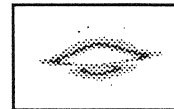


THE NOVAC GALAXY



THE NORTHERN VIRGINIA ASTRONOMY CLUB NEWSLETTER

Issue Number 44

Volume 12

November/December 1992

President: Myron Wasiuta 703-786-9276
Vice President & Editor: George Uhl 703-369-4575
Secretary: Bob L'Hommedieu 703-978-0946
Treasurer: Brenda Jones 703-527-7963
NOVAC Information Hotline 703-256-8359
NOVAC Computer Bulletin Board 703-256-4777

UPCOMING EVENTS

Club Observing Dates Monthly Meetings
December 18,19,26 December 16
(No Scheduled Observing On Christmas Night)

An Apology For Tardiness

by *The Newsletter Editor*

I'm sure most of you were wondering if you'd ever get a newsletter for November and December 1992. Well here it is - one month late and very much abbreviated!

My excuse: I was away in Hawaii from Halloween until November 16th -- getting married there and having a honeymoon too. After I got back, there was a wedding reception of sorts with family and friends. And following all this was Thanksgiving. Whew, I finally have the time to publish the newsletter!

The speaker for the December meeting will be George Uhl. He will discuss his trip to the summit of Mauna Kea while he was honeymooning in Hawaii. George likened his adventure to a Muslim's pilgrimage to Mecca. So if you need a shot of that ol' time religion, be sure not to miss the December meeting!

General Membership Meeting. The current nomination list is as follows:

President - Myron Wasiuta

Vice President - George Uhl

Secretary - Bob L'Hommedieu

Treasurer - Brenda Jones

Board Of Directors - Bob Ridgley and Tom Parry

What's Inside

NVTM'92 Wrap-up - Page 2
The Darkest Sky - Page 2
Reflections In The Eyepiece - Page 3
September Meeting Minutes - Page 4
October Meeting Minutes - Page 5
NOVAC Notices - Page 6
Advertisements - Page 7

If you wish to place your name in nomination for one of the above positions, please attend the December meeting no later than 7:30 PM at the Arlington Planetarium, on Wednesday, December 16.

Upcoming NOVAC Meeting Programs

by *George Uhl*

The November General Membership meeting, held on the 18th at the Arlington County Planetarium, featured Bob Bunge. Bob discussed the process of building a refracting telescope. He briefed attendees on the various stages of refractor construction, including the methods he employed in grinding his own objective lens!

At the top of the slate for the December meeting will be elections for club officers and 2 seats on the Board Of Directors. Nominations will be taken up to the time to vote.

The monthly meetings of the Northern Virginia Astronomy Club are held on the third Wednesday of every month at 7:30 P.M., at the Arlington County Planetarium, 1426 N. Quincy Street, Arlington, VA 22207. Admission is free and open to the public. Call the NOVAC hotline (703-256-8359) for upcoming events, special announcements, or to leave a message in order to obtain further information.

NOVAC Elections

NOVAC will hold elections for Club Officers and 2 seats on the Board Of Directors during the December 1992

President's Corner

Well here it is election time again. It sure doesn't seem like a year has gone by. During the last two monthly program meetings, we called for nominations. I would like to thank everyone who participated in these nominations as well as those nominated for their interest in keeping the workings of NOVAC running smoothly. There is a lot of behind the scenes work which must get done each month so that we all can enjoy the benefits of a newsletter, monthly programs, and organized events such as NVTM'92. To all these folks I say Thank You, and to the general membership I invite you to share your own

particular talents to help with the normal operations of the club. Don't be shy! We are always in need of help.

Finally, the main order of business at our December meeting will be the formal elections. Our program will be given by George Uhl who will give us a slide show about his recent honeymoon/marriage trip to Hawaii and the observatory at Mauna Kea! Rumor has it George asked the astronomers there if he could use the 10 meter Keck reflector to look at the moon.

(ed. note., They asked me if I had brought a TELRAD with me since theirs was in the shop. Since I hadn't, we had to use the 11 -inch Celestron instead!)

Myron E. Wasiuta
President, NOVAC

NVTM'92 Wrap-up

by George Uhl

By all accounts the Northern Virginia Telescope Meet was a big success, despite the fact that it was postponed at the last minute. It got a bit dicey the Thursday before the meet. With a tropical storm headed straight for the Mid-Atlantic region, and the prospect of being completely socked in both Friday and Saturday nights, I felt it was my duty as Telescope Meet Coordinator (and club VP.) to make emergency plans. I discussed the situation with Myron, and we decided to postpone the Meet until the following weekend. After getting approval from Gary Kwolek at Crockett Park, we pushed the event up a week (Oct. 2 and 3), piggybacking Saturday's activities to start after the Crockett Park Children's Festival ended.

