:00 PM	5
2/21/1996	W 6:49 AM	5:51 PM	8:11 AM	9:06 PM	11
2/22/1996	T 6:48 AM	5:53 PM	8:47 AM	10:09 PM	19
2/23/1996	F 6:47 AM	5:54 PM	9:27 AM	11:10 PM	28
2/24/1996	S 6:45 AM	5:55 PM	10:05 AM	-	38
2/25/1996	S 6:44 AM	5:56 PM	10:45 AM	12:10 AM	47
2/26/1996	M 6:43 AM	5:57 PM	11:28 AM	1:04 AM	57
2/27/1996	T 6:41 AM	5:58 PM	12:14 PM	1:55 AM	66
2/28/1996	W 6:40 AM	5:59 PM	1:03 PM	2:43 AM	75
2/29/1996	T 6:38 AM	6:00 PM	1:54 PM	3:27 AM	82

Rise and Set Times for the Naked Eye Visible Planets

Mercury

Date	Rise	Set	Phase	Mag	Vis
01/01	8h46m	18h26m	0.617d	-0.57	89
01/02	8h45m	18h27m	0.581d	-0.52	89
01/03	8h43m	18h29m	0.541d	-0.45	91
01/04	8h41m	18h30m	0.499d	-0.36	91
01/05	8h39m	18h30m	0.455d	-0.26	90
01/06	8h36m	18h30m	0.408d	-0.12	89
01/07	8h32m	18h28m	0.361d	0.05	86
01/08	8h28m	18h27m	0.312d	0.26	84
01/09	8h23m	18h24m	0.264d	0.52	80
01/10	8h18m	18h20m	0.217d	0.83	75
01/11	8h12m	18h15m	0.172d	1.20	69
01/12	8h05m	18h10m	0.130d	1.63	63
01/13	7h58m	18h03m	0.093d	2.13	55
01/14	7h50m	17h56m	0.061d	2.69	47
01/15	7h42m	17h48m	0.036d	3.31	38
01/16	7h33m	17h39m	0.019d	3.95	28
01/17	7h24m	17h30m	0.009d	4.49	19
01/18	7h15m	17h20m	0.007d	4.64	16
01/19	7h06m	17h10m	0.013d	4.29	18
01/20	6h57m	17h01m	0.026d	3.74	26
01/21	6h49m	16h51m	0.044d	3.18	34
01/22	6h40m	16h42m	0.068d	2.68	42
01/23	6h33m	16h33m	0.095d	2.23	49
01/24	6h26m	16h25m	0.126d	1.85	55
01/25	6h19m	16h18m	0.158d	1.52	61
01/26	6h13m	16h11m	0.191d	1.25	67
01/27	6h08m	16h04m	0.225d	1.02	71
01/28	6h03m	15h59m	0.259d	0.83	75
01/29	5h59m	15h54m	0.292d	0.67	79
01/30	5h56m	15h49m	0.325d	0.54	81
01/31	5h53m	15h45m	0.356d	0.43	83
02/01	5h51m	15h42m	0.386d	0.34	84
02/02	5h49m	15h39m	0.414d	0.27	85
02/03	5h47m	15h37m	0.441d	0.21	86
02/04	5h46m	15h35m	0.467d	0.16	86
02/05	5h45m	15h33m	0.492d	0.12	86
02/06	5h44m	15h32m	0.515d	0.09	86
02/07	5h43m	15h31m	0.537d	0.07	86
02/08	5h43m	15h30m	0.558d	0.04	85
02/09	5h43m	15h30m	0.577d	0.03	84
02/10	5h43m	15h30m	0.596d	0.01	83
02/11	5h43m	15h31m	0.613d	0.00	82
02/12	5h44m	15h31m	0.630d	-0.01	80
02/13	5h44m	15h32m	0.646d	-0.02	79
02/14	5h45m	15h33m	0.661d	-0.02	76
02/15	5h45m	15h35m	0.675d	-0.03	75
02/16	5h46m	15h36m	0.689d	-0.04	73
02/17	5h47m	15h38m	0.702d	-0.04	71
02/18	5h47m	15h40m	0.714d	-0.05	70
02/19	5h48m	15h42m	0.726d	-0.06	67
02/20	5h49m	15h44m	0.738d	-0.06	65
02/21	5h50m	15h47m	0.749d	-0.07	63

