

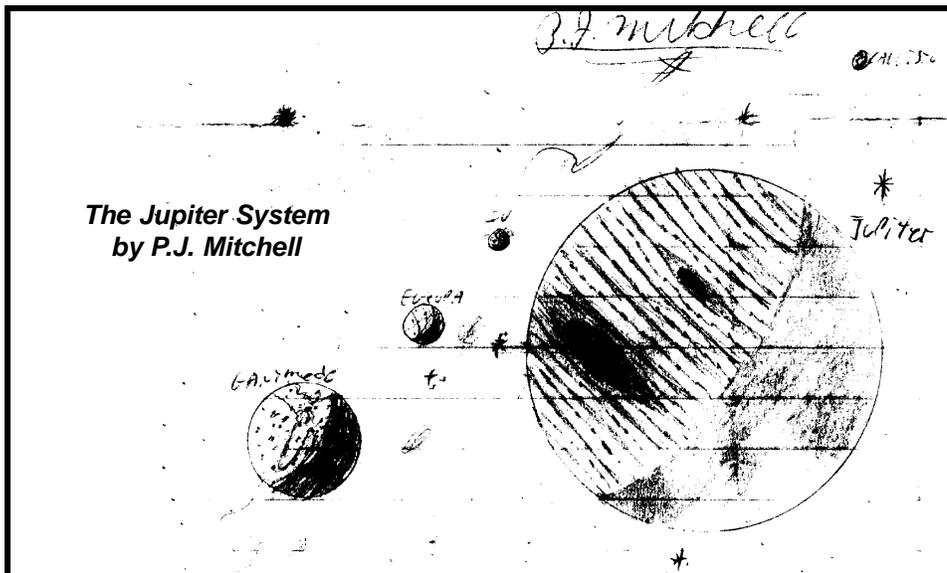


# The American Astronomer

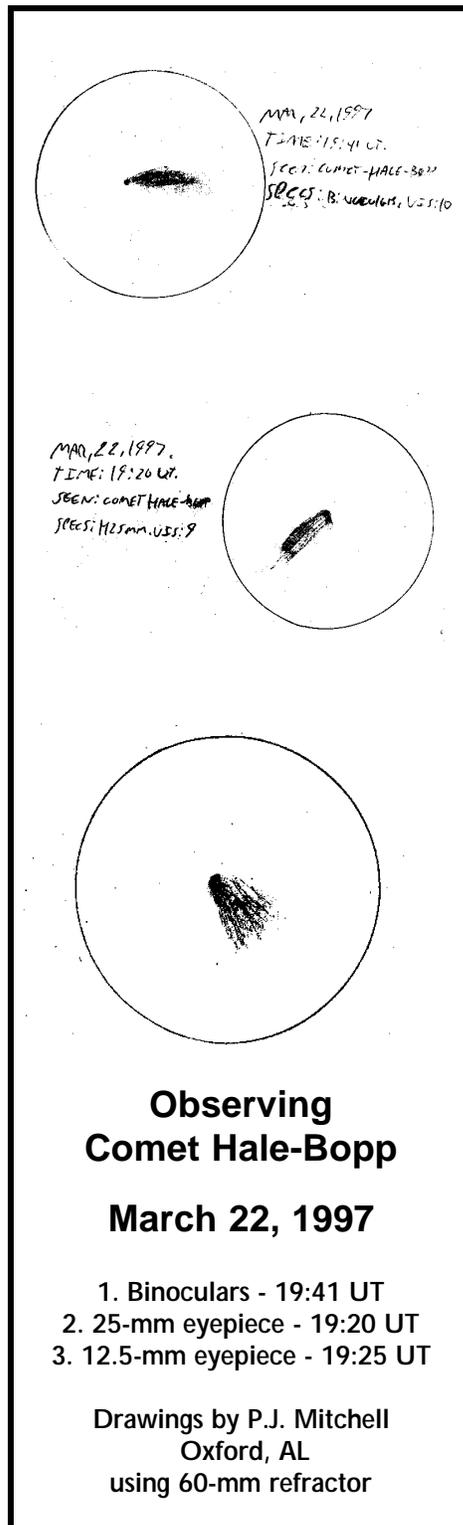
THE QUARTERLY NEWSLETTER OF  
THE AMERICAN ASSOCIATION OF AMATEUR ASTRONOMERS

Volume 11, No. 1

December 1997



The Jupiter System  
by P.J. Mitchell



## The Future is Looking Up

### President's Notes

#### Assistant Editor Announced

The AAAA keeps moving forward. I have a lot of good things to report in this month's President's Notes. First of all, I am happy to announce that Brenda Culbertson of Mayetta, Ks. has accepted the position of Assistant Editor of our newsletter, The AMERICAN ASTRONOMER. You have already read some of her great articles in past issues, and now she will be a regular contributor. This month she treats us to an article on what to wear when observing during these cold winter months, and begins a new series of observing articles on what is up in the night sky in the months to come. I hope that you are looking forward to her writing as much as I am.

#### ALCON '98

Each year, the Astronomical League presents a national convention for all members (of which you are one) to attend. This year (1998) the convention, or ALCON, will be held in French Lick, In. As another service to amateur astronomy, the AAAA will be providing a listserver to the Astronomical League to help keep members informed about the convention. A monthly newsletter

about ALCON will automatically go out to all those that have Internet access, and have subscribed. This newsletter will explain what activities will be going on at the convention, what speakers will be lecturing, and what sights you can see in the area. If you would like to subscribe to this newsletter, send an e-mail to [alcon98@gs1.revnet.com](mailto:alcon98@gs1.revnet.com), and put the word "join" on the first line of the body of the message. That is all there is to it. I hope that many of you will be able to join us at French Lick.

#### New Observing Program

Finally, I have put the Astronomical League's new observing program, the Urban Club, to bed. This new program is geared for observing under heavily light polluted conditions, and brings amateur astronomy back to the cities. It is a list of the best Messier and deep sky objects to observe under less than ideal conditions. The AAAA will be sending a copy of this new program to all members in January. We have many more exciting things planned for the AAAA, so I hope that you stay with us and share in the excitement. As they say, the future is always looking up. Until then, clear skies, and bloodshot eyes.

