

* **Event Horizon** *

Volume 3 Issue 2

December 1995

Editorial

I don't know about everyone else but I would really like to be able to do some observing again one of these days. We have an interesting event taking place on December 9 as discussed in Rob Roy's article on page 5. Those of you who do not attend our meetings will not get this newsletter in time and I was tempted to leave out the article for that reason. So before anyone complains about untimely information I believe the article still has value in showing yet another celestial event to watch out for. For those who are able, you may want to consider attending more meetings.

If it is clear on the weekend before Christmas (new moon December 22) I will be having a look at "Denise's galaxy". Check out the article on page 2 and finder chart on page 3.

This will be the last newsletter for anyone who hasn't renewed their membership. The deadline was October 31 but if you send in your renewal right now you won't miss a single issue. Consider it as an early Christmas present to yourself. You can still ask Santa for all those eyepieces, filters, books, software, ...

As always, articles and pictures are appreciated and you don't need a modem or Internet connection to submit them. The article by David Fleming on page 6 was submitted via "snail mail", scanned then converted into text using Optical Character Recognition (OCR) software. Just make sure to submit early and often.

Happy (and clear) holidays,

Stewart Attlesey stewart@io.org

HAMILTON AMATEUR ASTRONOMERS

Chair's Report

I can't think of a better way to summarize our November general meeting than: wow.

If you were there you know what I mean. If you missed it, picture this: 140 people, Terry Dickinson, the finest astrophotos ever and a chance to get autographed copies of some of the best astronomy books available.

Like I said: wow.

So many people helped at the meeting, I'm afraid to mention names in case I inadvertently forget someone! Anyway, here goes: thanks to Grant Dixon, Bill Tekatch, Gary Sutton, Pat Durrell and everyone who pitched in to help set up more chairs when the audience continued to grow beyond our expectations. Thanks to Bob Botts, Mike

Devillaer, Doug Welch and Grant Dixon for providing interesting presentations while we waited for Terry to arrive and set up. Thanks to Raechel Carson, Denise Kaisler and Grant Dixon for looking after the sale table throughout the meeting. Thanks to Bob Botts for coming to my rescue and helping with Terry's slide projector. Thanks to everyone who came and brought their families. Thanks to Grant Dixon for making sure everyone in the world knew about the meeting including the papers, TV and radio stations. A final and special thank you to Grant Dixon for arranging Terry Dickinson's appearance at this, our 2nd anniversary meeting!

The meeting was wildly successful on many levels and we have ten new members because of it, as well! I am certain that the momentum started with this first meeting of our third year will continue with us through the upcoming year.

After our very first meeting two years ago, as we piled into a newly opened restaurant in Dundas and settled in to our favourite beverages, Doug Welch proposed a toast to the Hamilton Amateur

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Astronomers. It's a toast I've never forgotten because it has proven to be our *raison d'être*. He raised his glass and said: "Have fun!".

We are, Doug, we are!!


Merry Christmas and a very happy & prosperous New Year to everyone!

Ann Tekatch
Chair
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P.S. Make sure you check out our new and improved home page!

<http://www.science.mcmaster.ca/HAA/index.html>

Denise's Galaxy: Perseus A

 One of the really neat things about belonging to an astronomy club is getting to meet interesting people who are doing interesting things.

Denise Kaisler is a graduate student in the Physics & Astronomy Department at McMaster University and is new to our council this year. She was the guest speaker at our general meeting last April. You'll remember her brave and witty presentation on astrology, I'm sure. (If that wasn't enough to convince you that Denise is not an ordinary graduate student, then you should check out her home page on the internet!)

Anyway, I had a chance to talk to Denise at the October council meeting and discovered that she's been doing some work on a peculiar galaxy in the constellation, Perseus. This galaxy sounded quite fascinating to me but Denise wasn't sure whether it would be visible in a backyard 'scope or not. In fact, she confessed that she hadn't

actually seen it through a telescope, yet. My interest was piqued and I vowed to check into this peculiar astronomical object.

The galaxy's common name is Perseus A. It has an NGC designation as well: NGC1275. Perseus A can be found at right ascension: 3h19.8' ; declination: +41degrees31minutes or about 2 degrees east of the star called Algol in the constellation Perseus. (Check out the finder chart)

According to the NGC 2000 catalogue, Perseus A is small, (2.6' in diameter) and dim (visual magnitude 11.6). As a comparison, the Ring Nebula (M57) in Lyra is 2.5' in diameter and has a visual magnitude of 9.0. The dimmest Messier object, M76 (the so-called "Little Dumbbell Nebula") has a visual magnitude of 11.5, but is almost twice as big as Perseus A at 4.8' across. The surface brightness of M76 should therefore be less than that of Perseus A. If M76 is visible in an 8" telescope under dark skies- and it is because I've seen it in my 8" scope - I would guess that Perseus A would be visible also.


