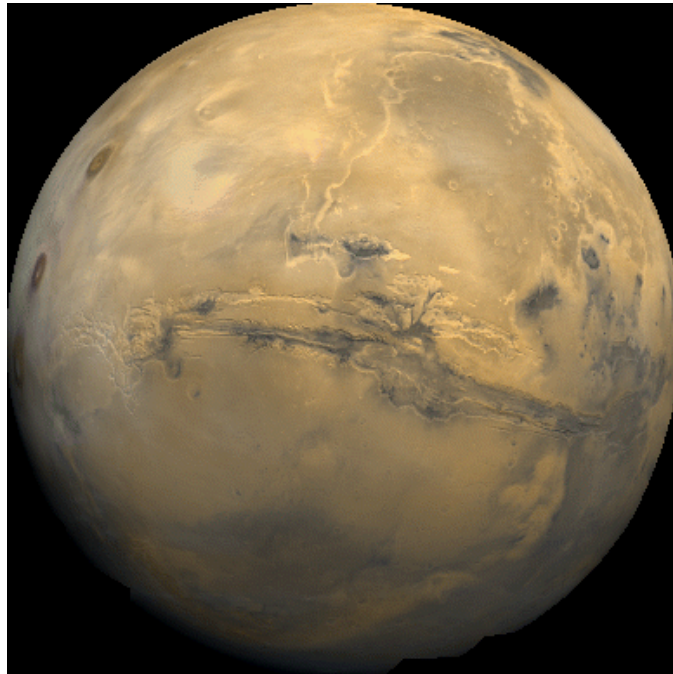




October 2005 Newsletter of the Omaha Astronomical Society Issue 214

Coming soon, but not as big as the Moon  
Mars



General Meeting of the  
Omaha Astronomical Society  
Friday, October 7 at 7:30 PM  
Durham Science Center, Room 169  
UNO Campus

Program: See Page 3

## Events

**October Club Star Party**  
**Saturday 29 October**  
**Club Site Weeping Water**

**Mahoney Public Star Parties**  
Done for 2005

### **7th ANNUAL OAS PAC BANQUET**

Mahoney State Park  
Helene Sapp Riverview Lodge  
October 14th, 2005 at 7:30 PM

Visit the club web site at: **[www.OmahaAstro.com](http://www.OmahaAstro.com)**

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**[Http://www.omahaastro.com/DigitalStella](http://www.omahaastro.com/DigitalStella)**

STELLA is a publication of The Omaha Astronomical Society. Please send related correspondence to: STELLA, c/o Omaha Astronomical Society, P O Box 540424, Omaha, NE 68154



# **BULLETINS**

## **October Meeting Presentation**

OAS Elections  
&  
Open Forum Discussion

**Good October Dates to  
Observe at the OAS Club Site or  
at any other good location**

Friday 30 Sept, new moon  
Saturday 1 Oct, new moon  
Friday 28 Oct , last quarter moon  
Saturday 29 Oct, last quarter moon

## **Upcoming Events**

**October Elections**

**Mars draws Close**

**Leonid Meteor Shower**

**Annual December Get Together**

## **October is Election Month**

Everyone is reminded that annual elections will be held at the Oct 7th OAS meeting and that all elected offices are up for grabs. The elected offices are president, vice-president, secretary, treasurer, program chair, and outreach chair. Those interested either nominating someone for a position, and/or self nominating please contact Al Dorn.

