

NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

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Inside this issue:

Editor's Note - Page 1
Highlights of General Meetings - Page 2
President's Column - Page 3
1994 NOVAC Election Slate - Page 3
Sky Sweep: November/December - Page 4
Sky Calendar: November/December - Page 5
Lunar Phases November/December - Page 5
Upcoming Meeting Programs - Page 5
The Recreational Astronomer - Page 6
Dress for Success - Page 8
Make a Date with Flora - Page 9
Images: Yerkes Observatory - Page 9
1995 NOVAC Annual Meeting - Page 9
NOVAC Notices - Page 10
Announcements - Page 11

Editor's Note

by Thomas S. Parry

This is the last issue of the NOVAC Newsletter for 1994. I can hardly believe a whole year is drawing to a close so soon. As I was musing over the events of 1994 in preparing this issue of the newsletter, I couldn't get out of my mind what an active and eventful year this has been for NOVAC. Two new observing sites have come on line, meeting programs were among the best I've attended and meeting attendance is up over previous years. We made some changes in the newsletter layout and design and have had a record number of article submissions. I can remember many nights out at Crockett Park in which so many observers were present that it was like NVTM over and over again. We witnessed two new supernovas and a magnificent annular eclipse, not to mention the incredible impacts of fragment of Comet Shoemaker-Levy 9 on Jupiter. NOVAC was fortunate to play a big part in the Jupiter Watch program at the U.S. Naval Observatory in connection with that event. We had beautiful skies and big turnouts for Astronomy Day and NVTM and NOVAC held its first annual family picnic. Finally, we conducted the most comprehensive survey ever done of our club members and obtained valuable information for planning in 1995 and beyond.

I also thought a lot about this publication, how it has evolved over the years, where it is now and where it is going. I am very appreciative of the many club members who work so hard to make this publication what it is. Without your enthusiasm and your article contributions, this newsletter would not exist. I would like to express appreciation to all who have contributed to Volume 14 of the newsletter, particularly to those who spend many hours preparing

regular columns for each issue with many competing demands on their time. To Kevin Jones who, from the College of William and Mary, contributes *Sky Sweep* in spite of the demands of a rigorous academic program, thank you. To Jon Stewart-Taylor, who prepares *The Recreational Astronomer* in the midst of competing demands of a large family, thank you. My thanks also to Al Schumann who, as long as I can remember, has never missed an issue and always contributes something insightful and extremely useful garnished with his own unique wit and sense of humor. Thanks also to Bob L'Hommedieu for the *President's Column* and to Marta Krause who toils tirelessly preparing club minutes to bring us the monthly meeting *Highlights*. My hope is all of you and many others will continue to submit material for Volume 15 in 1995.

Effective this issue, Jon Stewart-Taylor steps down as Associate Newsletter Editor. I want to express appreciation to him for his work over the past two years to review and edit submissions as well as be there for support. Also, I must point out that for most newsletter editors, the job isn't done until the last copy is in the mail. When I hand the final master copy over to Brenda Jones, I'm done. Without Brenda, the job of copy reproduction and distribution would probably get done but not as well or as fast. I'm very appreciative of all of the time and effort Brenda puts in to get this publication out.

On a slightly more personal note, we are all aware of how events change in our lives requiring adjustments and review of priorities. As a result of re-evaluating my anticipated workload and activities in 1995 as well as shifting family demands and possible changes in employment, I am constrained to step down as NOVAC Newsletter editor. I am, therefore, seeking a volunteer from among the NOVAC

membership who could carry our publication forward. I don't want to give the newsletter up, but feel it is in my and NOVAC's best interest if I do so as I will not be able to maintain it to the extent I have in the past. I would like to see the new editor begin as early in 1995 as possible, ideally beginning with publication of the March/April 1995 issue. If you think you might be interested in an opportunity to serve NOVAC

that is both challenging and rewarding, please give me a call.

Since this is the last issue of the Newsletter for 1994 and the winter holidays are almost upon us, I would just like to say on behalf of the newsletter staff, happy holidays to all our members and may the winter skies be clear and sparkling throughout the season. □

Highlights of September and October General Membership Meetings

by *Marta Krause, Secretary*

General Meeting September 21, 1994

Bob L'Hommedieu called the meeting to order at 7:30 PM. Thirty-two members and guests attended at the Arlington County Planetarium.

Announcements

1. The NOVAC picnic will be held October 1 at Crockett Park beginning at 4 pm. The picnic shelter at the Park has been reserved for NOVAC's use. Bring your own picnic and a dessert to share. October 1 is a regularly scheduled observing night; members and their families are invited to stay after the picnic to observe.

2. Myron Wasiuta, past NOVAC president, has designed and developed three eyepiece accessories to help observers who wear glasses to correct for astigmatism. The binocular lens inserts designed by Myron offer a full field of view; no glasses are needed. Look for Myron's small ad in *Sky & Telescope* for October, and watch for a new product review in an upcoming issue of *Astronomy*. If interested, contact Myron.

3. Charles Shephard recommends Orkney Springs as an observing site. It offers a dark sky and hotel facilities. Currently, the hotel is offering a single room and three full meals for \$45 per night during the week (not weekends). Please contact Charles for additional information.

4. Sandy Sanders will be traveling to Asuncion, Paraguay, in October to view the solar eclipse. Anyone with advice about viewing such an eclipse is invited to contact Sandy.

Officers' Reports

Marta Krause reports:

a) The Virginia Section of the International Dark-Sky Association will hold its 1994 meeting on Saturday, October 29 from 10 AM to 5 PM at the University of Virginia. Topics include lamp technology and design, lighting ordinances, and strategies for preserving dark skies. In addition to several well-known speakers in the field, the Leander McCormick Observatory (26-inch refractor) and the Fan Mountain Observatory (30-inch and 40-inch reflectors) will be open on the evenings of October 28 and 29. For more information, contact Marta.

b) Kent Blackwell, who was at the Northern Virginia Telescope Meet, has organized the East Coast Star Party for October 7 & 8 in Coinjock, North Carolina. Kent highly recommends the site for its exceptionally dark skies. Inexpensive camping facilities are available at Hampton Lodge Family Campgrounds.

c) The 1995 *Astronomy and Space Weekly* Desk Calendar from Starry Messenger Press is now available through NOVAC for \$10. These attractive, award-winning calendars retail for \$12.95. If interested, contact Marta Krause.

d) The Virginia Association of Astronomical Societies (VAAS) convention, which had been scheduled for October 1, 1994 in Roanoke, has been canceled by its host, the Roanoke Valley Astronomical Society, due to lack of interest.

Brenda Jones reports that Steve Smith, Director of the Arlington Planetarium, has requested that individuals be careful with recently made improvements to the Planetarium, including surface finishes. Also, Linda Schramm, meteorite curator at the National Museum of Natural History who spoke to NOVAC in June, has sent NOVAC a book entitled *The Total Eclipse of 1995*, which is now available in the club library. Finally, Brenda mentioned that observing passes for individuals who recently joined NOVAC are available and will be distributed personally at meetings or by mail.