Myron and I scrambled around to notify NVTM staffers, club members, guests, and the public. On such short notice, were limited in making the announcements on the NOVAC hotline and the bulletin

board. That Friday it rained, and Saturday was completely clouded out. A few people did show up on Saturday (the fliers stated "rain or shine"). I had put a sign up at Crockett Park announcing the postponement. I hoped they would return the following week.

The next Friday was a great evening for observing. A few NOVAC members and some observers from other clubs had crisp temperatures and excellent skies for observing, especially after moonset. There were about 15 telescopes set up. Dew got everybody around 2 AM so we all packed it in.

Saturday, we had a booth at the Children's Festival and a lot of people who came for the Festival decided to come back for the Telescope Meet. At 4 PM, we started setting up. A few telescopes were set up for solar observing, and Jim Schaeffer set up the 1000 yard solar system model. We had hotdogs and chips for sale, and the Park sold soft drinks.

The talks were held in the amphitheater, which turned out to be quite a hike from the field. Unfortunately, two of the three scheduled speakers, Bill Burton and Geoff Chester, had already made plans for that weekend and could not attend the Meet. The burden fell solely on Myron Wasiuta who gave an excellent and informative talk about the world of amateur astronomy. Myron presented his own astrophotography on slides and video to illustrate how an amateur can have fun as well as make important scientific observations.

Back on the field, 200 to 300 people enjoyed the views of the first quarter Moon, Saturn, and other celestial gems through the course of the evening despite some high cirrus clouds, the bright moon, and the ever-growing light pollution dome.

Bob L'Hommedieu gave a constellation tour for newcomers to learn their way around the night sky.

At around 9 PM, the door prizes were given out, after which the crowd began to thin. By midnight, even the few diehards were beginning to pack it in. After everyone had left, Jim Schaeffer and I closed up the show at 1 AM.

In retrospect, the Meet went well and was very successful, however some mistakes were made by myself and NVTM staff. First and foremost, the club must have a rain-date weekend, just in case of inclement weather. The old rule of using two evenings for the meet instead of one, thereby providing a built-in rain date, won't work any more. Second, a lot of planning and personal commitments must commence long before the Meet begins, starting 10 - 12 months prior to the event. Third, we need people to commit to help A.S.A.P.! Last minute recruiting is no way to organize a fairly large event like NVTM. Don't wait to be asked - VOLUNTEER!

I'd like to express my gratitude to Myron Wasiuta, Doug Mistler and his boys, Lance Gardner, Bob L'Hommedieu, Russ and Roz Duke, Jim Schaeffer, Steve Bodner, John Huggins and everybody else who sacrificed part or all of their evening to make NVTM'92 a success!

The Darkest Sky

by Evan A. Johnson

I felt a bit ashamed of the 80-millimeter refractor tube cradled in my lap as I pulled up to the Crockett Park observing site on August 1st. The Sun had just set behind the hills in the west and I saw 12-inch and 13-inch reflectors silhouetted against the darkening

sky. Already the Moon was prominently hanging in the west, a fingernail crescent; I still don't know any names, but somebody with an 8-inch called out "Petavius!" as soon as I stepped out of the car.

I took a look after I set up my scope and thought about how it wasn't much better than my scope at home...

It didn't help my already low self-image when I accidentally leaned over and knocked the 8-inch tube almost down to the horizon. But the owner didn't yell, didn't even give me a cold stare, but simply gave a pleasant "Whoops!" and quietly and quickly realigned the telescope. He didn't seem to mind that I was only a kid and had never really used a telescope other than my own before... I had never even looked into a reflector before that moment.

Everyone around me seemed almost professional... I heard about collimation and Bug nebulas and "No, I think it's gotta be NGC 6302" but as the sky darkened to the darkest gray I'd seen and I had talked to almost everyone there, I felt like one of them already.

I believe the first thing I saw that night once it really got dark was Antares. The southern horizon at my house really hinders my view and I had never seen Scorpius or Sagittarius before. Despite that, I split Antares with little trouble in a moment of good seeing; I don't mean to gloat, but a few other people couldn't and that made me feel good.

A man with a 10-inch (Myron?) was engaged in showcasing the Milky Way and I absorbed my first views ever of summer favorites such as M11-- not to mention Neptune.

