

Comet memories

by HaoQi (Esther) Li

In May 2004, many area astronomers were observing Comet NEAT C/2001 Q4. Even in the light pollution of Fairfax City, I was fortunate to catch the comet in one of the club's 4-inch Starblast loaner scopes. It looked like a filled-in letter "D" but without the long tail one expects with a comet. Still, NEAT was a welcomed treat that reminded me of the night my grandfather and I saw Comet Hale-Bopp in 1997, with its gorgeous split tail and a coma so bright it was easily visible to the naked eye. My grandfather has always regretted missing Halley's Comet when it last entered our night sky 18 years ago.

My comet memories, as well as those of my grandfather, prompted me to ask other NOVAC members about their comet observations over the years and decades. The response was incredible, not only in number but also in the thoughtful commentary and interesting anecdotes each contained. Comets appear to be frequent enough to enable comparison, yet they are rare enough—especially the bright ones—that their appearances are not quickly forgotten. They become associated with the family and friends as well as the places we observe them, and their unpredictability can leave us awe-struck or disappointed.

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MESSAGE FROM THE PRESIDENT

Breaking out of the "10% rule"

At last month's general meeting I offered a plea for more of you to be involved in club activities. While we had a good turnout for the meeting, I know my message only reached about 10% of the membership. For those of you who couldn't attend, here's the gist of my comments. And be aware, I offer it here in the hope you'll take a step back, look at how you can play a larger role in the club, and then step into that role.



NOVAC President
Rob McKinney

Like many organizations, especially those that are "voluntary," NOVAC has a core of people with the time and energy to take on the work of running the club. Your club has grown and evolved thanks to that small number of dedicated volunteers. That's especially notable in this area for a few reasons.

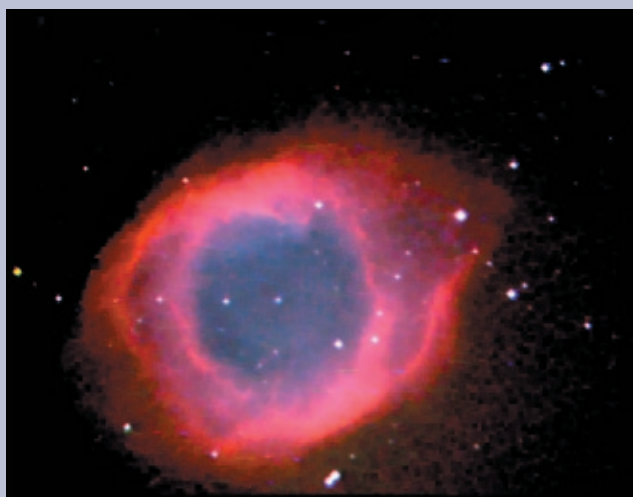
NOVAC (to the best of my knowledge, the largest astronomy club in the country) draws members from a large chunk of the mid-Atlantic metropolitan area. Our members are quite spread out (see the membership maps on our website), so geography is a factor in participation.

Add in the complexity of navigating the road networks, add in the traffic (eek!), add in the time and distance and effort required to find your way out of the light pollution to a reasonable observing location much less to any scheduled activity. It's no surprise we don't see all 800–1,000 of you at our observing sessions or meetings.

And then there's the "rat race" factor. This area is reknowned for being a "go-go-go" place. That doesn't leave much oomph

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ASTROPHOTO CORNER: IMAGES FROM JEFF FORSYTH



NGC 7293, Helix Nebula

- Image taken using a 12" Meade LX200, Pictor 416XTE, color filter wheel, Meade and F/3.3 reducer.
- RGB images—15 frames each color: 30, 30, and 45 seconds.

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Hunting gravitational waves: Space Technology 7

by Patrick L. Barry and Dr. Tony Phillips

Among the mind-blowing implications of Einstein's general theory of relativity, direct verification is still missing for at least one: gravitational waves. When massive objects like black holes move, they ought to create distortions in space-time, and these distortions should spread and propagate as waves—waves in the fabric of space-time itself.

If these waves do exist, they would offer astronomers a penetrating view of events such as the birth of the Universe and the spiraling collisions of giant black holes. The trick is building a gravitational wave detector, and that's not easy.

Ironically, the gravitational waves spawned by these exceedingly violent events are vanishingly feeble. Gravitational waves exert a varying tug on objects, but this tug is so weak that detecting it requires a device of extraordinary sensitivity and a way to shield that device from all other disturbances.

Enter Space Technology 7 (ST-7). This mission, a partnership between NASA's New Millennium Program and the European Space Agency (ESA), will place a satellite into a special orbit around the Sun where the pull of the Earth's and Sun's gravities balance. But even the minute outside forces that remain—such as pressure from sunlight—could interfere with a search for gravitational waves.

To make the satellite virtually disturbance-free, ST-7 will test an experimental technology that counteracts outside forces. This system, called the Disturbance Reduction System (DRS), is so exquisitely sensitive that it can maintain the satellite's path within about a nanometer (millionth of a millimeter) of an undisturbed elliptical orbit.

