NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

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UPCOMING NOVAC EVENTS

Club Observing Dates	Monthly Meetings
March 12, 13, 19, 20	March 17
April 9, 10, 16, 17	April 21

New NOVAC Newsletter Staff *from The Editors:*

This issue of the NOVAC Newsletter marks the end of one era, and the beginning of another. After a long term as editor, George Uhl is stepping down. George worked hard to produce a quality newsletter, and we owe him a big thank-you for keeping it going for so long. Thanks, George.

It will take two of us to fill George's shoes. Thomas Parry will serve as Executive Editor. He has been a NOVAC member for almost two years and is serving his first term on the NOVAC Board of Directors. Jon Stewart-Taylor, a NOVAC member for one year, will be Contributing Editor. With two people to share the work, we hope to avoid the dreaded editor's "burnout," and allow for vacations and emergencies without disrupting the publication schedule. To help the two of us work together, we will need more structure in the production of the newsletter.

We are adding four regular features. Kevin Jones' *Sky Sweep*, describing favorably placed deep-sky objects, will return. Bob Bunge will be contributing *Reflections in the Eyepiece*, a general-interest column giving us the benefit of his experiences. Thomas Parry will give us *Sky Calendar*, describing significant celestial events. Jon Stewart-Taylor will be writing *The Recreational Astronomer*, aimed at beginners and advanced beginners. Besides the columns, we'll welcome (and encourage!) article submissions from members on any astronomy-related topic. For more information about our publication schedule and how to submit articles for publication in the NOVAC Newsletter, please see *Call for Articles* in this issue.

We want to be sure the Newsletter meets your needs. We welcome your participation, suggestions and ideas. You may contact Tom at (703) 758-8224 or Jon at (703) 476-8949. You may also reach Jon via the Internet as **<maunaloa!jstewart @telenet .com>**, on the NOVAC Bulletin board. Of course, we will both be at the general meetings, and willing to hear any thoughts or suggestions.

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Highlights of January and February NOVAC General Membership Meetings

by Bob L'Hommedieu

General Meeting January 20, 1993

Myron Wasiuta called the meeting to order at 7:30 P.M. Twenty-five members and guests attended at the Arlington County Planetarium.

New Business:

1. Myron gave a summary of the issues discussed at the NOVAC Annual Meeting held Jan. 12, 1993 (See *NOVAC Annual Meeting* in this issue for complete outline).

2. Two club telescopes are now available for members to check out. The newest addition is an eight inch reflector. Anyone interested in using this new scope should contact Myron.

3. Because the lock on the gate at Crockett Park has become difficult to open, it will be replaced as soon as possible.

4. The U.S. Naval Observatory celebrates its 100th anniversary in May and NOVAC will participate in the event.

Myron Wasiuta gave a program on the art of making CCD images and gave an overview of available equipment for CCD imaging.

General Meeting February 17, 1993

Myron Wasiuta called the meeting to order at 7:30 P.M. Thirty-five members and guests attended at the Arlington County Planetarium.

Old Business:

1. Two eyepieces are available for the club telescope in Steve Bodner's care. This telescope is fully operational and ready for NOVAC members to check out. Anyone interested should contact Steve.

2. Jim Schaeffer will soon install a new lock and chain on the Crockett Park gate to replace the current defective one. The combination will remain unchanged.

New Business:

1. Due to budget cuts, Crockett Park management has asked NOVAC to pay an annual use fee of $200 to cover our monthly observing sessions. After discussing the issue, members present voted to pay the fee.

2. Our new Newsletter editors, Tom Parry and Jon Stewart-Taylor, asked members to submit articles, book reviews, software reviews, and ideas for the Newsletter.

3. Brent Archinal announced that April 28, 1993 will be our last chance to voice concerns about Virginia Power's plans to substantially increase outdoor lighting. There will be a public hearing of the Corporation Commission in Richmond and all interested parties are invited and encouraged to speak on the subject. For more information contact Brent.

4. Al Schumann reminded members that NASA is still accepting proposals from amateur astronomers for research projects using the Hubble Space Telescope. Last year there were only 30 proposals and 15 were accepted. Al challenged us all to consider making a proposal.

5. The Lynn Schumann Jupiter Radio Telescope Antenna is also available for loan to NOVAC members who would like to listen to radio emissions from Jupiter on a shortwave radio. Contact Al for more information.

Brent Archinal gave a very interesting program on planetary photography and observing. He detailed the equipment and techniques used by successful planetary photographers and showed us some examples of his personal work.

The 1993 NOVAC Annual Meeting
by Bob L'Hommedieu

Myron Wasiuta presided over The Annual Meeting of the Northern Virginia Astronomy Club January 12, 1993 at the home of Brenda Jones. Twelve NOVAC officers and members attended.

Old Business:

1. The 1993 edition of the Northern Virginia Telescope Meet (NVTM) will be a one-day public event at C.M. Crockett Park. The tentative date is September 18 pending Park management approval. The rain date is September 25. Additional information will be posted on the NOVAC hot-line and in the newsletter prior to the event.