John Wagoner  
President - AAAA

### Observing Comet Hale-Bopp

March 22, 1997

1. Binoculars - 19:41 UT
2. 25-mm eyepiece - 19:20 UT
3. 12.5-mm eyepiece - 19:25 UT

Drawings by P.J. Mitchell  
Oxford, AL  
using 60-mm refractor



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THE NEWSLETTER OF  
THE AMERICAN  
ASSOCIATION OF  
AMATEUR  
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## Letter to the Editor

Dear President of AAAA:

I, P.J. Mitchell, am writing to say thank you for congratulating me for observing 100 features on the moon with my naked eye, 10x50 binoculars, and my Tasco 60MM refracting telescope. It's very exciting for a 14 year old boy to be awarded for something that one day he would like to do professionally. It makes me feel like a real amateur astronomer because one of the problems is that I don't really know how to fully operate my telescope.

The problem is that I don't know how to use the right ascension and declination to find celestial objects. So I hope you guys could help me. But despite this, I've seen Jupiter with its four moons (Io is my favorite), open star clusters like M45, M7 in Scorpius, and the Trifid in M20. I've seen double stars from the trapezium in the Great Orion Nebula to Epsilon Lyra. I've seen nebulas like the Great Orion Nebula to the North American Nebula in Cygnus. I recently saw my first galaxy, M31 - the Andromeda Galaxy. One of my favorites is the Planet Mars. I'm extremely fascinated by the idea of terraforming and colonizing the planet. Jupiter is the easiest planet to find. I've seen all of the visible planets. Venus and Mercury are the most boring ones to me. The most pretty double star to me is Alberio.

At first I was living in Miami, FL. where the sky glowed blue but then about six months ago me and my family moved to the small town of Oxford, AL, where on any clear night you could see about 20 to 25 stars and even the Milky Way itself. A lot of my interest in astronomy came from reading. I have over 13 books on astronomy: 1 atlas which has always helped me, 3 books on Mars, 3 books on General Astronomy, 2 books on how to observe, 1 on black holes, 1 on interstellar travel, and others on space related things. I also have a year's worth of *Astronomy* magazine and *Sky and Telescope*. I've also gotten countless books from the library (both school and public).