DRS works by letting two small (4 cm) cubes float freely in the belly of the satellite. The satellite itself shields the cubes from outside forces, so the cubes will naturally follow an undisturbed orbit. The satellite can then adjust its own flight path to match that of the cubes using high-precision ion thrusters. Making the masses cube-shaped lets DRS sense deviations in all 6 directions (3 linear, 3 angular).

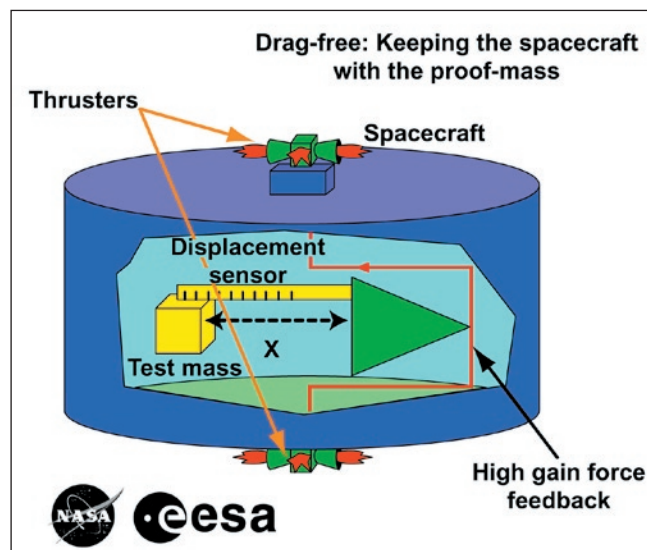
ST-7 is scheduled to fly in 2008, but it's a test mission; it won't search for gravitational waves. That final goal will be achieved by the NASA/ESA LISA mission (Laser Interferometer Space Antenna), which is expected to launch in 2011. LISA will use the DRS technology tested by ST-7 to create the ultra-stable satellite platforms it needs to successfully detect gravitational waves.

If ST-7 and LISA succeed, they'll confirm Einstein (again) and delight astronomers with a new tool for exploring the Universe.

Read more about ST-7 at [http://nmp.jpl.](http://nmp.jpl.nasa.gov/st7)

nmp.jpl.nasa.gov/st7. For kids in a classroom setting, check out the "Dampen that Drift!" article at http://spaceplace.nasa.gov/en/educators/teachers_page2.shtml.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration. ★



Space Technology 7 will test a technology to be used in detecting gravitational waves in space.

Reflections in the eyepiece: Recharging your astro batteries

by Bob Bunge

I rolled the rocker and mirror box of my homemade 20-inch Dob out of the back of the van. As I released the wheelbarrow handles and started to stand up, I heard it.

It was the first time tonight.

Wwwwooooo, whoo coookkeess forr yooooouuuu.

That was worth a smile and almost made the trip worth it, even if it does cloud up. It was a Barred owl, calling from the north side of the clearing. Often another will soon call from another side.

The struts to the 20 were unpacked and inserted into their clamps. As I was moving the ladder to climb up and put the top of the telescope together, the surprise came. Instead of a barred owl, it was the higher pitch; almost screech of a Great Horned owl.

Great Horneds are the king of the owls. They are the largest and are known to take small pets. They also love to prey on smaller owls, like the Barred. It was great to heard the Great Horned, but I knew I'd miss the sing-song play of the Barred through the rest of the night... the Barreds will shut up once they know a hunter is in their territory.

Finishing setup of the scope, I realized the ground was covered with tiny toads. If I walked across the field, they scattered in front of me, like grasshoppers in a field on a summer day.

After setup, I settled into a chair and watched the sunset. It's fun to watch the colors change. The sun was long gone, but the reds, oranges and purples still danced

across the sky. Then came the snort. That was to the east, behind me. For fun, I turned around and snorted back. The reward was another snort. It was coming from the clearing past the line of trees that forms the east side of the observing field.

The buck was never seen, but he clearly saw me. After a couple more exchanges, he got bored and likely wandered off.

A glance showed that old friends were about. Polaris, Regulus and other bright stars

I think, even then, there was a sense that this book was to have a huge impact on my life. More than any other astronomy-related book, Starlight Nights, by Leslie Peltier explains why we like stargazing and how it relates to the world around us.

appeared. In a few minutes, the real business would start, but the trip had already succeeded. My astro batteries had been charged without hardly any starlight. As I rested a moment before doing a two star alignment for the digital setting circles, I thought back 21 years before.

I remember a hand—my hand—running along the bookshelf of a library in a small

village on the north side of Columbus, Ohio. The hand stopped twice. Once was to pull down a volume by Patrick Moore. Technical, loaded with facts and pictures. Educational. Just the sort of book I was looking for.

The other stop was for a smallish blue covered hardback. Almost all words, only a few pencil drawings scattered through the pages. Clearly this volume wasn't technical. Nor did it appear educational. Still, the drawings were pretty neat and clearly this was about my newfound hobby of astronomy. And it looked fun.

I was just 18 and only a month away from finishing high school and enlisting in the Navy. I read the little blue book that night—it's a quick read if you are hungry for information like I was. I think, even then, there was a sense that this book was to have a huge impact on my life. More than any other astronomy-related book, *Starlight Nights*, by Leslie Peltier explains why we like stargazing and how it relates to the world around us.