2. NOVAC will purchase two eyepieces for the club telescope now in operation.

3. NOVAC has two complete six-inch reflectors and two finished mirrors. Presently, there are no plans for the mirrors.

4. NOVAC will host the the Virginia Association of Astronomy Societies meeting this spring. Plans are now underway for this event.

5. There will be no dues increase at this time but it will be needed in the future.

6. NOVAC may assume increased responsibility for the computer bulletin board. Blaine Korcel currently runs the system. Discussions are planned with Blaine to clearly define NOVAC's role.

7. NOVAC will establish an awards program to promote and encourage active observation and astrophotography at all levels of expertise. Proposed categories for awards include observations of the planets, Messier objects, binocular observing and astrophotgraphy. Because of NOVAC's affiliation with the Astronomical League (AL), we expect to take advantage of AL observing guide services and offer these for sale at the monthly meetings.

8. NOVAC proposes to grant service awards to members who have given of their time and effort to help in club activities and improve membership services.

9. A committee is being formed to look into the feasibility of securing a new observing site. The group will look into the options of leasing land, buying land, or using existing facilities such as a private campground or county property. In connection with this effort, the committee will also conduct a study to determine whether building a permanent observatory with a large telescope is a viable goal. The committee will present its findings to the membership for discussion. All interested members are invited to join this committee.

New Business :

1. A proposed budget for 1993 was presented and accepted.

2. NOVAC needs a new corporate agent as Blaine Korcel is no longer a Trustee. Several names are under consideration.

3. An inventory of NOVAC property needs to be done to complete our records. Anyone who is a caretaker of club property should notify Enid Levine (see *Notices* in this issue).

4. Enid Levine is the new NOVAC librarian and the library will be located in her home. Anyone wishing to use these materials should contact Enid.

5. To celebrate their Centennial anniversary, the U.S. Naval Observatory will host a special event in May. NOVAC and other clubs in the area will participate. Brent Archinal will provide further information as it becomes available.

Sky Sweep for March and April 1993
by Kevin Jones.

During March and April evenings, the impressive band of the winter Milky Way is setting in the west earlier and earlier while the star-poor yet galaxy-laden regions of Spring are approaching the meridian. Some of the open clusters and nebulae of winter linger long enough for some good intragalactic observing if done early in the evening.

After taking that first quick peek at brilliant Venus and bright and large (but shrinking) Mars, nudge the telescope over a couple of degrees to the open cluster M35 in Gemini. This cluster is visible in binoculars and is an excellent target for telescopes. In telescopes, another small and rich cluster may be visible in the same field, NGC 2158. This cluster is 11th magnitude and will most likely not be resolved into stars (the brightest stars are 16th magnitude).

Higher in Gemini is the bright planetary

nebula NGC 2392, more commonly known as the Eskimo Nebula. This 8th magnitude nebula has a sizable disk, 2/3 of a degree across and a 10th magnitude central star. On dark and steady nights an outer ring of nebulosity may be glimpsed (the Eskimo's "parka") giving the object (with some imagination) the appearance of an eskimo's (or a bundled up observer's) face.

Moving still higher in the sky and into Cancer, you will encounter the Beehive Cluster, M44. M44 earned the name "Beehive" because of the swarming appearance of its scattered yellow stars (the "bees"). The cluster is also called Praesepe, meaning the Manger. The name Praesepe fits well with the "common" names of Gamma and Delta Cancri, Asellus Borealis and Asellus Australis, respectively. These names, meaning the northern and southern donkey, refer to two animals standing at the edge of the manger or Praesepe. This cluster is easily visible with the naked eye from a reasonably dark site and is impressive in binoculars and finders. Telescopes show too small a portion of the cluster to give a spectacular view, however. The Beehive Cluster is estimated to lie just over 500 light-years from the Solar System.

After taking in the Beehive, move a few degrees southward to find another Messier open cluster, M67. This cluster pales in comparison to its bigger and brighter neighbor, M44. With a diameter of 15' and at 7th magnitude, M67 is only one-fifth the apparent size of and almost three magnitudes fainter than M44. M67 certainly deserves a look, though, as a bright and easily resolvable (its brightest stars are 10th magnitude) open cluster.

After moving one constellation east along the ecliptic, you enter Leo. Leo contains several bright galaxies well-placed for viewing during the spring months. The first of these is NGC 2903, located in a relatively blank corner of Leo, about four degrees to the west-southwest of Epsilon Leonis, the last star in the "sickle" asterism of Leo. This galaxy is a 10th magnitude loose, many-armed spiral, appearing more than twice as long as it appears wide. Moving from out in front of Leo's nose to beneath his belly, there are two bright triplets of galaxies which you can view. The first triple contains M95, M96, and M105, all of which can be seen in a single low-power field of view. All three of these galaxies are ninth magnitude. The spiral M96 is the largest of the three, at 6' across. M95, a barred spiral, is only slightly smaller than M95. The central bar in this galaxy gives it the appearance of a Greek letter theta in long-exposure photographs. M105 is the smallest galaxy of the three. It is a small, round elliptical galaxy only 2' in diameter. The M95-M96-M105 system is located an estimated 30 million light-years distant.

