

# NOVAC

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 703 729-0596  
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**NOVAC's Web Page**  
<http://astro.gmu.edu/~novac>

## President's Column

**Brenda Clements Jones**  
 Here it is the end of the year again. I'm sure that the earth is spinning faster and faster each year that passes by! Though it was a year that passed by quickly, it was a year filled with fun and the satisfaction that comes with realizing that our organization is filled with folks who are anxious to help out in so many ways. Two of those helpers, Bill Jensen and Sandy Sanders, are stepping down from their positions on the Board. I'm sorry to see them go but I'm also looking forward to seeing them at meetings in their civilian capacity. All you helpers out there deserve a big round of applause. Those who have helped with the newsletter, in writing, assembling and distributing it. Those who have helped share the night sky with others, whether those others be new club members, school kids, scouts or next door neighbors. Those of you who have cut the grass, trimmed the bushes, filled the holes and cleared the fallen trees at Savage. Those who have helped with the library, in donations and in organizing and inventorying the books. Those of you who have helped with our big public star parties, organizing them, coming up with clever ideas for lighting the parking areas and being traffic cops. Those of you who have set out our "Meeting Here Tonight" sign at the planetarium when I'm too busy to do it. Those of you who have organized the meeting before the meeting, and have kept

*(Continued on page 5)*

## What's Up?

**Al & Lynn Schumann**  
**COMET HALE-BOPP**  
 We figured it was high time we took a good long look at what should be the next great comet of the 1990's. So, a few other folks from the Skywatchers Club joined us on the Colonial Parkway near Williamsburg for a night of observing. Sky conditions could not have been better. We did not have the usual hazy skies you would expect in late summer - it was really clear. Also, the Moon was only a few days old, so it was out of the way before it even got dark. All year long Comet Hale-Bopp had been weaving its way through the southern Milky Way. It had departed Sagittarius and was in Scutum during our observing session. Because of its position, finding the comet was no trick at all. We just made our way along the Milky Way from the spout of the teapot and followed the fuzzies from the Lagoon and Trifid Nebulae on up to M-16. Hale-Bopp was the next fuzzy blob to the north. It was not yet a naked eye object. The comet seemed to be just about as bright as M-16, which put it around magnitude 6 to 6.5, an easy binocular object. It was a pretty sight in the 13-inch telescope. It showed a very bright coma, slightly flattened at one end, and it had just the suggestion of a tail at the other end. One fellow thought the comet resembled Hyakutake in early March just before the tail of that comet exploded into prominence. One thing is for sure, the expectations

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## Upcoming NOVAC Meetings at the Arlington Planetarium

**Jan. 7**  
 Annual Meeting 7:30 EST

**Jan. 15, 1997**  
 A speaker from the Goddard Space Flight Center on the subject "Comet S-L Impact" (Tentative)

**Feb. 19, 1997**  
 ♦TBA

# How to Endure Cold Weather Observing

Robert Bunge, William C. Burton, Steve Mansfield, Craig Tupper, Jon Stewart-Taylor

[Ed: At the November General Meeting, and over the Internet, I asked for advice on keeping warm while observing outdoors in the winter. Five hardy souls offered to share their ideas with us]

## Robert Bunge

Over the years, I've developed a system for observing in the cold using a number of components, including layering of clothing, specific types of clothing and diet, to prepare for a long night of cold observing!

I'll start off with what I believe is one of the most over-looked items to successful cold weather observing - diet. The body warms itself by generating heat. Heat is generated by burning calories. While eating sweets is one way to get lots of quick calories, I've found it best to plan ahead. On a typical Saturday before observing, I'll be sure to eat plenty. For me, that normally means a hearty sandwich during the afternoon, followed by a full dinner just before going out. I do take sweets along during observing: a candy bar or chocolate is good for quick calories that can supply the energy that your body needs to stay warm.

Another often over-looked factor is sleep. Your body has to work to stay warm. It has a harder time working if it's tired. I try to take a nap during the afternoon before observing, especially if I want to stay out late and make it past midnight. Clothing: as lots of sources suggest, I layer. I'll normally wear a flannel shirt, with a lined flannel shirt over that. I try to get the tallest, or longest lined shirts that I can find. But perhaps my biggest discovery in keeping warm has been the one-piece suit. This I wear over blue jeans and the lined shirt. It doesn't even have to be a lined one-piece suit. For years, I used a surplus military flight suit that was so thin that you could see light through it. While I'm sure that thicker is better, the basic idea is to keep the heat in! Even a thin one piece suit helps to keep the heat from escaping from under your outer coat and covers the waist - where other clothes form seams. On the outside, I wear an over coat. For some years, while observing in Northern Ohio, I used a surplus Swedish military coat made of wood and canvas. It worked great, but was very heavy. These days, I wear a leather flight jacket. In slightly warmer weather, I can remove the outer layer, or not wear the lined shirt.

Shoes and socks, of course are very important. In Ohio, I found "Moon boots," thick ski-like boots that are very, very light and appear to be made of plastic foam and a cloth cover. They work great, and are normally pretty cheap. I always found them at K-Mart. These days, I'm wearing L.L. Bean "Bean Boots," that are rubber on the outside and have a 1/2-inch thick felt liner inside. They are more water proof than the Moon Boots, but also don't allow my feet to sweat like the Moon Boots did. Nonetheless, I'm very happy with them. I normally will wear two pairs of thick wool tube socks.

Over the years, I've tried gloves and mittens. Last year, I followed an idea from NOVAC president Brenda Jones and tracked down a pair of gloves that have a pull over mitten. With the mitten section pulled back, the finger tips are exposed. Whenever outside, the hands stay in a pocket - best if it's a pocket that's against your skin, with the mittens pulled back. When the hands are outside, the mittens are on unless I'm working with small parts on the telescope or eyepieces.

One advantage about dressing for observing in the dark is that you don't have to worry about how you look! I found a goofy looking wool hat with pull down ear muffs that work great. The pull down part is super-nice because it also pulls down over the back of the neck.

When growing up in Ohio, I had a morning newspaper route. On extremely cold mornings, I learned to walk while wiggling the toes and to constantly wiggle my fingers. I do it to this day, and if I do, my fingers and toes rarely get cold, even just standing around the telescope.

Eyepieces: for the most part, I've collected two - yep twins - of each of my primary eyepieces. I might have a dozen different focal lengths, but I really only use two different sizes and a barlow. I do this so that I can keep one of the pair in a warm, inside pocket (normally a pocket on the chest of the one piece suit). Why? Because when it's cold, sooner or later, you fog your eyepiece with your warm breath (or someone else does it for you!). In really cold weather, just putting your eye close to the eyepiece lens will cause them to fog. When this starts to happen, I just trade eyepieces. Now the cold eyepiece gets a chance to warm up in my pocket for when the other gets cold. This takes about ten seconds and is much easier than pulling out the eyepiece and warming it with a dew gun or in a car.

I believe that a major part of staying warm while observing is the over all experience - if you aren't having fun, you will get cold. You can't have fun if your eyepieces fog up!