Peltier, born in 1900, grew up on a farm in northwest Ohio. At age 10, he witnessed both the great daytime comet known only by its number: 1910a and the dimmer, but more famous Halley. By age 16, he had picked strawberries to buy a 2-inch "spy-glass" refractor. Working from the very limited resources available, he first learned the sky and then explored all our favorite deep sky objects. Naturally driven to learn more, he started observing variable stars and reporting his observations to the AAVSO.

Dropped out of the high school so he could help on the farm while his older brother was off fighting WWI, he had time to dedicate to the hobby and dark skies just outside his back door. Sometimes observing more than 190 nights a year, his observations soon caught the attention of professionals who loaned him first, a 4-inch refractor and later a Fitz 6-inch f/8 refractor.

Realizing the unique talents of the short refractor, he started to hunt for comets from his home built observatory dome. By the 1960's, Peltier had discovered a dozen comets and made hundreds of thousands of variable observations.

Peltier's truly unique talent was his ability
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Elections at December 12th general meeting

It's that time again! NOVAC will hold its annual election for officers at the Dec. 12th general meeting. All officer positions (President, Vice-President, Secretary and Treasurer) and three board member seats will be on the ballot.

President Rob McKinney, Treasurer Pedro Martinez and Trustee Bob Stewart have announced their intentions to run again but at this time we have no other candidates for the other slots. Please consider running for any of these positions in the best astronomy club around. The clubs need your help to operate and here's your opportunity to have a position that helps shape the future of the club.

Please send me a note off-list if you are interested in running for any of these positions. All NOVAC members in good standing are eligible to run for office.

—Bob Parks, NOVAC Trustee

Meeting notes

Board of Trustees Meeting

Tuesday, August 3, 2004

- * **Pedro Martinez** provided a review of the NOVAC budget through July 31, 2004.
- * **Phil Wherry** submitted a membership report. He asked at what point should people who are past due with their dues, no longer be considered members. There was general agreement that 30 days after being past due would be appropriate. Renewal forms indicated praise for access to Spruce Knob and the website. One person indicated that NOVAC membership in the Astronomical League was important.
- * It was agreed that August 11 observing of the **Perseid meteor shower** at Crockett should not be open to the public. If Observatory Park opens for meteor shower observing, that information could be relayed in response to public inquiries.
- * **Alan Figgatt** discussed the **Analemma Society's** effort to refurbish the existing building at Observatory Park, while the "roll-off roof" building, which eventually might have a **robotic telescope** in it, awaits site-plan approval. **Bob Parks** noted the possibilities for a NOVAC relationship with the Analemma Society. Others cautioned that the Society focuses on education, while NOVAC prioritizes observing; the two may overlap somewhat but should not do so to the detriment of those wishing simply to observe.
- * **Alan Figgatt** indicated his intention to put together a list of **club-owned eyepieces**. He also said he no longer intends to oversee the club's loaner telescope activity.
- * **Ed Seward** reported his ideas for contacting neighboring astronomy clubs to see about the possibilities for **joint usage of observing sites**. He also raised the possibility of finding additional observing sites in case housing development or sports complexes ruin

the observing at some existing sites. This also raised the issue of finding a **permanent site**, either through the purchase or lease of land. **Bob Parks** reported that the Fairfax County Park Authority would not allow Chapel Road Park to be used as an observing site, citing environmental issues in a watershed-protected area.

HIGHLIGHTS

- **Club membership will now be cancelled if dues payments are over 60 days late**
- **Board elections in December will decide four officer and three of five trustee positions**
- **Only a tiny fraction of club members ever volunteer for outreach events**
- **Next Board meeting scheduled for November 9 to avoid conflict with Election Day**

General Meeting

Sunday, August 8

- * Over 50 people attended the August meeting, which began with a presentation by **James Morgan** of the **Mid-Eastern Region of the Astronomical League (MERAL)** on what the AL does for the clubs which make up its membership and the possibilities for increased regional cooperation among amateur astronomers. He saw light pollution and the ability to draw volunteers as the greatest problems facing local clubs.
- * Various club activities and programs were then discussed, including a **contest for the design of a new club t-shirt**.
- * **Alan Figgatt's Sky Tour** provided details on observing the upcoming Perseid meteor shower. He also highlighted summer and early fall planetary nebulae, which are ionized gases coming from a dying star. In addition to M27, M57,

M76 and M97, he provide a chart of 15 planetaries that are not too hard to observe, particularly recommending the Helix Nebula in Aquarius. He also provided a few from **John Nusbaum's** challenge list and noted that the number of targets increases dramatically as an observer is able to reach the dimmer magnitudes.

- * Club member **Roger Firestone** was the guest speaker, and gave an engaging talk on **celestial mechanics**. Providing a historical overview from the cosmology of the ancients through the Ptolemaic era to the Copernican Revolution and the work of Brahe, Kepler, Galileo and Newton. He then described the elements that go into calculating the movement of celestial objects, and the challenges that arise when doing so when the gravitational effects of more than two bodies are involved.