The galaxies in the other triple, M65, M66, and NGC 3628, can be found midway along a line joining Iota and Theta Leonis. The two spirals M65 and M66 are both ninth magnitude, while the third spiral, NGC 3628, is fainter at 11th magnitude. All three of these galaxies are fairly large, each being approximateiy 8' in length by 2' in width. M65 and M66 are separated by about 20', with NGC 3628 being about half a degree to the north of the M65 and M66 pair.

This sprinkling of objects, from the nebulae and clusters of the Milky Way to galaxies located far beyond the borders of our own, shows the rich assortment of objects visible in the March and April night skies. Get out there and take them in!

Sky Calendar

by Thomas S. Parry

March

1	First quarter moon in Taurus
3	Mars 5 degrees N of waxing gibbous moon
8	Full moon (moon at perigee)
10	Jupiter 6 degrees N of waning gibbous moon
14	Last quarter moon
17	Neptune 2 degrees S of waning crescent moon
	Uranus 3 degrees S of crescent moon
19	Saturn near waning crescent moon (early dawn)
20	Vernal equinox. The sun crosses the equator heading north, marking the beginning of spring
21	Mercury 4 degrees S of crescent moon
23	New moon
24	Thin crescent moon visible 4 degrees to the upper left of Venus low in the west
27	Crescent moon 3 degrees S of Pleiades
28	Jupiter is 1.2 degrees S of 3rd magnitude star Gamma Virginis
30	Jupiter reaches opposition
	First quarter moon to the lower right of Mars and Pollux.

April

1	Venus is at inferior conjunction
4	Daylight saving time begins
5	Mercury at greatest western elongation
6	Jupiter 7 degrees N of full moon
13	Neptune 3 degrees S of last quarter moon
14	Mars 5 degrees S of Pollux
16	Mercury 8 degrees S of Venus
	Saturn 7 degrees below waning crescent moon
19	Venus and waning crescent moon .5 degree apart
	Daytime occultation of Venus by the moon
20	Venus stationary
	Mercury 8 degrees S of crescent moon
21	New moon
22	Lyrid meteor shower (maximum after midnight)
	Neptune stationary
24	Crescent moon 3.5 degrees south of Pleiades
26	Uranus stationary
29	Mars 6 degrees N of first quarter moon

The Wonder of Amateur Astronomy

by Thomas S. Parry

Two summers ago. I had the opportunity of taking my family on a vacation to the spectacular Pacific Northwest. Part of that time was spent at the beautiful Black Butte Ranch in the central Oregon Cascades. It was mid August and the weather was ideal--bright sunny transparent days with cobalt-blue skies. One late afternoon, my family and I decided to go out to the nearby meadow to watch the sun set behind the majestic volcanic peaks. As darkness gradually enveloped the valley and the sky grew deep purple, we looked up high into the eastern sky to see what looked like clouds forming. Minutes later we realized that what we were seeing was the magnificent summer Milky Way coming into view! My first reaction was that I

can't believe it is coming into view even before many stars! Gradually more and more stars came into view. Within 45 minutes of sunset, twilight still faintly visible, the sky above us was ablaze with literally countless stars. There were so many stars that recognition of the familiar summer constellations at first was nearly impossible. Once the last vestiges of twilight faded in the west and full darkness settled in, the Milky Way shone with a brilliance unlike any I had remembered in my earlier years. The star fields exhibited a grainy appearance!

As we sat back and beheld the vast universe before us and the kids started asking questions, I felt somewhat disoriented. This was the first time in many years that I had beheld such a magnificent night sky hundreds of miles from city lights. It was, in fact, the first time I had looked up into the night sky since before I went to college many years ago. Locating the constellations presented a tremendous challenge in such a star-filled sky but little by little it started coming back. I recognized Cygnus, then Lyra and Hercules. I could even see the faint blur of the globular cluster M-13 in Hercules. I followed the Milky Way down to Sagittarius and Scorpius and showed my children the great Sagittarius star cloud in the direction of the center of our galaxy. As the night rolled on, the great Andromeda Galaxy became visible as did many early Autumn constellations.

After spending several hours under this magnificent sky reacquainting myself with the stars that had become old childhood friends, fatigue finally set in and I was off to bed. During the week at the ranch, however, we were favored with many more such nights. I took advantage of every one including an early morning rise to witness a grand conjunction of Venus, Jupiter and a waning crescent moon.

During my childhood in Southern California, I grew to love astronomy as a hobby. I learned to identify all of the northern constellations and bright stars and frequently went to the library to get all the books I could find on the subject. I visited the Griffith Observatory often and took trips to Mount Wilson and Palomar. My first telescope was a 60 millimeter refractor like that of so many budding amateurs of the time. Although I observed regularly from my backyard with my telescope, growing up under such light-polluted skies with little ability to get away from the city for serious dark-sky observing made for quite a challenge (it took at least three or four hours to get through the city, over the mountains and into the high deserts to have really dark skies). Eventually, the lack of funds and mobility as well as increasing demands of school and finally college and career all combined to shift my attention away from astronomy. The interest has always been there but it seemed there was never time and always something more important that had to be done. "Astronomy is a luxury I'll have to wait for retirement to enjoy" I thought--until that night in the central Oregon Cascades two years ago.