Finally a word about observatories. If you really want to observe in the cold, get an observatory with a dome. While observing at Warren Rupp Observatory in Ohio, I observed often on nights that I would have never dreamed of observing outside: nights with a 20 mph arctic north wind and temperatures near or below zero, with two feet of snow on the ground. When it was like this, I just looked at the part of the sky away from the wind. That cut the wind chill out of the picture. Even if we didn't really want it - because it affected seeing - the temperature inside the dome was always five degrees warmer than outside. It just made a huge difference! Normally, in those conditions, my biggest problem was keeping my fingers warm since they were almost always in contact with cold metal. On some occasions, though, the dome's slit would freeze shut, or the dome wouldn't rotate.

I did know a brave, hardy soul in Ohio who would observe outside the dome in conditions

like that above. Tom Burns would just ask me to help carry his 17-inch Dobsonian outside (he stored it in the telescope dome). But, that was after he'd stomped around in the two feet of snow and compacted a nice ten-foot diameter area so that the snow was only about two inches thick and was smooth and flat. He'd then carry the cradle of the Dobsonian outside without the ground board and place it in the middle of the circle. We would position the tube in the cradle and he'd be off observing in no time. Believe it or not, Formica on ice makes a great azimuth bearing!

Who says you can't ski with your telescope!

## Steve Mansfield

I don't yet know how well this will carry over to astronomy, but being a year-round motorcyclist, I have purchased "Lectric Gloves, vest, and chaps" from a company in California called "Widder." Their stuff is great. You hook up to the battery of your motorcycle (or, car as appropriate) and with or without the engine running (performance is better with) the heating coils in the gear keep you warm, plus they make a great extra layer even with the heating going on.

I've been looking at this, and I think it would be quite easy to make a few minor alterations or to build a separate hookup for the gear so that one could hook up to a car battery. People could buy an extra car battery and a charger to keep it juiced up, and have fun. I'll be happy to bring my gear to the next meeting to show people what I mean.

## Jon Stewart-Taylor

I dress in layers, so I can add/subtract (usually add!) as required. I like to keep a stock of hand warmers. Since one normally loses something like one-third of one's heat from the head, I usually stick one in my hat.

I keep a carpet scrap (about 2'x3') to put under my feet while at the telescope. The extra insulation makes a big difference in keeping the feet warm, and the feet are usually the first to get cold and the hardest to re-warm. Since I spend most of my observing time sitting down, on really cold nights, I'll wrap a blanket around my feet as well.

## Craig Tupper

I have found the following to keep me warm for hours at around zero degrees:

LEGS: a thin polypropylene long john sold for outdoor sports like cross-country skiing, followed by a thick quilted long john from the hunting department of K-Mart, followed by loose cotton jeans, followed by a cheap nylon ski overall.

TORSO: tee-shirt, cotton long johns, two thick cotton sweatshirts, and a down jacket with collar.

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# Observing Mars

**Bob Bunge**

I recently remounted an old 4.25-inch f/10 reflector on a newly acquired German equatorial mount. On Saturday, December 21st, I carried the combination outside of my house in Bowie, into an evening under clear skies and freezing temperatures. After set up and a quick look at Saturn and the Moon, the telescope was left outside to cool down for a morning observation of Mars, my first for this approaching Mars opposition (March 17th).

At 6:00 AM Sunday, Mars was high in the sky, approaching the meridian. Even though this wasn't a good opposition (Mars only gets to be just over 14" in diameter, about half of what it is during a good opposition) there were still things to see on the Red Planet. The seeing that morning was good, but not great - a slow waffling across the view with five second-long moments of steady air.

At 225x, a 12mm eyepiece and 2.4x barlow, (fresh from the warm house), I could see a tube current that caused Mars to have a snaky, chimney-like extension off the east side of the planet. I retreated inside, leaving the eyepiece combination in the telescope to cool for a few minutes.

A review of the article starting on Page 84 of the January *Sky & Telescope* suggested that I would be seeing Mars' central meridian angle of about 190 degrees. This is a somewhat quiet side of Mars, but still worth looking at!

After ten minutes, the eyepiece had cooled enough that the tube current was gone. I was rewarded with a fine view of the north polar cap. The north cap was pure white and smaller than the southern cap that I observed during the oppositions during the late 1980s with the

same telescope. Surrounding the cap was a dark area, Mare Boreum. A dark area on the south appeared to be Mare Cimmerium. During this opposition, the south polar cap is over Mars' southern horizon. I looked for, but did not see several small dark areas, including Propoutis and Stymphalius Lacus. Nor was I able to see any sign of morning haze or clouds.

Well, really, at a mere 7", I was just happy to see the polar cap!

Observing Mars can be very, very rewarding - it's clearly my favorite planet to observe. Many observers will take a quick look at Mars and come away discouraged by the lack of detail. Many won't even see the polar cap (normally the easiest feature to see). The Red Planet's small size challenges you to get the best from your vision, observing skill, seeing conditions and telescope! A bad opposition such as this one is even more of a challenge, but certainly worth an effort in light of the current missions on their way to the Red Planet. The key to success is attention to detail and patience. Once you train yourself to see dim, dusky, and murky dark markings on Mars, the huge disk of Jupiter never looks the same! If you want to observe Mars, I recommend the following:

- Fine tune your telescope as best you can. Clean the optics, including your eyepieces. If it's a newtonian, tweak the collimation on a star at high power once your scope is cooled down;
- Be sure that your telescope has had a chance to cool off to about the same temperature as the outside air. Most bad seeing is within a telescope. It most likely won't work to take your scope out in the morning without a least an hour of cool-down time. This is very important during cold weather. Waiting for my barlow and

eyepiece to cool off was the difference between seeing a red blob and seeing Mars;

- Dress warmly. If you haven't spent at least fifteen minutes staring at the planet, you haven't tried hard enough. To stay at the eyepiece for that length of time in the cold requires that you dress correctly;
- Study maps of the markings that appear in various books and magazines. The map on page 85 of the January *Sky & Telescope* is one of the best that I've seen;
- Don't wait for Mars to appear in the evening sky! I've usually found that seeing conditions are best in the morning. Besides, if you start monitoring the planet now, you get to watch the polar cap and dark markings change during its spring-to-summer season change. Spring on Mars is starting now. Summer starts soon after opposition.

These unfavorable oppositions do have something going for them. The planet is placed high in our northern sky. During the favorable approaches, observation of the Red Planet is hampered by worse seeing because the planet is low on the ecliptic and you have to look through more of Earth's atmosphere. □

# Dinner Before the Meetings

**Brent A. Archinal**

We're still continuing our tradition of having a get-together for dinner before our regular meetings. The dates this time are Wednesdays, January 15 and February 19. The latter date will actually be our second anniversary of these dinners! Yes, folks, they haven't kicked us out yet in all that time! Maybe we'll celebrate with some extra hot sauce. Anyway, these dinners continue to be quite informal, and still have as their main function a place for members to get together without the hurried activity of a regular meeting. This is still your best chance to meet fellow members at some place other than in the dark while you're observing! So for a new resolution for the new year, make plans to make it to dinner to discuss NOVAC, astronomy, and other things non-astronomical. Comet Hale-Bopp will already be getting bright in the pre-dawn sky in February, so we'll certainly have lots to talk about.