Board of Trustees Meeting

Tuesday, September 7, 2004

- * **Rob McKinney** and **Ed Seward** reported on progress in preparation for the **Star Gaze**, including speakers and other organized activity.
- * **Donna Blosser** reported that **Bob Traube** has stepped down from the Outreach Committee, and that she will be doing the same in December. Circulating a list of outreach events and the club members who participated in them, she noted that it frequently was the Outreach Committee members themselves, with Board members, who volunteered. Few others in the club do so. The Outreach discussion was extended into a broader examination of member involvement. A wide range of topics were raised, including the purpose of the **Monthly Observing Sessions**, the time and location of **General Meetings** and the topics of guest speakers, treatment of newcomers to the hobby on the e-mail list, the attractiveness of the club to the more advanced members, and the "regionalization" of the club into

different parts of northern Virginia. While few agreed with the assertion that the club was in crisis, most felt that there were specific things that could be done to improve member participation in club events.

- * **Pedro Martinez** reported that the **club's insurance** is up for renewal and has increased 20 percent due to a rate change. Given the many questions regarding the policy and what it covers, it was suggested that someone with experience with insurance policies review the club's policy to see if it really meets the club's needs.
- * **Bob Parks** mentioned ongoing discussions he has had about the possibility of making **The Mountain Institute** a club observing site. He hoped to have more specific ideas to suggest at a future meeting. **John Deriso** reported a number of requests for new books on CCD imaging and asked that the budget include funds to meet these requests.

General Meeting Sunday, September 12

- * The **October 16 Star Gaze** was advertised, and club members were asked to help with the event.
- * On the larger issue of member participation in club activities, President **Rob McKinney** noted that NOVAC had **1,056 members in 819 households**, 787 of which were active members. 638 receive e-mail announcements, while 307 are on the e-mail exchange list. Anywhere from 50–150 attend meetings and annual events, while only 20–40 attend the Monthly Observing sessions and only 24 have volunteered for outreach over the past two years. Finally, there are 17 Board members, including the appointed officers. He provided this summary to express concern about the degree of participation, and expressed hope that more people would become involved.
- * On a similar issue, **Bob Parks** mentioned that there will be **Board election in December** for the 4 officer and 3 of the 5 trustee positions. He asked people to consider serving on the Board, and asked for a non-Board member to help with the election process.

- * An **Astronomical League Messier Award** was presented to **Jim Biggins** for observing at least 70 Messier objects. Jim accomplished this by observing from his own backyard.
- * The **Sky Tour** focused on the close approach of **asteroid 4179 Toutatis** on September 29, the movement of which might even be telescopically discernible against background stars. Alan Figgatt also mentioned the appearance of **4 Vesta**, the brightest of the asteroids. He also noted the recent oppositions of **Uranus** and **Neptune** made these planets worthwhile targets right now.
- * The guest Speaker for the night was **Steve Dick, NASA's Historian** and author of a book about the U.S. Naval Observatory. His topic was a **historical presentation of the transits of Venus**. While he went back to the first observation of the transit by Jeremiah Horrocks in 1639 and the 1769 Cook expedition to Tahiti, most of his presentation focused on the U.S. Naval Observatory observations in 1874 and 1882 and their contribution to the advancement of astronomy. Particularly important were the contributions made for the determination of the solar parallax, which defined the distance from the Earth to the Sun.

Board of Trustees Meeting Tuesday, October 5, 2004

- * Various upcoming events were discussed. There was a consensus to reschedule the next **Board Meeting** for November 9 so as not to conflict with **Election Day**. **Ed Seward** circulated an observing schedule for 2005, including dates for Monthly Observing Sessions, open nights at Crockett Park, the annual picnic and the Star Gaze.
- * **Donna Blosser** mentioned that **Jon Stewart** would be the new contact for outreach. Others have indicated a willingness to provide some help.
- * **Greg Piepol** provided membership statistics for September 2004. There are **743 active members from 578 households**. A significant number of members are more than 2 months past

due on their dues. Renewal notices indicated continued support for club activities, although some suggested better times for General Meetings. Greg also raised the issue of the cost of coordinating membership, which argued strongly for encouraging people to utilize a **two-year membership option**, as well as to develop **on-line membership renewal**.

- * Treasurer **Pedro Martinez** presented a statement of cash received and disbursed for 2004 as of September 30. Total cashed received amounted to \$14,612.72, cash disbursed amounted to \$12,886.78, putting the club back in the black for the year with a net gain of \$1,725.94. Cash reserves now amount to \$20,500.52.
- * **Bob Parks** indicated that there are three nominees to fill the three trustee slots as well as the President and Treasurer positions, but nominees are still needed for the Vice President and Secretary positions.
- * It was suggested that another **off-site event** be held, probably in January, with additional work focusing less on projects and more on member involvement.
- * While the **insurance** has been paid for the coming year, **Bob Stewart** reviewed the existing policy and clarified issues of concern. He said the cost of the insurance was low, but the policy failed to cover the club's needs in many respects, including the public at club events. It was described as a standard business insurance policy, while the club needs a non-profit policy. There was agreement to look into correcting this situation in the coming year.
- * **David Yustein** made a presentation of some of the problems associated with **newsletter production**. Options for print versus electronic delivery of the newsletter were discussed, as the costs and time associated with production of the print version are substantial.
- * **Phil Wherry** reported on the status of several updates to the **Web site**.