I returned from my vacation with the vision of those splendid night skies indelibly etched in my memory. I also realized how much I missed doing observational astronomy and decided that now was the time to get back into it and not to postpone it until retirement. It seems there will always be things that have to get done but the nice thing about amateur astronomy is that it can be savored over time. The stars aren't going anywhere very fast (from our vantage point on Earth) and they will always be there to observe when the time and weather allow.

Because of my love for astronomy, my children have gotten involved. They come out and observe with me and have learned many things. My teenage son marvels at the filamentary structure of the Orion Nebula while my nine-year-old daughter has seen most of the planets and many deep-sky objects. My three-year-old son could look at the moon all night through a telescope. As I sit back and watch my children observe, I can't help but think: How far might this budding interest go?

Sometimes You Just Get Lucky Part3

by Al and Lynn Schumann

T. S. Eliot once wrote, "April is the cruelest month." However, December '92 had the makings of a new title holder as far as visual astronomers were concerned. With the exception of one day, the first 17 days of December were cloudy and generally miserable. But that one day, the 9th, was a beauty. And it was the day of the total lunar eclipse. This time we can't talk about a scheduling triumph with *Eclipses-R-Us:* it was just plain old dumb luck.

By mid-afternoon, the stage was set on the patio for the big event. The C-8 was cooling off on its pedestal, and the camera was loaded with Kodacolor ISO 400 print film. There was no big rush. We knew we were going to miss photographing the early stages of the eclipse, because we have a tree problem to the east, and the big show was going to start while the moon was quite low in the sky. Therefore, the master plan called for a leisurely dinner while watching the onset of totality through the living room bay window. Peering around the tree branches now and then posed no particular problem. As usual, it was a thrilling sight as the shadow of the Earth slowly crossed the lunar surface. It was a dark eclipse. Admittedly, we didn't have the best viewing conditions going for us at the time, but we lost track of the moon completely during totality. No kidding, it was a very dark eclipse. Since we couldn't see the moon anyway, we took our after-dinner coffee in the den and waited in comfort for the hoped-for reemergence. Hey! Just because eclipses have always ended in the past we saw no ironclad guarantee that the moon was going to come back this time.

When the first thin slice of the moon reappeared we heaved a sigh of relief and were all set for the picture taking. Still had to contend with a few twigs and minor branches on one tree, but it worked surprisingly well. The early exposures were made at 1/2 sec. and 1/4 sec.: guesswork mostly, but before long there was enough moon to allow use of the light meter. And, as the moon approached full, the meter was showing 1/250. Prime focus sure is great! If you have never tried it with your Schmidt-Cassegrain telescope, we recommend you giving it a whirl. It is fairly inexpensive, and the results can be quite rewarding.

The tools you need start with a single lens reflex (SLR) camera that has interchangeable lenses. Actually, you don't use any of your lenses, just the

camera body. The telescope itself becomes the lens. In order to mate the two, there are a couple of pieces of special equipment required. First is a "T" adapter. This is a short tube that screws on the telescope back in place of the star diagonal. The "T" adapters usually sell for about $25, and any of the mail order houses advertised in the astronomy magazines carry them. The second item required is a "T" ring for your own particular brand of camera. Some cameras have threaded lenses; some have bayonet connections. So, you need the right kind of camera "T" ring which will do the trick for your Canon, Konica, Pentax, Nikon or whatever. The camera "T" rings go for anywhere between $15 and $20. Thus, for less that 50 bucks you can become a world class lunar photographer. NOTE: film and batteries not included. One further item we recommend is a cable release. These are pretty cheap, and you can get them at any camera store. The cable release helps to avoid vibration when you click the shutter. Since you're dealing with substantial power while using the telescope as a lens, it's important to minimize any possible jiggling of the equipment which could result in blurry pictures.

Don't wait for an eclipse to begin your experimentation. It is best to start with the full moon which will give you an idea of how the image will show up in the viewfinder and on a frame of film. Also, it will enable you to see how effective the light meter can be when you have a big target. Focus can be kind of tricky, especially with thinner slices of moon, so it is also helpful to get the feel for focusing with a good bright moon. A lot of light is lost through the view finder, and that complicates the issue. After you get the hang of working with the full or a gibbous moon the quarters and thin slices will become easier.

We are rather partial to ISO 400 film for our lunar photography. It's not so fast as to give grainy pictures, and yet it's fast enough to get the thin moon without necessitating long exposures and the concomitant guiding requirements. Here's a quick and dirty guide for ISO 400 film shot through a 2000mm F-10 telescope:

Phase of Moon	Time in Seconds
Full	1/250
Quarter	1/125
Thick Crescent	1/60
Thin Crescent	1/30

NOTE: We have found that when the light meter shows an either/or situation, go for the darker of the two exposure speeds. Otherwise, the craters and other lunar detail have a tendency to get washed out. If you're like us, it will take every bit of your intellectual might to avoid overexposing the pictures "just to make sure they come out." Trust us, a little bit less is better that a bit more. However, your own camera and telescope will end up being the best teacher.