Ron Ferris reports that Dr. Drake Deming, Director of Planetary Sciences at NASA/Goddard, will speak to NOVAC on October 19 about the *Great Comet-Jupiter Crash*. In addition, Tom Parry will present results of the 1994 NOVAC Club Survey. Finally, Ron recommends the book *How to Choose Binoculars* by Alan Hale, available for \$14.95; the volume offers valuable information to those making decisions about binocular purchases.

New Business

1. Nominations are now open for the 1994 NOVAC elections. All members are eligible to run for any of the offices open, including all officer positions and three Board positions.

All current officers are standing for reelection. If you are interested in running for a position or would like to nominate someone, please contact any of the officers.

Jeff Stetekluh provided the observing report for the next four weeks. Both of NOVAC's telescopes are now available for use by club members.

Member Presentations

1. Brent Archinal has made available copies of his book *The Non-Existent Star Clusters of the RGNC*. At the August NOVAC meeting, Brent presented a summary of his research for this book. Anyone interested in the book, priced at \$9.50, should contact Brent.

2. In addition, Brent recommends the Hidden Hollow '94 astronomy conference to be held September 30 and October 1. Hidden Hollow is sponsored by the Richland Astronomical Society of Mansfield, OH. Along with other distinguished speakers, Brent will be making a presentation at the conference. For more information, contact Brent.

3. Jon Stewart-Taylor and Pete Gural presented information about the Savage Farm property, which is being prepared for NOVAC's use as an observing site. Pete presented slides of the Savage Farm property and its skies. Jon is organizing an observing session at the property on Saturday September 24 at 6 pm. Bring a bag of dirt to help with improvements. The lock combination is the same as at Crockett Park.

The program was given by NOVAC member Tom Parry, who presented a slide show and report of his participation in the August '94 Stellafane Convention.

General Meeting October 19, 1994

Bob L'Hommedieu called the meeting to order at 7:30 PM. Forty-three members and guests were present at the Arlington County Planetarium.

Announcements

1. Brent Archinal spoke about the recent meeting of the Virginia International Dark Sky Association. Anyone interested in details of the meeting should contact Brent. Brent's book *The Non-Existent Star Clusters of the*

RGNC, which was the topic of his presentation at the August NOVAC meeting, is now available for \$9.50.

2. John Turk reports that the Shady Grove House, a facility for homeless women, will be holding a fundraising "Steak and Stars" night in the Spring. Organizers of this event are asking NOVAC members to support the event by bringing telescopes, videos, and any other materials they can offer to provide the evening's entertainment. The House is hoping to sell 50 tickets for the evening, and local politicians and community activists will be invited to attend. Funds raised are to be used for the House's travel fund, to support day excursions by the residents, and for the House's household fund, to enable departing residents to buy furnishings for their new homes. NOVAC members who are interested in volunteering their time and equipment for this event are encouraged to contact John Turk at (703) 920-3694 (home) or (703) 841-7768 (work).

3. Sandy Sanders has offered NOVAC's support to the Arlington Outdoor Laboratory's Observatory. According to Steve Smith, Director of the Arlington Planetarium, the County is having trouble maintaining the rolling roof observatory and a 10" Criterion Dynascope. Steve noted, for example, that the telescope's drive mechanism needs a new clutch. In exchange for NOVAC's help, NOVAC would have access to the observatory. The Arlington County School Board is enthusiastic about the possibility of NOVAC's help, and may be able to make funds available for some improvements to the site. Sandy and Steve will assess the state of the observatory and will provide more information about ways in which NOVAC members could be of help. Anyone interested in this project should contact Bob L'Hommedieu or Sandy Sanders.

Officers' Reports

Ron Ferris reports that NOVAC's November 16 program will include presentations by Fred Holmes, who will speak about star atlases and their use, and Doug Mistler, who will speak about using planispheres.

Marta Krause reports that the Carnegie Institute is sponsoring a series of science lectures, three of which cover astronomy and cosmology. Speakers include Eugene Shoemaker on December 13, Virgil Sharpton on April 18, 1995, and Wendy Freedman on May 16, 1995. For more information, contact Marta or the

Carnegie Institute at (202) 328-6988. Also, the University of Denver has sent materials about their astronomy program for undergraduates, including information about faculty, admission requirements, major requirements and electives, and tuition. Any college-bound aspiring physicists who would like a copy of this information should contact Marta. Finally, the 1995 Astronomy and Space Weekly Desk Calendars are available for pick-up.

Brenda Jones reports that Bob Sandy, former NOVAC Board member and frequently published astrophotographer, has published a cookbook entitled *astronomical Cooking*. In addition to great recipes, the cookbook is filled with samples of Bob's astrophotography. Anyone interested in the book should contact Brenda.

Old Business

1. Club elections will be held in December. All members are eligible to run for any office or the three Board seats (1 one-year term and 2 two-year terms are currently up for election). All current officers are running for re-election, and Bob Binge and Sandy Sanders have been nominated for Board positions. Members interested in running for any of these positions should contact any of the current officers.

Jeff Stetekluh gave the observing report, noting that as of October 29, NOVAC members may park on the paved area or on the grass at Crockett Park. During Daylight Savings Time, NOVAC is not permitted to park on the paved area, which is used for boat launch and other recreational equipment parking.

Doug Mistler noted that Observing Guides from the Astronomical League for both Messier Objects and Herschel Objects are now available for \$4.00 each. Contact Doug to obtain either Guide.

The program for the evening was given by Dr. Drake Deming, Head of Planetary Sciences at NASA/Goddard, who spoke about *The Great Comet/Jupiter Collision*.

Tom Parry gave a brief report of results of the 1994 NOVAC Membership Survey. Thanks to everyone who completed and returned a survey. The response rate was excellent and information obtained will be valuable to current and future NOVAC officers and Board members in planning club activities. Anyone interested in survey details should contact Tom or access the NOVAC computer bulletin board. □

President's Column

by Bob L'Hommedieu

This Issue of the newsletter marks the end of 1994 for NOVAC. This has been a good year for our club. Thanks to the efforts of our members we have made important progress that will make the future better for NOVAC.

This spring, efforts by Bob Bunge and Bob Bolster highlighted the problem of light pollution and received good press attention in our attempt to influence appropriate use of outdoor lighting for the Disney project. Because of this effort, it may be easier in the future to approach other developers because of experience gained.

Good weather and excellent member participation made both Astronomy Day and the Telescope Meet successful events this year. Brenda Jones worked long and hard to assure NOVAC's participation in the Jupiter Watch event at the U.S. Naval Observatory in July. In addition, NOVAC members hosted other special star parties for various public groups. NOVAC is living up to our motto "To Observe and to Help Others Observe."

Attendance at the monthly meetings is up again this year and clear nights at Crockett are bringing out more people as well. We added a new observing site early this fall due to the excellent work of Bill Burton and Jon Stewart-Taylor. The Savage site will expand observing and photography opportunities complement Crockett Park.

Thanks to the work of Tom Parry, the recently completed NOVAC membership survey provides insights on how to refine club meetings and tailor activities to better serve the membership. Discussions are already underway to make changes and improvements suggested by the survey data. The high return rate by our membership makes the survey a valuable guide for NOVAC's future planning.