### Quick Tips for Observing in Cold Weather

1. Dress in layers. Many thin garments with lots of dead air between layers to trap heat are better than a few thick ones. Always bring more layers than you think you'll need. Add or remove layers depending on air temperature, wind chill, and how much you're exerting yourself.
2. Wear warm boots. Also avoid tight-fitting boots. Get a pair of boots one size to large, wearing a pair a size too large allows for wear an additional pair of socks.
3. Don't forget your head. Always wear at least one cap in cold conditions. An uncovered head rapidly radiates body heat away. A hood is even better, but often gets in the way. That's why the choice is yours, hood, watchcap, scarf, or combination thereof.
4. Keep well hydrated but avoid caffeine. Caffeine is a diuretic and reduces blood volume, making it more difficult for the body to maintain a normal temperature.
5. Keeping warm in freezing temperatures requires the body to burn calories at a great rate. Eat well before you head out to observe and bring some high-carbohydrate snacks to stoke the fire a bit during the night. For extended observing sessions during the colder months, a thermos of hot soup can really make the difference between an enjoyable outing and a cold and miserable one.
6. Chemical handwarmers are another good item to have, but aren't a substitute for wearing adequate layers of clothing. Many parkas has two pockets inside over the kidney area that are designed to hold handwarmers. This is an nice feature worth looking for in a heavyweight parka.  
(Note - Handwarmers can also be used as eyepiece case heaters.)



## **Stella Notes on OAS September 2005 Business Meeting**

### **Omaha Astronomical Society**

September 2, 2005

**Treasurer's Report.** OAS Treasurer Bill Bond presented the August 2005 Treasurer's Report. Income was \$.216.95. Expenses were \$ 306.53. For a balance of \$ 4,173.31.

#### **Old Business**

##### **1. OAS Outreach      Coordinator John Johnson**

OAS Outreach Coordinator John Johnson

Papillion LaVista School District

The Star Parties for the various 6<sup>th</sup> graders will be held at the 4-H Camp in Gretna, NE on the following dates: 9/8, 9/12, 9/14, 9/19, 9/21, 9/26, and 10/3. Those interested in assisting should contact John Johnson.

Glenwood IA School District

The Star Parties for this school district will be held on 9/26 and 9/28 at the Camp Neyati north of Glenwood, IA on Hwy 275. Those interested in assisting should contact John Johnson.

##### **2. Messier Observing Committee.    Clark & Deb Cheney**

Deb & Clark Cheney reported that Jupiter and Venus are close together this week in the lower western skies after sunset.

Three OAS Members used the Weeping Water , NE Astro Site in September.

#### **New Business.**

##### **1. OAS PAC Banquet**

The Seventh Annual OAS/PAC Banquet will be held on 10/15/2005. It will be at the Riverview Lodge in the Gene Mahoney State Park on the Platte River. Cost for the meal is \$10.00 per person. A catered dinner is

comprised of fried chicken, smoked sausage, potatoes, vegetables, dessert, and beverages. There will be door prizes awarded following the meal.

## **2. National Astro League Convention**

New Program generated is Outreach Activity.

There are new Observing Challenges recently released that include Open Star Clusters, Planetary Nebula, and a Lunar II

## **3. 2007 Mid-States Regional Astro League Convention**

Omaha Astro Society will host this event in the summer of 2007. Those interested in planning this event should contact Al Dorn.

### **Awards & Recognition.**

Bill Bond – Received his Honorary Messier Certificate # 2232 from the Astro League and also received his Globular Cluster Observing Certificate # 28 from the Astro League

### **September Meeting Program.**

Viewing Double Stars – by Harlan Seyfer

## **SO YOU WANT SOME NEW BINOCULARS?**

**By  
George E. Allen**

An amateur astronomer has many tools to help study the skies. Many newbies are sucked in by the thought of having a reason to buy a large SCT on the latest GOTO mount right away. Just think, all I have to do is enter the NGC number and PRESTO, there is the elusive 14 magnitude fuzzy everyone else is looking for.

Well, that all comes in time to the truly dedicated sky watcher, but let's keep it in perspective. That will make it easier to advance in the hobby and keep your wallet fatter. The most valuable instruments in your arsenal are actually simpler. Of course books are #1, followed closely by charts and maps. But this article will deal with a greatly misunderstood tool, binoculars.

continued on next page

Your first optical device should be a good pair of binoculars. We need to decide what size, power, price, design and where to get them. The power will need to be at least 7x and no more than 10x. The second number used to describe them tells you the light gathering ability, and is the diameter of the objective lens (front) in millimeters. This needs to be 42mm or more. Let's consider the old standard 7x50. This is a good starting place and is the most common size. They can be handheld and will reveal things like the North American Nebulae, Double Cluster, Pleiades, M33, M31 and much more, such as hundreds of double star systems. They will allow you complete the Binocular 50 Astronomical League award program, and they will be your constant companion on all astronomical trips to come, no matter how large of scope you finally aspire to.