The above chart makes no mention of really thin crescents, not to mention a fully eclipsed moon. Frankly, we don't think you can come up with definitive figures for these situations. There are just too many variables: volcanos, smog, haze, high/low riding moon, dew, frost, bat droppings on the corrector plate and myriad other evils that preclude specific settings. "What's a mother to do?" Shoot like crazy and bracket is our answer. If you think 1/4 sec. is about right, go for it, but also hit one at 1/8 sec. and 1/2 as well. The cheapest item in the whole show is the film, so don't be afraid of wasting a few shots to get the one you'll treasure. Good luck.

The Recreational Astronomer 1
What is a Recreational Astronomer?
by Jon Stewart-Taylor

Probably everyone knows what an amateur astronomer is, but what's a Recreational Astronomer? In my opinion, it's someone who looks at the night sky for the simple enjoyment of it. Recreational Astronomers don't work too hard. Spending hours in the cold guiding an astrophoto can be very rewarding, but it isn't Recreational Astronomy. This doesn't mean that there aren't things to learn about celestial objects, observing techniques, and equipment. All these things will enhance your enjoyment of your observing sessions.

This is the first article of a regular column that will appear in the NOVAC newsletter. It is based on my own observing experiences (I observe from my townhouse neighborhood every clear night with my eyes, and 3-5 times per month with binoculars). The column will focus on beginning and intermediate astronomers, but I hope it will be of interest to everyone who loves the beauty of the night sky.

You Can See More Than You Think!

One of the things that discourages potential astronomers most is feelings of inadequacy: *I don't have enough time, I don't have a dark enough sky, I can't find anything interesting, I don't have a telescope,* and so on. But whatever your conditions, whatever your equipment, you can see more than you think. With a little practice, learning a few techniques, and making the most of the sites you have available, you can see more, and increase your enjoyment of the sky.

One of the most important things is simply to observe often, with whatever you've got. It takes about 20 minutes for most peoples' eyes to fully adapt to the dark, but even before full dark adaption then there's lots to look at. Whenever you have 20 minutes or more free, you have an observing session. Use a telescope, a pair of binoculars, or just go out and use your eyes. Observing with the naked eye is the easiest type of observing to fit into your schedule. Whenever you've got a few minutes outside, you can look at the sky, such as at the end of the work day before going home. Most spouses think it's romantic to go out and look at the stars together, and it can be some quality time spent with children.

Another point is to choose your site carefully. Even if you're in a neighborhood full of streetlights, some areas are darker than others. Careful positioning of trees and houses can make a big difference, and sometimes neighbors will be willing to turn off lights. Particular locations may allow views of different parts of the sky better than others. Be careful, however, to temper your lust for darkness with a consciousness of safety (especially in urban areas). Don't go wandering around in other peoples' yards without their permission. Do look at the sites you're considering, in daylight, for potential hazards. Do make sure that you're not in a place where someone is likely to damage your equipment, or

injure you.

Less-than-perfect sky conditions shouldn't scare you off. In patchy clouds, there are often windows of perfectly good viewing if you're willing to wait a little while, or shift to a different part of the sky. The moon and planets will shine through thin clouds, and a bright moon can be a subject itself. In addition, while a full moon will wash out most of the sky, even 75% gibbous moons don't totally obscure everything. There are usually windows before they rise or after they set, and objects located more than 30-40 degrees away are often still observable.

One thing which is often overlooked is the importance of writing it all down. Techniques you learn, objects you see, and other things will be forgotten if you don't write them down. Even just a few abbreviations can often jog the memory, and you'll remember techniques which help you see more. It'll also give you a sense of accomplishment as the log grows, and you see the increasing number and variety of objects you've observed. I carry a little 9 x 13 cm notebook with me everywhere. I keep my observing log in it, and it also has enough pages that I can scribble all sorts of notes about sites, conditions, objects, and so on.

What You Can See With What You've Got

There are lots of things to see with just your unaided eyes. Some of the most spectacular are meteors, practically the only noticeably moving subjects in astronomy. The moon is a good subject, since it's easy to find, nearly always visible sometime during the night, and shows about as much detail as you'll see on any of the planets through good telescopes. Five of the nine planets can be detected, and their motion with respect to the background constellations observed.

The stars are a fertile subject for naked-eye study. Learning the locations and member stars of the constellations is fun, and an important step for locating other things you want to look at. There are a few naked-eye double and variable stars, and even "deep-sky" objects aren't out of reach. Star clusters like the Pleiades appear similar to what you'll see through small telescopes. A few globular clusters are detectable as hazy patches under good conditions, and three galaxies are visible from the Northern Hemisphere (counting our own Milky Way, flowing in streams and eddies through the sky).

If you have a pair of binoculars, your reach is extended quite a bit- they'll take you about half way between the unaided eye and modest-sized telescopes. The moon shows a lot of detail through binoculars, and the Galilean satellites of Jupiter are often visible. You'll be able to find objects as faint as 8th magnitude, even under bad conditions. About half of the Messier catalog of deep-sky objects is detectable with a pair of binoculars. Small telescopes, even department-store refractors can give respectable views of the planets and wonderful views of the moon, if one doesn't use too high a magnification. Nearly all of the Messier objects can be detected, and many double stars can be split.

