

NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

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NOVAC Officers 1995

President: Bob L'Hommedieu 703-978-0946
Vice President: Ron Ferris 703-643-0811
Secretary: Marta Krause 703-281-9049
Treasurer: Brenda Clements Jones 703-527-7963

NOVAC Board of Directors 1995

Robert D. Bunge 301-390-7298
Doug Mistler 703-437-0513
E. E. Sanders Jr. 703-590-8982
Linda Thomas 703-620-2791
Keith Ward 703-922-6545

NOVAC Newsletter Staff

Editor: Thomas S. Parry 703-758-8224
Sky Calendar: Luke Ward 703-922-6545
Prod/Dist: Brenda Clements Jones 703-527-7963

Important NOVAC Numbers

NOVAC Information Hotline 703-256-8359
NOVAC RBBS (2400 Baud) 703-256-4777
Crockett Park (Gary Kwolek) 703-788-4867
Arlington Planetarium 703-358-6070

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Editor's Note

by Thomas S. Parry

This issue of the NOVAC Newsletter marks my final issue as editor. The decision to step down as editor has not been an easy one for me since I feel I have so much invested in our club publication and have found such great enjoyment in this assignment. But, as happens to all of us at one time or another, I have found myself in the midst of competing demands for time with increased family responsibilities and new opportunities for service. In my effort to re-prioritize, I concluded I could not give this publication the time that it rightfully demands and did not want to see the quality diminish. Besides, it's healthy to give our publication a new perspective from time to time so that it might continue to grow and meet NOVAC's changing needs.

NOVAC member Elliott Fein of Rockville, Maryland has volunteered to serve as the new NOVAC Newsletter Editor. Elliott brings to the position many years of experience working with computers in a variety of applications as well as previous editorial experience. I am confident that he will do a fine job and maintain the same high level of quality our publication has come to enjoy over the years. Elliott assumes his new responsibilities effective with Issue 58 (March/April 1995). Article submissions should be posted to the NOVAC Computer Bulletin Board (BBS) to Elliott Fein or typewritten copies may be sent to Elliott's residence at 5 Carter Court, Rockville, MD 20852 (Home phone 301-762-6261).

Effective this issue, I am very pleased to introduce Luke Ward as our new Sky Calendar columnist. Compiling the Sky Calendar is a time-consuming job and in our efforts to expand coverage of

astronomical events in the Washington Metro area (a decision based on NOVAC survey findings), I knew I could not continue to compile the Sky Calendar and do the editorial work and the typesetting as I have the past two years. Luke is off to a fine start and his first Sky Calendar installment appears in this issue.

I want to again express my appreciation to all who contribute to this publication. The NOVAC Newsletter has evolved over the years into what I would consider a first-class amateur astronomy publication. Such a level of quality, however, would never have come to pass without the ongoing efforts of many NOVAC members. Thanks to all who contribute regular columns and articles as well as to those who contribute periodic special features. Thanks to all who have contributed astrophotographs and digital/CCD images for illustration purposes. Thanks to NOVAC officers for your contributions and to those who help in production. It would be my greatest desire that the same or a greater level of contributions continue as Elliott assumes his new responsibilities.

This new year brings with it many exciting astronomical events and a host of NOVAC activities. Our elections completed, we have an outstanding team of Officers and Trustees who will carry on programs initiated in 1994 and establish new goals and service opportunities based on results of the 1994 NOVAC Membership Survey (results of which are reported in this issue of the Newsletter). NOVAC couldn't be in better hands and 1995 will be an exciting and fun-filled year.

I'm looking forward to a great observing season (and using Savage this year) and participating in what I'm sure will be some outstanding NOVAC activities in 1995. Let's all hope the skies will be as nice this winter season as they were last fall! □

Highlights of November and December General Membership Meetings

by Marta Krause, Secretary

General Meeting November 16, 1994

Bob L'Hommedieu called the meeting to order at 7:30 PM. At least 37 members and guests were present at the Arlington County Planetarium.

Announcements

1. With the change to Standard Time, NOVAC members observing at Crockett Park may now use the field or the asphalt parking lot to set up their equipment. (During Summer, NOVAC must use the field because the parking lot is used by Park patrons for recreational equipment and boat launching.) Remember, when using Crockett Park, observe all Park rules and carry your observing pass with you. Do not give out to non-members the combination to the lock on the Park gates.

2. Jerry Wolczanski reports that he is doing a lot of public observing sessions in Fauquier County, including a great deal of contact with County schools. Jerry needs volunteers to help with activities and public events, including a solar observing event on December 14. If you are interested in helping Jerry, please contact him.

3. Jon Stewart-Taylor, who negotiated access to the Parcels Field and Savage Farm observing sites in 1994, is requesting membership opinions about the sites through a survey distributed at the meeting. Please contact Jon with your comments.

4. Michael Lucas has been awarded a certificate from the Astronomical League for observing 70 Messier objects. Congratulations to Michael on this accomplishment. Also, Doug Mistler announced that Messier Guides from the Astronomical League have arrived for those who ordered them. Please contact Doug if you are interested in one of these Guides.

5. A copy of the results of the 1994 NOVAC Membership Survey is now available to interested members in the NOVAC Library. Thanks to NOVAC Newsletter Editor Tom Parry for his hard work on the survey and presentation of the results.

6. For those of you looking ahead to the holidays, NOVAC hats make great gifts. If you are interested in these elegant chapeaux, contact Brenda Jones.

Officers' Reports

Ron Ferris reports that NOVAC's December 21 program will be presented by Jerry Wolczanski, who will speak about making a pitch lap for mirror polishing and figuring in "The Miracle of the Pitch Lap." Also, Bob

Bunge, who will speak about diffraction in refractor lenses using a computer simulation.

Marta Krause reports that the 1995 Astronomy & Space Weekly Calendars are available for those who have not yet picked up their orders.

Brenda Jones has observing passes for members who have joined recently.

Old Business

1. The following nominations for NOVAC elections have been made:

Officers:

President: Bob L'Hommedieu

Vice President: Ron Ferris

Secretary: Marta Krause

Treasurer: Brenda Jones

Board of Trustees:

Bob Bunge (one year term; to replace Bob Sandy, who resigned after relocating)

Linda Thomas (one year term; to replace Fred Holmes, who resigned for business reasons)

Keith Ward (two year term)

Sandy Sanders (two year term)

A motion was made to close the nominations. The motion was seconded. The motion carried unanimously, and nominations for 1995 officers and directors are now closed. The election will be held during the December 21 NOVAC meeting.

Jeff Stetekluh provided the observing report for the next four weeks.

Member Presentations

1. Sandy Sanders reported briefly about the recent solar eclipse in Asuncion, Paraguay. Sandy will present an in-depth report for NOVAC's January 1995 meeting program.