Someday you might want to add a pair of larger binoculars for deep sky and other more difficult targets. These will be 10x70 up to 25x100 or larger and will have to be held on a stand or tripod. Not because you are too weak to lift them, but because your muscles have constant, involuntary motion and will blur the view at powers much above 7x. This support system may be a large camera tripod with an "L" shaped adaptor, or a dedicated binocular support built like a parallelogram, allowing you to raise or lower the binoculars without losing the target object. This is wonderful for group activity.

Since there are many combinations of power and objective size, we will look at what the numbers such as 7x50 mean to you and your needs. Taking the second number and dividing it by the first number will give you the diameter of the "exit pupil" in millimeters. This is the size of light cone that will enter your eye and it should not exceed 7mm unless you are very healthy and about 10 years old. The reason is that your pupil (the opening in the center of your eye lens) will not be large enough to accept a larger bundle of light. Additional light will fall on your iris and be wasted. You can see the exit pupil by holding binoculars at arm's length and aimed at a broad light source. The round light disc seen in the eye lens is the exit pupil and can be measured with a ruler.

In the case of older viewers, a smaller exit pupil will do the job. In the case of a 50 year old smoker with a few problems like diabetes and hypertension, a 5mm exit pupil will do it all. So keep the exit pupil

value of your new binoculars between 5-7mm for maximum usage and economy. In the big binoculars you may have to suffer a smaller exit pupil, such as 25x100 = 4mm exit pupil, one price you pay for high magnification.

In the event you have astigmatism and must wear eyeglasses while viewing, you will need sufficient "eye relief." This is the distance between the binocular eye lens and your eyeball. A value of at least 20mm will be required for eyeglass wearers. A shorter distance will cause you to see only the center of the view, unless you remove your eyeglasses. Some binoculars have moveable cups at the eyepieces in order to shield stray light for persons not needing glasses, and at the same time collapsing to allow a longer eye relief for others. This feature is found in the better binoculars.

Binoculars are, as the name implies, two oculars. The problem is that the two oculars must be absolutely parallel and adjustable for users with different width of eye placement. This last condition is called "inter pupillary distance" and is listed on your eyeglass prescription as "P. D." It is measured in millimeters and may be around 55-75mm. The small circular scale on the hinge of binoculars tells you what P. D. the binoculars are set at, and it is adjustable.

Binoculars are made in two styles, American (or sometimes called Bausch & Lomb) and roof prism. The American style has offset tubes caused by a pair of prisms (porro) in the light path, used to erect the image. These can be made at a lower cost than roof prisms, but they are equal in quality. If you part with more of your hard earned cash you can have straight tubes, therefore more compact binoculars. These have a complex erecting system that is "in line." Take your pick and pay your money on this feature.

Coatings are another consideration. First, allow me to share with you that they are not really necessary. The 40" Yerkes and other fine old scopes are not coated. Coating purpose is to cause more of the incoming light to reach your eye, and in the correct location, increasing contrast. Coatings were not used prior to WW2. Ever notice in old movies there is a halo around bright lights? That is the lack of coatings. It is only a problem when there is a bright light source in, or near the view. Why, you ask?

continued on next page

When a ray of light strikes a glass surface, most of it penetrates the glass, while a small amount of it reflects back. The actual percentages depend on the glass type, the color of the light, condition of the air and the angle of the strike. Typically these numbers are around 97% transmitted, 3% reflected. This is additive for each air/glass surface. Some of this reflected light will get to your eye as scattered light, causing lower contrast and ghost images. Higher end binoculars also have better baffling to minimize this. Coatings increase the transmitted light and decrease the reflected light by creating an interference effect at the boundary of glass/air. The first coatings were magnesium fluoride and were easily damaged, as they were soft. Later coatings were greatly improved and made more scratch resistant. There is an entire science centered on coatings and their applications. But enough of that. What coatings do YOU need?