The place for dinner continues to be the *Santa Fe Cafe* in Rosslyn. You should plan to arrive at about 5:45 to 6 PM, in order to have time to make it to the regular meeting at the Arlington Planetarium at 7:30 PM. This is a nice

Mexican restaurant with reasonable prices, although credit cards are not accepted. Smoking is apparently allowed in one part of this (large) one room restaurant, but so far NOVAC members have not been smoking and the few others dining at that time have rarely smoked. If you do arrive first, we would appreciate it if you'd try to sit in the front in the non-smoking section. There's always plenty of space; so don't worry about finding room with us.

Directions: The *Santa Fe Cafe* is located at 1500 Wilson Blvd, in Rosslyn, with entrances off of both Wilson Blvd. and Clarendon Blvd. This restaurant is easily found, just west of "downtown Rosslyn", on the southwest corner of Wilson Blvd. and N. Oak Street, where Wilson splits becoming Wilson one-way west and Clarendon one-way east. From I-66 east, take the Rosslyn exit to Lee Highway, and turn right at the second light onto Fort Myer Dr. Go two blocks and turn right onto Wilson, and the restaurant will be one block ahead on your left (on the corner across Oak/Clarendon from a big outdoor sculpture). On street parking is usually available in front of the restaurant, on the other side of the street up the hill, or around the long block (Make two left turns) on Clarendon just before it ends by the restaurant. However be

sure to feed the parking meter if you arrive before 6 PM. This location is also quite close to the Rosslyn Metrorail station.

Reservations are not necessary, although it does help to know who's coming so we'll know how big a table to get. Also, if the weather should turn extremely bad (remember last January?!), I can let you know if we've decided to cancel. So if you know you're coming or if you need a ride to the meeting and back to the Metro, or just for more information or directions please give me a call (evenings) at 703-448-7466 or e-mail me at [baa@casa.usno.navy.mil](mailto:baa@casa.usno.navy.mil). See you at dinner! □

# Leonid Observations

Jon Stewart-Taylor, William C. Burton

Subject: Observing report: 1996 Leonid Meteor Shower

To: novac@his.com (NOVAC Mailing list)

Date: Tue, 19 Nov 1996 14:27:52 -0500 (EST)

Observing report: 1996 Leonid Meteor Shower.

I went to Savage on the evening of November 16th to observe the 1996 Leonids, and found Bill Burton and Roberto Flores already there. Pete Gural arrived about an hour after I did. Despite early cloudiness, as the evening progressed, it grew clearer and clearer. By midnight the skies were beautiful, with the limiting magnitude around 6.0 at zenith. While waiting for the radiant to rise, we saw three spectacular Leonid fireballs between 11:30 and 12:30, each lasting several seconds, traveling more than 45 degrees across the sky along the horizon, and leaving long persistent trains.

They turned out to be harbingers of an extraordinary night. The Leonids were plentiful, colorful, and frequently spectacular. Many were 2nd magnitude or brighter. Almost half left glowing trains. Bill tracked one train for almost 10 minutes in his 8x40s. If this year's display was any indication, the 1998 and 1999 Leonids are going to be worth traveling long distances to see.

I started officially recording meteors at 12:30, and stopped at 4:00. My totals for the night:

TIME	LM	T	L	S
12:30-1:30	6.0Z	7	14 (64%)	5
1:30-2:30	5.3G	2	21 (33%)	9
2:30-3:30	5.4G	3	24 (46%)	11
3:30-4:00	5.3G	3	8 (75%)	3

LM: Z=at zenith; G=in Gemini

T=Taurids; L=Leonids; S=Sporadics

Number in parenthesis is % of Leonids that left persistent trains.

After 1:30, several of the sporadics were probably Taurids, but I stopped checking all but the brightest non-Leonids.

Grand totals: 15 Taurids, 29 sporadics, and 67 Leonids (of which 50% left trains).

I'd be very interested to see reports by other NOVAC members.

J. -- Jon.C.Stewart-Taylor@

From owner-novac@lists.his.com st: Wed, 20 Nov 1996 10:14:20 -0500

I would like to augment Jon's report with observations on Leonid meteor trains. Two meteor showers left trains that lasted at least several minutes; long enough to study in binoculars. In both cases the trains started immediately to contract and twist up like a strand of spaghetti.

The greater part of both trains broke up into knots while shorter segments retained a linear continuity. In neither case did the train acquire a "wind-swept" look, as was reported for at least one Leonid train in 1966.

The first train was left by a meteor with a -4 magnitude burst passing through Orion. It was

visible with averted vision for five minutes and in 10x40 binoculars for ten, until a passing high cloud washed out the background. In the surviving linear segment, a narrow dark central lane running the length of the train was faintly visible.

The other Leonid meteor was a -5 fireball through Perseus. I did not see it because I happened to be looking at the stone patio, which lit up in an orange light! The train from that meteor was visible for five minutes in binoculars. The linear segment had a striking structure consisting of two bright narrow lanes on either edge of the train separated by a wide dark central lane. This is what one would see looking through a translucent hollow tube against a dark background, and the dark central lanes in both trains I interpret to mean that these trains had hollow cores.

William C. Burton,

From owner-novac@lists.his.com Thu Dec 12  
From: jon.c.stewart-Subject: 1996 Leonids:  
Preliminary Report

Hi all. The IMO's preliminary report on the 1996 Leonid shower is available at:

<http://www.tu-chemnitz.de/~smo/imo/news/leo96.html>

It's worth noting that NOVAC members constitute almost 10% of the 30+contributing observers credited. Amateurs really can make important scientific contributions, at least in meteor observing.

Jon.C.Stewart-Taylor

## Mars Meteorite Studies

Harold Geller

It's not often that you enroll in a class at George Mason University called "Foundations of Computational Science" and get to do research on a hot issue in astronomy, but when the professor is an astrophysicist himself, I guess you get lucky. This past fall, this course at GMU, also known as CSI 801, was taught by the only astrophysicist at Mason, Dr. John Wallin.

At the very beginning, Dr. Wallin laid out the requirements for this course, and there were many. But the one that was tickling my astronomy side to the max, was the term project, which was to be a group term project. All term projects were to be related in some manner to the announcement by NASA (August 7, 1996) about the possibility of scientists having discovered micro-fossil evidence for life on a meteorite that supposedly came from our favorite Red Planet.

Dr. Wallin forced all of the groups to follow a strict schedule with milestones, which was actually a blessing in disguise. After all, it's bad enough when you procrastinate yourself, but how about a group of five! After much time and effort, as well as a lot of arguments, all of the groups produced final reports that were

presented in class.

A couple of groups chose to look at the feasibility of a meteorite surviving the atmosphere and impact the Earth (at Antarctica) and still have those micro-fossils and carbonates present. One of those groups came to the conclusion that "depending on the angle of re-entry, the meteor may have survived or not." I know, but remember, this is a computer class and the groups had to come up with something for which they could write a computer model.

Two groups examined the Martian atmosphere. One group tried to determine where the water on Mars might have gone. Their approach was to model atmospheric cooling and photolysis. Another group modeled the ancient Martian atmosphere using the assumption that it was similar to the ancient Earth atmosphere and modeling the escape of gases.