As we close out this year, I would like to say a special thank you to Officers Ron Ferris, Marta Krause, Brenda Jones; Board members Tom Parry, Fred Holmes and Doug Mistler for their efforts this year. I hope 1995 will bring another good year and clear skies for NOVAC. □

NOVAC Elections

Nominations are open for the 1994 NOVAC elections to be held December 21. All NOVAC members are eligible for any position. If you are interested in being placed in nomination for a position, see Bob L'Hommedieu or Tom Parry.

Nominees to date are as follows:

President: Bob L'Hommedieu
Vice President: Ron Ferris
Secretary: Marta Krause
Treasurer: Brenda Jones

Board of Directors:
Sandy Sanders
Bob Bunge

Sky Sweep for November/December 1994: Six Galaxies of the Autumn Sky

by Kevin Jones

Early in November and December evenings, the luminous band of the Milky Way is setting in the west. If you look to the relatively star-poor area of sky rising in the east, you are looking perpendicular to the plane of our Milky Way--in a direction away from the highest concentrations of particulate matter in our galaxy into intergalactic space. This means that there are fewer stars, dust clouds, and other assorted material within our own galaxy blocking your view of the distant galaxies located beyond the Milky Way's borders. This month, Sky Sweep will focus on six galaxies: the Andromeda Galaxy, M-31, its companion galaxies M-32 and M-110; the Pinwheel Galaxy, M-33, in Triangulum; M-74 in Pisces; and M-77 in Cetus.

M-31, the Andromeda Galaxy, is one of the easiest deep-sky objects to locate. It is easily visible to the naked eye under reasonably dark skies and is a dramatic sight in binoculars. To find it, first locate the Great Square of Pegasus. Draw an imaginary line from the southwest corner of the Square to its northeast corner. Extend this line northeastward, almost doubling its length. M-31 is located near the end of this imaginary line and should be easy to sweep up in binoculars. Because of its large size (about four degrees from end to end and one degree wide), the galaxy is best viewed in wide-field binoculars. Telescopes, with their narrow fields of view, can show only a portion of M-31's length at one time making it harder to appreciate the size and grandeur of this object.

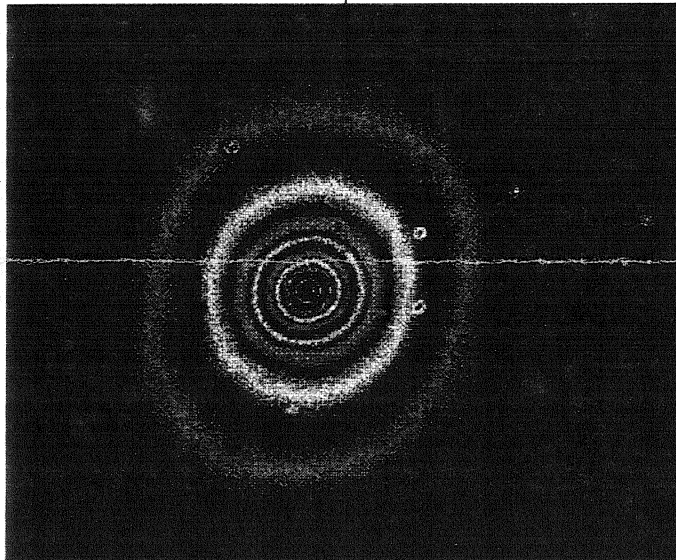
While looking at M-31, try to keep in mind that this galaxy is a "sister galaxy" to our Milky Way, roughly similar in size and shape. The blur you see is the combined light of countless millions of stars so far away that their light has taken 2.2 million years to reach our eyes.

I remember finding M-31 on my own for the first time many years ago. I was very much a tenderfoot amateur astronomer then. Although I knew the constellations pretty well, I'd never tried anything beyond naked-eye stargazing. One crisp autumn evening, I took a pair of 7x50s out into the front yard, aimed them toward the spot in the sky where I thought the Andromeda Galaxy was, and, startlingly enough, I found it immediately! The thrill of seeing that distant smudge of light was absolutely indescribable. I stayed out there staring up at M-31 until I got too cold to stare anymore. That did it! Since that time I've been hooked on deep-sky observing! At the time, I was on a kids' soccer team. Our uniforms were the standard kind: a number of your choice on the back, with lettering, usually your name, over the number if you wanted it. I was so impressed by my observation of M-31 that I got a new soccer jersey made: number 31, with the letter M above it. Yes, that made my jersey read "M 31." I wonder sometimes if I was a strange child...

M-31 has two bright elliptical galaxies in close orbit around it. These galaxies, M-32 and M-110, are very near the bright core of M-31 and are not difficult objects for amateur telescopes. M-32 is an eighth magnitude almost round glow located about half a degree due south of M-31's nucleus. M-110 is a slightly fainter glowing ellipse, but it is a

few times the angular size of M-32, so its surface brightness is considerably less than M-32's. M-110 is, then, a bit harder to glimpse than M-32. M-110 is located about a degree away from M-31's nucleus, to the northwest (nearly perpendicular to the long axis of M-31).

The Pinwheel Galaxy, M-33, is located to the south of Andromeda in the constellation of Triangulum. Measurements of M-33's total magnitude show that it is brighter than M-31. It is, however, considerably more difficult to see because it appears face-on and has a much lower surface brightness than the nearer to edge-on ellipse of M-31. Low powers are usually needed to find M-33. It can sometimes be seen without optical aid under dark skies by people with good eyesight. Binoculars are probably the best instrument to use to search for M-33. The narrow fields of view of telescopes make the large, diffuse glow of this galaxy difficult to locate. Through extremely large telescopes, the clumpy spiral arms of M-33 are quite a sight. The best view of M-33 I've ever had was from the Stellafane convention (held every summer in Springfield, Vermont) at high power through a huge reflector with an aperture of almost three feet. The galaxy's star clouds and nebulae



Amateur CCD image of core of Andromeda Galaxy M-31

outline its spiral arms beautifully. Physically, M-33 is a little farther away and a little smaller than M-31. M-33, like M-31, M-32, and M-110, is a member of the Local Group of galaxies--the small cluster of galaxies that includes the Milky Way.

A smaller and even more challenging galaxy is located farther to the south, just east-northeast of the star Eta Piscium. This galaxy, M-74, is a beautiful face-on spiral with loose, open spiral arms that show up well on long-exposure astrophotographs. Through the eyepiece of your telescope, M-74 will show up as a round, faint glow surrounding a fairly bright, almost star-like nucleus. M-74 has about the same total magnitude as M-110 and is about the same size. M-74 is generally

regarded as a more challenging object,

however. M-74's light is concentrated in its stellar nucleus, leaving the disk of the galaxy faint. M-110's light is spread across its disk more smoothly, making M-110 a bit easier to see. M-74 is eight arcminutes in diameter, roughly the angular size of M-110.

