

NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

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UPCOMING EVENTS

<u>Observing Dates</u>	<u>Monthly Meetings</u>
September 18, 19, 25, 26	September 16
October 16, 17, 23, 24	October 21
<i>NVTM'92 - Fri./Sat., Sept.25/26</i>	
<i>C.P. Children's Festival - Sat., Oct. 3</i>	

Preview Of NVTM '92

This year marks the tenth anniversary of the Northern Virginia Telescope Meet. Each year NVTM gets a little bigger and a little better, and NVTM'92 will be no exception!

The Meet will be held on Friday, September 25 and Saturday, September 26, at C.M. Crockett Park in Midland, Virginia. As usual, Friday night is reserved for amateur astronomers, while Saturday is open to amateurs and the public alike.

Camping is permitted for both nights, however you must set up out of sight, behind the maintenance shed or down by the dam. No water or electricity will be provided.

Friday's event will begin at dark, and continue until dawn. No special activities are planned. Come out and kibbutz with your old astronomy pals.

Saturday's activities begin at 3 p.m. Come early, set up your telescope and view the Sun.; Take a hike along the 1000-yard solar system model; buy, sell or trade

astronomical equipment at the swap tables; or just check out the telescopes being set up on the field.

Around dusk, the talks and presentations will be held at the amphitheater, or in case of inclement weather, in the Panorama Shelter.

Survey, a noted authority on impact structures. He will be showing us slides of meteor craters from around the world. The October meeting will be devoted to a wrap-up of NVTM'92, as well as any miscellaneous business.

Also in the October meeting, John and Meg Menke will be promoting the "Home Dome" as advertised in S&T. The "Home Dome" is a fiberglass, de-mountable, observatory dome which comes in a 6' or 10' size (and a future 15' size).

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As night settles in, a full night of observing is in store under the wide open skies of Crockett Park. Let's hope for perfect weather (for a change)!

Upcoming NOVAC Meetings

By Bill Burton

The speaker for the September NOVAC meeting will be Dr. Dan Milton, from the US. Geological

Vice President's Column

Since Myron took a sabbatical from this issue's President's Column, I decided to perform some function as Vice President and do the column for him. Hopefully, I won't be misspelling any words or appending any E's.

By the time you get this newsletter, the Telescope Meet will be about two weeks away. The club needs your help! If you haven't volunteered, please do so. See The August NOVAC Meeting Minutes

article in this newsletter for more information.

Myron, Bill Burton and I checked out a new alternative observing site to Crockett Park. Jim and Sheree Kilpatrick have graciously extended the club an invitation to observe on their property. The Kilpatrick's live in Leon, VA. which is about 10 miles southwest of Culpeper. The skies at the site the darkest I've seen within a two hour radius of DC. They are much better than Sky Meadows and blow away Crockett Park.

To use the site, you must get permission from the Kilpatricks prior to coming out. The site is close to their house and will not accommodate large groups of observers. When you go out, please be considerate of our hosts and keep the noise to a minimum. See the NOVAC Notices section for directions and observing site regulations.

Jim Kilpatrick has offered to keep an eye open for an observing site that will be out of the way and won't be an intrusion on anybody.

See you at NVTM'92, and let's pray for clear skies!

George Uhl
vice-president - NOVAC

A Beautiful Double Star Is Closing Up

by Guy Moore

Throughout this century, one of the "show-pieces" among double stars, particularly using small telescopes, has been Gamma Virginis. Also known as Porrima, the stellar pair is rapidly closing up and amateurs will soon lose what is arguably called the finest double star in our latitudes (after Alberio).

According to Jean Meeus (Sky & Telescope, "Some Bright Visual Binary Stars", Jan. 1971), Porrima was one of the first stars discovered to be double. The discoverer was a French missionary in India named Richaud.

After closing up beyond reach of almost all telescopes in 1836, the two components (both at 3.4 magnitude) rapidly opened up and attained their greatest separation in 1920 at about 6.2 arcseconds. McKready, in what was once the Bible of many of us older amateurs, The Beginner's Star Book noted that the pair could be divided easily by a 2-inch instrument at 50x (in his day, the components were a comfortable 6 arcseconds apart).

In the 1930's and 40's I was perforce a binocular observer, but I first "split" Porrima March 27, 1971, using a 2-inch department store Taco refractor at 60x. The image was fuzzy but the division of the star was definite.