My own group attempted to determine if it was likely for Martian micro-fossils to be as small as the NASA team was reporting. We modeled both the Mars radiation budget (to determine the temperature regimes over time) and a primitive life form based upon chemical reactions within the cell. We found that although Martian temperatures in the past may have been sufficient to support liquid water, the astrophysics of our sun leads to a paradox similar to what is known as the "hot sun" paradox. After all if astrophysicists are correct in their models of stars, our sun should be putting out more

energy now than billions of years ago. This creates a problem. We also found that our cellular model did not behave well at the colder temperatures (even if above water's freezing point) although there was a tendency for the cell size to be smaller at colder temperatures.

My own opinion of the best effort, was the group that attempted to model the possible Earthly contamination of the meteorite by carbonates, which were so crucial to the NASA scientists' presentation. This group came to the conclusion that terrestrial contamination of the meteorite could account for the infamous "PAH" level in the meteorite.

All teams had to have a significant amount of work available on the World Wide Web for Dr. Wallin to grade. I only wish he would have invited members of NOVAC to the night of the presentations, because I think many of our members would have enjoyed it.

## President's Column

(Continued from page 1)

it going. Those who have taken new telescope owners under their wings.

We've lost one of our eager helpers. Herschel Payne, a longtime member and dear friend of the club, passed away last week. Herschel was

a retired machinist who often helped the club or its members with his talents. Several years ago he spent many hours in his basement guiding my son Kevin in making a spectroscope. He was always willing to share his knowledge and talents with those who might need help. We'll miss Herschel.

All you wonderful NOVAC members out there,

the club thanks you for your help in making what the club is -- one that reaches out "To observe and to help others observe."

Brenda

## What's Up

(Continued from page 1)

for greatness seem to be holding up. Hale-Bopp is already an impressive comet, and it still has a long way to go before it makes its closest approach in April of '97. If you missed the chance to observe and get some good pictures of Comet Hyakutake, you've got a shot at enjoying another dandy spectacle. Hale-Bopp looks like it's going to be a blockbuster.

### A CLOSE CALL

Because of all the trees in our yard here in Williamsburg, our little Edmund Astroscan has been getting a lot of use. Portability is a big factor around here. The PVC tripod we made for the telescope worked like a charm for years ("Raising Edmund's Astroscan", by Stu Ekstrand, *Astronomy*, September, 1991.) However one night, without warning, a leg of the tripod snapped off at the glue joint near the top. A mad grab saved the telescope, but it was time to come up with a better idea for a mount. For the most part, we stayed with PVC and devised something that is more of a pier than a tripod. It's easy to make and it is safer. We sent a few words and photos to *Astronomy* magazine, and they will be running an article on the pier sometime soon. We recall that there is at least one more Astroscan/PVC tripod combination in NOVAC. Watch those tripod legs! Also, keep an eye out for the *Astronomy* article. It might save some grief.

### TOTAL LUNAR ECLIPSE

It was a great night at the Skywatchers' NASA Langley Observatory for the 26 September Har-

vest Moon eclipse. The weather had been pretty cloudy during much of the day, but the skies cleared beautifully after sunset. Best of all there was no dew all night. We really enjoy lunar eclipses. Maybe it's because things happen so slowly. There is plenty of time to look at a lot of different things. You don't even need any optical aids; the naked eye is just fine. You can even take photographs without being rushed. And you never know for sure how the eclipsed Moon is going to look. It could be dark or bright depending on crazy things like volcanic activity half a world away. We had a pair of C-8's, a C-5, a small refractor, and some nice binocular set-ups on hand for the event. Unfortunately, the 16-inch observatory telescope was out of action. The mirror was being re-aluminized and coated.

Our C-8 was set up to take pictures of the eclipse with a 35mm camera body mated to the telescope. It gave us a 2,000 mm f/10 prime-focus arrangement. This prime-focus setup is ideal for lunar photography. The telescope is easy to focus and the image of the Moon just about fills up the vertical axis of a 35mm picture frame. The finished product gives you something you can really see without having to make enlargements. The film was ISO 400 Kodak Royal Gold print film. We have always had good luck with this speed film. At Full Moon, a 1/250th of a second exposure is just about perfect. Faster film could overtax the shutter capabilities of one's camera. Bear in mind that the camera's light meter can be a helpful aid until there are only smaller slivers of the Moon to deal with. During totality, an

exposure of a few seconds normally will do the trick. With a roll of 36 exposures in the camera, we planned on taking a picture every five minutes as the Moon approached and departed totality. During totality, there were eight shots to play with, so we took a series of pictures with the exposure times varying from 1 to 8 seconds. They all came out! However, the 3 to 4 second pix were about the best. After that, we still had an hour of totality. So, we sat back and enjoyed the show while noshing on sandwiches and sipping hot coffee. What could be better?

Overall, this was a very pretty eclipse. The Moon turned a beautiful coppery color and it was quite bright. Just before totality, one fellow noted how much the Moon looked like an oversized Mars -- a red planet with a white polar ice cap. This bright eclipse was a far cry from those a few years ago when the sky was filled with pollutants from Mount St. Helens and Mount Pinatubo. As we recall, the Mt. St. Helens eruption in the 1980's darkened the sky to the point where the Moon was virtually invisible during totality. This time around there had been no previous significant volcanic eruptions and the weather was great. We were lucky, especially since this was the last total eclipse visible from North America until after the turn of the century. We were very lucky indeed.

[Editor's note: When Al sent me the manuscript for this article, he included a print of one of his shots of the Moon during totality. Really impressive. We passed this around the room at the December General Meeting.] □

## How to Endure Cold Weather Observing

(Continued from page 2)

**HEAD:** a knit balaclava topped with an **Thinsulate**-insulated nylon-shell balaclava.

**GLOVES:** again from the K-Mart hunting department, hunter's mittens. These look like nice long mittens, but inside the nylon shell are **Thinsulate** gloves with individual fingers. There is a slot in the shell at the base of the fingers and thumb that allows you to stick your fingers out when you need to change eyepieces, load your gun, etc. The **Thinsulate** thumb and index finger also have tiny slots in the tips, to allow you to have skin contact for fine work.

Most of the time I stay warm enough with my other clothes that I just leave the fingers out, or even leave my hands exposed, but it is nice to be able to retract the fingers inside the shell when it's really cold.

**FEET:** two pairs of thick wool socks inside insulated leather boots usually keep me warm, but I'm still looking for better (but cheap!) boots for REALLY cold nights, per my recent e-mail. Battery socks help for a few hours, but are expensive unless you use rechargables, which don't last as long.

### William C. Burton

I recommend Sorel boots, made in Canada, and available at local outfitters like Appalachian Outfitters and perhaps REI. These are large

laceable boots with rubberized outer shells (like Bean boots), very thick rubber soles, and warm felt-like inner liners. They come in several cold ratings. Be sure to get the heaviest: a boot rated for "-20 Celsius" is barely adequate for standing around in subfreezing weather.

### Adele Fein

I bought a pair of Sorel boots large enough to accommodate heavy wool socks and polypropylene liners inside their felt boot liners. The first time I wore them, while observing at Crockett, it got down to the 20's and my feet were freezing! Next time I will try my daughter's skiing tip: put a hand warmer under the toes between the sock and boot liner.