2. Bob L'Hommedieu recommended *Hothands*, inexpensive disposable chemical hand warmers, and a Warm Suit from Sears, to help fend off the cold during winter observing sessions. Contact Bob for more information about cold weather observing.

Ron Ferris introduced the program for the evening. Fred Holmes spoke about Star Atlases and shared his extensive collection of atlases with those present, recommending *Tirion's Bright Star Atlas* for magnitude six stars, and *Sky Atlas 2000* for magnitude eight stars. Doug Mistler spoke briefly about planispheres, and recommended them for use by beginners and by observers with children. NOVAC member Kevin Jones makes large size planispheres, helpful for use with groups, for \$50 each. Contact Kevin for more information.

General Meeting December 21, 1994

Bob L'Hommedieu called the meeting to order at 7:30 PM. At least 34 members and guests attended at the Arlington County Planetarium.

Announcements

1. Bill Burton is interested in organizing an experiment and writing an article for the *Horizons* educational section of *The Washington Post*. Bill proposes to design a reader-involved experiment collecting data about the effects of light pollution in the Washington metropolitan area. For example, how many stars in a specific constellation can be seen by observers at different places in the area? He would then write up the results of the observations in an article. Anyone interested in working with Bill on this project should contact him.

2. Sandy Sanders has taken inventory of the equipment at the Arlington Outdoor Laboratory, and reports that there is much to be done to improve the usefulness of the facility, including everything from cleaning the building, cleaning eyepieces and telescopes, and performing telescope adjustments and maintenance. NOVAC's efforts may mean improved access to the site for NOVAC members. Bob L'Hommedieu added that NOVAC's efforts at the Outdoor Lab help support the Arlington Planetarium staff, who operate the Outdoor Lab and who enable NOVAC to hold monthly meetings at the Planetarium. At the January meeting, a sign-up sheet will be circulated to gather names and phone numbers of those wishing to help at the Outdoor Lab.

3. Bob L'Hommedieu reminded members that NOVAC's annual meeting for 1995 will be held on Tuesday, January 10, beginning at 7:30 PM at the home of Brenda Jones, 883 North Kentucky Street, Arlington. The meeting is open to all interested members.

Officers' Reports

Brenda Jones reports that a subscription to *Astronomy* magazine through NOVAC has increased from \$16 to \$18. Those who recently paid \$16 will receive 11 rather than 12 issues for the subscription year. Brenda also mentioned that Eva Shephard, a member in Arlington, is in need of an observing companion. Please contact Brenda or Eva for more details.

Marta Krause reports that the Mount Wilson Institute's *Telescopes in Education Program*, which provides amateur astronomers with remote access to a 24-inch telescope atop

Mount Wilson, is now available to individuals. Also, the Shoemaker-Levy 9 Comet Collision with Jupiter is now available in a CD-Rom program for Macintosh and Windows. The program is \$19.95 plus \$3 for shipping and handling. For more information about either of these programs, please contact Marta.

Ron Ferris announced that the program for January's NOVAC meeting will be Sandy Sander's report on the recent eclipse in Paraguay. In addition, Ron is interested in finding individuals who have a particular interest or ability that could be shared with other NOVAC members as a monthly program. Surveys were distributed to those present; anyone with interests they would be interested in sharing with the club is encouraged to contact Ron.

Old Business

1. Club elections were held. NOVAC's new officers and directors for 1995 are:

Officers:

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

Board of Trustees:

Bob Bunge (one year term)
Linda Thomas (one year term)
Sandy Sanders (two year term)
Keith Ward (two year term)

In addition, Doug Mistler will serve the second year of his two year term as Trustee in 1995.

2. Tom Parry was presented with a certificate of appreciation for his service to NOVAC as newsletter editor and publisher as well as

Trustee. NOVAC thanks Tom for his time and hard work on behalf of NOVAC.

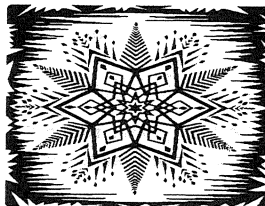
Jeff Stetekluh presented the observing report and reminded members that due to the holidays, there will be no observing at Crockett Park until January 1995. At Savage Farm, members should look for a sign that says "Wildlife Sanctuary," since the NOVAC sign keeps disappearing. The observing site can be reached through the white metal gate with the lock on the back of the gate's left hand side.

Member Presentations

1. Jon Stewart-Taylor obtained some information from the Internet about determining visibility, in terms of magnitude, for the sky on any given night. Anyone interested should contact Jon.

2. Charles Shepherd is interested in lunar and celestial maps of large scale. Anyone with information about where such maps could be obtained is encouraged to contact Charles.

Ron Ferris introduced the program for the evening. Jerry Wolczanski spoke about mirror polishing in "The Miracle of the Pitch Lap" and Bob Bunge demonstrated use of "Aperture," a computer program designed by Dick Suiter to calculate the diffraction effects of telescope aperture. □



President's Column

by Bob L'Hommedieu

I would like to wish everyone a Happy New Year and hope 1995 will be a prosperous one for us all. The year will see some changes for NOVAC and I want to tell you about one of them this month. Beginning in 1995, NOVAC will have standing committees chaired by a Trustee. We hope this will make for smoother and more organized club operations as well as give more people a chance to participate in club activities. The committees and their Chairpersons are: Finance: Bob Bunge; Publicity: Sandy Sanders; Education: Linda Thomas; Observing: Keith Ward.

If you are interested in finding out more about the committee functions and serving on a committee, please give the Chairperson a call. Their phone numbers are listed on the front of the Newsletter. We encourage your participation and you will find this a good way to meet other club members and do something to help out NOVAC.

On another note, our annual Corporation Meeting will be on Jan. 10, 1995 at 7:30 PM at Brenda Jones house. This will be a planning meeting to lay out our goals and agenda for the coming year. All club members are invited and encouraged to attend and their input is welcome. □

To Observe and Help Others Observe: A Proposal

by Jon Stewart-Taylor

A mini-survey of our two alternate observing sites (Parcells and Savage) conducted at the November general meeting showed that we are missing an opportunity to fulfill the second half of our club goal: to help others observe.

A substantial number of beginners who responded to the survey indicated that they did not go to observing sessions either because they did not have a telescope, or because they were concerned that they would be the only ones at the site. I believe we can help them out and enjoy the sites and experience ourselves simply by being in the right place at the right time.

What I propose is that experienced club members volunteer their time and telescopes one night during the year. For each observing session, one club member would commit to be at the site from 9:00 pm to 11:00 pm, and be willing to help others observe and learn. Since there are about 24 observing weekends, we could cover the entire year if as few as 20 percent of NOVAC members sign on for one night per year per site.