Also, I'm in 7th. grade and they don't teach much about astronomy, but they do teach Life Science, but I'm good in all fields of science. I showed my teachers the article in The AMERICAN ASTRONOMER that announces my receiving the Lunar Club certificate and they all said that they were proud of me for this great achievement (especially my science and math teachers). My family was especially proud. I framed my certificate also.

I know a lot about astronomy. My math teacher says I could have a ninth grade science education. So hopefully one of these days there will be a professional astronomer by the name of P.J. Mitchell. When I become a professional astronomer I would like to study Mars and find ways to get us there and how to turn it into an earth-like planet. I think people that do things like that are called Areologists? So have good seeing and I'll be seeing you around.

Oh, enclosed is my observation of Comet Hale-Bopp. That was a great comet. May there be others. I can also draw pretty good too.

Fellow amateur astronomer and friend,

*P.J. Mitchell.*

P.S. And a special thanks to Carl Sagan (1934-1996) for helping me realize my dream and to John Shoemaker for showing us that not all rocks are boring. My apologies to his wife Carolyn who was always by his side. Thank you.

Dear P.J.,

Well, you certainly made my day when I received your letter. I read it from cover to cover and was delighted with the whole thing. I especially enjoyed the drawings that you sent with it. You truly are talented in that area. I just wish I could draw half as well. I am very happy that we could help in giving you the recognition that you truly deserve. From your letter, it sounds as if you are well on your way to a successful career in science. We here at the AAAA wish you the best of luck.

Don't worry about not being able to use Right Ascension and Declination to find things. You will find that the most successful and knowledgeable deep sky observers are star hoppers, and don't use RA and DEC at all. A good star atlas, a red light, and a telescope or binoculars is all that you need to open up the heavens for endless hours of pleasure. As starters, an inexpensive pair of binoculars and the Astronomical League's binocular programs are all that you need to learn the night skies, and find the many objects that lie therein. I hope you get a chance to tackle one of these programs. It sounds as if you are in the right location for it.

Your goal of terraforming Mars is a worthy one. Interest in planetary science is at an all time high right now, and Mars is in the spotlight, what with the many probes either there or on the way. The planets have always been a source of wonder and fascination for me, and the wonderful thing about them is that they are in our own backyard. Our knowledge about them will increase several fold as we continue to send out more probes, and use the Hubble Space Telescope. Exploring the planets is something that can be done in our lifetimes, and promises to add to the wonder that we call astronomy.

I certainly hope that you continue your studies in astronomy and in science in general. We can always use more young people with your talents. Keep reading and studying, and keep us posted on your successes. I hope to see your name again in the AMERICAN ASTRONOMER as the recipient of yet another observing award. We are certainly happy to count you as one of our members. And as I say to people who think I'm nuts, "Remember, it is better to curse one little candle, than to light the darkness".

Best wishes, and clear skies.

*John Wagoner  
President - AAAA*

## Sky and Telescope Magazine

A regular subscription to S&T is \$36.00 per year, but you can get it through the AAAA for only \$27.00 per year. If you would like to start a subscription to S&T through the AAAA, or if you want to extend your present subscription at the reduced rates, then send a check for \$27.00 made payable to the AAAA to:

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# Traditional Lecture About Keeping Warm

*Keep safe and don't freeze your tootsies, pinkies, or other parts of your physical astronomer. And if you get cold, go where you can get warm! And stay there a while!!*

## COLD WEATHER IS ON ITS WAY

by Brenda Culbertson

Have you noticed that many things change with the change of seasons? Sure, the constellations are different. Of course, the bugs have gone underground or inside. Given, the reptiles have slithered to warmer places. But have you noticed that your wardrobe has also changed?

Doug Holmes of Northeast Kansas Amateur Astronomers' League in Topeka, Kansas, recently wrote about the temperatures lowering. This is true. He also wrote about the jacket feeling good and coffee doing its job to keep us warm. These are also true statements. Doug was getting to the point that COLD WEATHER IS ON ITS WAY!