Comet memories, from page 1

Halley's Comet (1986)

The most famous comet, Halley's, received the most commentary. While agreeing with Pete Johnson, who called the comet's 1986 visit "underwhelming," many often had some silver linings in their stories.

Ralph Kantowitz recalled having one of about 20 telescopes on a Staten Island Beach, getting barely a reaction from visitors being directed to what was the fuzzy-looking one of three stars in the field of view. He nevertheless was pleased that people came back for a second view in his 5-inch refractor with his homemade parts, which they claimed gave a nicer view than the others.

Halley's Comet made amateur astronomers out of both Ralph Marple and Rob McKinney, and brought Bill Burton back to the hobby after a long absence. One night while searching for the comet at Burke Lake Park, Ralph met a high-school kid with a new telescope looking for someone with whom to observe.

That young man eventually introduced Ralph to NOVAC. Bill also observed Halley's locally but was already a club member when he first noticed a young woman named Laurel who had the best photos of the comet. She would become his wife three years later.

Mike Lewis, who observed Halley's in northeastern Alabama, noted that it was "hyped big-time and failed to deliver—just a faint smudge to the naked eye." The comet

nevertheless reminded him of his late grandfather, who had the privilege of seeing Halley's in 1910 and 1986. Mike's grandfather once described the earlier apparition as something like "a cross between Hale-Bopp and Hyakutake," close and bright enough that people actually thought it could set the planet on fire.

Allan Meyer heard stories of the 1910 visit from his grandmother, but she passed away a few months before its return. Donna Blosser's grandparents described the comet's 1910 appearance in a way similar to the vapor trails produced by jet planes in today's skies. For her, the 1986 "little fuzz ball" wasn't spectacular but satisfied a life-long observing goal she held jointly with her "astronomy buddy," her dad, whose passing away two months later made achieving that goal all the more significant.

As an aside, observing the famous comet was also a stated goal for writer Mark Twain. He was born during the 1834 apparition, and died soon after viewing the comet in 1910.

The only NOVAC member to admit to being arrested while observing Halley's Comet was Robert Stewart, who drove around a locked gate at the Back Bay National Wildlife Refuge on the Virginia-North Carolina line and was observing the comet with some friends when the police arrived. "Stew" and company got a lecture from the local magistrate before being sent on their way. Bob Traube observed the comet near a runway at Quantico Marine Corps Base, where, he suspects, today's security might have more severe consequences than Stew had experienced. Bob Bunge may have endured the most punishment, having to stand on a country road in the middle of Ohio during a pouring rain and to explain to people in cars "in both directions as far as they eye could see" why you can't see the comet through the clouds and a local club's program at a park was therefore cancelled. Bob, however, did get to see it another night. Rob McKinney and Mike Coren tried, but never did see it.

Mike Coren also noted Halley's greater distance from Earth in 1986 relative to previous appearances to explain why observation did not meet expectation. Mike Lewis and Donna Blosser also lamented the effect light pollution was having on the night sky by

1986 and continues to have today. Jim Richberg, who saw Halley's with fellow graduate students in southern California and central Arizona, and John Deriso, who observed it in Arizona and Utah, benefited from the darker skies. Like Bob Traube, both of these active observers with lots of astronomical gear today, made reference to the small, very basic telescopes they used back then. Ed Witkowski sought the dark-sky of southern California mountains to take some photographs of Halley's, but he confessed that he never developed the film.

Hyakutake (1996) and Hale-Bopp (1997)

A decade later, two naked-eye comets finally graced the night sky. In contrast to the short-period Halley's and its expectation-raising return, Hyakutake and Hale-Bopp are long-period comets last visiting the inner solar system thousands of years ago. Hyakutake came first and with the least warning, making it several people's favorite. Pete Johnson and Mike Lewis noted that its circumpolar location and more than 60-degree tail made it best to leave the telescopes and binoculars at home. "You just had to lie in the grass and take it all in. Now that was a comet!" As with some of his observations of Halley's, Bill Burton observed Hyakutake lying on a tropical beach. From the colder mountains of Pennsylvania, Bob Hand was returning to amateur astronomy as a hobby and was "as thrilled to find Hyakutake as to see it, although in retrospect it was not that hard to do." Bob's memories of Hale-Bopp include driving through the dark countryside of Croatia. Bill Burton called Hale-Bopp "the People's Comet," perhaps not as popular with amateur astronomers as Hyakutake but perhaps doing more to popularize astronomy.

Comet West (1976)

While Hyakutake and Hale-Bopp came a decade after Halley's, Comet West came a decade earlier and was the favorite of those who saw it. Einstein Planetarium astronomer Sean O'Brien said it was "a wonderful view in the pre-dawn sky, very impressive to a young lad..." Rob McKinney saw it from the high elevation and low humidity of northern Nevada, and he regards it as his favorite. The same goes for Bob Traube, who had the advantage of the open plains of Montana. Bob Hand didn't see West but wishes he had: "It's the most photogenic."