For Parcells, I'd like volunteers for the Fridays closest to the last quarter moons. For Savage, I'd like volunteers for the Saturdays closest to the new moons. If you are willing and able to make a commitment, please sign up. You can reach me at home (703) 476-8949 or via the Internet at jstewart@telenet.com or telenet!maunaloa!jstewart@uunet.UU.NET, and of course you can find me at the monthly meetings. Please share your experience, and help others observe. □

New E-Mail Address List

by Jon Stewart-Taylor

I have started collecting E-mail addresses of NOVAC members for a NOVAC mailing list. If you would be interested in being on the list, send me mail at jstewart@telenet.com or telenet!maunaloa!jstewart@uunet.UU.NET. Examples of the kind of things I have been sending to the list are reminders about scheduled observing sessions at Savage and Parcells, announcements for "unscheduled" sessions, info from the Park Service, requests for quick observing session summaries, and so on. I expect there may be other uses for the list.

Since I haven't been able to convince the administrator here to give me an address for the mailing list, send mail for the list to me, with a message subject beginning with "NOVAC:". My mailer will automatically forward it to everybody on the mailing list. Do make sure to put your e-mail address in your message. I believe all messages from the list will have my return address on them. If you forget the "NOVAC:", I will try to figure out whether the message was for the list and send a message asking. □

Eclipse Viewing from Chile by Guy Brandenburg

I was fortunate to see the total solar eclipse of November 3, 1994 from the northern Atacama Desert in Chile as part of an expedition organized by *Eclipse Edge Expeditions*. Neither words nor pictures can do justice to such a magnificent event. No photograph or videotape comes close to capturing the beauty and detail of an eclipse. The human eye, on the other hand, can adjust for and simultaneously comprehend a wide range of light levels allowing me to make a detailed drawing of details lost to conventional film and video imaging methods. I made my observations about two miles inside the southern edge of the band of totality.

Astronomer Tom Van Flandern of Meta Research Foundation (formerly with the U.S. Naval Observatory) was the main organizer of the trip. His bulletins argued that you can best see most interesting phenomena associated with eclipses near the edge of totality as opposed to the centerline. Such phenomena include red chromosphere, Bailey's beads, the "diamond-ring" effect and shadow bands. Although totality is shorter at the edge, there is considerably more detail visible. Van Flandern claims astronomers have been going to the centerline of eclipses for over a century simply because it was the tradition.

I can personally vouch for most of this theory. I didn't time the "beads" (the part where the last part of the sun shines through the valleys on the edge of the moon), but the "diamond ring" lasted for about ten seconds on either side of totality. I saw the red chromosphere and two large prominences for the full 45 seconds of totality through my six-inch f/8 Dobsonian reflector. It was truly amazing. The corona, which is what one usually sees in eclipse photos, was striking. Venus was easily visible next to the sun, but I didn't take the time to search for Jupiter or Mercury.

By way of comparison, I spoke to members of a French group and a German group. Only one of the four Francophones with whom I spoke remembered seeing the red chromosphere at all and that for about a second. Their totality was a bit over twice as long as ours, about two minutes. They had stayed in the Lauca National Park (Chile) high in the Andes near the Bolivian border at about 12,000 feet for a week so that they could get accustomed to the altitude. They also had to endure chilling nighttime temperatures. They were openly incredulous when I told them what we saw.

The German group, who had observed near Lake Chungara (also near Bolivia) said that they saw about one second each of

chromosphere and diamond rings, and frankly didn't believe me when I told them what we saw. ("It is not possible...") It helped a bit when I had four or five other witnesses from our expedition and that I had timed the videos other members had taken. I might mention with 45 seconds of chromosphere visible (in this my only eclipse) I've seen more of it than most professional astronomers have seen in their entire lives! Later one of the Germans said, "Maybe in 1999, we also will view the eclipse in Turkey from the edge."

I found that the easiest way to view the partial phases of an eclipse is to project the image onto a large white surface. It's easier on the eyes than squinting through even the friendliest eyepiece, and lots of people can see sunspots and mountains on the moon at once. You can get very interesting effects this way when the sun is partially obscured by haze, and it photographs well.

The Atacama desert, where we observed, is so dry it's hard to believe. Every other desert I've seen (Sonoran, Mojave, Sinai, Negev) has some plants. Not the Atacama. Even most of the old *wadis* or *arroyos* or *quebradas* are without vegetation, even at the bottom. We drove for hours through dust, sand and rocks and ended up at a little oasis called Codpa, which was watered by snows from the Andes. I asked the locals in my lousy Spanish how often it rained there. They had never seen rain their entire lives. The other deserts I mentioned all have rainy periods.

Tom Van Flandern's unorthodox theories are fascinating. He does not believe in the Big Bang nor in black holes, and believes that comets and asteroids were formed from a planet that exploded in the gap between Mars and Jupiter about 3.2 million years ago.

With the dictatorship over in Chile, the economy is booming. The US dollar buys a lot and is legal tender. Santiago is a gorgeous city set at the base of the snow-capped Andes. There are numerous pre-Columbian artifacts, the food is good, the countryside beautiful, the people very friendly and the southern constellations are incredible! The Magellanic clouds are impressive; Alpha Centauri is a bright and beautiful double; Sagittarius and Scorpio are upside-down, as is Orion. There are more globular clusters and beautiful open clusters in the southern hemisphere than one can ever see here in the northern hemisphere.

For me, seeing the eclipse was only part of the story. Viewing the southern skies that we can never see here; visiting South America for the first time; and sharing this experience with my students here in DC, were invaluable parts of a marvelous journey. □

Sky Sweep: Open Clusters of the Winter Milky Way

by Kevin Jones

This installment of Sky Sweep, in a continuing series highlighting each of the 110 Messier objects, examines three open clusters high in the northern Milky Way. These clusters are M52 and M103 in Cassiopeia and M34 in Perseus.

The first of these three objects, M52, is located in the Milky Way between Cassiopeia and Cepheus. This cluster is seventh magnitude, one-fifth of a degree in diameter, and contains about 100 or 150 stars. It is located on the order of 4000 light-years distant, in the plane of our galaxy. Telescopically, this cluster is a nice low-power object. It is also a beautiful sight through binoculars, surrounded by a rich starry field.

M103 is located along the side of the "W" of Cassiopeia closest to Perseus. This cluster is, like M52, seventh magnitude, but has a diameter only half that of M52. The brightest stars of this cluster are concentrated in an elongated bar crossing the cluster's center, making M103 easy to notice in telescopes and higher-powered binoculars. Although its shape may make M103 noticeable, it does not make M103 spectacular as this cluster is a rather unimpressive loose aggregate of only a few dozen stars. M103 is thought to be located a distance of about 8000 light-years, twice that of M52.