It is time to give everyone reminders of what to do and what not to do in the cold. Here are some things to keep in mind when you are preparing for an observing session during the colder season.

### 1. Wear layers of clothes

Whether or not you feel cold when you are packing to go observing, take extra clothes. A seasoned observer knows that temps drop during the night, and observing is not an activity that takes a lot of calories. You won't generate heat by standing or sitting still looking through an eyepiece.

Start with a layer of silk or nylon against your skin. This will act like an extra layer of skin and help you keep the air off your skin. Then a more porous layer, such as cotton or wool should be layered. These fibers will draw the moisture away from your skin so it won't get wet from any sweat which may occur. It also acts as insulation. Then a fairly tight weave of fibers to trap the body heat in the cotton or wool layer. You won't want any wind to blow through a loose weave, so you might consider a nylon material, such as in a windbreaker, to go on the outermost layer.

If you want a good one-piece covering to wear during Winter, get a snowmobile suit. These are well insulated and have a nylon outer covering. Some come with hoods, fuzzy face covers, and snug cuffs to keep the body heat in. They generally have many large pockets and zippers. The Carhart style coveralls are OK, but they allow the wind to penetrate the outer layer and allow the heat to escape more easily than the nylon would. You can get the suits at several places, but most stores order only once. If you see one and have considered getting one, you should get it when you first see it. They usually run around \$100. Places that have carried them in the past include Walmart, TSC, and Army surplus stores.

Something else to remember...don't

wear metal jewelry. It will transfer the cold directly to the skin it is touching. Earrings can promote freezing of the lobes. If you wear a watch, keep it covered with your arm.

### 2. Keep your feet warm but not hot

Layer what you wear on your feet as well. Nylon socks against the skin, then fluffy cotton or wool after that is ideal. There are such things as battery operated socks to keep the feet warm, but I have not heard of anyone actually being successful with those. Socks are on the market which are designed to cause the body to generate more heat for the feet. I think that the simple means of layering is more successful than the gimmicks. I may be proven wrong, and that's OK, because my feet get cold real fast and I would like to find something to help.

If you can find boots that have a thick sole, you might find those to work best. The sole raises you from contact with the ground (which is very cold after a long period of freezing temps). A variety of linings help to trap your body heat in your boots. Make sure you take extra socks so you can keep your feet dry in case of sweating. Wet feet get cold fast!

### 3. Don't forget your head

Make sure you wear a hat. The layering principle works with heads, too. A nylon cap under a wool hat works very well. Many types of hats are on the market, but most people wear the traditional stocking cap or the insulated hunter's hat. It doesn't matter which hat you wear, just make sure your head is covered. Most of the body heat is lost through the top of the head.

### 4. Hands need covering too

Wear mittens, gloves, socks, anything to cover the hands. The little digits of fingers can freeze quickly when handling knobs, dials, and other metal pieces. The one-size-fits-all stretch gloves are great to wear when you need to handle things. They can be worn under other gloves or mittens. They are very inexpensive, too.

### 5. The face needs protection

People who do not have beards know how cold the face can get while being exposed to a cold breeze. The face needs to be protected so it does not get chapped, wind burned, or frost bitten. A neck scarf can be brought up over the nose and mouth, leaving just the eyes exposed. Some knit caps provide full face covering with holes for the eyes, but these are not very comfortable for most people.

### 6. Food and drink

Something warm to drink helps to keep the radiator system working (and flushed). It is good to keep fluids in your body when you

are in the cold. Coffee is not the best thing to drink, but it is the most common. Actually, a warm fruit juice is better, or hot chocolate. Coffee dries out the system, which you don't usually need. Fruit juice gives you the long lasting energy to keep going and also tastes yummy. Definitely don't drink alcohol. It thins the blood and does other things to the mind and body, especially when the person is in the cold.

Snacks turn up, no matter what. Usually something crunchy is available sometime during an observing session. Nuts, dried fruit, and "healthy" stuff is better for producing that long lasting energy. Oreos are not so good for you, but they usually turn up during the crunchy food eating.