On April 4, 1972, I used a 3-inch Unitron refractor on Porrima and split it nicely at 96x but anything less only elongated it. It was then at 4.4 arcseconds separation.

On May 20, 1992, I used the same 3-inch Unitron again on the star and found that 160x was required to split it. According to the 1992 edition of the Observer's Handbook, by Roy L. Bishop, ed., the components are now separated by only 2.8 arcseconds.

To some eyes, each star is a pale yellow, to Robert Burnham, Jr., "they look for all the world like the remote twin head-lamps of some celestial auto, approaching from deep space", (Burnham's Celestial Handbook, Vol. 3.) To my eyes, and Mary Proctor's, both components are white.

My two drawings made 20 years apart, may serve to call attention to a beautiful binary that is rapidly closing and which poses an interesting challenge to all astronomers as the star reaches its minimum of 0.39 arcseconds in May, 2008.

Apologies to Guy Moore.

Unfortunately his sketches of Porrima were not scanned in time for the publication of the newsletter. They will be included in a future edition.,ed.

The Perseids Out West

by Bill Burton

This August my family and I vacationed in Colorado and Wyoming for two weeks, a land of high elevations and dark skies. The first week of the vacation corresponded to the period leading up to the peak of the Perseid meteor shower.

Inspired by an article in the August '92 Sky and Telescope which outlines the basics of doing an accurate meteor count, I decided to try my hand at observing and counting the Perseids. This, of course, is a special year, with the Earth possibly "closing in" on the putative source of the meteors, Comet Swift-Tuttle. Corrected hourly rates for Perseids seen last year in Asia topped 200 meteors an hour and briefly went over 300. Despite the interference of the moon this year, the coincidence of good viewing conditions, leisure time, and the possibility of a meteor storm sent me out night after night.

Date	8	9	10	11	11	12	13	13	13
Time (UT)	9:33-10:03	9:39-10:09	9:51-10:21	9:34-10:04	10:08-10:38	9:12-9:25	9:07-9:37	9:41-10:11	9:20-9:50
Moon&alt(deg)	no moon	no moon	no moon	Gib. 10-5 deg	Gib. 5-0 deg	Full 20+ deg	Full 20+ deg	Full 20+ deg	
Clouds (%)	20	0	0	10	5	40	10	20	
Lim. Mag.	5.2	7.0	7.0	5.8	6.0	5.0	5.0	5.0	
# Perseids	6	5	12	7	12	6	10	10	16
# non-Per.	2	13	8	2	4	0	1	4	
A.H.T.	68	10	24	43	60	188	136	136	218

I ended up with six nights of observations consisting of one or more 30-minute sessions each night, starting around 3:30 in the morning. The accompanying table shows the date and Universal time of the observing sessions, altitude and phase of the moon, a crude estimate of the average percentage of clouds in the area of sky observed, the limiting magnitude (faintest stars seen in the Little Dipper), the actual counts of Perseids and non-shower meteors, and the adjusted hourly rate of Perseids.

The hourly rate was adjusted for the time interval (doubled in most cases) and the decrease of limiting magnitude caused by the moon, using the correcting factor of the International Meteor Organization. I adjusted the hourly totals to be equivalent to the darkest skies I saw, which had a limiting magnitude of 7.0 (the IMO corrects to 6.5). Cloud cover was not considered for simplicity's sake, and uncertainty as to whether a given patch of clouds would hide a long meteor streak. (Perhaps the lack of cloud cover compensation and the higher limiting-magnitude "baseline" cancel each other to yield numbers similar to the IMO's Zenithal Hourly Rate.)

The last two nights, August 12 and 13, were the predicted days this year for the "new peak" and regular peak of the Perseids, respectively.

Our first night was at a house in the mountains outside Denver and the session was dogged by high clouds,

which cut the limiting magnitude to 5.2. For the next three nights, however, we were in Laramie, Wyoming, where I could drive up to a ridge at 8000', a few miles north of town, and enjoy perfectly dark skies after moonset. Finally there was no avoiding the moon, and our venue shifted back to a cabin in the Colorado Rockies, where thunderstorms occurred every afternoon and clouds were more prevalent at night.