For More Information

If you'd like more information, you may wish to look into the following sources:

Backyard Astronomy, available from Sky Publishing. Contains a set of reprints from the *Backyard Astronomy* column of *Sky and Telescope*. I highly recommend it. The Internet sci.astro *Purchasing Amateur Telescopes FAQ* is a compilation of the wisdom of dozens of contributors. It contains a wealth of information about many different aspects of Astronomy (including buying telescopes!). Chapters include:

o What Is The Single Most Important Thing I Should Know Before Buying A Telescope?
o What Will I Be Able To See?
o Why Should I Start With Binoculars?
o What Books and Star Charts Are Recommended?

If you don't have access to the Internet, I'm willing to make copies on request, or upload it to the NOVAC bulletin board.

Two books are worth mentioning are *The Sky*, by H. A. Rey (yes, the *Curious George* author), and Peterson's *Field Guide to the Stars and Planets*.

That's it for this time: go out and do some observing!

Reflections in the Eyepiece
by Robert Bunge

In Central Ohio, there is a locally famous observer named Biff Smooter. Biff is a folk legend, and his observing skills are second to none. He was looking for the Horsehead years before any of us. Perhaps Biff's most remarkable skill is how he only has to find an object once to memorize it's position forever. I've had the honor of observing with Biff many times over the past five years, and each time, it's been a lesson I never forget.

This time, as the Mit-e-Lift observing platform at Warren Rupp Observatory coasted down toward the floor through the cold, early morning air, I planned to steal some of Biff's hot coffee from downstairs in the clubhouse. I don't normally drink coffee, but I was cold and thirsty, and needed something to keep me awake. Biff and I had decided to risk death on the hour-long drive home after a weeknight all-nighter because neither of us had done any observing throughout the winter months.

The promise of both springtime galaxies and a clear, moonless night prompted me to risk drooling on my notes in meteorology class the next day if I fell asleep during lecture. The instructor might understand. He's an amateur, and was probably out as well. While I was observing clusters of galaxies in Leo and Ursa Major with the 31-inch, busy identifying each galaxy, taking notes and making drawings, Biff was doing a completely different type of observing, using Tom Burns' 17-inch (I assumed he had permission).

The Mit-e-Lift door banged closed behind me. The clocks on the wall said it was 3 a.m. Outside, it was quiet and calm. I couldn't believe no one else had ventured up to the hilltop on such a great night, but Biff was the only person outside. The frosty grass crunched as I approached him. He was staring off into the southeast sky, puffing on his cigar.

The glow from the tip of the rolled up bunch of tobacco lit the scene with a dull

red glow. Biff didn't use a red flashlight. He just puffed a little harder.

"Whatcha waitin' on, Biff?"

"M-4"

"How're you doing so far?"

"Sixty two."

That's what I like about Biff. Straight and to the point.

"How 'bout a break, Biff? I need a wake up."

"No... gotta wait for M-4 and M-80."

"OK Biff, but it's pretty hazy in that direction. Good luck."

Biff's only reply as I headed down the steps was continued puffing on the cigar. Twenty minutes later, the silhouettes of Biff and the 17-inch came into view as I climbed the stairs. Biff hadn't moved. He was still staring off toward the southeast.

"Still waitin', Biff?"

"M-8, M-20."

"You find 4 and 80?"

The red tip of the cigar moved in such a manner as to point toward the eyepiece of the 17-inch. A glance through the scope showed nothing. I pulled on the dobsonian, and bumped it up a field. There, faintly, through the muck was a faint M-80.

"That make 64?"

"Nope. Seventy-five," replied Biff. "Did the summer Milky Way while I waited."

"Good luck." I started back for the 31-inch dome.

Puff, puff.

"Biff, if ya ain't careful, you're going to cause a temperature inversion with that thing."

Puff, puff.

Biff was doing a Messier Marathon. Having never done one, I decided to find out why he liked doing this annual observing event. During the drive home, I grilled him with questions- but first we had to get on the road. After loading up the car in the morning twilight, Biff carefully placed the butt of his cigar, with the lit tip sticking out of the top, in a freshly poured cup of coffee. Then he got out three sticks of BIG RED chewing gum. He unwrapped each one, and popped them in his month. When finished with each stick, he bumped the cigar so the ashes fell into the coffee. After a minute of hard chewing, he pulled the cigar out of the coffee, took a swig and then a drag of cigar smoke.

"What is it Biff?"

"A Messier Marathon? You stay up all night long and try to look at all the Messier objects. It's tough. Some of the objects are close to the sun and hard to find. At times you have a lot to look at, and only a few minutes to find them before they set or morning twilight drowns them out. By morning, you're preeetty dopey 'less you have some these ciiiigars."

"Why do a marathon?"

"It's a challenge, and it's fun. It's a great way to learn how to find a lot of Messier objects, especially the fainter, rarely observed ones that nobody ever looks at. Besides, there is a bigger reason."

"What's that Biff?"

"You get to see how the universe is put together. In the evening, you start out with the local group of galaxies, then a few minutes later, you swing south and explore another arm of the Milk-Way galaxy. After working your way up the winter Milk-Way, you peek through a hole in our galaxy to examine the Coma-Virgo cluster. After that..."

"I get the drift, Biff. But, who does this thing?"