The third cluster to examine this January and February is M34, a pretty-looking open cluster in Perseus. M34 is located nearly on a line between the bright stars Algol (Beta Persei) and Almach (Gamma Andromedae), slightly closer to Algol. M34 is a bright, coarse cluster, shining at sixth magnitude. This cluster can be glimpsed without optical aid under the darkest of skies. Its brightness, size, and coarseness make it an excellent binocular object. Through telescopes, the lowest powers will give the best views of this cluster. It is similar in angular size to M52, but is located at only about half of M52's distance, which means that M34 must be a physically smaller cluster than M52.

These three objects should serve as a good warm-up for a long night of winter observing. Be sure to bundle up and keep warm! Clear skies to all in 1995. □

Announcing the 1995 NOVAC Annual Meeting

Tuesday, January 19, 1995
7:30 P.M.

at the home of Brenda Jones
883 North Kentucky Street
Arlington, Virginia



Sky Calendar for January/February 1995

Compiled by Luke Ward

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



January Events

- 1 *Evening*- Mercury 3° S. of Neptune
New Moon
Observing at Savage Farm
- 3 *Evening*- Mercury 2° S. of Uranus
Mars stationary
Quadrantid Meteor Shower Peaks
- 5 *Evening*- Saturn below Moon After sunset
- 8 First Quarter Moon
- 13 *Morning*- Venus at greatest western elongation (47°)
Noon- Uranus in conjunction with Sun
- 14 *Morning*- Venus 3° N. of Jupiter
- 16 Uranus in conjunction with Sun
Full Moon
- 18 **Meeting at Arlington Planetarium**
- 19 Mercury at greatest eastern elongation
- 20 **Observing at Crockett Park/Savage Farm**
- 21 **Observing at Crockett Park/Savage Farm**
- 22 *Morning*- Jupiter 5° N. of Antares
- 24 Last-Quarter Moon
- 25 Mercury stationary
- 27 *Morning*- Moon 0.2° N. of Venus
Observing at Crockett Park/Savage Farm
- 28 **Observing at Crockett Park/Savage Farm**
- 30 New Moon

February Events

- 2 Moon 6° N. of Saturn
Ceres at opposition
Observing at Savage Farm
- 3 Mercury at inferior conjunction
Observing at Savage Farm
- 4 **Observing at Savage Farm**
- 7 First-Quarter Moon
- 11 Mars at opposition (closest to Earth)
- 15 **Meeting at Arlington Planetarium**
Full Moon
Mercury stationary
- 22 Moon 2° N. of Jupiter
Last-Quarter Moon
- 24 **Observing at Crockett Park**
Observing at Savage Farm
- 25 **Observing at Crockett Park**
Observing at Savage Farm
Moon 4° N. of Venus
- 26 *Morning*- Venus 0.7° N. of Neptune
Observing at Savage Farm
- 27 Moon 5° N. of Mercury

For more information on local events and satellite passes, call the Smithsonian Sky Watcher's report at 202-357-2000.






Upcoming NOVAC Meeting Programs

January 18 at 7:30 PM: The January program will feature E. E. (Sandy) Sanders who will report on the *Paraguayan Total Eclipse*. Sandy traveled to Paraguay to view the November 3, 1994 total solar eclipse. His report will feature a slide presentation.

February 15 at 7:30 PM: *Choosing and Using Binoculars* is the topic for this session featuring Bob L'Hommedieu. Those looking for a less expensive alternative to buying a telescope will find this session useful and informative.

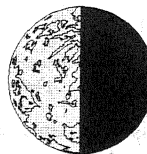
Monthly NOVAC General Membership Meetings are held the third Wednesday of every month at 7:30 PM at the Arlington County Planetarium, 1426 N. Quincy Street, Arlington, VA. Admission is free and open to the public. Call the NOVAC hotline (703) 256-8359 for upcoming events, special announcements or to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

Planetary Positions for January and February 1995

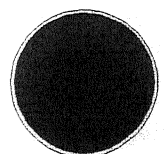
-  **Mercury** Reaches 19° elongation in evening sky on Jan 19 and soon sinks out of view. Returns again in morning sky, reaching max of 29° elongation on Mar 1.
-  **Venus** Curving downward in morning sky, passes closest to Jupiter on Jan 14.
-  **Mars** Visible in the early evening sky, found in Leo near Regulus. Mag -0.4 on Jan 1, peaks at opposition on Feb 12 at mag -1.2, dims slightly afterwards. Telescopic detail most visible during February.
-  **Jupiter** Follows a straight path, climbing in morning sky.
-  **Saturn** Sets very soon after sun, sinking into sun's glare.

Lunar Phases for January and February 1995

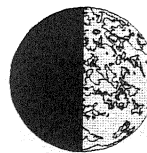
Last Quarter
January 24
February 22



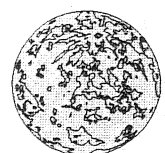
New Moon
January 1
January 30



First Quarter
January 8
February 7



Full Moon
January 16
February 15



The 1994 NOVAC Membership Survey: Summary of Results

by Thomas S. Parry

A major goal of NOVAC Officers and Trustees this year was to get a better understanding of the range of interests and expectations of our club members. A club as large and diverse as NOVAC with a constantly changing demographic composition provides many challenges in terms of planning and meeting member needs. Although NOVAC provides a wide range of member services and benefits, it is important to know how current programs are meeting needs and to plan for future activities. It was felt a survey would be the best way to reach all of our club members and obtain this vital information.

The 1994 NOVAC membership survey was developed in the spring (May and June) and mailed out to the membership with the July/August Issue (Issue 54) of the NOVAC Newsletter. Returns began to come in within a week of the mailing and continued through mid September. Data were collated and analyzed in the latter half of September and first week of October and briefed to NOVAC Officers and Trustees in the October Board of Directors Meeting and to the Club membership October 19 at the general membership meeting. This report of the survey findings is provided for the benefit of all club members but particularly for those who do not regularly attend meetings or participate in club activities. Although survey results have been analyzed and are final, if you did not respond to the survey and/or would like to make suggestions or pass on any thoughts that could benefit NOVAC in its planning efforts, please contact a Club Officer or Trustee.

Background and Demographics

The survey was mailed out with the July/August 1994 issue of the NOVAC Newsletter to 175 club members. Of the 175 recipients, 15 are considered complimentary memberships that include owners of local telescope shops, planetarium operators, observatories and an additional assorted dues-paying members who reside outside the local area. Therefore, 160 members was the population base surveyed and used as the basis for calculating the rate of return. Of the 160 dues-paying members in the Northern Virginia Area surveyed, 75 returned their surveys constituting a 47% rate of return. This is an exceptionally high number of returns and we in the NOVAC leadership appreciate the time and effort everyone made to get their survey back to us.