# Happy New Year!

# American Institute of Physics Bulletins Excerpts

(From) The American Institute of Physics Bulletin of Physics News, Number 296, November 20, 1996 by Phillip F. Schewe and Ben Stein

**DO NEUTRINOS PUSH PULSARS AROUND?** Many pulsars possess a proper motion across the sky, implying that the pulsars get kicked somehow in the act of being born in the violent explosion of a supernova. A new theory holds that these birth velocities might be caused by a non-symmetric shell of neutrinos rushing away from the supernova collapse. (A large fraction of the energy released in a supernova is vested in neutrinos.)

According to Gino Segre of the Univ. of Pennsylvania (segre@dept.physics.upenn.edu), an asymmetry in the "neutrinosphere," the surface at which the neutrinos last scattered before emerging from the star, could be caused by neutrino oscillations (the transformation, say, of tau neutrinos into electron neutrinos) under the bias of the star's magnetic field. A 1% anisotropy in the neutrino distribution could result in a "kick velocity" consistent with the measured average pulsar velocity of 450 km/sec. (Alexander Kusenko and Gino Segre, upcoming article in Physical Review Letters.)

**WHAT'S HAPPENING ON OTHER WORLDS?** On Mars an Oklahoma-sized dust storm swirls about near the northern pole, while at Neptune storms and a northern-hemisphere dark spot discovered only last year were tracked by the first movie ever made of the entire Neptune rotation period (Hubble Space Telescope press releases). Saturn's inner ring is dripping water onto the planet below (New Scientist, 26 October). The Galileo spacecraft has updated knowledge of Jupiter and its moons, a miniature solar system all by itself. New reports suggest that the Great Red Spot (essentially a 20,000-km-wide storm rotating at a speed of 110 m/sec) is probably a shallow structure; the volcanic moon Io may be the source of at least some of the interplanetary dust coming from the Jovian environment; many plate-shaped structures on Europa's surface may, like Arctic ice floes on Earth, be fractured ice riding on top of a slushy ocean; the ancient ridges on Ganymede appear now (with the help of Galileo's much better resolving power: 74m/pixel versus Voyager's 1.1 km/pixel) to be flanked by many more finer ridges, implying a thinner crust and a hotter interior than previously thought (Science, 18

October). Further out yet, a new extrasolar planet was detected near the star 16 Cygni B; the orbit is the most eccentric of any planet yet known. It comes as close as 0.6 astronomical units and as far as 2.8 a.u. from the star (Science News, 26 October).

(From) The American Institute of Physics Bulletin of Physics News, Number 298, December 4, 1996 by Phillip F. Schewe and Ben Stein

**SOME QUASARS SEEM TO BE IGNITED IN GALAXY COLLISIONS.** The prevalent view of quasars is that their tremendous brightness is fueled by matter falling toward a massive black hole and, furthermore, that the matter is supplied by a host galaxy. This view has been certified to a growing degree in recent years by Hubble Space Telescope observations that succeed in making out the surrounding galaxies through the quasars' glare. New Hubble images, released at a recent NASA press conference, show that the galaxies harboring quasars come in a variety of shapes. Many of the quasars studied were located at the point where two galaxies were colliding, suggesting that some quasars are born or re-kindled by the fresh fuel supplied by the merger.

(From) The American Institute of Physics Bulletin of Physics News, Number 300, December 20, 1996, by Phillip F. Schewe and Ben Stein

**MOUNTAINS ON THE SUN.** The SOHO spacecraft, dedicated to observing the Sun and doppler-mapping the rise and fall of material and the passage of vibrations across the Sun's face, has detected the presence of extended structures a third of a mile high on the solar surface. Jeffrey Kuhn of Michigan State, speaking at this week's American Geophysical Union meeting in San Francisco, said the bumps persisted in the same place on the surface for a month or more. (San Jose Mercury News, 18 December 1996.)

## Membership Listing Corrections

Al and Lynn Schumann: (757) 564-7329

Brenda Clements Jones: e-mail: STARRRS@compuserve.com

Ken Pettijohn: new e-mail: pettijon@erols.com

## Call for Articles

Here's your chance to see your name in print! Be the first one on your block. Write an article for the NOVAC Newsletter describing your observing experiences: good, bad, or indifferent. Beginners welcome. Tell us how you liked observing sites both local and distant. Tell of your experiences buying telescopes and accessories.

Article submissions, in ASCII please, may be posted to Elliott Fein on the Internet at edfein@cpcug.org. Questions? Call Elliott at 301 762-6261 or contact him on the Internet.

## International Dark-Sky Assoc.



Join the IDA!  
3545 N. Stewart  
Tucson AZ  
85716

## Site Locations

Here are the locations of our four observing sites as provided by NOVAC members:

- Savage: 39° 04.7' N; 77° 51.7' W
- Parsells: 39° 01' N; 77° 32' W
- Crockett: 38° 37' N; 77° 43' W
- Nichlason: 38° 44' N; 77° 21' W
- Big Meadows: 38° 32' N; 78° 26' W.

## Time and Weather

Here are two handy phone numbers:

- Time: from the US Naval Observatory Master Clock, Voice: 202 762-1401
- Weather: from the National Weather Service: Local and Extended Forecast, Voice: 703 260-0307

# The Astronomical League Is Celebrating Its 50th Birthday: The Golden ALCON

Date: Mon, 25 Nov 1996 19:46:44 -0400

To: edfein@cpcug.org

From: william.jensen@tcs.wap.org (Bill Jensen)

Subject: See Below then See Colorado

Cc: Sandys@doubled.com

Elliott, I am copying the announcement below for use in the newsletter.

By copy of this notice to Sandy Sanders, our ALCON, I am letting him know of the publicity being shared with our members concerning this gathering. Bill

Priority: urgent

Date: Tue, 19 Nov 1996 10:44:00 -0700

From: Ed Kline <EdmundK@cryenco.com>

Subject: See Below then See Colorado

To: "william.jensen@tcs.wap.org."

Dear Astronomical League Member,

The league is holding the 50th Anniversary (Golden) Convention at Copper Mountain Colorado next July. We would appreciate it if you would print the announcement below in your club newsletter for our membership, and post it on your bulletin board. The information is current for October, 1996. We expect to name speakers and add commitments as the time approaches.

## The Astronomical League Is Celebrating Its 50th Birthday: The Golden ALCON.

This celebration, an international event, is open to all members of the league.

### HOW ARE WE CELEBRATING?

-By: Reserving a Colorado Rocky Mountain convention-equipped major winter ski resort (Copper Mountain) to host the 1997 Astronomical League Convention.

We are taking advantage of this facility's size and getting low off-season rates for 6 to 12 days (June 27, 1997 through July 9, 1997). Rooms, condos, and efficiencies with or without kitchens are available. Creating an International Celebration within the reach of most of our 14,000 members.

Assuring dark skies at 9,000 to 14,000 feet above sea level, 60 miles from any real light pollution with many observing sites. 6.5 to 7.5 magnitude skies are common. Colorado has over 300 clear nights a year. Creating a summer vacation opportunity in a most beautiful place, 18 miles from Vail, 25 from Aspen, 10 from Breckenridge and 50 miles from the Rocky Mountain National Park in the center of the highest National Forest land in the USA. And Much More- See 'Colorado' in any good travel guide.