If we are to believe the corrections, there was a small peak the first night (morning of August 8) followed by a sharp drop and a gradual rise over several days to the main shower peak. In contrast, the non-Perseids appear to fluctuate randomly in abundance. The much-anticipated night of August 12, date of the sharp new peak in Perseids last year, was plagued by clouds at my site and resulted in an observing session of only 13 minutes. The 6 Perseids seen during that period, in a large hole in the clouds, correspond to an hourly total of 188, the highest number I saw during regular timed sessions. It was clear that there was no meteor storm, however.

The next night, the traditional peak of the Perseids, produced slightly fewer meteors during the timed intervals. However, during a 30-minute interval bridging the two sessions (last column in table) I saw 16 Perseids, corresponding to an hourly total of 218. Perhaps this

little burst was the real peak of the whole Perseid shower.

I found meteor watching to be a lot of fun, as well as a welcome respite from the myopic view through a telescope eyepiece. The IMO welcomes observations from any time of year, not just during meteor showers. The next time you're under dark skies, step away from the scope, grab a pencil and paper and a good seat and warm blanket, and give it a try.

NOVAC, A World Class Outfit!!!

by Al Schumann

The winter and spring just passed were neither kind nor gentle to amateur astronomers. It was almost a given that we'd have heavy clouds and rain during the moonless weekends and clear skies when the moon would hinder deep sky observing. I'm sure many of us were thinking it was a conspiracy. Where is Oliver Stone when you really need him?

The night of June 27 changed our run of bad luck. It was Saturday night, the moon didn't rise until the wee hours of the morning, and the sky was beautiful. It was also the night that changed my perception of NOVAC for good. While driving out to Crockett Park I figured a few other folks would show up for a good night under the stars; the usual suspects, so to speak. Instead, there

was a crowd, a big crowd! One might of thought that our telescope meet had been moved to June instead of September. There were 15 carloads of people and telescopes before it even got dark, and they kept pouring in for hours thereafter. Granted, following the weeks of bum weather, must of us were starved for an astro-fix, but this turnout was nothing short of miraculous. NOVAC has grown into one helluva club!

But it was not just the numbers that were dazzling, the enthusiasm was electric, and the innovations quite extraordinary. People were rushing from one telescope to another in order to check out design features, construction techniques and other "Gee Whiz" stuff. For example, Bob L'Hommedieu unveiled a new 8" reflector with air conditioning! He placed a battery powered electric fan down by the mirror cell. The idea is not only to help cool down the mirror, but also give a stabilized air current through the tube as an aid to seeing. As you might expect from Bob, the telescope was put together like a fine piece of furniture. Baltic birch plywood, no less. Also, he showed his new, adjustable, bicycle seat observing stool. If you looked deep into Jerry Wolczanski's eyes you could see the idea gears spinning like mad.

There were other big time telescopes on hand as well. One was a gorgeous C-11 with a control panel which someone likened to the bridge of the Starship Enterprise. Another was a home-built, hybrid version of the 18" "pocket" telescope. Magnificent! Bob Bunge was there with his unusual, low profile 12.5" reflector. I think there was also a 20-incher down the line somewhere, but I didn't get to check it out. And there were plenty of others.

We have some incredible talent in NOVAC, and I don't think there is a more dynamic outfit anywhere. Not only do we build or buy telescopes, we actually use them. What a concept!

Reflections in the Eyepiece, John Herschel Discovered Life on the Moon - Hoax or Satire?

by Robert Bunge

On Tuesday morning, 25 August 1835, New Yorkers awoke to find that the great British astronomer Sir John Herschel, observing from South Africa, had discovered humanoid--perhaps even intelligent- life on the Moon.

This news was carried by a popular daily "penny" newspaper, The New York Sun. Published by Benjamin Day, The Sun was first printed in September 1833. In a day and age when most newspapers were bankrolled by political parties and cost six cents per issue, The Sun was a pioneer: priced at only a penny, it instead relied on advertising for income. In this manner, The Sun was to set the stage for newspapers for the next 150 years. Other revolutionary ideas employed by Day to attract large numbers of average people as readers included the first reporting of crime and court proceedings and non-biased political reporting.

A Monster Telescope

The news of life on the Moon was carried in a six day series and was authored by an associate of Herschel who had helped to build the telescope used to make the discoveries. Indeed, life on the Moon was a popular topic. Circulation of the penny paper skyrocketed from 8,000 on the 25th to about 19,500 by day six. Additionally, the newspaper sold at

least 10,000 reprints for the hefty sum of a quarter apiece.