Mercury

Date	Rise	Set	Phase	Mag	Vis
02/22	5h50m	15h49m	0.759d	-0.08	61
02/23	5h51m	15h52m	0.769d	-0.09	59
02/24	5h52m	15h55m	0.779d	-0.11	57
02/25	5h53m	15h58m	0.789d	-0.12	54
02/26	5h53m	16h01m	0.798d	-0.14	53
02/27	5h54m	16h04m	0.807d	-0.15	50
02/28	5h55m	16h07m	0.816d	-0.17	48
02/29	5h55m	16h11m	0.825d	-0.19	47
03/01	5h56m	16h14m	0.833d	-0.21	44
03/02	5h57m	16h18m	0.841d	-0.24	42
03/03	5h57m	16h22m	0.850d	-0.26	40
03/04	5h58m	16h26m	0.858d	-0.29	38
03/05	5h58m	16h30m	0.866d	-0.32	36
03/06	5h59m	16h34m	0.873d	-0.36	34
03/07	5h59m	16h38m	0.881d	-0.39	32
03/08	6h00m	16h42m	0.889d	-0.43	30
03/09	6h00m	16h47m	0.896d	-0.47	28
03/10	6h00m	16h51m	0.904d	-0.52	27
03/11	6h01m	16h56m	0.911d	-0.57	24
03/12	6h01m	17h01m	0.919d	-0.62	23
03/13	6h02m	17h05m	0.926d	-0.67	20
03/14	6h02m	17h10m	0.933d	-0.73	19
03/15	6h02m	17h15m	0.940d	-0.80	17
03/16	6h02m	17h20m	0.947d	-0.86	15
03/17	6h03m	17h25m	0.954d	-0.94	13
03/18	6h03m	17h31m	0.961d	-1.01	11
03/19	6h03m	17h36m	0.967d	-1.10	10
03/20	6h03m	17h41m	0.973d	-1.19	8
03/21	6h04m	17h47m	0.979d	-1.28	6
03/22	6h04m	17h53m	0.984d	-1.38	4
03/23	6h04m	17h58m	0.989d	-1.49	3
03/24	6h05m	18h04m	0.993d	-1.60	0
03/25	6h05m	18h10m	0.996d	-1.72	0
03/26	6h05m	18h16m	0.998d	-1.84	0
03/27	6h05m	18h23m	0.999d	-1.94	0
03/28	6h06m	18h29m	0.999d	-1.97	1
03/29	6h06m	18h35m	0.997d	-1.94	6
03/30	6h06m	18h42m	0.994d	-1.88	12
03/31	6h07m	18h48m	0.988d	-1.82	17
04/01	6h07m	18h55m	0.981d	-1.75	23

Venus

Date	Rise	Set	Phase	Mag	Vis
01/01	9h31m	19h33m	0.837d	-3.99	156
01/15	9h23m	20h05m	0.803d	-4.02	175
02/01	9h04m	20h42m	0.754d	-4.08	193
02/15	8h45m	21h10m	0.708d	-4.13	205
03/01	8h23m	21h39m	0.652d	-4.19	218
03/15	8h04m	22h04m	0.591d	-4.26	228
04/01	7h44m	22h31m	0.505d	-4.36	239

Mars

Date	Rise	Set	Phase	Mag	Vis
01/01	8h27m	18h00m	0.993d	1.20	63
01/15	8h09m	17h59m	0.996d	1.17	49
02/01	7h42m	18h00m	0.998d	1.13	31
02/15	7h17m	18h01m	0.999d	1.10	16
03/01	6h48m	18h01m	1.000d	1.07	0
03/15	6h19m	18h01m	1.000d	1.10	0
04/01	5h43m	18h00m	0.999d	1.16	9