I saw M4 with my own scope, and Saturn presented perhaps the best telescopic view I have ever had... of anything. I happened upon an unknown cluster, and someone with a BIG telescope (the one searching for the Bug nebula) kindly told me that if it "looked like a resting butterfly" then it was M6 -- kindly interrupting an observation to answer me.

The best part, however, came at about 10:30, when belated cries of "It's finally getting DARK!" were in the air. I still don't know your name, but you know who you are with the 6-inch. The one who showed me the (for me) elusive targets M57 and M27 and compared what we thought was M29 (it is, by the way) in the 6-inch and my little 3-inch, the only refractor there.

Eventually, of course, I had to leave. I couldn't leave my father guarding my scope (he insisted) forever. So I silently said good-bye and drove up the driveway to the exit of the park, turning my back on the darkest sky I have ever seen.

Reflections in the Eyepiece

by Robert Bunge

It was pitch black as I stepped outside after climbing 11 flights of stairs from the photolab to a deck just behind the bridge of the aircraft carrier USS America. As usual, it was so dark out that I couldn't even tell if it was clear out. Using a railing as a guide, I stumbled over to the spot where I had been setting up a small telescope for the past three years and waited until my eyes adapted to the dark. Stars showed first, then the outline of the ship against the sky. I set up the scope and started observing.

My log for that night reads something like this:

November 27, 1983. +20 degrees north, somewhere near Puerto Rico. Temperature, 80[⊙] F, very calm seas. Instrument: 4-inch F/4 Rich Field Telescope (RFT). Remarks: Great night. M-45 was the best I've ever seen it. The nebula was so easy to see. Looked at a total of 14 galaxies with the RFT. Flight Ops, partly cloudy, calm with 0 to 1 degree of rocking, very nice.

I didn't know it at the time, but I had constructed a code in the remarks in my observing log that today relate to huge amounts of information in a few words -- if fact it only took 64 words.

Flight Ops -- the carrier was conducting flight operations, which means jet aircraft were taking off and landing on the flight deck, from which I was protected from because I was on the other side of the island structure which sticks up above the rest of the flight deck. Jets are loud, so ear plugs and ear muffs were a permanent part of my observing gear. Every time a plane took off or landed, vibrations rendered the telescope useless for a minute. But Flight Ops also meant good observing. The ship was turned into the wind, so it was as steady as the sea state would allow. Most of all, it met the ship wouldn't be turning. I always cursed every time I found an object, only to have the ship turn, and see it travel from one side of the sky to the other!

Partly cloudy -- Perhaps a dozen trips to the Caribbean Ocean had taught me that it was always partly cloudy here. Unlike Ohio, you couldn't see the clouds, you could only not see them. The clouds only appeared as dark holes in the sky where you could not see any stars. This didn't bother me too much, because the forward motion of the ship reduced the time under the clouds to a couple of minutes.

Calm -- calm seas with only two to four foot waves. This met no spray (Which eroded the coating on my mirror) and no white caps that because of the design of my telescope could sometimes cause reflections in the eyepiece and ruin contrast.

0 to 1 degree rocking -- The most I ever saw the America rock was six degrees in a port to starboard or left to right motion, and that was in a hurricane! The ship, over a thousand feet long rocked very little stern to bow. Often the ship didn't rock at all. Because the ship presented such a large broadside area, if there was any wind, and if the ship was broadside to it, the ship would sometimes list to one side and just "stay" there. With the 4-inch, it was very rare when I could not observe. I also observed successfully with a 6-inch F/5 reflector on the America.

The lack of information about other ship's crew activity tells me if other ships were operating with the America, they were on the other side, because the ship's signalmen weren't using their signal lights to communicate with them. It helped that they didn't like to use them during flight ops. These lights were much like small search lights, and could sometimes spoil my night vision.

If I was observing near sunset or sunrise, the ships navigators would often come out to make an observation to practice the skill of navigating by the stars. More than once I steered them away from planets that they had mistaken for bright stars. They soon learned that I knew the sky well, and would come out for their required sightings if they knew I was observing!

Sometimes another ship would be steaming about 50 yards beside the America while the two ships would

exchange fuel and supplies. Lights from the other ship would ruin my night vision. Once, while in the North Sea, the ship was in a slow 360 degree turn that never allowed me to find an object.

Another time while cruising south through the Red Sea, light from waste oil fires on huge oil rigs not only ruined my vision, but created a haze in the atmosphere because of a temperature inversion layer. My favorite story is how I was observing -- luckily with binoculars -- when a man over board drill was called. I had five minutes to pack up my stuff, and climb down eleven stories to report to the photolab or they would think I had gone overboard!