Inviting the AAVSO, the Royal Astronomical Society, IOTA, The Dark Sky Association and many other national and international groups.

These are confirmed with more to answer.

### WHAT TO DO?

Tours of the second highest observatory (14,200 ft) in the world: Denver University's 28-inch I.R. binoculars (the Hubble is the only one higher) on Mount Evans, 35 miles from Copper Mountain.

Tours and viewing through the Denver University's Chamberlain Observatory's famous 20-inch Alvan Clark refractor and shows at Gates Planetarium in Denver. Denver is 60 miles (1 hour and 15 min) away and is a beautiful Major League city with great day and night life.

Door prizes, raffles, auctions, astronomical display tables and night time demonstrations including many major astronomical equipment suppliers. Convention speakers from the top of Astronomy's pyramid, both amateur and professional.

JMI is bringing their 40-inch scope along with a 25-inch NTT for all five nights. Many other 20" and larger scopes will be there. S&S Optica, a Celestron dealer, will represent Celestron. Other major vendors have not yet committed to attend but have expressed strong interest.

Copper Mountain Resort's facilities and programs including golf at 9100 feet, complete gym and spa facilities, dining, cocktail lounges, hiking, wildlife viewing, ski lifts, nearby white water rafting, fishing, boating, and much more. Local fireworks nearby on July 4.

This looks to be the greatest star party/convention ever. ATM awards for prizes judged by the Denver Astronomical Society optical and mechanical judges.

### WHEN AND HOW MUCH?

The official convention dates are from July 1, 1997 to July 6, 1997, with three days before and three days after for an extended vacation at the negotiated rates.

The convention fee that includes three meals has not been set, but will be less than \$75 with 250 or more registrations. Final convention fees will be published by end of May 1997. One convention breakfast and one barbecue dinner as well as a formal awards dinner are included in the registration price (this also pays for the fixed convention space costs - the more who come the cheaper it gets).

### THE ROOM RATES ARE AS FOLLOWS:

Hotel room, King or Twin (1-2 people) \$79.00 per day (add 7.8% sales tax to rates)

Deluxe studio with kitchen (1-2 people) \$95.00 per day

1-Bedroom condo with sofa bed (up to 4 people) \$105.00 per day

2-Bedroom condo with sofa bed (up to 6 people) \$170.00 per day

## Books at Increased Discount

NOVAC is participating in the discount book sales program offered by Kalmbach Publishing. We may buy any astronomy related book for 25% off the list price if we send in a group order. Nicole Mastey is coordinating the

sales. If you are interested, please see her at a meeting or call her at home (703) 476-1207 to place an order. Make the check out to NOVAC for the price of the book minus the discount when you place the order.

(Shared room costs can be near \$30 per person) When calling to register, tell them you are with the "Astronomical League Convention" (July 1-6, 1997)

Voice: 1-800-458-8386 (ext. 1 and ext. 1 again). FAX 1-970-968-2733

Mail: Copper Mountain Resort  
PO Box 3001  
Copper Mountain, CO 80433.

Low airline rates can be arranged through your local travel agent, into Denver or Colorado Springs airports from US hub cities. Please begin those arrangements early to take advantage of airline discounts. Van and limo services are available. Parking is available at Copper Mountain for those who drive. No camping is permitted at Copper Mountain. Other accommodations are available but could present difficulties in access to parking.

Travel arrangements are up to you. You can arrange them any way you choose. If you have a local travel agency whom you trust, by all means use them. We have informed a reputable travel agency here in Denver, Colorado who knows the turf. They are:

Business and Leisure Travel Agency  
1775 Sherman Street  
Denver CO 80203  
Telephone 1-(800) 895-2805  
Local Phone 1-(303) 830-8928  
FAX 1-(303) 830-8938

They can arrange good airline rates from anywhere in the US and transportation between the airports and Copper Mountain. Of course one early announcement can only skim the surface of what will be going on there. Keep tuned to the Reflector Newsletter and the Internet DAS & Astronomical League page (<http://www.du.edu/~pryan/alcon97.html>) for updates.

Not sure you are a member of the Astronomical League? Check with your club. If not, you can join for \$25 at the ALCON.

Edmund G Kline  
Chairman for Raffles and Prizes  
1997 Golden ALCON

# Minutes of the September and October General Meetings

Bill Jensen

## Minutes of the November, 1996 General Meeting of the Northern Virginia Astronomy Club.

The meeting was called to order at 7:30 PM by Club President Brenda Clements Jones. She welcomed 49 members and guests to the meeting held at the Arlington Planetarium.

### Announcements

1. Brenda Jones reminded members that elections will be held at the December meeting, and nominations will held open until that time. Any NOVAC member is eligible to run for office. Interested members should contact Brenda or any of the trustees.

Nominees include Brenda Jones for President, Tilly Smith for Vice President, Pete Johnson for Secretary, and Bill Burton, Nicole Mastej, and Russell Duke for trustee vacancies.

2. Brenda Jones announced that David Petty is no longer the manager at Crockett Park, but that no change is anticipated for observing for the club.

3. Kalmbach book discount program orders for this quarter must be placed by December 5 with Nicole Mastej.

4. Ted Roach reported that he had obtained an estimate of the maintenance of the Savage Site.

### Officers Reports

The December meeting will be highlighted by a presentation by Steve Smith of the Arlington Planetarium reviewing the proposed Northern Virginia Science Center and the planetarium's "Tis the Season" show.

Brenda Jones advised that members interested in the 1997 Space Calendar offered to members at up to a 40% discount should see Secretary Bill Jensen at the end of the meeting.

Treasurer Ken Pettijohn distributed a statement of receipts and disbursements for the year to date. The report showed \$4,286.40 in cash received, \$2,313.90 total disbursements, and \$1,972.50 excess of receipts over disbursements. Total assets as of the meeting totaled \$8,243.58

### The Observing Report

Jeff Stetekluh gave the observing report for October, and Jon Stewart-Taylor conducted the monthly sky tour using the planetarium projector.

### November Presentation

Brent Archinal, of the US Naval Observatory and a NOVAC member gave a presentation titled "Like Fire-Flies Tangled in a Silver Braid-the Star Clusters". Mr. Archinal gave an overview of star cluster importance throughout history, mixing the process of scientific discoveries with the cultural impact of clusters for societies. Mr. Archinal noted that several

categories of clusters exist: open, globular, associations; and even those objects that appear to be clusters: asterisms. He noted that there are no firm definitions of how many stars make up a cluster, and often confusion existed over open and globular clusters. Mr. Archinal highlighted the importance of clusters, both as a "laboratory" of star formation at relatively the same distance, and defining the structure of our galaxy and others. He showed the history of cataloging these clusters, including a catalog by Hynes and Archinal soon to be published. The cataloging in the past often was imprecise in documenting locations, and this has led to the same cluster having several "discoveries". As Mr. Archinal summarized the societal impact of clusters, he quoted biblical and literary references to clusters, which cite their intrinsic beauty. Mr. Archinal concluded his presentation by answering questions and noting the entire sky viewed from earth can be understood as part of a star cluster. The meeting was then adjourned.

Respectfully submitted,  
Bill Jensen  
Secretary

## Minutes of the December, 1996 General Meeting of the Northern Virginia Astronomy Club.

The meeting was called to order at 7:30 PM by Club President Brenda Clements Jones. She welcomed 48 members and guests to the meeting held at the Arlington Planetarium.