Jupiter

Date	Rise	Set	Phase	Mag	Vis
01/01	6h43m	16h06m	1.000d	-1.82	44
01/15	6h01m	15h25m	0.999d	-1.84	84
02/01	5h10m	14h34m	0.997d	-1.89	125
02/15	4h26m	13h52m	0.995d	-1.95	154
03/01	3h38m	13h05m	0.993d	-2.03	182
03/15	2h51m	12h20m	0.992d	-2.11	208
04/01	1h52m	11h23m	0.991d	-2.22	240

Saturn

Date	Rise	Set	Phase	Mag	Vis
01/01	11h07m	22h32m	0.998d	1.13	335
01/15	10h15m	21h42m	0.998d	1.18	272
02/01	9h12m	20h44m	0.999d	1.22	195
02/15	8h20m	19h56m	0.999d	1.23	131
03/01	7h26m	19h06m	1.000d	1.24	65
03/15	6h35m	18h19m	1.000d	1.23	3
04/01	5h33m	17h23m	1.000d	1.31	19

Vis: minutes of visibility

Highlights of the November/December General Membership Meetings

NOVAC General Meeting Minutes for November 15, 1995

The meeting was called to order at 7:30 PM by Bob L'Hommedieu. At least 48 members and guests were present at Arlington Planetarium.

Announcements

1. Elections to select club officers and board members for 1996 will be held at the December meeting. At present, the candidates for office are: President: Brenda Jones; Vice President: Doug Jackson; Secretary: no candidate yet; Treasurer: no candidate yet; three board seats: Bob Bunge, Jeff Stetekluh, and Craig Tupper. All members of NOVAC are eligible to be candidates; anyone interested should contact any of the current officers.

2. Jon Stewart-Taylor reminded everyone that the Leonid meteor shower, which should be good this year, will be at its peak this Friday night. There will be an observing session at the Savage Farm observing site. Savage Farm is reserved for observing from Thursday, November 16, through Thursday, November 23.

3. Brent Archinal reminded everyone that dinner get-togethers are still being held at the Santa Fe Cafe in Rosslyn before each monthly NOVAC meeting. Dinner starts around 5:45 PM. Anyone interested is welcome.

4. Bob Bunge has photos of Wallops Island, including the recent launch of the Conestoga rocket and its subsequent explosion. Anyone interested should contact Bob.

5. Jon Stewart-Taylor asked that anyone interested in being on his e-mail mailing list to provide him with their e-mail address. Jon's e-mail address is in the monthly newsletter.

Officers' Reports:

Ron Ferris reported that the speaker for the December meeting will be NOVAC member Kevin Jones. Kevin spent the past May and June in Australia and New Zealand, and will speak about observing in the Southern Hemisphere in a program entitled, "Looking Up from Down Under."

Brenda Jones has information about the Star Hill Inn in New Mexico, for those interested in an observing -oriented vacation. Back issues of NOVAC's newsletter are available from Brenda. Also, newsletters from other astronomy clubs in the area will be available to look at after the meeting.

Marta Krause reported that NOVAC has received a recent donation to its library. "How the Universe was Born: The Big Bang Concept Buried" is now available on the shelf in the entrance hall to the planetarium.

Jeff Stetekluh and Jon Stewart-Taylor gave the observing report for the next month with the help of the planetarium projector.

There were no member presentations.

November Program

Ron Ferris introduced NOVAC member Al Boldt, who offered "Informative and Truthful Hints for Observers," covering observing equipment, observing guides, and other information.

The meeting was adjourned at approximately 10 PM.

Respectfully Submitted,
Marta Krause
Secretary

NOVAC General Meeting Minutes for December 20, 1995

The meeting was called to order at 7:30 PM by Bob L'Hommedieu. At least 31 members and guests were present at Arlington Planetarium.