### 7. Eyes need looking after

The cold dries out the skin, but it also dries out the eyes during a long observing session. Dr. Neil Carr, O.D., recommends putting moisture drops in the eyes before going out to observe. This keeps them moist even if we don't blink for a while. Rest the eyes between sessions of finding objects.

### 8. Vehicular care

Take care of your vehicle if you drive to your observing site. If you run your equipment off the battery that starts your vehicle, make sure you don't drain it during the observing session. Some people take an extra, charged battery to run the equipment and save the vehicle battery to run the vehicle. This is a good idea, but if you still run both from one battery, stop every now and then to recharge the battery a bit. Make sure your equipment is not hooked up when you start the vehicle. Most people don't observe where AAA will find them. Be prepared.

### 9. Just in case...

Take blankets, a thermos of warm drink, a few snacks, a first aid kit, and extra clothes. Let someone know where you are going, and take someone with you if you can...even if that person doesn't observe. A cellular phone or CB radio is always good to take if it is available. Turn in a "flight plan" to a friend who can form a rescue party if you don't turn up when you are supposed to.

### 10. Other

You should go out and enjoy the Winter season. The nights are longer, quieter, clearer, and full of great stuff God put up there. Be careful, though. Set a temperature limit for yourself, and a time limit. Don't push yourself to the point of exhaustion, but enjoy your observing session. Keep safe and don't freeze your tootsies, pinkies, or other parts of your physical astronomer.

If you get cold, go where you can get warm! And stay there a while!!

# Winter Season Observing

**Go out and look around.**

**Whether you are a naked eye observer, a binocular user, or a devoted telescope jockey, you will always find something to look at.**

*by Brenda Culbertson*

The Winter Season provides steady, cold air; long, early nights; and many celestial objects to view. When you set out to observe in the cold temperatures, make sure you follow cold weather safety precautions and keep safe. Also, let your telescope cool off if it has been stored in the house. It only takes a short while to do this, by setting the tube in place and taking the covers off. The temps in the tube should reach ambient temperature in a few minutes. You could set the scope outside hours before the observing run if you have good conditions, and it won't take as long to cool off before observing.

Before you start observing, set up a plan. List a few objects you want to view and check them on your charts. Make sure you have your charts laid out, or have pages marked, so you can get to the place where your objects are described without having to fumble around much. If you are working on a list, be realistic when setting out to find an object. If the object is due to set shortly after sunset, look for it first and don't be disappointed if you don't find it right away. It will be there the next night as well. You can try again.

Document the objects you see. You can make notes in an observing notebook, with a tape recorder, or by photographs. Keep track of dates, times, and objects as you view them. A short description will help as well. You can refer back to your notes later and transcribe them into a more detailed format at a more convenient time.

Getting started is half the battle of observing in the cold. Once you get started, you will find yourself indulging in what God put out there. Overhead in the Winter Season are some favorite objects to observe. Below are some of these objects, ranging from easy to difficult, for you to hunt, observe, and document. Start with the easy list and gradually conclude the season with a few of the difficult objects. There are many, many objects to observe in the Winter sky, but these will get you started.

## **Easy Objects**

Leading in the Winter constellations



**The Horsehead Nebula region in Orion. The bright star to the left is zeta Orionis, also called Alnitak. All photos by Roy Herrman, Shawnee, KS.**

Beginning is Taurus, where you will find the Pleiades Star Cluster, also known as M45. This cluster is a naked eye object and is easy to see even in the city limits. Known as the Seven Sisters, six or seven of the brighter stars are easily discernible without optical assistance. From a remote observing site, 12 to 13 stars can be resolved with the naked eye by most people. In binoculars, a much more dazzling sight is seen, with many more members showing up, along with a light blue nebulosity. In a low powered telescope even more stars can be seen. The average magnitude of stars in this cluster is about 1.5.



**The Pleiades Cluster in Taurus, also known as M45**

A second object to be seen in Taurus is the Hyades. The Hyades is the prominent star cluster making up the V of the bull's head. Binoculars will reveal more members of this group, with Aldebaran, a red giant, dominating the view.