I left the America without much looking back in 1985. When I think about the trouble I went through to observe, I'm amazed I ever bothered to do it. It would have been easy to stay in the lab and watch movies on TV.

But instead, I did go to the trouble of observing, and today I can have the records of those sessions. With the help of these records, I can recall the many memories of these observing sessions whenever I want.

Keep a record of your observing. Note more than just what you saw with your telescope. Note the color of the sunset, the smell of the air, a song played on the radio. Make a quick drawing of a tree against the rising twilight, or the flash of a meteor across the sky. Jot down the names of the people you're observing with, or the name of a visitor who looks through your telescope.

All these things may seem so trivial at the time, but later they will become so important.

September Meeting Minutes

The meeting was called to order at 7:30 pm with Myron Wasiuta presiding at the Arlington County Planetarium. There were over 20 members and guests present.

Old Business

1. George Uhl called for volunteers to help with the Northern Virginia Telescope Meet. George also announced that the speakers for the Meet would be Geoff Chester, Bill Burton, and Myron Wasiuta. George passed around a sign up sheet for members who would like to volunteer to help.

2. Brenda Jones announced that 4 more members are needed to participate in the Sky & Telescope subscription plan before the club can join the program. Club members may elect to renew their subscriptions at the club rate of \$20 per year by contacting Brenda.

New Business

1. Crockett Park will be holding the Annual Children's Festival on October 3, 1992. The Ranger has requested our help in this event by displaying our telescopes and answering questions for the children. All members are urged to help the Park with this event.

2. October 17, 1992 is the date for the International Dark Sky Association Meeting in Charlottesville, Virginia. The Meeting will include observing on nearby Fan Mountain.

3. Virginia Power is attempting to increase outdoor lighting and is applying to the state Corporation Commission for permission. Brent Archinal has information for those willing to write to the state in opposition to these plans.

4. A possible new observing site was investigated recently and found to have darker skies than Crockett Park. This new site is a few miles farther out but still within easy driving of the metropolitan area. There are no plans to discontinue using Crockett Park but to offer a darker site to those who may desire.

The program was given by Dr. Dan Milton, a noted authority on meteor impact craters. Dr. Milton showed slides of craters around the world from Australia to Arizona and explained how these structures were formed by the tremendous forces generated by impact.

Respectfully Submitted,
Bob L'Hommedieu, Secretary

October Meeting Minutes

The general membership meeting was held on October 21, 1992 at the Arlington County Planetarium at 7:30 PM. Myron Wasiuta presided. There were about 30 members and guests present.

Old Business

1. Myron gave a synopsis of our recently completed and successful Northern Virginia Telescope Meet. There were 200 to 300 people attending. The talks were given by Myron and Bob L'Hommedieu and were well attended. The club members had a good time checking out each others telescopes and observing. The club's thanks go to George Uhl for again doing such a good job organizing NVTM.

2. Brenda Jones announced that she has completed getting the club in Sky and Telescope magazine's "club program". Through it, you can get a year for \$20.00 rather than \$27.00. Simply make out the check to Sky and Telescope; in the "memo" portion of the check, write whether

it's a new subscription or a renewal. You can also get 10% off any Sky and Tel publication; call Brenda for details.

3. Steve Bodner meant to announce that the club telescope is now fully functional and ready to be loaned out. It is a Celestron, model SP-C6, 6 inch, 750 mm focal length, Newtonian on a Super Polaris, German equatorial mount with wooden tripod. The scope accepts 1.25 inch O.D. eyepieces and there is currently one eyepiece (9mm resulting in 83X magnification) on loan to the club scope from Myron Wasiuta. The club has a lead on buying some additional, inexpensive eyepieces. Any eyepiece donations would be very helpful. The scope can be borrowed by club members for 2 weeks at a time, but that can be extended by calling and seeing if anyone else is waiting to use it. Since the previous NOVAC club telescope was stolen, you unfortunately will have to show Steve your proof of membership such as observing pass or newsletter mailing label and leave a signed, dated personal check for \$500. made out to NOVAC. Your check will not be deposited, but will instead be held and returned to you upon return of the telescope. Please call Steve at 703-243-1722 for further information.