Announcements

1. NOVAC's annual corporate meeting, a meeting required of all organizations granted non-profit status by the IRS, will be held Tuesday, January 9, 1996 at 7:30 PM at the home of Brenda Jones, 883 North Kentucky Street, in Arlington. The club's goals and plans for the coming year are discussed at this meeting; all members are encouraged to attend! Call Brenda if you plan to attend.

2. Club observing dates for 1996 will be published in the next issue of the newsletter. The dates are tentative since they have not yet been cleared with the administration at Crockett Park.

3. Doug Mistler, NOVAC's liaison to the Astronomical League, announced that two NOVAC members have received observing certificates for their efforts. Jon Stewart-Taylor received a certificate for observing at least 70 Messier objects. Jeff Stetekluh received an honorary certificate and pin for observing all of the Messier objects.

Officers' Reports:

All officers, who are each completing two years in their respective offices, expressed their appreciation to the club and offered their future support in other capacities.

Marta Krause reported that NOVAC has received another donation for its library. The "NASA Office of Space Science 1995 Flight Project Data Book" published in September 1995 was donated by Craig Tupper, for those interested in NASA missions.

Brenda Jones reported that Linda Schramm, meteorite curator at the Smithsonian Museum of Natural History and past NOVAC program speaker, has sent NOVAC a NASA reference publication published in July 1995 entitled "The Total Solar Eclipse of 1997."

Old Business

1. Elections were held for officers and board members for 1996. 1996 officers are: President: Brenda Jones; Vice President: Doug Jackson; Secretary: Bill Jensen; Treasurer: Ken Pettijohn; Board members: Bob Bunge, Jeff Stetekluh, and Craig Tupper. In addition, Sandy Sanders and Keith Ward will complete the second year of their two-year board term in 1996.

2. Certificates of appreciation were presented to outgoing officers and board members by outgoing president Bob L'Hommedieu.

Jeff Stetekluh and Jon Stewart-Taylor gave the observing report for the coming month with the use of the planetarium projector.

Member Presentations

1. Bill Burton showed the custom-made T-shirt he ordered at this year's Stellafane convention. The hand-painted shirt depicted the collision of Comet Shoemaker-Levy 9 with the planet Jupiter. For more information about the shirt and other custom-made astronomy T-shirts, contact Bill.

2. Jon Stewart-Taylor recommended two publications:

- 1) The annual Astronomical Calendar, available through the Astronomical League or from the Astronomical Workshop at Furman University in Greenville, SC, (803) 294-2208.
- 2) For children, "My Place in Space" offers a good perspective on the universe.

December Program

Ron Ferris introduced Kevin Jones, who spoke about "Looking Up From Down Under," his two-month tour of Australia and New Zealand, and observing and astrophotography in the Southern Hemisphere.

The meeting was adjourned at 9 PM.

Respectfully submitted,
Marta Krause
Secretary

□

From: Brenda Clements Jones Northern Virginia Astronomy Club Financial Statement for January 1, 1995 to December 31, 1995

INCOME		BBS	992.74	Income	3,920.94
Dues, Renewals	\$1,908.00	Astronomical League Due	354.25	Expenses	3,379.60
Dues, New	1,164.00	Insurance	293.00		
BBS Donations From Members	638.00	Hotline	191.92	NET GAIN	541.34
Interest: Savings Acct.	81.08	Activities	180.86		
Checking Acct.	48.35	Postage	111.30	Beginning Balance	5,716.49
Donations	47.51	Misc. ("Meeting" sign)	44.93	Net Gain	541.34
Hat Sales	30.00	Taxes, Fairfax County	37.24		
Kalmbach Book Sales	4.00	Fees to State Corp. Commission	25.00	ENDING BALANCE	\$6,257.83
		Printing	16.55		
TOTAL INCOME	\$3,920.94	Calendars	9.70		
EXPENSES					
Newsletter	\$1,122.11	TOTAL EXPENSES	\$3,379.60		