The constellation of Orion gives us much to view. An easy object to find and view is the Great Orion Nebula. The Orion Nebula, also known as M42, is one of the most observed objects by astronomers of all levels, and has many details to see. It is a naked eye object, but shows more and more detail as the observer views through more and more magnification. It is located in the sword of Orion and is evident by the bluish nebulous area. A closer view will show wisps of nebulous material extending around a central group of stars called the Trapezium, which is a moderately difficult object.

Another naked eye star cluster, M 41, can be seen in Canis Major. Its brightest members range between 7th and 8.5th magnitudes. A few of the members of this cluster can be picked out in binoculars, but seen through a telescope, it provides a beautiful array of stars.

## **Moderately Difficult Objects**

Another object in Taurus is the Crab Nebula, also known as M1. The Crab Nebula resides between the horns of the bull and is best seen during a clear, dark, steady night. A telescope of at least eight-inches of aperture is needed to view this object well, but smaller instruments have been used. The Crab Nebula is the remnants of a supernova, and appears as an elongated oval, fuzzy patch with no star. The Crab Nebula is of 9th

# Winter Season Observing

magnitude.

The Trapezium is seen at the core of the Orion Nebula. It appears as a trapezoid, with four bright stars at unequal distances. A closer look will show six distinct stars, and an even closer look will show more. A bluish nebulosity shines throughout this grouping, and a 3 dimensional appearance can be seen under high magnification.

A fun object with moderate difficulty to see is the Eskimo Nebula, also called NGC 2392. This object is in the constellation Gemini and is 9th magnitude, with a 10th magnitude central star. Nebulosity encircles the central star, and when closely scrutinized the observer will see a face and the fringe of a parka. Thus, the Eskimo.

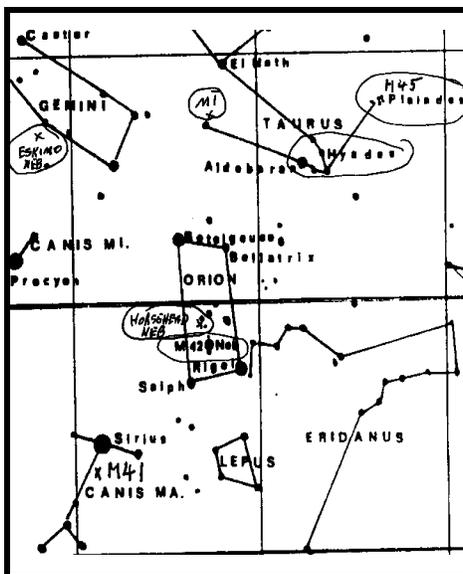
## Difficult Objects

Orion provides a nearly impossible object to view optically. It has been done, though. The Horsehead Nebula is an object which shows nicely in photographs, but most observers have never seen it visually. It takes an extremely exceptional night of clear, still air and no Moon. It also takes a fairly large aperture telescope and much patience. If you have the opportunity to view this object, take it, but don't be disappointed if you don't see it. It is quite a task.

Canis Major provides another difficult object to view. It is the companion to Sirius, Sirius B. Sirius B is said to be observable in a 10-inch reflector, but according to *Burnham's Celestial Handbook*, "The air, however, must be very steady. With reflectors of the usual 4-vane diagonal-holder type, the image of the companion may also fall on one of the diffraction rays, where it is totally lost. The observer should determine the expected PA beforehand, and the telescope should be oriented so that the companion will fall between the diffraction spikes." Sirius is -1.5 magnitude and Sirius B is 8.6. You can see how Sirius will easily outshine its companion.

## Meteor Showers

Meteor showers occur all the time. Selecting the one for you to go out and watch is something you will have to do after evaluating sky conditions, Moon phases, and your time. The ideal Moon phase is, of course, New. With no Moon to hinder your sighting of the fainter meteors, you will see many more than if you had to contend with the Moon's light. However, just past or prior to New Moon is a pretty good time too. Sky conditions have a lot to do with your spotting meteors. If thick clouds block your view, you won't see any but the rare fireball that shows through the clouds. High, thin clouds will block your view of the very faint meteors, but



you should still see some of the brighter ones. Clear, steady air provides prime sky conditions for viewing the faint, fast meteors that would be lost due to lesser conditions.