It is interesting to note that of the 160 members noted above, approximately 50% of those or 80 people per year drop out of NOVAC while an approximately equal number join as new members. What this means is that we have the other 50% or 80 individuals who are renewing (continuing) members from whom we received the majority of the 75 responses. We feel we have a very good representation of the

cross section of the NOVAC membership.

The survey covered four areas: monthly membership meetings, observing and observing sites, NOVAC Newsletter, and a miscellaneous area that includes stating preferences for future activities, reasons for joining NOVAC and indicators of overall satisfaction with NOVAC. There were a total of 20 questions—most of which were multiple-choice response with some short answer fill-in-the-blanks. This summary will cover responses to each question asked in the above categories.

Monthly Membership Meetings

Question 1: How often do you attend the monthly NOVAC Membership meetings? Approximately 25% of the respondents indicated they don't attend the meetings while 31.5% attend almost all the time and 43.5% attend sometimes. It is interesting to note that meeting attendance has been on a steady increase over the past three years (see Figure 1).

There are only two periods during the year when meeting attendance falls. The first is mid-winter during January and February due to cold or inclement weather and during the summer months at the peak of vacation season.

Question 2: Do the meetings meet your expectations? Ninety-three percent of the respondents felt that NOVAC meetings are meeting their expectations. This is particularly gratifying to NOVAC leaders who dedicate a great deal of time planning the programs. Of the seven percent who feel their expectations are not met by the meetings, indications are that some programs were too advanced for them. There is evidence of a significant number of individuals in NOVAC seeking very basic information and understanding about astronomy and we recognize that these needs must be met.

Question 3: What is the MOST valuable aspect of the monthly meetings for you? The main program is the primary reason members attend the meetings (42.5%), followed by the opportunity to socialize (13.7%), and the observing report (12.3%). Four percent feel the business meeting segment is the most valuable to them

and 4% are unsure what is most important to them. Twenty-three percent of those responding to this question do not attend any meetings.

Question 4: If you don't attend the meetings, what is it that most often prevents you from attending? The majority of respondents (29%) don't attend because they are too busy. Meeting location poses a challenge for 20% and 17% have schedule conflicts with the day and time established for the meetings. Thirty percent do not attend for "other" reasons related to scheduling priorities, family responsibilities and extended work hours. Although there has been discussion of alternative

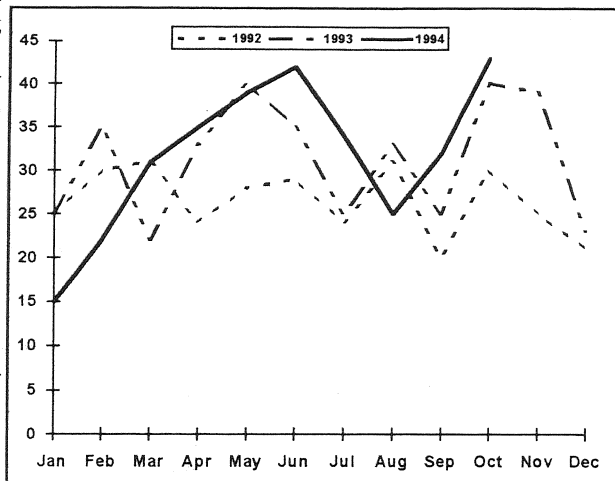


Figure 1. NOVAC meeting attendance for past three years

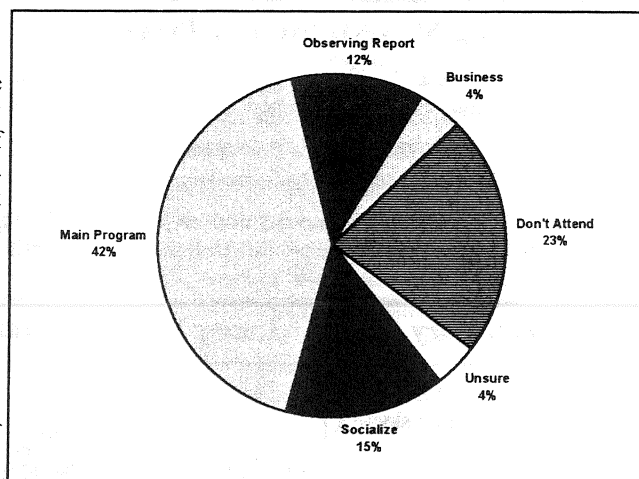


Figure 2. Most valuable aspect of monthly meetings

meeting times and days, there is no plan to make any changes in the foreseeable future.

Question 5: How would you rate the quality of facilities for the monthly meetings? Seventy-five percent of respondents rated the Arlington planetarium facility as "good" to "excellent." Twenty-one percent "don't know" as they are the same who do not attend meetings. The very few who rate the facilities "poor" to "fair" express concern about the acoustic properties of the planetarium and lack of seating comfort; problems over which we have no control.

Question 6: How would you like to see the meetings improved? Thirty-eight respondents provided written responses to this question. Salient points are: (1) more beginner-level programs, (2) larger meeting facility, (3) reduced business segment, (4) expand the observing report to include monthly sky show with the planetarium projector, and (5) place a sign outside the planetarium to welcome guests and visitors.

Question 7: What topics would you like to see discussed at the monthly meetings? There were 85 suggestions made for monthly meeting topics. These were analyzed for overlap and duplicity and fell into six broad categories. The categories and number of suggestions made in each are as follows: Observing (23), telescope use and maintenance (15), telescope making (14), technical (11), astrophotography and CCD computer applications (10), other/miscellaneous (11).

Observing/Observing Site

Question 8: How important is observing to you? Survey responses to this question confirm that NOVAC is an "observing" club. Fifty-seven percent rate observing as "very important" followed by 31% for whom observing is "important." Only 11% feel observing is "somewhat important" and one percent "not important" (See Figure 2).

Question 9: In what area of astronomical observing are you most interested? As expected, the majority of NOVAC members (54%) are deep sky observers. An unexpected finding is that a large 34% are planetary observers. Only 11% are binocular/naked eye observers and one percent don't observe at all. No one surveyed indicated any interest in double or variable star observing.

Question 10: If you don't observe, what is the reason? Reasons stated for not observing include family commitments, lack of telescope or optical aid, frequent cloudy nights, poor vision, and excessive light pollution.

Question 11: In the past year, how often have you been out to Crockett Park to observe? Most NOVAC members (44%) observed out at Crockett Park 1-5 times in the last year. Only 18% were out 6-10 times, three percent 11-15 times and seven percent more than 15 times. Twenty-eight percent did not observe at Crockett Park in the last year.

Question 12: How satisfied are you overall with Crockett Park as a club observing site? Almost half of the respondents (41.43%) indicated they are "satisfied" with Crockett Park. A few more (7.14%) are "very satisfied." Although 15.72% don't observe at Crockett Park, 27.14% are "neutral" about the site and a small minority (8.57%) are dissatisfied. No one responding to the survey was "very dissatisfied."