You will have coatings on any binoculars today. You can detect them by the color of reflected light seen on the lenses, usually green or amber. This is the color the coatings DON'T work on, that is why you see it. A perfect coating would not reflect any light at all, but those have not yet been invented. Some binoculars say they are "coated" and that means at least one surface is coated with something. Not good. Others say, "fully coated" and that means all glass to air surfaces are coated with something. Better. The high-end binoculars will say "fully multi-coated" which means they have an advanced coating on all glass to air surfaces, including the prisms. Best. Ruby coated is a term used by TV infomercials to imply quality. Combine this with "sees for miles," "made of genuine optical glass," "prism free," and "never needs focusing" and you know they are junk.

How about cost? If you stay with the main brands you will get better views by spending more money, to a point. Less expensive (under \$100) binoculars may have plastic lenses and prisms inside, and only the front and back lenses will be real glass. Less expensive binoculars will also be constructed with a dot of epoxy holding the optical components in place. If a lens or prism moves even as little, the binocular is then "out of collimation" and you will see two images of a single star. Most garage sale binoculars fall in this category. Your brain can re-align these images to a small degree but in doing so will cause eyestrain, leading to a headache. Epoxied systems cannot be repaired and are more likely to become damaged when dropped or jolted than higher end binoculars, which are held in precision, machined frames.

These can also be repaired if they should become misaligned. Again, take your pick and pay up.

The most economical source of binoculars is the Internet. Look for firms that sell Leica, Fujinon, Swarovski, Leupold, Nikon, Pentax, Steiner and Zeiss. You should be very happy with these or similar brands. These are priced around \$300-1000+ but after owning and using many dozens of binoculars let me suggest a good pair is a fine lifetime investment, will save you much heartache, and may be enjoyed by your grandchildren someday. After all, you will be happy to lay down \$8000 for a SCT-GoTo some day, and let me assure you I have spent many more hours with my binoculars than my big SCT.

Center focus or individual focus? For astronomical use, the individual focus is best. Center focus, if it uses internal moving lenses, is just as good. But center focus that uses moving eye lenses have a problem. As you rest the eyepieces on your head or eyeglasses, they tend to see-saw on the center axle, throwing one side to near focus and the other to far focus. This problem is less with high-end binoculars, but can be really bad with glasses under \$100. If these are to be used for only astronomical, go for individual focus. The places you really need center focus is bird watching or racing events where the target is always on the move.

To summarize, start with 7x or 8x, 42-50mm, expect to pay \$200 or more, and consider much more. You'll thank me one day. Oh, did I say you will have to read those books I mentioned earlier?

#### FOR SALE

George Allen has the following for sale; Hardin 6" f-8 > dobsonian scope, with 2 eyepieces (9 & 25mm fully coated Plossls), sky chart, > other charts, > > new in the box, moon filter, assembled. \$250. I was able to > find the 10" > > version and now have one of those. Contact by email > [geonjod@earthlink.net](mailto:geonjod@earthlink.net)



**Club Officers .....**

**President:** Al Dorn 291-5595  
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**Vice President:** Deb Cheney 296-4733  
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**Treasurer:** Bill Bond 491-4135  
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**Stella Editor:** Mark Weiss 291-5322  
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**BENEFITS OF MEMBERSHIP**

- ◆ Members receive the STELLA, our monthly newsletter.
- ◆ Each member is automatically a member of the Astronomical League, the only nation-wide organization for amateur astronomers.
- ◆ Use of the observing site at Weeping Water, NE
- ◆ The opportunity to borrow one of several club-owned telescopes.
- ◆ Organized trips to local observatories, planetariums and museums.
- ◆ Significant savings on subscriptions to **Sky & Telescope** and **Astronomy** magazines.
- ◆ Savings on astronomy books and printed materials.

**ANNUAL MEMBERSHIP DUES**

Regular/Family  
\$25.00

Junior/Student  
\$10.00

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