Depicted as an extract from The Edinburgh Journal of Science, the series started by describing in great detail, how, Sir John, son of Sir William Herschel--the discover of Uranus--used a huge refracting telescope with a lens 24-feet (7.3-meters) in diameter to examine the surface of our nearest neighbor at magnifications as high as 42,000. To set the stage for what was coming, on the first day, the story read:

"...the younger Herschel, at his observatory in the Southern Hemisphere, has already made the most extraordinary discoveries in every planet of our solar system; has discovered planets in other solar systems; has obtained a distinct view of objects in the moon, fully equal to that which the unaided eye commands of terrestrial objects at the distance of a hundred yards; has affirmatively settled the question whether this satellite be inhabited, and by what orders of beings; has firmly established a new theory of cometary phenomena; and has solved or corrected nearly every leading problem of mathematical astronomy."

Carried alongside front page advertisements--common in penny papers--that pedaled the best beaver skin top-hats for \$2.50, the articles were comprised of long-winded, highly complex sentences that were choked full of seemingly amazing detail. They described how Sir John, forever restricted by the dimming of the telescopic view as higher and higher magnifications were used, developed a technique where he burned "hydro-oxygen" to produce a light which was then used to brighten the view through the telescope. Indeed, even without the use of "hydro-oxygen," the telescope itself, was clearly something special.

Aided by a grant of \$70,000 from the King of England:

"Sir John Herschel had submitted his plans and calculations in adaptation to an object glass of twenty-four feet in diameter: just six times the size of his venerable father's. For casting this ponderous mass, he selected the large glass-house of Messrs. Hartly and Grant at Dumbarton. The material chosen was an amalgamation of two parts of the best crown and one of flint glass, the use of which, in separate lenses, constituted the great achromatick discovery of Dolland. It has been found, however, by accurate experiments, that the amalgam would as completely triumph over every impediment, both from refangibility and discoloration, as the separate lenses."

Once the telescope was constructed and transported to Sir John's observatory at the Cape of Good Hope, the observations started. At the eyepiece of the tremendous telescope, Herschel and others were able to observe flowers, at least 38 species of trees, complete forests, and herds of creatures of all types wandering the lunar surface. But, about half-way through the third day of the series, the story got really interesting as the author quoted Herschel after having noticed four flocks of flying creatures:

"Now gentlemen, my theories against your proofs, which you have often found an even bet, we have here something worth looking at: I was confident that if ever we found beings in human, it would be in this longitude, and that they would be provided by their Creator with some extraordinary powers of locomotion: first exchange for my number D."

This lens being soon introduced, gave us a fine half mile distance; and we counted three parties of

these cheaters, of twelve, nine and fifteen in each, walking erect towards a small wood near the base of the eastern precipices. Certainly they were like humans beings, for their wings had now disappeared, and their attitude in walking was both erect and dignified...They averaged four feet in height, were covered, except on the face, with short and glossy copper-colored hair, and had wings composed of a thin membrane, without hair, lying snugly upon their backs, from the top of the shoulders to the calves for the legs. The face, which was of a yellowish flesh color, was a slight improvement upon that of the large outing, being more open and intelligent in its expression, and having a much greater expansion of forehead.

Even as the public gobbled the news up, a few experts were asking questions. All but the most knowledgeable people seemed stymied and amazed by the richness of the science presented in the reports. Other newspapers were scrambling to confirm, or even reprint the series. But, within days, the real story broke--it was all a hoax. Or was it?

The Real Story

Indeed, Sir John, really was at the Cape of Good Hope. There, he was busily extending his father's survey of deep sky objects to the southern skies that are not visible from England. Even as the *The Sun* articles were on the streets of New York, Herschel was starting to hunt for Halley's comet, due to return in early 1836. However, Sir John's real telescope only had an aperture of 18-inches...not 24-feet! And, the *The Edinburgh Journal of Science* had ceased publication two years before. Not to mention that the blurring effects of the Earth's atmosphere rarely allow visual observers use magnifications

of more than a few hundred, no matter what the aperture of the telescope.

When another New York penny paper pressed *The Sun* for more information and permission to reprint the series, a *Sun* reporter, Richard Adams Locke admitted complete authorship and that it was all bunk.