The fact that so many members expressed satisfaction with Crockett Park is surprising given the increase in light pollution at the park and amount of complaints heard on a typical observing night. The fact that it is an established site and a "sure thing" as well as a generally good compromise between dark skies and driving distance without doubt plays into the distribution of responses.

Question 13: How interested are you in NOVAC finding an observing site with darker skies? As expected, 48% of respondents are "very interested" in finding a darker-sky site and 47% are "interested." Combining positive responses, 95% percent of club members have a lot of interest in this. Although NOVAC has brought two new observing

sites on line this year, neither has significantly darker skies. The problems we continue to encounter in finding a darker-sky site is time to explore the surrounding area at a suitable distance from the metro area and the time problem many have in driving the distance required to get to such a site. Again, this is why satisfaction with Crockett Park is high; it is a good compromise between dark skies and long driving times.

Question 14: How long would you be willing to drive to a good dark sky site for a night's observing? This is where the "rubber meets the road." Forty-six percent of respondents indicate they are willing to drive 61-90 minutes to get to a dark-sky site. Fourteen percent are willing to drive longer than 90 minutes. Of course time and distance are relative depending on where people live. Reality, however, dictates that no less than 90 minutes are needed to get to any suitable site and two hours may be more accurate. Thirty-six percent are willing to drive only 30-60 minutes and three percent less than 30 minutes.

NOVAC Newsletter

Question 15: Is the information in the NOVAC Newsletter generally clear and easy to use? Ninety-six percent of respondents say "yes." Only four percent say "no." Those responding in the negative had no comments. As editor of our publication, I'm gratified by this response.

Question 16: Please rate each of the features of the NOVAC Newsletter based on their degree of usefulness to you. Given the amount of information derived from individual ratings of each of the newsletter features, there is not adequate space to report it here. This information can, however, be reviewed in its entirety in the 50-page final report. Contact a club Officer or Trustee for details on the report. All newsletter features were rated highly in terms of usefulness to our

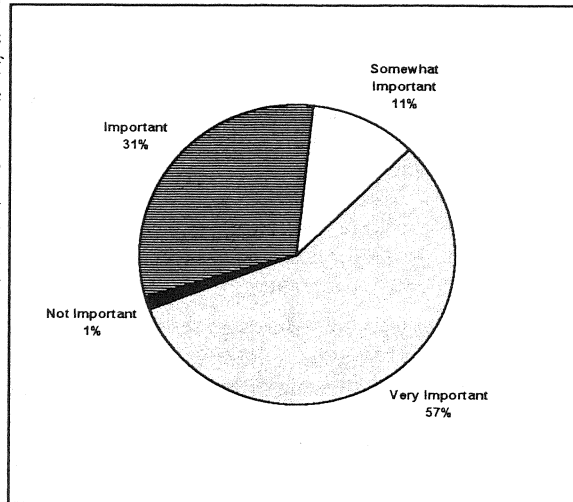


Figure 3. Importance of Observing to NOVAC members

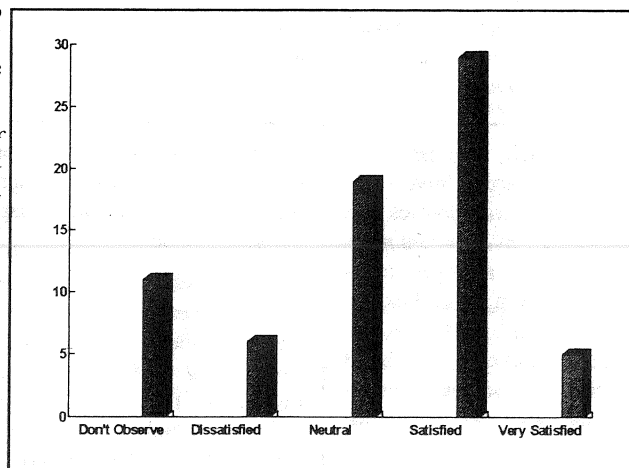


Figure 4. Overall club satisfaction with Crockett Park

membership and data will be used for continuous improvement of our club publication.

Question 17: *How could the NOVAC Newsletter be improved to better meet your needs?* Some 24 suggestions were made, many of which overlapped. The most salient suggestions were: (1) Expand *Sky Calendar* to include information on local events, (2) seek more professional astronomer contributions, and (3) improve reproduction of the graphics. Concerning reproduction of the graphics, we are limited by our budget on printing costs, and although output images and graphics are of very high quality, that quality is lost in production-level copying. This is an area that will receive continued attention in the 1995 volume.

General/Miscellaneous

Question 18: *In which of the following activities would you most like to participate?* This is a key question to aid in planning for the next several years ahead. We needed an indication of what members would most like to do in NOVAC. The responses are reported below in the order of most to least interest.

Activity	Percentage
Field trips to local observatories	64
Establish permanent club observing site	45

Public education/promotion of astronomy	42
Annual picnic and other social events	30
Organize public star parties	27
Special interest/discussion groups	22
Promote light pollution awareness	21
Contribute article to NOVAC Newsletter	18
Present program in a monthly meeting	11
Serve as NOVAC Trustee or Officer	4
Fundraising	3

Question 19: *What was your primary reason(s) for joining NOVAC?* There were 84 responses to this question. The responses, however, focused on: (1) Meet and associate with people having similar interests, (2) astronomy education, (3) access to dark-sky sites, (4) receive the newsletter, (5) learn about telescopes and telescope operation, (6) learn observational techniques.

Question 20: *Have your expectations been met?* A good gauge of success is to determine whether or not member's expectations are being met. Information from this question helps us know if the services and benefits NOVAC offers are on target in meeting needs. If not, we must find ways to do so. Fifty out of 59 respondents to this question indicate that their expectations have been met. For six individuals, NOVAC has not met their expectations and three indicate only partly. The vast majority of comments were very positive. Of those whose expectations

have not been met, comments included "not yet finding a dark-sky site or establishing a club observatory," "people at meetings don't socialize much," and "I'm too out of touch." Those responding "partly" are individuals who recently joined NOVAC.

Conclusion

Since this survey was completed, NOVAC leadership has learned a great deal about the health of our club and where we are headed in the future. Overall, NOVAC is a healthy, dynamic and growing organization with talented, knowledgeable members. We also discovered from this survey that there is a significant number of novice members whose needs in some cases are not fully being met. This, along with many other issues, will be a topic of focus in our 1995 programs as we seek to bring these individuals into full involvement in club activities.