If you have never watched a meteor shower you should join a seasoned observer for the show. The seasoned observer will have stories to tell while you are lying back waiting for the meteors to start showing themselves. Some things to take on your meteor observing run include (but are not limited to) the following:

- ☞ A lounge chair to lie back and look up, without getting a pain in the neck.
- ☞ A blanket or sleeping bag to cover up and keep warm.



**The Central Core of M42 in Orion, where the Trapezium is found.**

- ☞ Cold weather attire (if in the Winter) or bug spray (if in the Summer).
  - ☞ Warm liquids to drink.
  - ☞ Snacks.
  - ☞ A basic 35mm camera with a manual shutter and a lens of 50mm or wider.
- NOTE: Film preference varies from person to person, but 400 ASA color is a general purpose film many meteor photographers use.

Go out to a hilltop with all horizons visible, away from the city sky glow, and settle in. Start looking up and when you see meteors coming from the direction of the source, you will be watching members of the shower. Meteor showers are named from the constellation they appear to radiate from. Therefore, the Geminids appear to come from Gemini, the Leonids from Leo, etc.

Here are some dates for Winter Season meteor shower peaks. Watch nights before and after the peaks, though, and you will still see many meteors from the shower.

- December 12-14, 1997  
Geminid Meteor Shower Peak
- January 3-4, 1998  
Quadrantid Meteor Shower Peak

## Other Objects

Other objects to keep viewing include the planets, the Moon, and the Sun. Lunar events occur frequently. Consult the *S&T Skyline* for updated information on lunar occultations, planetary occultations, asteroid passages, and more.

The Sun is coming out of its low activity period and we should have some events to see in the near future. Look for sunspots and listen for information. With high solar activity, the possibility of seeing aurora grows. Again, a moonless night with clear, calm skies is the best for viewing aurora.

Whether you are out watching for meteors, or hunting down faint fuzzies in your telescope, make an occasional look to the north to see if the red glow or white spike has made an appearance. If it has, watch it for a while. Take a photograph if you are set up for that, but most of all, call a friend if you have access to a telephone. The friend won't mind being waken out of a sound sleep to go out and witness an aurora. If you can't think of anyone to call, call me. I would appreciate it.

There is much to see at any time. Go out and look around. Whether you are a naked eye observer, a binocular user, or a devoted telescope jockey, you will always find something to look at. What I have listed is not even a nick out of the whole list of objects. Make a plan and go out to enjoy the heavens.

Clear Skies!

# Don Anderson Saves the Day!

*(or in this case...the night!)*

A very unexpected object was seen by participants of a "star gazing" from the parking lot of the Topeka & Shawnee County Library. The gathering was hosted by the library and was provided by several local astronomers who were organized by Brenda Culbertson.

The night of October 3, 1997, was clear but only a few objects were visible from the light polluted, tree lined, downtown parking lot in Topeka, Kansas. Two telescopes were set up, but one did not work so well, as a couple pair of binoculars were passed around. A few children and adults attended to see what they could see, and visit with the astronomers, Culbertson, Don Anderson, Mike Calderwood, and Liliانا Mandigo. Jupiter and Venus were the prime targets but

a couple of the brighter stars were viewed as well.

The evening was pretty slow since not much could possibly be viewed from our location with our equipment. We answered questions about equipment, celestial objects, and many other topics. The library contact, The library contact, Barbara DeLisle, provided treats, and the participants provided the interest to keep us all going although we were running out of things to talk about and things to see. That is until Don mentioned that a particular object, or set of objects, were due to arrive.

About 8:20 p.m. that night, an extremely bright object appeared in the southwestern sky and traveled to the northeast. The object was a glimmering, golden, non-blinking

thing travelling at a pretty fast clip. It was followed by a smaller object only a few degrees behind it. Anderson said that it was the Mir Space Station with the space shuttle Challenger following.

We pointed out the objects and everyone in the neighborhood must have heard the exclamations from the star gazers. All eyes were on the space station and pointing fingers followed the glimmering objects as they traversed the overhead skies. After a mere few minutes Mir and Challenger were out of our sight and people started breathing again.

Had it not been for Don Anderson, Mir, and Challenger, the star gazing session would not have been a memorable event, but just another program at the library.

Thanks, Don.

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