The last object for this month's column is another galaxy, located in Cetus, to the southeast of M-74. This galaxy is tenth-magnitude M-77. It can be found half a degree to the southeast of Delta Ceti (a fourth magnitude star five degrees northeast of Mira). Although M-77 is fainter than M-74, it is slightly smaller and has a similar surface brightness. Like M-74, M-77 is a face-on spiral galaxy. M-77 is one of an unusual type of galaxies known as *Seyferts*. These objects have bright, star-like nuclei exhibiting peculiar spectra. Strange things are going on in the nuclei of these galaxies. M-77 is thought to be located thirty million light-years from the Milky Way--fourteen times more distant than the Andromeda Galaxy. M-77 is not a particularly easy Messier object to locate. If you were able to find M-74, however, you should be able to track down M-77.

Clear skies! □



Sky Calendar for November/December 1994

Compiled by Thomas S. Parry

(Times and dates are Eastern Time. Observations begin at dusk)



November

- 3 New Moon
S. Taurid meteor shower
Total eclipse of the sun (South America)
- 4 **Observing at C. M. Crockett Park**
Observing at Savage Farm
- 5 **Observing at C. M. Crockett Park**
Observing at Savage Farm
- 6 Mercury at greatest elongation W. 19° (AM)
Venus emerges as morning star low in east
- 8 Neptune 4° S. of waxing crescent Moon (PM)
Uranus 6° S. of waxing crescent Moon (PM)
Asteroid 2 Pallas at opposition
- 9 Saturn stationary
- 11 **Observing at Parsells Field**
First Quarter Moon
Saturn 7° S. of First Quarter Moon (PM)
- 12 Mercury 5° N. of Venus (AM)
- 16 **NOVAC Monthly Membership Meeting at Arlington Planetarium**
- 17 Jupiter in conjunction with Sun
Leonid meteor shower (nearly Full Moon)
- 18 **Observing at Parsells Field (Leonids)**
Full Moon
Penumbral eclipse of the Moon (Begins 11:25 PM Nov 17 and ends 4:02 AM Nov 18)
- 20 Pluto in conjunction with Sun
- 21 Venus stationary
- 25 **Observing at Parsells Field**
Mars 8° N. of Last Quarter Moon (AM)
- 26 Last Quarter Moon
Observing at C. M. Crockett Park
Observing at Savage Farm
- 30 Venus 2° N. of waning crescent Moon (AM)

December

- 2 New Moon
Observing at C. M. Crockett Park
Observing at Savage Farm
- 3 **Observing at C. M. Crockett Park**
Observing at Savage Farm
- 5 Neptune 4° S. of waxing crescent Moon (PM)
- 6 Uranus 6° S. of waxing crescent Moon (PM)
- 8 Mars 2° N. of Regulus (AM)
- 9 **Observing at Parsells Field**
First Quarter Moon
Saturn 7° S. of First Quarter Moon
- 14 Geminid meteor shower (gibbous Moon)
Observing at Parsells Field (Geminids)
- 18 Full Moon
- 20 Mars viewing season begins
- 21 **NOVAC Monthly Membership Meeting at Arlington Planetarium**
- 22 Solstice (First day of winter)
- 23 **Observing at Parsells Field**
Mars 9° N. of waning gibbous Moon
- 25 Last Quarter Moon
- 29 Venus 3° N. of crescent Moon (AM)
- 30 Jupiter 1.1° S. of waning crescent Moon

Note: Observing nights at Crockett Park and Savage Farm are not scheduled the nights of Nov 25, Dec 30 and 31 due to park closure for the holidays.

Upcoming NOVAC Meeting Programs

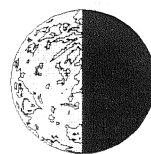
November 16 at 7:30 PM: The November program will feature Doug Mistler and Fred Holmes who will discuss and demonstrate effective use of planispheres and star atlases for planning observing sessions and in locating objects during observing sessions. Several types of star atlases on the market will be compared based on their strengths and limitations.

December 21 at 7:30 PM: Amateur telescope making is the topic for this session in which Jerry Wolczanski presents *Miracle of the Pitch Lap* and Bob Bunge examines the concept of *Diffraction* in Refracting Telescopes. The segment on diffraction will feature a computer presentation and demonstration.

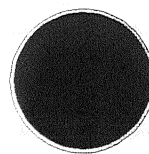
Monthly NOVAC General Membership Meetings are held the third Wednesday of every month at 7:30 PM at the Arlington County Planetarium, 1426 N. Quincy Street, Arlington, VA. Admission is free and open to the public. Call the NOVAC hotline (703) 256-8359 for upcoming events, special announcements or to leave a message for additional information. □

Lunar Phases for November and December 1994

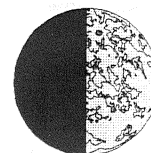
Last Quarter
November 26
December 25



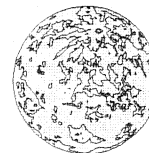
New Moon
November 3
December 2



First Quarter
November 11
December 9



Full Moon
November 18
December 18



The Recreational Astronomer: Buying a Telescope

By Jon Stewart-Taylor

This month's column, first in a two-part series, discusses two of the most important decisions beginning astronomers make: (1) whether to buy a telescope, and if so, (2) what kind. Our focus this month will be telescopes and mountings. Next month we will examine essential accessories such as eyepieces and finders. Although intended for those thinking of buying their first telescope, this column will be useful to those about to buy a replacement instrument.

Rule Number One

The single most important thing to remember is: Don't buy a telescope at a department store or from a deep-discounter catalog. These telescopes, often advertised as pushing magnifications of 300X up to 600X, usually have poor optics, shoddy construction, inadequate mounts, and poor quality accessories. An easy rule of thumb is not to buy any telescope promoted as giving high magnification. Most are small telescopes that don't yield useful magnifications of more than 100X. Small telescopes can be a good choice, but should be of good quality and purchased with reasonable expectations.

Are You Ready?

With all that firmly in mind, check whether or not you are ready for a telescope. First, *how well do you know the night sky?* Can you name and locate the major constellations of each season? Do you know the names and locations of the 10 or 20 brightest stars? Can you locate the 4 brightest planets? Second, *how much do you know about telescopes?* What is the difference between a refractor and a reflector? What are the two main types of telescope mounts? Do you know the different types of eyepieces available? Do you know how to use a finder or a Telrad reflex sight? Do you know what focal ratio is, and how it affects the characteristics of a telescope? If you don't know the answers to these questions, it's probably time to do more research and get more experience.

Try Before You Buy

The best way to find out what kind of telescope you would be happy with is to go to club star parties and observing sessions for hands-on experience with different types of telescopes. Most telescope owners will be happy to explain what they like and don't like about their instruments, and many will be willing to let you "test drive" them. There is no substitute for hands-on experience, and it's even better if you can have fun while getting it.

Get a Telescope You Will Use

So, what kind of telescope should you get? First and foremost, the best telescope for you is the one you will use most often. A number of factors influence how often a telescope is used: How difficult it is to get it ready to use? If you can give it its own observatory where it will be ready to use at any time that's ideal, but most of us need to store it. If it's very large or heavy, its sheer bulk will discourage you from getting the scope out. If it has to be carried long distances, or up and down stairs, a smaller scope is probably a good idea, implying either a smaller objective, or a shorter *f*/ratio. If it has to be transported in a car, the size of the car will obviously constrain the size and shape of the scope.