Perseus A is a strong source of radio and X-ray emissions and is located about 300 million light years away from us. It appears to consist of two galaxies actually passing through one another! The radio waves being emitted from Perseus A have been traced to two lobes near the nucleus of the galaxy(ies) which orbit about a common centre of gravity in only 10,000 years.

I promised Denise that we'd find her galaxy as soon as the next opportunity arose. It's been cloudy ever since.

Sorry, Denise, it doesn't look like galaxy-gazing was in your horoscope for November! However, I see a tall, dark telescope pointing towards Perseus in your future....

Ann Tekatch

Sweatshirts Part 2, Anyone?

 Our first order of sweatshirts didn't last very long! Many people have expressed an interest in ordering more. If we can get a few more orders, we can put in another order for 25. If you want to reserve one, make sure you fill out the form below or let me know.

In case you missed the first order, here are the details again:

These 50% cotton/50% polyester sweatshirts will feature the same yellow-gold logo plus the phrase "...resistance is futile" beneath it. They are available in black, white, red, grey, or dark blue. Sizes: Adult S, M, L or XL (XXL available at \$3 extra). If we get orders for 25 sweatshirts, the cost will be \$23. each including taxes. If you're interested, fill out the order form below and hand it to me at the next general meeting or mail it to me at my address below. Once we have an indication that enough people are interested, we can place our order and collect payment.

HAA SWEATSHIRT ORDER FORM

NAME: _____

ADDRESS: _____

PHONE: _____(DAYS)

_____ (EVE.)

SIZE: _____

COLOUR: _____

Ann Tekatch
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JPL News Release

Contact: Diane Ainsworth,
FOR IMMEDIATE
RELEASE Nov. 22, 1995

COMET SAMPLE RETURN MISSION
PICKED AS NEXT DISCOVERY
FLIGHT

A spacecraft designed to gather samples of dust spewed from a comet and return the dust to Earth for detailed analysis has been selected to become the fourth flight mission in NASA's Discovery program.

Known as Stardust, the mission also will gather and return samples of interstellar dust that the spacecraft encounters during its trip through the Solar System to fly by a comet called Wild-2 in January 2004. Stardust was one of three Discovery mission proposals selected for further study as part of a February 1995 announcement by NASA that a Moon-orbiting mission called Lunar Prospector had been selected as the third Discovery flight.

"Stardust was rated highest in terms of scientific content and, when combined with its low cost and high probability of success, this translates into the best return on investment for the nation," said Dr. Wesley T. Huntress Jr., NASA Associate Administrator for Space Science. "The Stardust team also did an excellent job of updating their plan to communicate the purpose and results of this exciting mission to educators and the public."

The Stardust mission team is led by Principal Investigator Dr. Donald Brownlee of the University of Washington in Seattle, with Lockheed-Martin Astronautics, Denver, as the contractor building the spacecraft. NASA's Jet Propulsion Laboratory will provide project management.

Comet Wild-2 is known as a "fresh comet" because its orbit was deflected

from much farther out in the Solar System by the gravitational attraction of Jupiter in 1974. Stardust will approach as close as 100 kilometers (62 miles) to the comet's nucleus.

"Space scientists are intensely interested in comets because we believe that most of them are well-preserved remnants from the earliest days of star and planetary formation," Huntress said. "Stardust should also give us some unique guidance about how to focus the science we plan to conduct a few years later with a surface lander on a different comet during the international Rosetta mission."

Stardust will be launched on an expendable launch vehicle in February 1999 for a total mission cost to NASA in real-year dollars of \$199.6 million. The return capsule carrying the dust samples would parachute to Earth in a landing on a dry Utah lake bed in January 2006.

Stardust will use an unusual material called aerogel to capture the dust samples. This porous, extremely low density material is somewhat like glass in that it is made of silica -- a pure form of sand -- and it has about the same melting point. Although aerogel does not absorb moisture, the strangely fluorescent substance can absorb large amounts of gas or particle matter due to its remarkable internal surface area.

The spacecraft will also carry an optical camera that should return cometary images with 10 times the clarity of those taken of Halley's Comet by previous space missions, as well as a mass spectrometer provided by Germany to perform basic compositional analysis of the samples while in-flight.

Stardust was selected over a proposed mission to study the circulation of the atmosphere of Venus, known as the Venus Multiprobe, and a proposed mission to collect samples of particle matter from the Sun, called Suess-Urey. These three missions and Lunar Prospector were among 28 Discovery proposals submitted to NASA in October 1994 in response to an August 1994 announcement of opportunity.