Although this survey is over, it is the desire of NOVAC leadership that members come forward and offer their ideas and suggestions at any time on how we can make NOVAC meaningful and relevant to you. This is your astronomy club. The more you get involved, the more you gain in return. □

Ptolemy's Star Catalog

by Alexander L. White

*Editor's Note: Just days after submitting this article for publication last June, Alexander White passed away. A retired research chemist, Alex was a devoted student of the sciences and had been an amateur astronomer since 1940. With particular interest in the history of astronomy, Alex came upon the research work of Robert R. Newton of Johns Hopkins University who studied the *Almagest* and other historical writings. Alex wrote an article on planet position calculations using epicyclic models that was published in the November/December 1993 issue of the NOVAC Newsletter. This is his last writing. We at NOVAC will miss Alexander White. He was a brilliant and creative thinker and scholar who challenged our thinking and pushed us to a higher level of awareness.*

Robert R. Newton and Owen J. Gingerich, professors of Astronomy at Johns Hopkins and Harvard Universities respectively, have conducted numerous research studies and published extensively on the history of astronomy. Newton made an extensive examination of Ptolemy's *Almagest* and specifically studied Claudius Ptolemy's star catalog.⁵ Newton describes the distribution of *functions of a degree* in the star catalog.⁶ With reference to Ptolemy's catalog, Gingerich³ found the catalog puzzling and that it contained errors in the reported analyses. I, therefore, sought to review the catalog myself and conduct my own statistical analysis. That is the subject of this article.

Ptolemy's Catalog is the oldest extensive star catalog that has survived. Position accuracy of charted objects was tested by Cohen and Drabkin (1966)¹ using data from Peters and Knobel (1915).⁷ The star positions in Cepheus, Corona Borealis and Lyra were computed for 100 AD and compared to those in the *Almagest* book VII, section 5. Ptolemy said that the longitudes were for 137 AD. The Catalog has ecliptic coordinates. Modern ecliptic longitudes are measured eastward from the vernal equinox along the ecliptic circle. Latitudes are measured northward or southward from this circle. Ptolemy measured the longitudes eastward from the beginning of each 30 degree zodiacal sign.

Cohen and Drabkin pointed out that the latitudes agree very closely with modern values and the longitudes have a mean error of about one degree. I found Ptolemy's magnitudes to agree well with the Harvard photographic ones given.

The source of the stellar observations is unclear. Hipparchus made an earlier star catalog that is not available today. It is believed to have contained about 850 stars mentioned in Hipparchus' *Commentary on Aratus and Eudoxus*.⁴ Gingerich³ gave J. L. E. Dreyer's 1917 suggestion that perhaps part of Ptolemy's catalog came from Hipparchus, and stars with one-quarter degree fractions were Ptolemy's own additions. Dreyer² gives the date of 129 BC. for Hipparchus' catalog and 137 AD for Ptolemy's catalog.

Although Ptolemy's catalog of 1,028 stars contains multiples of *one-sixth* and *one-quarter* degree fractions, Newton⁶ prepared his theoretical distribution of the fractions assuming that degree intervals of instrument circles were not divided. Ptolemy said that the degree intervals of his ring astrolabe (armillary sphere with sights) were divided into as many parts as was practical. Newton took the star positions for his distribution table from Peters and Knobel (1915) and omitted one longitude and two latitude fraction readings that were

considered questionable. Newton's expected numbers of observed fractions may be calculated by multiplying 1026 by one-sixth for zero and 30 minutes of arc, by one-eighth for 10, 20, 40, and 50 minutes; and by one twelfth for 15 and 45 minutes. The product of trials and probabilities equals expectation. Newton does not say why he chose one-sixth, one-eighth, and one-twelfth and indicates that he very well could have used one-eighth for each fraction. Gingerich³ said the fit was very close for the latitude fractions! Newton judged Ptolemy's latitude fractions to be homogeneous based on this agreement. He said further that the longitude fractions did not come from any possible body of observations and the odds are one billion to one that Ptolemy's data was fabricated!

Newton's assumption requires the observer to estimate fractions of 0, 10, 15, 20, 30, 40, 45, and 50 minutes without division of degree intervals. This estimating ability is doubtful and it is not clear that the probabilities of these fractions should vary as chosen by Newton. One could just as well assume that the chance occurrence of each of the eight selected fractions is about equally likely. The probability of occurrence of each fraction would then be about one-eighth and the expected bar lengths 128 measurements. I find that Ptolemy's data does not agree with this expectation. Ptolemy's longitude fraction readings have only about eight one-quarter degree fractions. Since these readings have essentially all one-sixth degree fractions they should be compared to a distribution of one-sixth degree fractions. The probability of each fraction is clearly 1/6 and this distribution can be shown on a bar graph as a dotted line at 171 measurements. I will discuss this unsatisfactory fit later.

Gingerich said that Newton believed the fractions 5, 10, 15, and 20 minutes etc. were equally probable. Newton, however, used three probabilities in his distribution and there are no 1/12 degree readings in the catalog. Both scholars, however, seem unaware of the importance of testing the longitude fractions with a distribution of 1/6 fractions.

Gingerich said a better fit than that obtained by Newton can be found. A distribution is prepared assuming that the latitude fractions of 300 stars were observed using 1/4-degree divisions and the rest with 1/6-degree divisions. I prepared a similar distribution (see Figure 4), but used 276 stars since a slightly better fit was found. The zero and 1/2-degree readings can be made using 1/6- or 1/4-degree divisions and the sum of 125 and 69 was used for their expected occurrence. This fit for latitudes is as good as that found with Newton's distribution, which assumes the degree intervals were not divided.

The 138 latitude fraction readings of 1/4 and 3/4 degrees that I found in the *Almagest* imply that there are also about that many 1/4-degree measurements contained in the zero- and 1/2-degree readings. Twice 138 equals 276, the number of stars found for best fit in the bar graph

of Figure 4. Since the best fit was not obtained with 178 stars (1028 - 850), this test does not support Dreyer's suggestion that perhaps stars with 1/4-degree fractions were Ptolemy's own additions. The estimated 284 1/4-degree measurements in the catalog does not equal 178. The presence of many 1/4-degree fraction readings for latitudes and only about eight for longitudes would be unexpected unless degree intervals were divided and suggests that two types of circle divisions were probably used.

The unsatisfactory fit for longitude fractions may be due to insufficiently accurate measurements. The readings had to be made quickly due to the earth's rotation and it is unlikely they were accurate enough to give good agreement. This unsatisfactory fit should make us cautious of making firm conclusions from the distribution of fractions in the catalog.

The sample used by Cohen and Drabkin to test star position accuracy may not be as large and random as is needed. The date of computation chosen is only approximately that of the catalog. I see no reason to be sure that Ptolemy's latitude fraction data is homogenous nor do I believe there was fabrication of the longitude fractions. With reservations, Ptolemy's statement about divisions of degrees and the fractions I find in the catalog suggest that 1/6 and 1/4 circle divisions were used. The catalog no longer seems puzzling after such a careful statistical examination.