What objects do you plan to observe? Although some telescopes perform well optically on both planets and deep sky objects such as clusters and nebulae, telescopes are usually better for one kind of objects or the other. In general, planetary telescopes have smaller objectives (primary mirror or lens), but require longer *f*/ratios and a mount that tracks the sky. For deep sky objects, the larger the objective the better. While shorter *f*/ratios keep the size of the telescope manageable, motorized tracking isn't as critical. If you plan to do astrophotography, either planetary or deep sky, motorized tracking is essential. Consider your experience level. If you have used telescopes before, then you are more likely to use equatorial mounts, clock drives, digital setting circles, etc. If you are just starting out in astronomy, such complexity will probably just confuse or annoy you until you acquire enough experience to understand when and how to use them.

If you have never used a telescope before, consider starting out with binoculars. Binoculars are a pair of small telescopes joined together, one for each eye. They are an excellent way to learn your way around

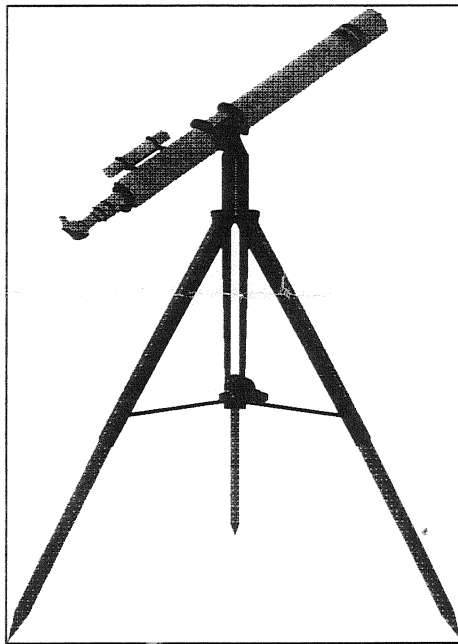
the sky, and will take you about half way from unaided eyes to small telescopes. A decent pair of binoculars costs less than a telescope does and chances are you may already have a pair. The practice and experience of finding celestial objects with binoculars can be transferred to use of a telescope when you obtain one. The field of view of most finders is comparable to that of binoculars. That makes binoculars a handy aid for finding objects to view in your telescope.

Telescope Functions

The various types of telescopes available on the market have common features with which they perform the basic functions of gathering light and magnifying. All telescopes have an objective lens or mirror to gather light, an eyepiece to magnify the image and a mount to support the telescope and hold it in position while you view. The light-gathering ability of a telescope is the extent to which the instrument amplifies the light of objects too dim to see with the unaided eye to a suitable threshold of brightness for viewing. This is a function of the

diameter of the objective. Magnification allows perception of details too small for the unaided eye to distinguish, and is a function of the ratio of the focal length of the objective and the focal length of the eyepiece. In theory, any telescope can be made to give any magnification by using an appropriate eyepiece. In practice, the use of magnifications exceeding 50X or 60X per inch of objective aperture, or 2X per millimeter, is not recommended.

Focal ratio, often written as "*f*/", is defined as the focal length of the objective divided by the diameter of the objective. For example, if a telescope has an eight-inch objective with a focal length of 48", the *f*/ratio is 48/8=*f*/6. Focal lengths from *f*/4 to *f*/6 are considered *short*. Those from *f*/6 to *f*/8 are *normal* and from *f*/8 and up are *long*. Short *f*/ratio telescopes have shorter tubes for a given aperture, give lower magnifications with a given eyepiece and produce wide fields of view. This optical configuration is ideal for faint deep-sky objects. Longer *f*/ratios require longer tubes, but are easier to manufacture because it is easier to produce very high quality mirrors. They give higher magnifications with a given eyepiece and a narrower field of view.



Long *f*/ratio telescopes are designed for planetary observing.

Telescope Types

There are three common types of telescopes: refractors, Newtonian reflectors, and Schmidt-Cassegrains (SCT). Refractors are what most people envision when they think of telescope. Refractors use a lens at the front of the telescope to gather light, which is sent to the eyepiece at the back. Newtonian reflectors use a large mirror at the back of the telescope to gather light, which is reflected back up towards the front of the telescope. From there, it is reflected to the eyepiece, either out the side, or towards the back again. SCTs are hybrids, with a correcting lens at the front and a mirror at the back.

Newtonian Reflectors

The Newtonian reflector may be the best telescope for beginners. It has a primary mirror at the bottom of the tube, which reflects light up to a small diagonal mirror. The diagonal mirror sends the light out the side of the tube to the eyepiece. Due to their simple two-element design, Newtonians are usually the least expensive per inch of objective aperture, although prices vary dramatically based on quality and sophistication. Newtonians come in a wide range of *f*/ratios, from short (*f*/4.5) to long (*f*/10 and up).

Dobsonians

A "sub-species" of Newtonians is the Dobsonian. This is a basic Newtonian telescope on a very simple, stable, and easy-to-use alt-azimuth mount. The mount is made of solid but very inexpensive materials (usually plywood and formica), so that most of the money you spend buys optics. This means that you can get a larger aperture, or higher quality optics, for a given amount of money. The drawback is that the mount can not be made to track the motion of the sky automatically (although technology today is changing this). Most people do not find this to be a problem in practice, and many find the simple motions of the alt-azimuth mount easier to use than an equatorial.

The mirrors of most reflectors are made of Pyrex but some have mirrors of plate glass. Pyrex is more expensive, but has better thermal characteristics so it isn't affected as much by temperature changes. In addition, more expensive mirrors are usually coated to increase the amount of light. This can improve the brightness of objects by 10 to 15 percent.

Refractors

Refractor telescopes use a lens as their light-gathering objective. Because there is no secondary mirror, all of the lens collects light (unlike most reflectors in which the primary mirrors are partly shaded by the secondary) and there are no diffraction effects to reduce the clarity of the image. On the other hand, since lenses are more difficult to make than mirrors (they have twice as many optical surfaces), refractors are much more expensive than reflectors of equivalent size. A well-made refractor can give superior views for its size, particularly on brighter objects such as planets. With refractors, as with reflectors, the mounting can be either equatorial or alt-azimuth. Regardless of which type of mount used, it should be sturdy and well made. Many of the cheap department-store refractors have reasonably adequate optics, but their mountings are flimsy, and often render the whole telescope useless.

Schmidt-Cassegrains

SCTs are a combination of refractor and reflector. Light passes through an corrector lens at the front to a mirror at the back. It is reflected to a

secondary mirror attached to the corrector plate, and bounced back through a hole in the primary mirror to the eyepiece. All this folding makes these telescopes very compact and portable compared with standard refractors or Newtonians. SCT optics are complex to manufacture and to align. They are mass-produced with limited quality control resulting in occasional lemons. Under some weather conditions, the plate at the front is susceptible to dew and because of such, there are a large variety of dew prevention and removal devices for SCTs. Due to their relatively stubby tubes, moderately large apertures, and the fact they usually come on some sort of motor-driven equatorial mount, SCTs are excellent scopes for astrophotography. If photography and portability are primary considerations, a SCT can be a good choice.