New Business

1. Nominations and Elections:

a. Pursuant to the club bylaws, the annual election will be held during the December 1992 general meeting for service taking effect 1 Jan 1993. The positions to be filled are President (one year), Vice President (one year), Secretary (one year), Treasurer (one year), and two Trustees (two years each). The other three Trustee positions become open next year, the positions being staggered to provide continuity.

b. Nominations were opened and the nominees so far are: Myron Wasiuta for President (incumbent), Bob L'Hommedieu for Secretary (incumbent), Brenda Jones for Treasurer (incumbent), Tom Parry for Trustee, and Bob Ridgley for Trustee. Of course, more than one nomination may be made for each position.

c. Nominations will also be taken during the November general meeting. Anyone wishing to make a nomination is encouraged to do so. Also, if you desire to serve, you are encouraged to ask someone to nominate you.

2. George Uhl has been carrying the load of being newsletter editor for several years. Now that he's getting married, he will have less free time. Thus, his last newsletter will be the March/April 1993 issue. Our thanks go out to George. We need a volunteer to be editor or two or more volunteers to be co-editors. Otherwise we will not have a newsletter in May/June and later. Call George to find out what the job entails.

3. John and Meg Menke, owners of Technical Innovations Inc, gave a slide presentation on the fiberglass domes they make for semi-permanent installation for astronomy. The construction is similar to fiberglass sailboats. The domes rotate and have a sliding shutter opening and are rain tight when closed. The domes seemed very well designed and well built. Six foot diameter costs \$1950 to \$3950, depending on options. Ten foot diameter cost \$3750 and up, depending on options. To obtain a free brochure and price list or to ask questions, contact the Menke's at Technical Innovations; 22500 Old Hundred Rd; Barnsville, Md 20838; 301-972-8040

4. Brent Archinal showed slides from NVTM and from the recent antique telescope show at the Naval Observatory.

5. Bob Ridgley gave a slide show on his recent work-related trip to the Steward Observatory Mirror Laboratory at the Univ. of Arizona. He showed photos of the state-of-the-art, spin-casting furnace when it was recently making a 6.5 meter, 21,000 kilogram mirror. The slides were very impressive and interesting.

Respectfully submitted,
Bob L'Hommedieu, Secretary

NOVAC NOTICES

Focault Tester Donated

Herschel Payne has donated a finely crafted, home-built, Focault Tester to the club. Herschel is a talented craftsman and has a reputation for producing top-grade instruments. NOVAC is very grateful to Herschel for donating his Focault Tester.

Anyone who wants to use it to test the quality of their mirrors should contact Bob L'Hommedieu at (703) 978-0946. If you don't know how to use the device, Bob will show you.

1993 NOVAC Meeting & Observing Schedule

The tentative schedule below lists the 1993 NOVAC General Membership Meeting and NOVAC Observing Schedule. The dates in normal text are the observing nights and the dates in *bold italics* are the monthly meetings. The General Membership Meetings are held at the Arlington Planetarium on the third Wednesday of every month. Trustee Meetings are held on an as needed basis, usually the Tuesday

before the General Membership Meeting. Non-Trustees interested in attending should contact a Club Officer or Board Member for further information. The NOVAC Observing Sessions are held at C.M. Crockett Park in Midland, VA.

JAN	15, 16, 20 , 22, 23
FEB	12, 13, 17 , 19, 20
MAR	12, 13, 17 , 19, 20
APR	9,10, 16, 17 , 21
MAY	14, 15, 19 , 21, 22
JUN	11, 12, 16 , 18, 19
JUL	16, 17, 21 , 23, 24
AUG	13, 14, 18 , 20, 21
SEP	9, 10, 15 , 17, 18
OCT	8, 9, 15, 16, 20
NOV	5, 6, 12, 13, 17
DEC	10, 11, 15 , 17, 18

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 a 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: 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, \$29.95.

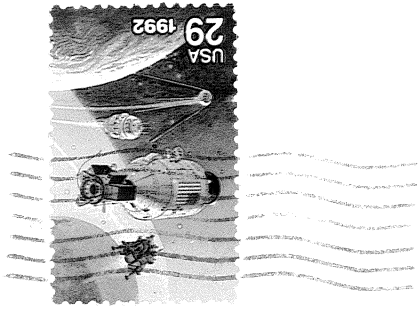
(C) Copyright 1992 The Northern Virginia Astronomy Club. All rights reserved. The NOVAC Newsletter may be reproduced with proper credit given to The Northern Virginia Astronomy Club.

The NOVAC Newsletter is published six times a year. Subscriptions are available through membership in NOVAC. Dues are \$18.00 per year.

For club membership information contact:

Brenda Jones, Treasurer,
883 North Kentucky Street,
Arlington, Virginia, 22205,
telephone: 703-527-7963.

Reston, Virginia 22091
2102 Whisperwood Glen Lane
L. Manrow and B. Burton
12/92 - \$0.1



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

NOVAC