"Amateurs the world over, Bob. It started in the seventies, I think. Brent Archinal and John Kerns turned me onto it in '81. That year at Perkins (Observatory, near Delaware, Ohio) we saw a great aurora and 108 objects. I do it every year."

"When do you do it?"

"See that's the trick. It turns out that there is a hole in the sky where there aren't many Messier objects. At the end of March, beginning of April, the Sun is in

The Messier Sequence

John Kern's Messier sequence, taken from the March 1983 Nebula, newsletter of the Ohio State University Astronomy Club (OSUAC).

Messier Number	Con	Messier Number	Con
74	PSC	89	VIR
77	CET	90	VIR
79	LEP	58	VIR
31	AND	59	VIR
32	AND	60	VIR
110	AND	49	VIR
33	TRI	61	VIR
34	PER	104	VIR
76	PER	68	HYA
45	TAU	83	HYA
42	ORI	5	SER
43	ORI	92	HER
78	ORI	13	HER
41	CMA	57	LYA
93	PUP	56	LYA
47	PUP	12	OPH
46	PUP	10	OPH
50	MON	107	OPH
48	HYA	9	OPH
1	TAU	80	SCO
35	GEM	4	SCO
37	AUR	39	CYG
36	AUR	29	CYG
38	AUR	27	VUL
44	CNC	71	SGE
67	CNC	11	SCT
95	LEO	26	SCT
96	LEO	16	SER
105	LEO	17	SGR
65	LEO	18	SGR
66	LEO	24	SGR
81	UMA	23	SGR
82	UMA	25	SGR
97	UMA	21	SGR
108	UMA	20	SGR
109	UMA	8	SGR
40	UMA	28	SGR
106	CVN	22	SGR
94	CVN	19	OPH
63	CVN	62	OPH
51	CVN	6	SCO
101	UMA	7	SCO
102	DRA	69	SGR
3	CVN	70	SGR
53	COM	54	SGR
64	COM	52	CAS
85	COM	103	CAS
100	COM	15	PEG
98	COM	2	AQR
99	COM	75	SGR
88	COM	72	AQR
91	COM	73	AQR
86	VIR	55	SGR
84	VIR	30	CAP

that section of sky, and you can see more than a 100 of the 110 objects on the list. Remember, it's got to be dark all night, so it needs to be near new moon."

"How do you do it?"

"You get or make a search order list. You just can't go by R. A., or you're be all over the sky, going from north to south and then back north when you could have saved time and stayed in the north. (Sort of like this sentence) John Kern's search order list is good because it's grouped for use with Astro-cards. If two objects appear on the same card, he put them together on the list. You also need the list in order not to forget objects. Otherwise, you forget things like M-32, M-110, M-44 and M-45. Oh yea, it's better to use a smaller scope. I use the 17-inch because I know it so well, and I've been doing this a while. A ten or six inch is perfect. A few years ago, a fellow in Columbus used a 3-inch refractor, and found ninety-some objects. You wouldn't want to use the 31-inch... it's too big and slow to point."

"Were do you do it?"

"Somewhere dark, with a good horizon. Get there early and be prepared to stay reallllly late."

With that, Biff lit a new ciiigar and cranked up some bluegrass music. When I started to choke on the smoke, he cracked his window.

"How the hell are ya going to stay awake if you don't get some stimuuulaates in your body?"

I didn't answer- I was dead asleep. Good thing he was driving.

Swift-Tuttle in the Evening

by Jon Stewart-Taylor

After weeks of bad weather on free nights, and family or job commitments on clear nights, Friday, November 13th arrived clear and cold. I'd finished all the urgent projects at work, and made arrangements with Kathleen to be late for dinner. It looked like I would finally get a crack at the comet I'd read glowing reports of on the Internet.

Throwing the handy Bushnell 10x50s and Peterson Field Guide into the backpack, along with extra socks, shirt, earmuffs, hat, and a vest to go over my jacket, I set off for my favorite "dark" observing site: Waxpool Field ("Home of the Mustangs"). My favorite observing site is the hill behind our townhouse, but I thought a limiting magnitude of better than 3.5 might be appropriate. Since it's only a 30 minute drive from my office in Reston, I arrived after sundown, but while it was still light.

As soon as I got out of the car, I could see that it would be an unusually clear sky. Stars that are never visible from home were already appearing near zenith, even though it was still light enough to see clearly. If I didn't know better, I'd have sworn that I could make out traces of the Milky Way right overhead. Acting on impulse, I hauled out the binoculars and scanned Cygnus. The "double" omega 1&2 was lovely, with its blue-orange color contrast. The star fields around Deneb were developing nicely, so I trailed down through the Swan's tail feathers, and found cluster M39. It still wasn't even dark!

Turning to the east, where the Square of Pegasus was clearly visible, I started at Alpharatz and hopped three stars down the chain of Andromeda, then up three stars to the Great Galaxy. Its pale glow was clearly visible, stretching across what seemed like half the seven-degree field of view. H/x Persei (the double cluster) was next, also plainly visible, though not resolvable into individual stars. At this point the stars of Hercules were appearing, so I got out the comet finder chart I'd pulled off the Internet and laser-printed.

I started at the lower shoulder (or is that upper- he's upside down), then swept over towards Albireo and- what was that fuzzy thing? About the size & shape of M13, about the same brightness too. There's that little triangle of stars- That's IT!