The first two missions in the Discovery program will be launched in 1996, in February and December, respectively: the Near Earth Asteroid Rendezvous, a small spacecraft that will orbit and study the asteroid Eros beginning in January 1999; and the Mars Pathfinder, designed to place a small lander and robotic rover on the surface of Mars in July 1997.

Formally started in NASA's FY 1994 budget, the Discovery program features small planetary exploration spacecraft with focused science goals that can be built in 36 months or less, for less than \$150 million (FY '92 dollars), not including the cost of the launch vehicle. The program grew out of a series of discussions and workshops that NASA has held with the space science community.

(Thanks to Doug Welch for passing along this article. - Ed.)

Off the Beaten Path

Well, winter is almost here, and with the weather we had for the last month there is no guessing that it is about to arrive. With almost an entire month of solid cloud cover or fog this past month, I bet all of you are suffering from cabin fever. When the good weather arrives again (albeit cold weather), you can try a hand at the following list of easily located objects visible this month.

NGC 1555 Located around T Tauri, this faint and small patch of nebulosity requires both aperture and high magnification to spot. This is Hind's Variable Nebula, whose variability is associated with the famous variable, T-Tauri.

NGC 1647 This rich but spread out group of some 52 stars is located in the middle of the bull's forehead. This cluster is more obviously a cluster in binoculars or a finder than it in the main scope.

NGC 1817 Bright, rich, about 120 stars at 165X. Many dim members "fill in" this cluster. NGC 1817 and NGC 1807 are in the same field of view at 100X, these two clusters are not condensed and form a Poor Man's Double Cluster in the same wide angle field of view.

NGC 650 and NGC 651 (collectively M76) Bright, pretty large, elongated 1.8 X 1 at 200X. This planetary nebula located in Perseus, is the dimmest Messier object. It is often called the Barbell or Little Dumbbell because of its' resemblance to M 27 in Vulpecula. In an 8" it shows the dual structure that made William Herschel assign it two numbers.

NGC 1513 Also located in Perseus, this bright, large, rich and somewhat compressed cluster includes a nice arc of pretty bright stars on the North side. The bizarre thing about this cluster is that it is shaped like a horseshoe.

NGC 157 This bright, large galaxy, Located in the constellation of Cetus, is easy to find in an 8" scope. This galaxy shows some mottling in moments of good seeing. NGC 157 is located roughly one third of the way between Iota and Eta Ceti.

NGC 246 is a very nice planetary to break up all these galaxies and clusters. It is bright, large and round with several dark areas that combine to look like this is a doughnut someone took a bite from (something that typically happens after many an observing session). An OIII or UHC filter makes this effect more noticeable.

Charles W. Baetsen, Observing Guru
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What's Your IO?

Time to get down to business with your Christmas shopping again. I always send some trinkets to my relatives on IO. When you pause to put your feet up for a moment work on these questions. But first, here are the answers to last month's questions:

- 1) *True. Its magnitude is 12.8, so that a fairly small telescope will show it. It had been photographed frequently before being identified as a quasar in 1962-3, but had always been mistaken for a star.*
- 2) *True. Pioneer 10, launched in March 1972, made its closest pass of Jupiter on 3 December 1973, at a distance from the planet of 82,000 miles (132,000 km.)*
- 3) *True. The last transit of Venus was that of 1882. Assuming that one's memory can go back to the age of three, this means that anyone who can remember the transit must have been born in 1879 or earlier.*
- 4) *The 72-inch (182.7-centimetre) reflector made by the third Earl of Rosse in 1845. It was then much the most powerful in the world.*
- 5) *False. A transit instrument moves only in altitude, and always points due north/south. The moment at which a star passes over the observer's meridian can be determined very accurately, and this in turn gives the precise time at that moment.*
- 6) *True. The automatic transit instrument at La Palma was financed by the Carlsberg company, and is therefore known as the Carlsberg Transit Instrument.*

Are you comfortable? I'll make this month easy, but look out for January.

- 1) T/F The theory of relativity was first developed by Albert Epstein.
- 2) T/F Charles Conrad was the second man to step on to the surface of the Moon.
- 3) Why does the Sun rise toward the east and set toward the west?
- 4) T/F In July, daylight lasts for longer in Iceland than in Spain.
- 5) T/F A circular crater on the Moon will appear elliptical if it lies near the lunar limb.
- 6) T/F Capricornus is officially the tenth constellation of the Zodiac.

Don't forget to hang up your stockings. Have a very Merry Christmas and a

Happy New Year.