Notices Notices Notices



Notices Notices Notices

NOVAC Notices and Benefits

Discounts on *Sky & Telescope*

As a member of NOVAC you can get a subscription to *Sky & Telescope* for \$24.00 instead of the regular \$33.00 rate. Make your check out to SKY & TELESCOPE for \$24. Note on the check: new subscription or renewal. Send your check to Ken Pettijohn, 7916 Ivymount Terrace, Potomac, MD 20854. You can also order any publication directly from Sky Publishing at a 10% discount. Just mention the Club Discount Plan and that you are a member of NOVAC.

Discounts on *Astronomy*

Your NOVAC membership entitles you to subscribe to *Astronomy Magazine* at the annual rate of \$18.00. This is a discount from the usual \$24.00 rate. A two-year subscription costs \$36.00. Make your check payable to Kalmbach Publishing Company. Note on the check: new subscription or renewal. Send your check to Ken Pettijohn, 7916 Ivymount Terrace, Potomac, MD 20854.

NOTE: There are no special 10% discounts offered on publications from Kalmbach Publishing, but read what follows.

Discount on Books

NOVAC is participating in the discount book sales program offered by Kalmbach Publishing. They will sell our members any astronomy related book for 20% off the list price when we send in a group order. Nicole Mastej is coordinating the sales. If you are interested, please see her at a meeting or call her at home (703) 476-1207 to place an order. Make your

check payable to NOVAC for the price of the book minus the discount when you place the order. We anticipate doing this 3-4 times a year if demand warrants.

Club Telescopes Available for Use

NOVAC makes available two six-inch (f/5) Newtonian reflectors for club members to check out free of charge and use for a limited time.

One scope is a Celestron model SP-C6 on a Super Polaris German equatorial mount and wood tripod. It will readily fit disassembled in any car and is easily transported and can be set up quickly at remote observing sites. The scope comes with an Orion Ultrascope 10mm and Meade MA 25mm eyepieces with 1.25-inch barrel sizes. To borrow this scope you will need to show your NOVAC observing pass and leave a \$500.00 security deposit.

The other scope is a home-made six-inch reflector on a dobsonian mount and comes with a 25mm Kellner eyepiece. It is easy to transport to dark sky sites and easy to use. To borrow this scope you will need to show your NOVAC observing pass and leave a \$250.00 security deposit. If you are interested in borrowing either of these scopes, contact Bob L'Hommedieu at (703) 978-0946. He will schedule a time for you to pick the scope up at his home. Bob lives at 4415 Eastwood, Fairfax, VA.

Note: Checks must be made payable to NOVAC. Checks used as security deposits on telescopes are not deposited and will be returned to the originator when the scope is returned in the same condition it was checked out. The scopes may be checked out for two to four weeks at a time, depending on demand.

NOVAC Library

NOVAC has established a library at the Arlington Planetarium for use by NOVAC members. Books may be checked out and returned only at the monthly meetings. Members may check out books for one month at a time. To borrow books, see NOVAC librarian Linda Thomas at the monthly meeting. The NOVAC library seeks book donations to the library. If you have any astronomy books or materials you are thinking of discarding, please consider a donation to the NOVAC library. A complete list of all library holdings is available upon request.

NOVAC Observing Schedule for 1996 Observing at Savage Farm and C.M. Crockett Park

See Back Cover of this newsletter.

Observing at Parsells Field

Any evening.

General Membership Meetings

General Membership Meetings are held at the Arlington Planetarium on the third Wednesday of every month. The Arlington Planetarium is located at 1426 N. Quincy Street, Arlington. Trustee Meetings are held the Tuesday before the week of the General Membership Meeting. Non-Trustees interested in attending should contact a Club Officer or Board Member for further information.

NOVAC On-line

NOVAC maintains an e-mail mailing list. Messages sent to the list include reminders about scheduled observing sessions, announcements for unscheduled sessions, requests for quick observing session summaries, MIR observability predictions, etc..