What an anticlimax- three weeks of waiting, and it took less than a minute to find, in skies that still had a slight tinge of color from the sunset! It was a seemingly uniformly round eraser-smudge. The Internet News articles had been reporting it at around 5th magnitude, with a faint trace of tail. Comparison against globulars M92 (much fainter, and smaller) and M13 (about the same size, maybe a little fainter) confirmed the brightness, but it was still too light to hope for any tail, especially since it probably couldn't be seen in binoculars at all.

What to do while waiting for dark? Venus gleamed brightly- perhaps I could see its current phase, which should have been gibbous enough to tell from fully round. I centered it in the field, but couldn't really tell about the phase. Trying averted vision, I shifted my eyes up above the planet, and another fuzzy patch popped into view. What would that be? Let's see- Sagittarius, just above the Teapot's Spout- it was the Lagoon Nebula, in the same field of view as Venus. Made me wish I had a camera with a telephoto lens.

As the sky darkened, the Lagoon grew clearer and stronger. On impulse, I swept up the Milky Way. M20 (the Trifid), the Lagoon, and Venus, all in one field. Up the galactic equator- M24, M18, M17, M16, and M11, one after another. Back down the chain to the Lagoon and Venus. By now it was a good deal darker (and colder), so I moved onto the still-warm hood of my car, and back to Swift/Tuttle. It was easier to see, but still no tail- it remained an eraser smudge.

Hoping to distract myself from the growing cold, I aimed the 10x50s overhead, to the heart of Cygnus- Gamma, M29, and NGC 6910. It was beautiful, but I was still cold. After a last look at the eraser smudge in Hercules I got back into the car and headed home, wishing the heater would work a little faster. It was a night to treasure: I'd captured my second comet (Halley was the first: another eraser smudge), and been treated to an unexpected conjunction of Venus and the Lagoon Nebula.

Call for Articles
by The Editors

As the new NOVAC Newsletter editors, we need your help. We are seeking article submissions from members on any aspect of Astronomy. If you have an article hiding in you, even just a few paragraphs, let it out and see your name in print. We welcome articles on:

- o a particularly memorable observing session
- o product reviews
- o equipment
- o book reviews
- o your favorite object to observe
- o astronomy software reviews
- o anything else meaningful to you

If you can get your article to us in a machine-readable format, that would be best. We prefer plain ASCII text, with carriage returns at the end of every line. If you would like to E-mail it, Jon Stewart-Taylor's *Internet* address is **maunaloa!jstewart@telenet.com**.Uploads to the NOVAC bulletin board are also fine. Upload it personal to JON STEWART-TAYLOR. If neither of these options are possible for you, we can handle IBM-format 5-1/4 or 3-1/2 inch double-sided double-density and high density floppies. We also have capability to convert **MAC** files to IBM format. We'll also accept old-fashioned paper (although we prefer typewritten to longhand).

As two of us are working on the newsletter now, we need to have better coordination and to publish to a clear, documented set of deadlines. Our deadline for getting the Newsletter in the mail is the Wednesday before the general meeting, and our production deadline is the Wednesday before that. For the May/June issue, article submissions will be due April 22.

Articles received after April 22 will be considered for the July/August issue. We encourage submissions for the Newsletter. If you would like more information, contact the Editors via *Internet*, the *NOVAC bulletin board,* or talk to us at the general meetings.

NOVAC Notices

Sky & Telescope Discounts

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.

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. 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; However, 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 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 may 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.

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 saying that you are a NOVAC member and you wish to observe that night. Also, leave a telephone number where the Kilpatricks can reach you. 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, alcoholic beverages or loose pets. Do not leave trash or debris behind. We are guests of the Kilpatricks and they reserve the right to revoke our observing privileges any time due to 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. 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.

Directions to The Kilpatrick's

From the Washington DC/Northern Virginia area, go west on I-66 to Route 29. Take the 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.

NOVAC Property Inventory

NOVAC is conducting an inventory of all club property. If you currently have any club property, plase contact:

Enid Levine
6823 Spur Rd.
Springfield VA 22152
(703) 451-7435

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.

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.

Total meteors 9-12 EST

9-10: 13P, 3 mag 0, -1 0-3, incl. 1-4 mag

10-11: 16P, (45 min clear), 10 mag 0 incl, 3 -3 or brighter

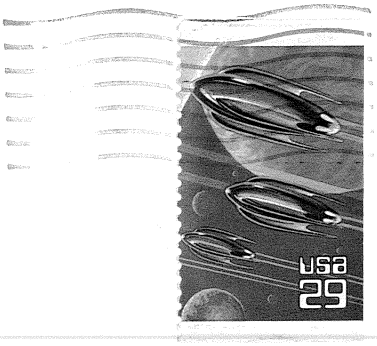
10:00-10:06: 4 fireballs, 2 -1's, 2 -3's 4 w/trains

10:48-10:51, 3 fireballs,

11-12: 15P, -4-5 mag fireball at 11:26, 2 fireballs

NOVAC

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



12/92 - $24.00

L. Warrow and B. Burton
2102 Whisperwood Glen Lane
Reston, Virginia 22091