Printed newsletter to be phased out

The Board of Trustees is preparing to reduce the required quantity of paper newsletters mailed to members. In the future only members without computer access will receive the printed version of the newsletter. Members with computer access can opt to either receive the electronic version directly through their e-mail (via a .pdf file) or be given notice of its availability on the NOVAC webpage. The e-version offers a number of advantages both to members and the club: we can provide a newsletter with color photos and illustrations, have a shorter publication cycle so it's available to you sooner, and reduce a significant financial burden on the club treasury.

And all the others

Comet Bennett's appearance in 1980 was deserving of mention according to Ralph Kantrowitz as well as Bill Burton, who momentarily found the aurora borealis around northern Lake Michigan a "pesky natural form of light pollution." Bill's wife Laurel has her painting of the 1987 Comet Bradfield next to her Halley's photo in their dining room.

Ralph and Bob Hand liked Ikeya-Zhang, who came by in 2002. Bob recalls the company of NOVAC member Alex Lim while observing it at the club's Glengary Tree Farm site. Bill Burton, meanwhile, recalls the helpful company at Stellafane of David Levy while trying to locate one of the comets discovered by that famous observer. IRAS-Araki-Alcok in 1983, Austin in 1990, and Swift-Tuttle in 1992 were also observed. Comet Kohoutek, which came in 1974, seems to have been the greatest flop, but all "the hoopla" got Bob Hand interested in astronomy at an early age.

While some are brighter and more impressive than others, many comets have

left our sky but not our memories. Sean O'Brien said, "an amateur astronomer could measure his or her lifespan against the great comets observed. The next great comet is surely on its way! The only questions are when and where?" Mike Lewis hopes his two-year-old son gets his chance to see it. With all the recent discoveries of Comet NEAT and LINEAR, Bob Bunge says what he will "miss in the coming years, are the great names" that go with the great comets.

Standing with my grandfather seven years ago, under the star-filled sky in my home country China, we both observed Hale-Bopp with our naked eyes and its famous tail through binoculars. Little did I realize that the people with whom I would later share a love of astronomy far away in Northern Virginia were also gazing at that impressive sight. Having shared those memories of past comets, the hopes for future comets, and all that we observe together under the heavens in the meantime, we can feel certain that we are never, ever alone. ★

Special thanks for all who shared their stories.

Recharging, from page 3

ity to combine his love of all things nature to his love of the night sky—and then convey it in simple, but elegant prose that is a pleasure to read. The book is loaded with fun stories and the adventures of growing up in the county and in a more simple time.

Starlight Night's ability to reach out and touch an astronomer is unique and quite powerful. I don't think there is really another book like it. More than anything else, it influenced another observer into variable work and later comet seeking. In the 1990's this observer would be part of the team that discovered the most unique and amazing comet of our age: Comet P/Shoemaker-Levy 9.

I had formed a friendship with David Levy several years before when though an unlikely series of articles and letters in *Sky & Telescope* magazine we had discovered our mutual love for *Starlight Nights*. When David spoke before a group, he always quotes from the little blue tome, and I suspect these many years later he still does. Several times I saw David show slides during his talks and almost always they included one of him and Peltier talking. David often recounted the story of how Leslie had encouraged him to

continue comet hunting after several years of no success.

Today, a simple Google search will find thousands of web pages dedicated to the nitty-gritty technical details of modern amateur astronomy. When one can hardly subscribe to an email list or other electronic group without having to endure long, technical discussions over the advantage of this eyepiece over that eyepiece, or why it's important to spend hours checking the collimation of your Newtonian telescope, or the difference between an f/4.3 vs f/5 mirror, it's all too easy to lose sight of the core values and reasons to enjoy the best and most universal hobby on Earth.

If you feel buried by the seemingly "must know" technical details of 21st century amateur astronomy. If you have been depressed by an extended run of bad weather. If you feel that without the most recent, high-tech, whiz-bang astro toy (that you can't afford), you just can't do anything in the hobby. If you have lost your way and don't know what in this hobby to do next, then you need to pick up a copy of *Starlight Nights*.

It will, quite simply, recharge your astronomical batteries. ★

President, from page 1

left at the end of a day to participate in much of anything. Thus, about a tenth of you have the time and energy to be active in the club, and fewer than that can contribute more.

Still, my hope is that NOVAC can break out of that "10% rule." At the September meeting I offered a breakdown of our membership's participation as follows:

NOVAC stats

1,056 Members

819 Newsletter subscribers (households)

787 Members in "good standing"

638 Subscribers to the "announce list"

307 Subscribers to the "listserv"

50–150 Attend meeting/annual events

20–40 Attend Monthly Observing Sessions

24 Have volunteered for outreach events (in 2002–2004)

17 Board members (elected & appointed)

If you are part of the vast majority who happily pay dues for the benefits of membership, you're helping finance a wonderful organization. Our website is the best. Our newsletter is superb. Our access to observing sites is remarkable. And our offering of Special Interest Groups, progressive projects, annual programs, advocacy for dark skies and more make NOVAC a star among astronomy clubs.