(Continued from page 8)

For more information, send a message to jestewart@telenet.com.

NOVAC Observing Site Rules

C. M. Crockett Park: NOVAC members may use Crockett Park for observing on nights other than those scheduled for club observing; however, YOU MUST HAVE PRIOR APPROVAL FROM THE PARK MANAGER. Call (703) 788-4867 early in the day on which you wish to observe. If you reach an answering machine, leave a message saying that you are a NOVAC member and wish to observe that night. Also, leave your telephone number. If you do not receive a return call, you MAY NOT use the park. THERE ARE NO EXCEPTIONS! Use of the park is limited to NOVAC members only. Park management locks the entrance gate at sunset and you may use the combination shown on your Observing Pass to gain access. Do not reveal it to anyone. You must lock the gate behind you after entering and after you leave. During EDT, set up on the large field to the left. During EST, set up on the paved cul-de-sac 200 yds. past the gate. No loud radios, alcoholic beverages or loose pets. Do not leave trash or debris behind. We are guests of the park and park management may revoke our observing privileges at any time due to the carelessness of one person.

Parsells Field: In addition to scheduled nights, NOVAC members may observe at Parsells field ANY evening, with no prior notice. You must park and set up only in the parking area: do not go onto the field itself. Please park to the left near the entrance and set up to the right away from the entrance. The usual NOVAC observing site rules apply: no loud noises, alcohol, or loose dogs, and pick up after yourself. We are guests of the Dulles Little League, and could have our access to this site revoked at any time if it is abused.

Savage Farm Site: The Savage Farm site is reserved for NOVAC use on the same nights as Crockett Park plus all the major meteor showers. For non-scheduled observing sessions, call the park manager, Paul McCray, at (703) 729-0596 at least 24 hours in advance and leave a message with your phone number. You MAY use the site for that session UNLESS you receive a call from Mr. McCray stating otherwise. No loud radios, alcoholic beverages or loose pets. Pick up after yourself and do not leave any trash behind. Make sure the gate is locked whenever you are in the park, and when you leave. We are guests of the NVRP and could have our access to this site revoked at any time if it is abused.

Directions to NOVAC Observing Sites

C. M. Crockett Park: From the Washington DC/Northern Virginia area, go west on I-66 to the 47-a exit. This is 234 South to Manassas. Continue on 234 for 2.8 miles then turn right on Godwin Drive at what was previously the "Po Folks" restaurant. Follow Godwin Dr. for 1.8 miles to where it merges with Rt. 28 West. Once on Route 28, continue driving for another 13.7 miles through the towns of Nokesville, Catlett, and Calverton until you turn right on Rt. 643 toward Warrenton. There is a small country store (Mayhugh's) on the corner of the intersection. Go on about a mile up Rt. 643 to the Park Entrance road. Look for a small sign for C.M. Crockett Park on your right directing you to turn left. Once on the park entrance road, go one-half mile to the park gate.

Parsells Field: From the Northern Virginia area go West on the Dulles Toll Road until you reach Route 28. Go North on Rt. 28 for 2.8 miles to Route 625, Waxpool Rd. (You may also take Route 7 West to 28, then go South to Waxpool). Turn West on Waxpool, and go 1.8 miles to the Waxpool/Farmwell intersection. Turn left on Route 625, Waxpool Rd. (!), and go 1.6 miles to the Waxpool/Ryan/Shelhome intersection. Continue on Waxpool for about another 1.6 miles to the field. Turn left and follow the blue parking signs to the parking area.