Is That All There Is?

Once you have a telescope, you're all set, right? Nope. People with lots of experience sometimes get by with a bare scope, but there are many accessories we lesser mortals can't do without. You'll need a Telrad or finder, an eyepiece or two (make sure your telescope can accommodate 1.25-inch eyepieces rather than the smaller .965-inch size), and decent sky charts. These should also be of high quality, and (depending on your telescope) may cost half as much as the telescope itself. Accessories and how to choose them will be the topic of next month's column.

If You Have To Ask...

So, what do beginner's telescopes cost? That depends on the type and quality. Prices vary quite a bit, from less than \$200 for small refractors, to over \$2000 for large equatorial mounted scopes with lots of accessories. Most good beginner's scopes sell for less than \$500, although trade-offs of quality, accessories, and price can drop it as low as \$250, or raise it to around \$1000. You can find current prices in several ways. If you have a telescope store handy, go ask. Look in current issues of *Sky and Telescope* or *Astronomy*, or get catalogs from mail-order stores. In general, you should expect to get what you pay for, and try to pay only for what you need.

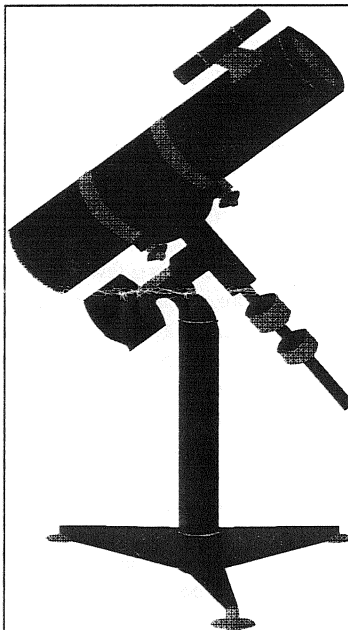
One thing to keep in mind is that you can improve most telescopes piecemeal over time. Accessories such as eyepieces and the finder can be replaced one at a time as funds permit. An imperfect mount can be reinforced, re-balanced, or replaced. Focusers, mirror mounts, and even the primary mirror itself can be improved or replaced. The Coulter telescopes have

been called "the best telescope kit on earth," because so many of their components can be improved by gradual replacement.

Mail Order

If a low price is more important to you than service and the chance to check out a piece of equipment before you buy it, mail order may be the way to go. But, buying things mail-order is always something of a risk. In general, there is no way to be certain you won't be inconvenienced, lied to, or even ripped off by mail-order suppliers. Here are a number of suppliers who have gained reputations over time. Please note that these are word-of-mouth reputations, and your individual experience may vary.

Focus and Adorama, although they often have the absolutely lowest prices, should be avoided unless you know exactly what you're doing, and the item you're ordering is unlikely to be damaged in shipping. Their sales personnel are not generally knowledgeable about astronomy nor the contents of the stock room.



Pauli's Wholesale Optics (Connecticut) should be avoided. I have heard of too many people who have had bad experiences, both by mail and in person.

Pocono Mountain Optics (Pennsylvania) may be the best compromise between price and service. Their prices are often on par with Adorama, but their sales people are usually knowledgeable and honestly helpful.

Orion Telescopes is a full service operation with prices to match. They have one of the best guarantees in the mail-order telescope business.

Roger Tuthill, Astronomics, and Lumicon all fall in the middle-of-the-price range. Roger Tuthill is reported to take extraordinary care of the telescopes he sells, personally checking and adjusting them before shipping.

Summing Up

In summary, before you buy a telescope, make sure you are ready. Check out different scopes at star-parties. Keep your intended usage in mind, and make sure it's a telescope you will use. Buy from a reputable dealer (whether mail-order or retail), and keep the quality vs. price trade-off firmly in mind: don't skimp, but do understand the difference between needs and wants. Save some of your budget for good accessories: the eyepieces and finder contribute as much to the usability of the scope as the primary optics.

The bottom line recommendation of many experts for a first telescope is a 6-inch to 8-inch *f/6* or longer Dobsonian. If price is the primary consideration, a small refractor or a pair of binoculars may serve. If

restricted storage space or eventual astrophotography is your main concern, an 8-inch Schmidt-Cassegrain may be a good choice.

References and Acknowledgments

At least one of *Sky and Telescope* and *Astronomy* magazines are usually considered essential for amateur astronomers. They often contain articles describing telescopes in general, and evaluations of specific brands and models. They contain (many!) ads. The November 1994 issue of *Astronomy* contains a long article about telescopes for beginners. New subscribers to *Sky and Telescope* receive a set of pamphlets covering what telescopes are and how to choose and use them.

Most dealers, mail-order or otherwise, will be glad to send you catalogs. Most are free, while the others only cost a few dollars. If you ever actually buy anything from them, you'll probably get the catalog through the mail forever. The Orion catalog in particular is full of informative sidebars describing the basics of binoculars, telescopes, and eyepieces.

If you have access to the Usenet news (or the NOVAC library!), the sci.astro.amateur *Purchasing Amateur Telescopes Frequently Asked Questions* files are a wealth of information about telescopes and more.

The telescope stores listed in the Metro area Yellow Pages are: **Company Seven Astro-Optics** (Laurel, MD); **Redlich Binocular and Optical** (Falls Church, VA).

Thanks Bill, Steve, Desmond, and Linda, for letting me play with your scopes. □

Dress For Success

by Al & Lynn Schumann

Before long, we will be able to enjoy the spectacular views of the Orion Nebula along with the sight of those dazzling open clusters of the winter sky -- and in prime time rather than the early hours of the morning. Doesn't that sound good? Well, H. L. Mencken once noted that there is no free lunch. In this case, the price we pay for those views is the bitter cold temperatures and mind numbing chill factors that so frequently accompany the clear, transparent skies. We cannot control the temperature, but we can give ourselves a better shot at coping with the cold. And that is where dressing for success comes in. What follows is nothing really new. After all, who among us can forget how Mommy got us all bundled up before letting us go out to play during the winter.

Most body heat is lost through the head. A baseball cap is great for keeping the sun out of your eyes, but on a cold winter night you need something to preserve heat. A good woolen hat that can be pulled down over your ears fills the bill; a balaclava is even better, since it covers head, ears and neck as well. A fur lined "trooper's" hat with ear flaps also will do nicely. A lot of it depends on personal taste, of course, but you get the idea; a well covered head will keep you warmer. As we work our

way down, don't forget a scarf for the neck.

Layering is the key for the torso and legs. Generally, it will be warmer at the start of an observing session than it is a few hours down the road. Therefore, the trick is to add layers of clothing as the temperature drops. Regular underwear, long johns, heavy shirt, trousers and a light wind breaker might be ideal for at the start of a session. As the night time temperature drops, start adding other items, such as a sweatshirt with a hood, then a sweater, and finally a heavy coat in place of the wind breaker. You might even consider insulated coveralls. The coveralls can be very bulky, but we're not looking for fashion. The beauty of layering instead of being heavily bundled from the start is that you can control your comfort level. If you start perspiring early on, you will be doomed later. Anyhow, always take more clothing than you think you will need. Chances are you will use it.