### Announcements

1. Brenda Jones announced that a long term member, Mr. Herschel Payne passed away on recently. Mr. Steve Smith announced that a memorial service would be held in January.

2. Brenda Jones announced that the Annual Meeting would be held on January 7, 1997, at the Arlington Planetarium, at 7:30 PM. All members are invited to attend. the regular January meeting will be held on January 15, 1997.

3. Bob Bunge announced that through his wife's membership in the American Astronomical Society he had donated a directory of the Society to the Club's library for reference.

4. Bill Burton announced that the director of children's science programs in Omaha Nebraska had contacted him to perform a Project Orion study in that area.

5. Mr. Burton further reviewed a summary of the orbital elements of Comet Hale-Bopp, as part of his upcoming article in The Washington Post's Horizon section on February 12, 1997.

6. Ron Cook reviewed bolide reports over New Mexico and California in connection with the Infrasonic Monitoring System, whose purpose is measuring changes in barometric pressure to ensure compliance with the nuclear test ban.

7. Newsletter Editor Elliott Fein thanked all who had sent articles about staying warm while observing, and asked for additional tips to be sent. He also circulated a photo of the lunar eclipse by Al and Lynn Schumann.

### Officers Reports

Secretary Bill Jensen announced that the club orders for the Space and Astronomy and Ottewell calendars had arrived.

Treasurer Ken Pettijohn announced that Astronomy Magazine's discounted subscription rate had increased to \$20 per year. He further advised that magazine orders would be forwarded once per month. He also noted that he requested volunteers for the audit committee last month.

### The Observing Report

Jeff Stetekluh gave the observing report for December.

### Annual Election of Officers and Trustees

Brenda Jones reminded members that elections will be held at this meeting, and nominations could still be made. Any NOVAC member is eligible to run for office. Nominees include Brenda Jones for President; Tilly Smith for Vice President; Pete Johnson for Secretary; and Bill Burton, Nicole Mastej, and Russell Duke for trustee vacancies. There being no additional nominees, the above mentioned nominees introduced themselves to the members present. Ballots were then distributed and collected.

Trustees Jeff Stetekluh and Craig Tupper counted the ballots, and announced that the following had been elected to fill the 1997 term in office: Brenda Jones - President, Tilly Smith - Vice President, Pete Johnson - Secretary, Ken Pettijohn - Treasurer, Nicole Mastej and Bill Burton - Trustees.

Brenda Jones announced that the club had prepared Certificates of Appreciation for Vice President Doug Jackson, Trustee Sandy Sanders and Secretary Bill Jensen for their service to the club.

### Questions

Russell Duke mentioned that the Washington Post had an article in today's edition reporting gamma ray bursts from the same point in space, the first time that such a phenomenon has been recorded.

### December Presentation

President Brenda Jones introduced the Arling-

*(Continued on page 9)*

(Continued from page 8)

ton Planetarium's Director, Steve Smith and Assistant Director, Chris Vaganos. Messers Smith and Vaganos presented a program about The Science Center of Northern Virginia. They discussed the need for a science center in the area, and described the implementation of their dream in detail. Using a video which outlined the proposed \$50 million dollar, 200,000 square foot multicultural facility, they drew comparisons to like science centers in various cities. They indicated an estimated annual attendance of 1,000,000 visitors for the center.

Several sites are being considered by the board of directors, with the hope of having funding of approximately one-half of the overall cost in order to begin ground breaking. Mr. Smith noted that the center would include a planetarium seating 300 people, an IMAX theater, and an observatory. They asked the club members for assistance in the completion of the project. Mr. Smith and Mr. Vaganos then presented the holiday show of the Arlington Planetarium, "Tis the Season", using the planetarium projector, its Apple II computer controlling slides and music; tracing the history of celebrations of the

winter solstice, Hanukkah, and Christmas traditions. The meeting was then adjourned at 9:45 PM.

Respectfully submitted,  
Bill Jensen  
Secretary

## Notices Notices Notices



## Notices Notices Notices

### NOVAC Notices and Benefits

#### Discounts on *Sky & Telescope*, *CCD Astronomy*, and *Astronomy*.

As a member of NOVAC you can get astronomy magazine subscriptions at a discount. To obtain *Sky & Telescope* for \$27.00 (instead of the standard \$36.00), make your check out to "Sky Publishing Co." for \$27. For *CCD Astronomy Magazine* at \$20 per year, make your check payable to "Sky Publishing Co.". You can subscribe to *Astronomy Magazine* for \$20.00 (one year). Make your check payable to "Kalmbach Publishing Company". In each case, note on the check: "new subscription" or "renewal." Send your check to Ken Pettijohn, 7916 Ivymount Terrace, Potomac, MD 20854. The Treasurer will send in the checks to Sky Publishing and Kalmbach once a month on the first of each month. To have your renewal included, be sure to have it in his hands by the last day of the preceding month.

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.

There are no special 10% discounts offered on publications from Kalmbach Publishing, but read what follows.

#### Discount on Books

NOVAC is participating in the discount book sales program offered by Kalmbach Publishing. They will sell our members any astronomy related book for 25% off the list price when we send in a group order. Nicole Mastej is coordinating the sales. If you are interested, please see her at a meeting or call her at home (703) 476-1207 to place an order. Make your check payable to "NOVAC" for the price of the book minus the discount when you place the order. We anticipate doing this 3 - 4 times a year if demand warrants.

#### Club Telescopes Available for Use

NOVAC makes available two six-inch (f/5) Newtonian reflectors for club members to check out free of charge and use for a limited time.

One 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 Ultrascope 10mm and Meade MA 25mm eyepieces with 1.25-inch barrel sizes. The other 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 a scope you will need to show your NOVAC observing pass and leave a \$500 (for the Celestron) or \$250.00 (for the Dobson) security deposit. To borrow the Celestron, contact Doug Mistler at (703) 437-0513; for the Dobson, contact Bob L'Hommedieu at (703) 978-0946. 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 borrow books, see NOVAC Librarian Marta Krause, or Deputy Librarian Steve Custerer 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 1997

Observing at Savage Farm, C.M. Crockett Park and Nichlason site: see back cover of this newsletter.

Observing at Parsells Field: any evening.

#### General Membership Meetings

General Membership Meetings are held at the Arlington Planetarium, 1426 N. Quincy Street, Arlington, VA, on the third Wednesday of every month. To reach the Planetarium, take Interstate 66 to exit 71 West, North Fairfax Dr. (Rt.

237). Go east on Rt. 237 to the 5th stoplight, N. Quincy Street (about 0.8 miles). Turn left onto N. Quincy Street (at the funeral home). Go 6 blocks (about 0.5 miles). The planetarium will be the low white domed building on the left.

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 On-line

NOVAC maintains an e-mail mailing list. Messages sent to the list include reminders about scheduled observing sessions, announcements for unscheduled sessions, requests for quick observing session summaries, MIR observability predictions, etc. For more information, send a message to Chewning Toulmin, pct@his.com.