But as you can see, it wouldn't take too many of you to increase NOVAC's ability to be a supernova: as a coalition of concerned voters who want to preserve dark skies, as mentors and role models offering glimpses into the excitement and worth of our hobby, as kindred spirits who deserve a few nights out with like-minded folks to shake off the rigors of metropolitan lunacy...in effect, "To observe and to help others observe."

So, here's my plea. We have elections coming and need candidates for offices; we have appointed positions, big jobs and little jobs, a need for volunteers for our annual events; we have opportunities for new SIGs, new membership benefits, and new ideas. Please take that step back and think about being more involved in NOVAC. You'll probably find you get more than the satisfaction of participation; you'll make a difference.

Contact me at president@novac.com for questions or when you're ready to step forward into your role as an involved NOVACian. ★

Jeff's observing report

by Jeff Stetekluh

Jeff's astronomical calculations are made for the Northern Virginia area. See www.novac.com/jeff/jrefs.html for calculation references and further details.

Jupiter eclipse events on Friday and Saturday nights

Nov 21	3:39 am	Io eclipse start
Nov 21	5:31 am	Europa eclipse start
Nov 28	5:32 am	Io eclipse start

The Sun

Nov 14	rises at 6:50 am	sets at 4:55 pm
Dec 12	rises at 7:18 am	sets at 4:47 pm

The Moon

Nov 5	Last Quarter
Nov 12	New Moon
Nov 19	First Quarter
Nov 26	Full Moon
Dec 4	Last Quarter
Dec 11	New Moon

Events

Nov 17	The Leonid meteor shower peaks (active Nov 14 to Nov 21)
Nov 20	Mercury is at greatest eastern elongation
Dec 10	Mercury is in inferior conjunction

The Planets

Nov 14	Rises	Transits	Sets
Mercury	8:44 am	1:20 pm	5:55 pm
Venus	4:06 am	9:50 am	3:32 pm
Mars	5:09 am	10:33 am	3:57 pm
Jupiter	3:20 am	9:12 am	3:04 pm
Saturn	9:14 pm	4:30 am	11:43 am

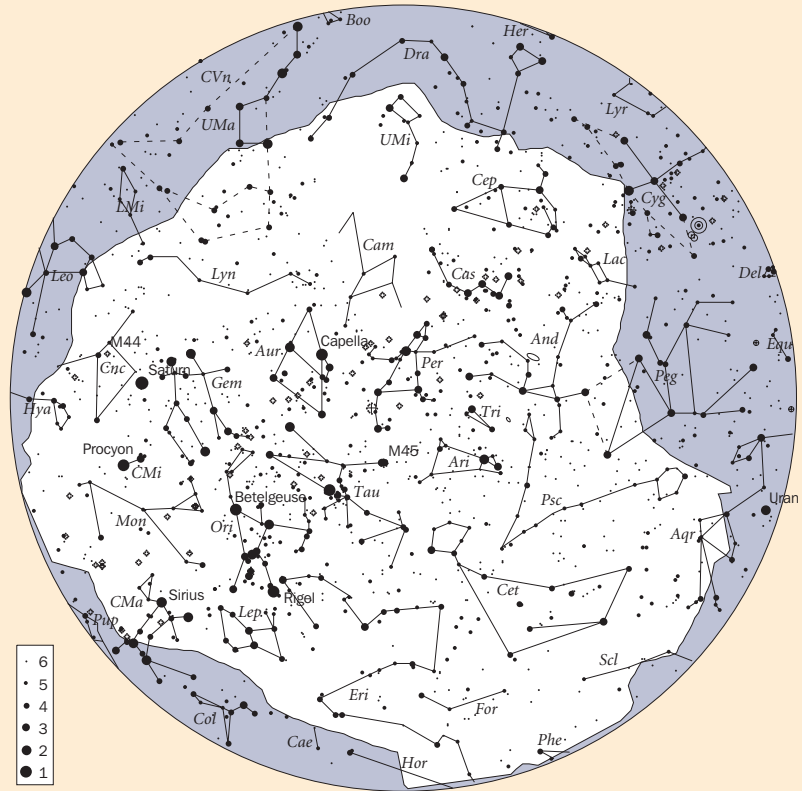
Dec 12	Rises	Transits	Sets
Mercury	6:48 am	11:39 am	4:31 pm
Venus	5:09 am	10:13 am	3:17 pm
Mars	4:53 am	9:57 am	3:00 pm
Jupiter	1:53 am	7:39 am	1:26 pm
Saturn	7:18 pm	2:36 am	9:49 am