Feet are tough to deal with. It seems that our feet always get cold. Unless you want to get electric socks or boots, however, the next best things are a couple pairs of socks and real, heavy soled boots that come up above the ankles. Wear a light pair of absorbent socks next to the skin, woolen or some sort of insulated socks next, and then the boots. Don't try to get away with wearing tennis shoes, because they won't work. The cold will be rough on your ankles and lower legs. Also, remember that sooner or later you will have frost or dew to contend with. When the "tennies" get wet, your feet will begin to feel

like blocks of ice. Fingers are also hard to keep warm. Mittens are great, but you have to take them off to do almost anything. Instead, we have hand wear that is a combination glove and mitten. The middle, ring, and pinkie fingers are enclosed as in a mitten, but the index finger is separately enclosed. The gloves are knitted wool and give a lot more freedom of motion. It seems, however, you still have to stick your hands in your pockets every now and then and warm them up. It's just part of being an amateur astronomer.

Now that the outside is covered, don't forget about the inner man. Keeping warm takes calories. Make sure you have a hearty meal before going out to observe. This will get the furnace going initially. Then, be sure to pack a good substantial lunch; something that will re-stoke the furnace when you really need it. Fluids are very important. Cold, clear air is dehydrating, so you need to keep up the fluid level in the body. By itself, coffee isn't the answer in that it tends to be a diuretic. Warm juice would be a far better idea. Try a thermos of hot apple juice with a bit of cinnamon. It will warm up the insides, and the natural sugar will help give an energy boost as well. Here is another alternative:

Spiced Tea

2/3 cup instant tea
1 (9-ounce) jar Tang
1 (3-ounce) package Wylers' lemonade mix
1 cup sugar
1 teaspoon cinnamon
1/2 teaspoon ground cloves

1/4 teaspoon nutmeg

Mix all ingredients and store in an airtight container. It may be kept unrefrigerated for up to three months. To serve, add 1 teaspoon of the mix to a cup of boiling water (2 teaspoons for a mug).

Just a few words on the equipment. Give your vehicle a good once-over. Tires should be checked for proper pressure; under inflation is the most common cause of tire failure. Proper tire pressure will also give you better gas mileage. Give the cooling system a careful look. Check for worn hoses, loose clamps, leaks, etc. Consider having the radiator

coolant drained and replaced if it has been in the vehicle for a few years. A one-to-one mixture of anti-freeze and water is recommended. Check the battery and make sure you have a set of jumper cables in the trunk -- just in case. Put new batteries in your Telrad and flashlights. Also, if you have a rechargeable powerpack to run your telescope, make sure it has a full charge before going out for each observing session.

Finally, remember that last bit of caution Mommy gave us as we went out the door, "Don't eat the yellow snow!" □

Make a Date With Flora

by Al & Lynn Schumann

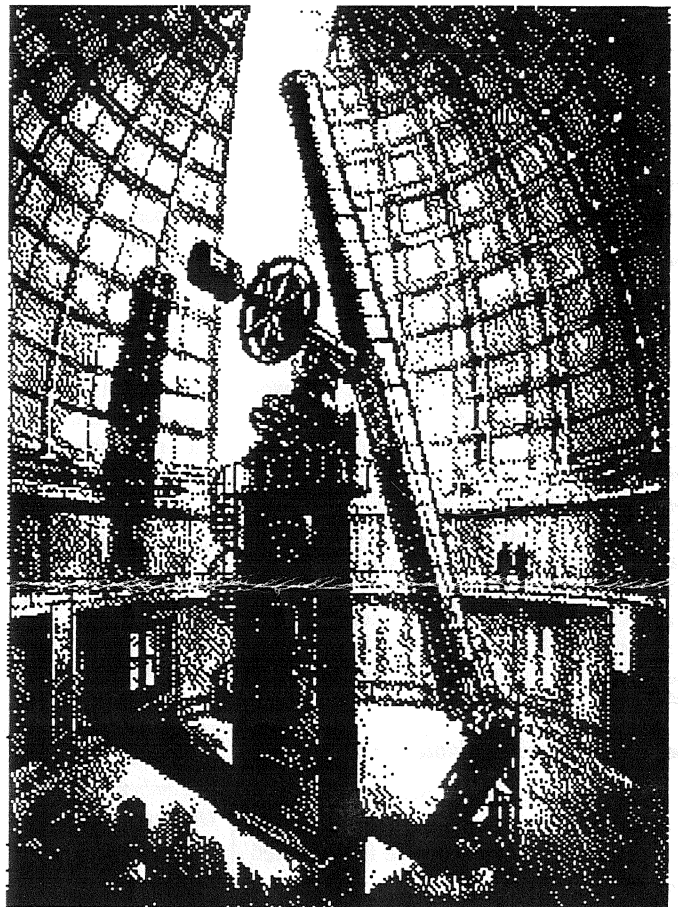
She's baaack! Yes, Flora is back in town, and if ever there was a good chance of seeing an asteroid, this is it. Flora is an orbiting hunk of rock about 90 miles in diameter. This time it makes a big looping arc through the Hyades star cluster. The Hyades is the arrowhead shaped asterism that marks the base of the bull's horns in the constellation Taurus. Flora will shine at magnitude 8.0 when it reaches opposition on 5 December, and it will only fade to 9.1 by mid January. So, it is a fairly bright object and it will pass through one of the easiest to find asterisms in the sky. As if that weren't enough, Flora will either occult or pass very close to several readily identifiable stars in the Hyades. And, it keeps getting better, because during a couple of those near miss/occultations, the moon should be out of the way. Thus, the conditions are just about as good as they can be for an asteroid hunter.

The November 1994 issue of *Sky & Telescope* has a very good chart showing the path of Flora. You will note that one must do a bit of interpolating in order to determine where Flora will be at any given time. But that is part of the fun. Going after an asteroid is something like a game of hide and seek. And it's a real kick when you find one.

Here is how we have gone about locating Flora and a couple others in the past. We generally check the chart and look for a star or group of stars that we know we can find. Obviously, it helps if the stars are within a degree or so along the path of the asteroid. It all depends on the field of view you have in your eyepiece. In Flora's case, there are a number of opportunities; Theta, Delta, and Epsilon Tauri. There are some other dimmer stars that will do the trick as well...if you can positively identify them. Several days, or even weeks, before the asteroid reaches the "kill zone," we sit at the telescope and make a sketch of the area using a low power eyepiece. In this case, we're going to make three sketches, one for the area around each of the aforementioned stars. Then, we'll wait for the date the asteroid is to pass through the region. At the appointed time, we'll cross check the sketch with the picture in the eyepiece. If we're lucky, there will be an extra star. That extra star is it. If we miss it on the first try because of bad weather or ineptness, we'll still have a couple more shots at it.