While it may be easy--and perhaps even correct--to conclude the purpose of the Moon Hoax was to increase circulation, there is little if any evidence that publisher Day knew the series was fiction.

But, if boosting circulation wasn't the reason, what could have been Locke's motive to write the series? It has been suggested by Michael J. Crowe of the University of Notre Dame, that Locke was not attempting to hoax the world, but to, instead, satirize a popular movement that believed the Moon, and indeed, the entire universe was heavily populated by intelligent life.

Theology and Early SETI

While a few astronomers had reported sighting of green fields and even Lunar cities, by 1800, an increasing number of observers had become convinced that the Moon had no atmosphere because stars quickly blinked out as they passed behind the Moon. But that didn't stop others from speculating.

One of those speculators was the Rev. Timothy Dwight. Dwight, as president of Yale University from 1795 to 1817, regularly repeated a series of sermons that placed intelligent life throughout the universe. A number of his students and other theologians also preached, for many years, the idea that God had not put humans on Earth alone and that certainly these beings must be happier than those on Earth. One

of the most popular of these theologians was the Rev. Thomas Dick, a Scotsman who wrote volumes on the subject and at one point estimated that more than 2 billion inhabited worlds existed.

Thus, while some had doubted the truth of Locke's articles, many more people had little reason to be skeptical. It appears that at first Herschel was amused by the story, but later he was buried under an avalanche of mail, most asking for confirmation of the observation and some asking if he had been able to contact the Lunarians. If Locke was attempting to satire the ideas of Dwight and Dick, he was preaching to a crowd that had already bought into the argument...and The Sun series only served to confirm what they already knew.

July General Meeting Minutes

The meeting was called to order at 7:30 PM by Myron Wasiuta on July 15, 1992 at the Arlington Planetarium. There were 24 members and guests present.

Old Business

1. The members present voted to go ahead and purchase liability insurance for the club through the Astronomical League. This means all club members will now also be members of the Astronomical League. For information on Astronomical League services and benefits please contact Steve Bodner who is now our League representative.
2. The members present voted unanimously to alter the club Bylaws as requested by the I.R.S.
3. The trip to Hood College will be on July 18, 1992.

New Business

1. Plans for the Telescope Meet in September are being finalized. Bill Burton is trying to find a speaker. There will be more daytime events this year including solar viewing. We also plan to have constellation programs this year at night. An effort is being made to upgrade the concessions also.

2. Volunteers are needed to help with the Telescope Meet and all members are urged to join in.

Member Lloyd Verhage gave a very interesting talk about the design, use and construction of sundials. Lloyd showed many examples of these fascinating instruments made by himself and also by club member Hershel Payne.

Respectfully submitted,
Bob L'Hommedieu, Secretary

August General Meeting Minutes

The general membership meeting was held on August 19, 1992 at the Arlington County Planetarium at 7:30 PM. Myron Wasiuta presided. There were 31 members and guests present.

Old Business

1. Steve Bodner has applied to the Astronomical League for club membership and liability insurance coverage. The insurance should be in effect by the Telescope Meet.

2. Volunteers are needed for the Telescope Meet. Members are needed to work in the following areas:

- registration
- concessions
- security

- set-up/clean-up
- speakers
- constellation programs
- informal talks
- individual projects

Please call George Uhl [H: 703-369-4575; W:703-883-7305] if you can help.

The Telescope Meet is a lot of fun and none of these jobs require much effort.

New Business

1. On Friday Aug. 21, 1992 there will be a public star party at the Hidden Pond Nature Center. NOVAC has been asked to help by providing telescopes. All members are encouraged to attend and help educate the public.

2. Bob Bunge received a Merit Award from the Goddard Astronomy Club at the annual Stellafane Convention for his homemade 12.5 inch portable reflector.

Russell Duke showed us some mirror blanks and tools he obtained for United Lens Co. and also from Newport Glassworks. Andre Bormanis showed some of his collection of striking astrophotos. The main program for the evening was a video of this years' Stellafane Convention taken by Blaine "Steven Spielberg" Korcel. The video included the sights and sounds of Stellafane as well as the NOVAC members who attended.