#### NOVAC Observing Site Rules

**C. M. Crockett Park:** Any night that NOVAC observes at Crockett Park, the observing session will be open to the public. The gate will be locked and will not be unlocked unless a NOVAC member enters the park, at which time the gate should remain unlocked until 10 o'clock (or some other prearranged time) when the Assistant Park Manager, will come out and ask members of the public to leave. The gate will then be locked and should remain locked through the rest of the evening. NOVAC members may remain until they are finished with their observing session. There is now a 2-week lead time requirement for permission to observe at Crockett Park on nights other than those listed on our schedule at the back of this newsletter. Gary Kwolek recommends that anyone interested in observing in that area on unscheduled nights drive out to the Crockett Park gatehouse, turn left and drive down to the cul-de-sac where you can set up your telescope on the public road.

If any NOVAC member out observing at Crockett Park notices any member of the public violating Park policy, he or she is requested to notify the Assistant Park Manager, who lives in the house adjacent to the end of the parking lot.

(Continued from page 9)

During EDT, set up on the large field to the left. During EST, 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:** In addition to scheduled nights, NOVAC members may observe at Parsells field ANY evening, with no prior notice. You must park and set up only in the parking area: do not go onto the field itself. Please park to the left, near the entrance and set up to the right, away from the entrance. The usual NOVAC observing site rules apply: no loud noises, alcohol, or loose dogs, and pick up after yourself. We are guests of the Dulles Little League, and could have our access to this site revoked at any time if it is abused.

**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 your phone number. 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. Make sure the gate is locked whenever you are in the park, and 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.

**Nichlason Site:** The same rules apply as for the Savage Farm Site except that in seeking permission to use the site for non-scheduled observing call Smokey Jacobs (Northern Virginia Regional Park Authority) at 703-250-9124 and follow same procedure as with Savage Farm Site.

#### 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 what was previously the *Po Folks* restaurant. Follow Godwin Dr. for 1.8 miles keeping to the right to merge 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.

Alternate directions to avoid Manassas: Go west on I-66 (21.7 miles from I-495) to Exit 43A in Gainesville onto Rt. 29 South toward

Warrenton. After 11.8 miles on Rt. 29, stay left (towards Culpeper), to bypass Warrenton (but still on Rt. 29 S.) Go about 1 mile to Rt. 643 exit, Meetze Road. At top of ramp, turn left to go East on Rt. 643. Go 7.5 miles on Rt. 643. Watch for the C.M. Crockett Park sign on your right, and turn right into the Park Entrance Road. 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 Toll Road until you reach Route 28. Go North on Rt. 28 for 2.8 miles to Route 625, Waxpool Rd. (You may also take Route 7 West to 28, then go South to Waxpool). Turn West on Waxpool, and go 1.8 miles to the Waxpool/Farmwell intersection. Turn left on Route 625, Waxpool Rd. (!), and go 1.6 miles to the Waxpool/Ryan/Shelhome intersection. Continue on Waxpool for about another 1.6 miles to the field. Turn left and follow the blue parking signs to the parking area.

**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. The park entrance is past the driveway whose gatepost reads *Ben Lomand*. The park entrance is the next driveway on your left. There will be a sign on a tree saying *Wildlife Sanctuary*. If you come to gateposts on the left that say *Belle Allee* and *Ball Alley 1875*, you have gone too far.

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 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 FEMA installation. Turn right at the park entrance after passing the gateposts with *Belle Allee* and *Ball Alley 1875* on your right.

The park entrance on Route 601 is marked by a small brown and white NOVAC sign. 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. These locks are located to your left behind the gate as you face it from the outside. 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.

**Nichlason Site:** I-66 to Rt. 7100 (Fairfax County Parkway) south to Ox Road (Rt. 123)

south to second right on Chapel Road to immediate left onto Wolf Run Shoals Road (Rt. 610). Continue on Wolf Run Shoals Road (watch signs carefully at twists and turns in the road) for 3.9 miles to the site. It is immediately after a yellow house with white picket fence on the right. Nichlason Site is on the left marked by "Wildlife Sanctuary" signs on utility poles. After third "Wildlife" sign there is a dirt/gravel lane into the site.

From Springfield/Burke area: go north on the Fairfax County Parkway (Rt. 7100) to left onto Burke Lake Road. Burke Lake Road becomes Clifton Road just after the intersection with Rt. 123. Continuing on Clifton Road, turn left at the Citgo station onto Wolf Run Shoals Road. Follow Wolf Run Shoals Road as above to site.

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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. Additional memberships at the same address are \$6.00 per person without additional copies of the newsletter. Contact Ken Pettijohn, Treasurer, 7916 Ivymount Terrace, Potomac, MD 20854, telephone 301 983-3199, [pettijohn@erols.com](mailto:pettijohn@erols.com). All notices of change of address should be sent to Ken Pettijohn. Please include both old and new addresses.

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NOVAC members are invited to contribute materials of interest for publication consideration in the NOVAC Newsletter. The editor reserves the right to edit all materials submitted.

Article submissions, in ASCII please, may be sent to Elliott Fein at [edfein@cpcug.org](mailto:edfein@cpcug.org), or to Elliott's address in Rockville, given above. Questions? Call (301) 762-6261, or send e-mail.

Deadline for submissions is three weeks in advance of publication, e.g., Feb. 10 for the Mar./Apr. Newsletter

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## 1997 NOVAC Observing Dates (Subject to change)

### C.M. Crockett Park

January 3, 4 (Quadrantid meteor shower), 10, 11, 31  
February 1, 7, 8, 28  
March 1, 7, 8, 28, 29  
April 4, 5, 25, 26  
May 2, 3, 4 (Eta Aquarid meteor shower), 9, 10, 30, 31  
June 6, 7, 27, 28  
July 4, 5, 25, 26, 27 and 28 (Southern Delta Aquarid meteor shower)  
August 1, 2, 8, 9, 11 and 12 (Perseid meteor shower), 29, 30  
September 5, 6, 26, 27  
October 3, 4, 21 (Orionid meteor shower), 24, 25, 31  
November 1, 17 (Leonid meteor shower), 21, 22, 28, 29  
December 13 (Geminid meteor shower), 19, 20, 22 (Ursid meteor shower), 26, 27

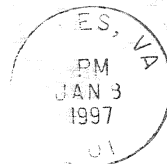
### Savage Farm & Nichlason Site

January 3, 4 (Quadrantid meteor shower), 5, 10, 11, 12, 31  
February 1, 2, 7, 8, 9, 28  
March 1, 2, 7, 8, 9, 28, 29, 30  
April 4, 5, 6, 25, 26, 27  
May 2, 3, 4 (Eta Aquarid meteor shower), 9, 10, 11, 30, 31  
June 1, 6, 7, 8, 27, 28, 29  
July 4, 5, 6, 25, 26, 27 and 28 (So. Delta Aquarids)  
August 1, 2, 3, 8, 9, 10, 11 and 12 (Perseid meteor shower), 29, 30, 31  
September 5, 6, 7, 26, 27, 28  
October 3, 4, 5, 21 (Orionid meteor shower), 24, 25, 26, 31  
November 1, 2, 17 (Leonid meteor shower), 21, 22, 23, 28, 29, 30  
December 13 (Geminid meteor shower), 19, 20, 21, 22 (Ursid meteor shower), 26, 27, 28

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