Notes

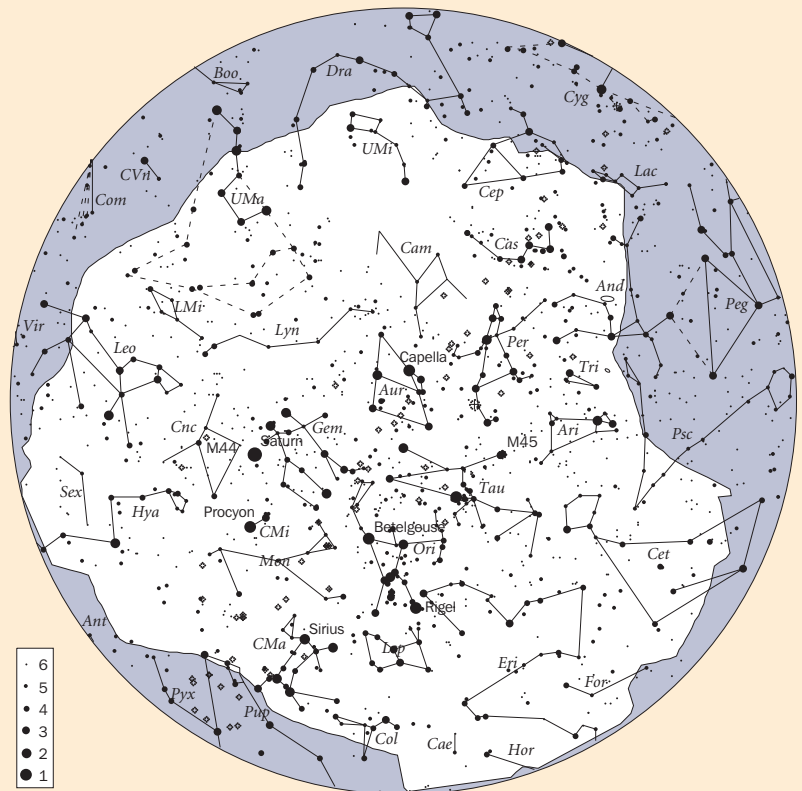
Nov 14	Mag	Diam	Elev
Mercury	-0.3	5.9"	9* SW
Venus	-4.0	12.6"	
Mars	1.7	3.7"	
Jupiter	-1.8	32.1"	
Saturn	2.0	19.3"	

mag: apparent magnitude; **diam:** apparent equatorial angular diameter; **elev:** degrees elevation at sunset taking into account atmospheric refraction

November skies from Savage Farm



December skies from Savage Farm



“To observe, and to help others observe”

NOVAC is a non-profit, all-volunteer organization chartered to advance amateur astronomy in Northern Virginia. Members benefit from:

Access to dark sky observing sites:

NOVAC maintains agreements that provide club members with year-round access to observing sites away from city lights

Monthly meetings

Monthly meetings are held at 7 p.m. on the second Sunday of each month in Room 80 of the Enterprise Building on the campus of George Mason University. Each meeting features a lecture on an interesting topic by a local expert. See the web page or future newsletters for a schedule of speakers.

Bimonthly newsletter

The NOVAC newsletter provides information specifically for NOVAC members, as well as general interest articles on such topics as observing reports, equipment reviews, upcoming events, ATM projects, and more.

High-quality telescopes to borrow

NOVAC members may borrow one of the clubs several “loaner” telescopes at no charge. Members may choose from among three 6” reflectors, two 10” f/6 reflectors, an 8” SCT, and a hydrogen-alpha solar scope. Binoculars are also available for loan.

Club website

Up to date information about club events and activities is maintained on the club website at www.novac.com.

Large club library

NOVAC maintains a well stocked library that members may borrow from by contacting John Deriso (seaotter@bellatlantic.net). A full list of titles is available from the club website.

Private e-mail list-serve

Members keep up with current club information by subscribing to the NOVAC e-mail list, without fear of flame wars or spam e-mails.

Public outreach opportunities

Several times each year, volunteers from NOVAC present astronomy programs to schools, churches, Scout troops, and other public groups.

Membership in the Astronomical League

Through NOVAC’s membership in the Astronomical League, NOVAC members gain access to the AL’s newsletter, services, and observing programs.

Discounts on astronomy magazines and books

Subscriptions to *Sky & Telescope* and *Astronomy* magazines are offered to club members at a considerable discount. Also, astronomy books purchased through the club are eligible for a 10–25% discount.

See your *Membership Guide* for more details.



The NOVAC Newsletter is the official publication of the Northern Virginia Astronomy Club and is published six times per year. The NOVAC Newsletter is sent to members of NOVAC as a regular membership benefit.

Membership

Membership in the Northern Virginia Astronomy Club is \$25.00 per year and is open to anyone interested in astronomy or the sciences. Additional memberships at the same address without additional copies of the newsletter are \$5.00 per person. Contact:

Greg Piepol
Membership Director
PO Box 341551
Bethesda, MD 20827
gpiepol@verizon.net

Change of address

All notices of change of address should be sent to Greg Piepol. Please include both old and new addresses.

Advertising

NOVAC does not knowingly accept advertising for products of inferior quality nor does it accept responsibility for the quality of advertised products.

Submissions to the newsletter

NOVAC members are invited to submit articles for publication in the NOVAC Newsletter. The editor reserves the right to edit all materials submitted. Send article submissions to the Editor, Dave Yustein, at david.yustein@aero.org.

The deadline for submissions is two weeks in advance of publication: Friday, December 3 for the January/February 2005 newsletter.

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News and articles • Comet memories • Hunting gravitations waves: Space Technology 7 • Reflections in the eyepiece: Recharging your astro batteries

Announcements • Elections at December 12th general meeting • Printed newsletter to be phased out

Regular features • Message from the President • Astrophoto corner • Meeting notes • Jeff's observing report • Sky maps



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