Respectfully submitted,
Bob L'Hommedieu, Secretary

NOVAC NOTICES

Children's Festival

On Saturday afternoon, October 3, Crockett Park will sponsor their

annual Children's Festival. The Park has offered NOVAC a booth to promote our club and it's activities. Stick around in the evening and show some kids the first quarter moon. Call Myron Wasiuta at 703-786-9276 for more information.

OBSERVING SITE RULES

Crockett Park:

NOVAC members may use Crockett park for observing on nights other than those scheduled for club observing; **BUT, YOU MUST HAVE PRIOR APPROVAL FROM RODGER PENCE, THE PARK MANAGER.** Call early in the day on which you wish to observe; the telephone number is 703-788-4867. If you reach the answering machine leave a message stating that you are a NOVAC member and you wish to observe that night. Also, leave a telephone number where you can be reached. 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.

The gate is locked at sunset and the combination is shown on your Observing Pass. Do not reveal it to anyone. You must lock the gate behind you after entering and please remember to lock it after you leave.

During EDT, you must set up on the large field to the left. During EST, you may set up on the paved cul-de-sac 200 yds past the gate.

No loud radios, no alcoholic beverages; no loose pets; do not leave trash or debris behind. We are guests of the park and our observing privileges may be revoked at any time because of the carelessness of one person.

The Kilpatrick's:

NOVAC members may use Jim and Sheree's property for observing on any night - **BUT, YOU MUST HAVE PRIOR APPROVAL FROM THE KILPATRICKS.** Call early in the day on which you wish to observe; the telephone number is 703-547-3501. If you reach the answering machine leave a message stating that you are a NOVAC member and you wish to observe that night. Also, leave a telephone number where you can be reached. If you do not receive a return call you may not use the site, **THERE ARE NO EXCEPTIONS!** Use of the site is limited to NOVAC members only.

No loud radios, no alcoholic beverages; no loose pets; do not leave trash or debris behind. We are guests of the Kilpatricks and our observing privileges may be revoked at any time because of the carelessness of one person.

Directions to Crockett Park

From the Washington DC/Northern Virginia area, go west on I-66 to the 47-a exit which is 234 South to Manassas. Continue on 234 for 2.8 miles until then turn right on Godwin Drive at 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 towards Warrenton. There is a small country store (Mayhugh's) on the corner of the intersection. Proceed 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 1/2 mile to the park gate.

Directions to The Kilpatrick's

From the Washington DC/Northern Virginia area, go west on I-66 to Route 29. Take Route 29 South exit to Warrenton. Continue on 29 past Warrenton and Culpeper. When you pass the last exit for Culpeper, stay on Route 29 for 8 miles. At Route 631, turn left, and go 2.5 miles. At Route 630, turn right and go 1.5 miles until you come to Route 632. Turn left, go about 100 yards up the hill. On the right there are three mailboxes. Turn right onto the driveway, go straight to the Kilpatrick's home. Let them know you have arrived and they can help you find a spot to set up.

ADVERTISEMENTS

For Sale, contact Jim/Schaeffer during working hours only at ³⁷⁰⁻⁹⁰³³ 751-8737: CAPS, baseball type, mesh back, adjustable, NOVAC logo, \$5.95 (you pick up), \$7.75 (UPS ship); JACKETS, nylon/satin, NOVAC logo on front & back, elastic at sleeves, neck, and bottom, very good quality, sizes S, M, L, XL, \$34.95.

29.95

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NOVAC

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Theodore von Kármán
Aerospace Scientist

During EDT, you must set up on the large field to the left. During EDT you may set up on the paved surface. See 100 for more details.

No one should be involved in any investigation because of the seriousness of the person.

Process about a mile up on the Park Entrance road. Look for a small sign for L.M. Crocker Park. In your right direction you will turn left. Once on the park entrance road, turn right to the park entrance.

Once on Route 28 continue driving for a distance of 1.1 miles through the

1.8 miles to where it merges with...
Godwin Drive in the "old"...
Manassas, continues on 2.8 for 1.8...
Virginia Ave. go west to... to the...
from the Washington DC border.

NOVAC members are the Crocker Park for observing the night sky. Call early in the day. If you reach the answering machine leave a message saying that you are a NOVAC member and you wish to observe that night. Also, have a telephone number a 703-788-1857. NOVA members are the Crocker Park for observing the night sky. Call early in the day. If you reach the answering machine leave a message saying that you are a NOVAC member and you wish to observe that night. Also, have a telephone number a 703-788-1857.

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