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3. Gingerich, Owen. *The Great Copernicus Chase*. Cambridge MA: Sky Publishing Co. (1992), pp. 25, 26.
4. Hipparchus. *Commentary on Aratus and Eudoxus*. ca 135 BC. There is an edition with a parallel German translation by Manitius, K. and Teubner, B. G. Leipzig (1894).
5. Hutchens, Robert M. *Ptolemy, Copernicus, Kepler* in "Great Books of the Western World." Chicago: Encyclopedia Britannica (1952), p. 234. (Contains the *Almagest*.)
6. Newton, Robert R. *The Crime of Claudius Ptolemy*. Baltimore MD: The Johns Hopkins University Press (1978), pp. 240, 245, 248, 401.
7. Peters, C.H.F. and Knobel, E.B. *Ptolemy's Catalog of Stars*. Washington DC: The Carnegie Institution of Washington (1915). □

Competition is Great

by Al & Lynn Schumann

Once upon a time, if you wanted a Schmidt-Cassegrain telescope (SCT) it was going to be an F-10. Oh sure, there were telecompressors and various rich field adapters available for temporary conversion, but basically you still had an F-10 instrument. Then, a few years ago the Meade people unleashed a right hook at the opposition by introducing an F-6.3 SCT. It gave the user a wider field of view without sacrificing the ability to use very high power. Also, it made for shorter exposure times for

astrophotography. With some slick "be the first kid on the block to have one" type advertising Meade must have sold a bunch of them. Cutting exposure times in half didn't hurt sales amongst the deep sky photo hobbyists either. It wasn't long before Celestron stepped inside and counter punched with a reducer-corrector of their own which could be screwed onto the rear of the mirror cell and convert virtually any F-10 SCT to an F-6.3 telescope. Not only that, but owners of Meade 6.3 instruments could use the Celestron reducer to convert their existing F-6.3 scopes to F-4 telescopes. Furthermore, the new reducer was also a coma corrector, so

you had a nice flat field of view. Wow! That sounds like a George Foreman finish, right? Well, not quite. The reducer/corrector sold for a somewhat high \$250.00. Meade not only weathered the blow, but came back swinging with a similar reducer/corrector--at about half the price. Shortly after that, the price of Celestron's reducer plummeted. After all that jabbing and punching who won? WE DID! It was a classic example of the free market in action, and we end up getting the goods we want at the best prices.

Not all that long ago a six-inch reflector was considered a good-sized telescope. John Dobson helped to change all that when he

invented the mount that bears his name. That simple, easy-to-build mount opened the door to the big light buckets we see in such profusion today. The Coulter Optical Co. was one of the first to dive into the business of marketing fairly large reflectors at a reasonable price. Early on, you could buy an eight-inch Coulter for the same money you would spend for some of those department store telescopes with 500 power and rickety mounts. A lot of people tend to heap scorn on Coulter, but you have to keep things in perspective. A novice could see a lot more, and see it better, through the eight-inch Coulter than through one of those two-inch refractors being sold at Monkey Ward's. Anyhow, Coulter sales must have been pretty good, because it appeared there was usually a waiting period for a telescope. With the market cornered, life was sweet. Now maybe it's just a coincidence, but Coulter raised their prices a couple years ago. Shortly thereafter, Orion burst upon the scene with a whole line of inexpensive dobsonians. Not to be left out, Meade also entered the fray with a series of their own. Thus, the jabbing and sparring goes on, and the result is choice. Just think of the choice of "starter" scopes that amateur astronomers have today compared with ten years ago.

Of course, telescopes are just the start. The accessory wars are really something else. You can see it in eyepieces--no pun intended. There's something for everybody--from economical orthoscopes to plossls, super plossls, wide fields, super wide fields, ultra wide field and what

all. Everyone is trying to make a buck, and while they are cutting each other's throats, we end up with enormous selections and an equally wide range of prices. It wasn't long ago that there were two CCD cameras on the market. Lynx and SBIG come to mind. In the January 1995 issue of Sky and Telescope, Meade has an advertisement for six, count them, six CCD cameras! The stuff available is truly dazzling, and you can bet that as more companies come on board the prices of today's exotic equipment will drop. The companies actually making all this equipment aren't the only ones engaged in fierce competition. Just look at the outlets selling the stuff through advertisements in Astronomy and Sky and Telescope. Adorama, Lumicon, Pocono Mountain Optics, etc. Judicious shopping in the magazines can save the buyer even more. Those are just the big outfits. Amateur astronomers are an inventive bunch, and there is a great deal of new stuff in the marketplace sections of the magazines. You never know when a little gem is going to show up at a price you can't refuse.

Don't overlook the used products. With technology zooming along the way it is, telescopes and electronics become obsolete rather quickly. There is always someone who simply can't live without having the very latest and greatest gear available. Suddenly, the telescope that was bought a couple years ago, and used only three times, is up for grabs at a bargain basement price. Free market competition. We love it! □

Notices Notices Notices

NOVAC Notices Notices Notices

NOVAC Notices and Benefits

Discounts on Sky & Telescope

As a member of NOVAC you can get a subscription to Sky & Telescope for \$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 \$18.00 (note increase from \$16.00). This is a significant discount over the usual \$24.00 rate. A two-year subscription costs \$36.00. To start a new subscription or renew an established subscription, make your check payable to KALMBACH PUBLISHING COMPANY for \$18.00 (one-year subscription) or \$36.00 (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 (f75) 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 January/February 1995

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

January 20, 21, 27, 28

February 24, 25

Observing at Parsells Field

Observing dates to be announced

General Membership Meetings

General Membership Meetings are held at the Arlington Planetarium on the third Wednesday of every month. Meetings will be held January 18 and February 15 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 please park in the parking area on the right (as you face the patio). □

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Eyepieces 2" & 1.25"	12v lighter plug

**Contact: Robert A. Owen
4856 Woodie Ct.**

Woodbridge, VA 22193 (703) 590-5678

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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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Images: Saturn's Dynamic Atmosphere



Hubble Space Telescope image of Saturn showing major storm in upper cloud deck near the equatorial region. Image courtesy Space Telescope Science Institute and National Aeronautics and Space Administration.

NOVAC

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



NOVAC Observing Schedule for 1995 C.M. Crockett Park and Savage Farm

Jan	20, 21, 27, 28	July	1, 21, 22, 28, 29
Feb	24, 25	Aug	18, 19, 25, 26
Mar	3, 4, 24, 25, 31	Sep	15, 16, 22, 23
Apr	1, 21, 22, 28, 29	Oct	20, 21, 27, 28
May	26, 27	Nov	17, 18, 24, 25
Jun	2, 3, 23, 24, 30	Dec	15, 16, 22, 23

12/95 - \$0.

Robert E. Riddley
 3213 Korte Ct.
 Falls Church, VA. 22042-3760