Savage Site: Use some combination of Routes 7, 267 (Dulles toll road), and 28 to get to the Route 7 Leesburg bypass. Go around Leesburg on the bypass until you reach "regular" Route 7 again. From the intersection of the bypass and "regular" Route 7, continue on Route 7 west 18.5 miles to Route 601, at the top of Snicker's Gap. Turn left onto Route 601 south and go 2.4 miles to the park entrance. The park entrance is past the driveway whose gatepost reads *Ben Lomand*. The park entrance is the next driveway on your left. There will be a sign on a tree saying *Wildlife Sanctuary*. If you come to gateposts on the left that say *Belle Allee* and *Ball Alley 1875*, you have gone too far. You may also take I-66 west to Route 17 North. Stay on Route 17 North until it intersects with Route 50 at Ashby Gap. Turn left onto Route 50 and go 1.0 mile and turn right on Route 601. Continue on Route 601 (Blue Ridge Mountain Road) and go two miles past the main gate of the FEMA installation. Turn right at the park entrance after passing the gateposts with *Belle Allee* and *Ball Alley 1875* on your right.

The park entrance on Route 601 is marked by a small brown and white NOVAC sign. The neighbors periodically pull up the sign, so it may not be there. As you turn into the park, go straight ahead until you reach the gate, which is secured by both a keyed padlock and a combination lock. These locks are located to

your left behind the gate as you face it. The combination is on your NOVAC observing pass. ALWAYS lock the gate behind you. The NOVAC lock MUST be locked to the keyed lock, not to the chain, to allow emergency access by the fire department. Drive to the observing area (the stone patio next to the house). There is very limited parking at the observing area itself, so please park in the parking area on the right (as you face the patio). □

The NOVAC Newsletter is the official publication of the *Northern Virginia Astronomy Club* and is published six times per year at 5 Carter Court, Rockville, MD 20852-1005, telephone (301) 762-6261, Elliott D. Fein, Editor and Publisher. The NOVAC Newsletter is sent to members of NOVAC as a regular membership benefit.

Membership in the Northern Virginia Astronomy Club is \$18.00 per year and is open to anyone interested in astronomy or the sciences. Contact Ken Pettijohn, Treasurer, 883 North Kentucky Street, Arlington, Virginia 22205, telephone (703) 527-7963. All notices of change of address should be sent to Ken Pettijohn. Please include both old and new addresses.

NOVAC does not knowingly accept advertising for products of inferior quality nor does it accept the responsibility for the quality of advertised products.

NOVAC members are invited to contribute materials of interest for publication consideration in the NOVAC Newsletter. The editor reserves the right to edit all materials submitted.

Article submissions may be posted to the NOVAC Computer Bulletin Board (BBS) to Elliott Fein or to edfein@cpcug.org on the Internet. Diskettes (3.5" or 5") or typewritten copies may be sent to Elliott's residence at 5 Carter Court, Rockville, MD 20852-1005 (Home phone 301-762-6261).

Deadline for submissions is three weeks in advance of publication, e.g., June 10 for the July/Aug. Newsletter

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1996 NOVAC Observing Dates

Savage Farm

Regular sessions:

Jan 12,13,14/19,20,21
Feb 9, 10, 11/16,17,18
Mar 8,9,10/15,16,17/22,23,24
Apr 12,13,14/19,20,21
May 10,11,12/17,18,19
Jun 7,8,9/14,15,16
Jul 5,6,7/12,13,14/19,20,21
Aug 9,10,11
Sep 6,7,8/13,14,15
Oct 4,5,6/11,12,13
Nov 1,2,3/8,9,10
Dec 1/6,7,8/13,14

Meteor Showers:

May 6 (Eta Aquarids)
Aug 12 (Perseids)
Oct 21 (Orionids)
Nov 17 (Leonids)

C.M. Crockett Park

Jan 12,13,19,20
Feb 9,10,16,17
Mar 15,16,22,23
April 12,13,19,20
May 10,11
June 7,8,14,15
July 12,13,19,20
Aug 9,10,16,17
Sept 6,7,13,14
Oct 4,5,11,12
Nov 1,2,8,9
Dec 6,7,13,14

All dates are tentative, awaiting approval.

NOVAC

The Northern Virginia Astronomy Club
c/o Brenda Clements Jones
883 North Kentucky Street
Arlington, Virginia 22205



12/95 - \$18
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