Of course, nothing is ever easy as it sounds. With a reflector you have an inverted view in the eyepiece. Using a star diagonal with a Schmidt-Cassegrain telescope (SCT) gives a mirror image. This means you have to go through some mental gymnastics when comparing the chart with the eyepiece view. Remember to turn your chart upside down for the reflector. With an SCT, it might help to make a copy of the chart. Then, turn the copy over and illuminate it from below. This will give the same image you see in the eyepiece. Good luck and have fun. □

Images



The Great 40-Inch Refractor at Yerkes Observatory

Announcing the 1995 NOVAC Annual Meeting

Tuesday, January 10, 1995

7:30 P.M.

at the home of Brenda Jones

883 North Kentucky Street

Arlington, Virginia

This is NOVAC's most important planning meeting of the year. All members are encouraged to attend and give their input and ideas regarding activities for the coming year.

NOVAC Notices and Benefits

Discounts on Sky & Telescope

As a member of NOVAC you can get a subscription to Sky & Telescope for \$20.00 instead of the regular \$27.00 rate. To start a new subscription or renew an established subscription, make your check out to SKY & TELESCOPE for \$20. Note on the check if this is a new subscription or a renewal. Send your check to Brenda Jones, 883 N. Kentucky St., Arlington, Va. 22205.

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 \$16.00. This is a significant discount over the usual \$24.00 rate. A two-year subscription costs \$32.00. To start a new subscription or renew an established subscription, make your check payable to KALMBACH PUBLISHING COMPANY for \$16.00 (one-year subscription) or \$32.00 (two-year subscription). Note on the check if this is a new subscription or a renewal. Send your check to Brenda Jones, 883 N. Kentucky St., Arlington, VA 22205. NOTE: There are no special 10% discounts offered on publications through Kalmbach Publishing.

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.

The first 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 Ultrascopic 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 second 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, NOVAC President, at (703)

978-0946. He will schedule a time for you to pick the scope up at his home. Bob resides at 4415 Eastwood, Fairfax, VA 22032.

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 check out 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 November/December 1994

Observing at C.M. Crockett Park and Savage Farm Site

November 4, 5, 26

December 2, 3

Observing at Parsells Field

November 11, 25

December 9, 23

Observing at Parsells Field for Meteor Showers

November 18 (Friday)

Dec 14 (Wednesday)

Dec 23 (Friday)

General Membership Meetings

General Membership Meetings are held at the Arlington Planetarium on the third Wednesday of every month. Meetings will be held **November 16** and **December 21** at 7:30 P.M. 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 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 PARK MANAGER GARY KWOLEK. Call (703)-788-4867 early in the day on which you wish to observe. If you reach the answering machine, leave a message saying that you are a NOVAC member and you wish to observe that night. Also, leave a telephone number where someone can reach you. 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 please remember to lock it after you leave. During EDT, you must set up on the large field to the left. During EST, you must 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: NOVAC members may use Parsells Field in Loudoun County as an alternative observing site ONLY ON THE NIGHTS DESIGNATED for general observing and meteor showers. Currently there are no provisions for unscheduled observation nights. You must park and set up ONLY IN THE PARKING AREA and not go onto the field itself. Please park to the left near the entrance and set up to the right away from the entrance. No loud radios, alcoholic beverages or loose pets. Do not leave trash or debris behind. We are guests of the Dulles Little League and they reserve the right to revoke our observing privileges any time due to the carelessness of one person.

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 a number where you can be reached. 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. In addition, please make sure the gate is locked whenever you are in the park, and especially 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 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 Access (Toll) Road until you reach Route 28 (last exit before Dulles Airport). Proceed north on Route 28 until you come to Route 625 (Waxpool Rd.). You may also take Route 7 (Leesburg Pike) to Route 28 and go south on 28 until you reach Route 625. Go west on Waxpool Road passing through the town of Ryan and Route 641 (Ashburn Rd.). Continuing on Route Rt. 625, Parsells Field will be on your left a short distance beyond Ryan. If you make it to Route 659 (Belmont Rd.), you've gone too far.

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. 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 one (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 FEME installation. Turn right at the park entrance.

The park entrance on Route 601 is marked by a small brown and white NOVAC sign. Note that 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. 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 park in the parking area on the right (as you face the patio). □

Wanted

NOVAC Newsletter Editor

Seeking NOVAC member to serve as editor of the NOVAC Newsletter.

This is a great opportunity to provide significant service to NOVAC in a creative and fulfilling way.

Interested individuals should contact Tom Parry, NOVAC Newsletter Editor at 758-8224.

Wanted

Sky Calendar columnist for NOVAC Newsletter.

Seeking NOVAC member to compile Sky Calendar column for the NOVAC Newsletter. Duties would be to research and compile monthly celestial events and local area astronomical events and programs for submission to the editor and inclusion in the newsletter.

Contact Tom Parry 758-8224

Announcing

gAstronomical Cooking by Robert Sandy

A cookbook containing more than 50 delicious recipes from around the universe.

\$12.95 plus shipping and handling

Saturn Software
P.O. Box 476
Salem, Virginia 24153

Editor's Note

Due to the amount of time-critical material to be published in this issue and limitations on space, the NOVAC Membership Survey results and final report will be published in Issue 57, January/February 1995. I regret any inconvenience to our readers expecting the survey results in this issue and ask you to bear with me on what are oftentimes tough editorial choices.

If you can't wait until January, talk to an officer or Trustee who can share the results with you.

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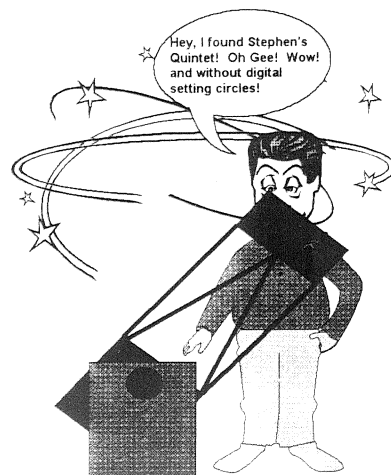
Membership in the Northern Virginia Astronomy Club is \$18.00 per year and is open to anyone interested in astronomy or the sciences. Contact Brenda Jones, Treasurer, 883 North Kentucky Street, Arlington, Virginia 22205, telephone (703) 527-7963. All notices of change of address should be sent to Brenda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

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NOVAC members are invited (and ENCOURAGED!) to contribute materials of interest for publication consideration in the NOVAC Newsletter. The editor, however, reserve the right to edit all materials submitted. Ideally, materials submitted for publication consideration should be sent on 3.5" or 5.25" floppy disks in ASCII text format to the address of the editor. Other electronic formats are acceptable as well as double-spaced typed and letter-quality manuscripts. Contributors may post their article submissions to the NOVAC RBBS. Please post them as personal uploads to Tom Parry. Contact the editor for details and/or possible direct electronic file transfer.

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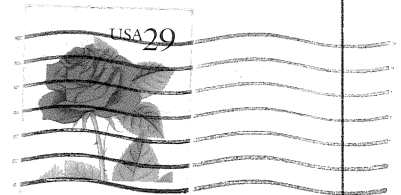
A typical Crockett Park observing night!





NOVAC

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