Io, Keeper of the Flame
Jupiter Co-ordinator



Rare Asteroid Occultation

Actually, the occultation of a reasonably bright star by an asteroid is not that rare an event. To live on the path of visibility of such an event, IS uncommon. For there to be fair diminution of 1 magnitude or more is rarer again. Such an event will occur in Hamilton's skies on Dec. 9 local time. During the whole of 1994, for instance, there was only one close call. We were on the very edge of the path of visibility of an asteroid occultation on August 27. It was a very poor one at that, the star's magnitude was a faint 11.9 and it dimmed by only 0.2 magnitude- not very exciting at all!

On Dec. 9, LMT, Asteroid 85 IO will occult SAO 111235. Hamilton and southwards (ie. Binbrook) will be on the path of visibility of this earth shattering event. The star is located in the SW of Taurus, RA 3h 31.0m, Dec 7d 12m. The asteroid (157 Km diameter) will start to occult 0:37-0:44 UT, Dec. 10 or 19:37-19:44 LMT, Dec. 9 (+/- several min.) The magnitude of the star is 8.5 and during the 17 second occultation it should drop to 11.6, a very dramatic change, indeed! Bright moon won't help, but, "Hey, you never know."

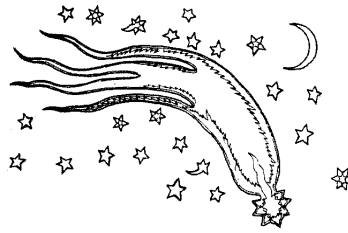
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Comet Impact on McMaster

On November 1, Dr. Jane Luu of Harvard University presented a talk for the McMaster Physics and Astronomy colloquium series entitled "Comet Nuclei and Their Origin". In her lecture, Dr. Luu touched upon a number of aspects including the composition, structure, and origin of comets. The current hot topic in comet circles (ellipses?) has been the recent confirmation of the Kuiper belt's existence. This subject played a feature role in the concluding portions of Dr. Luu's presentation.

By way of introduction, the audience was informed that the composition of comets is dominated by water-ices. In spite of this icy nature, however, a typical comet presents a fairly low albedo, reflecting less than 5% of incident light. This compares with values of about 90% for snow and 10% for the Moon, making the moniker "dirty snowball" a fitting one to apply to comets. Although the nucleus of an average comet may extend to a diameter of perhaps ten kilometres, an obscuring coma of gas can surround it for hundreds of kilometres. The escape velocity from a typical comet is only on the order of 1 m/s, and as a result the coma is not gravitationally locked into place.

Dr. Luu explained that comets may be monitored for periodic variations in brightness which indicate a rotation of their nuclei. A nucleus which is not nicely spherical will present different amounts of surface area at different times (somewhat like a gigantic potato rotating in space!). A rotation will lead to regular luminosity fluctuations, which are observed at both optical and infrared wavelengths. The amplitude of these variations may be used to discern the ratio of the long to short axes of the nucleus. It appears likely the aspherical nature of comet nuclei is the result of some shape modification processes. Jets which emanate from comet nuclei are



The Great Comet of 1577

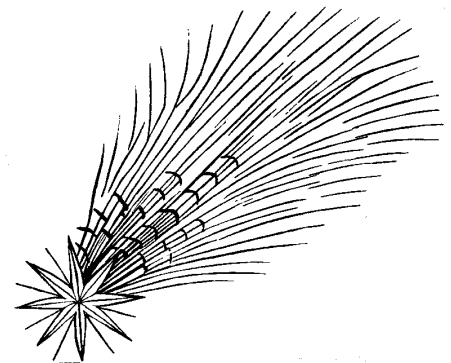
themselves observed to be distinctly asymmetric in their location.

The origin of comets is a subject that has recently undergone some significant revisions in scientific thinking. The Oort cloud, a spherical halo consisting of billions of comets located approximately 100 000 AU from the inner solar system, has often been thought of as the original home for all comets. In reality, while the Oort cloud seems to be supplying us with long-period comets ($T > 200$ years), gravitational capture from this distant cloud has almost certainly been too inefficient to explain the observed flux of short-period comets. In addition, Dr. Luu noted that if the orbital inclination of these short-period comets was conserved during capture, it would be hard to explain the fact that short-period comets are by nature low inclination objects. This argument was originally advanced by a Canadian team of researchers, and led to renewed interest in the existence of a "belt" of comets located just beyond the orbit of Neptune.

This region of high comet density was dubbed the Kuiper belt after an American astronomer who suggested its existence in the early 1950's. (An English astronomer named Edgeworth had a similar idea but seems to have missed out in the publicity sweepstakes). Just over five years ago, Dr. Luu and other researchers began looking for objects at Kuiper belt distances in order to test the rejuvenated hypothesis. Eventually, they succeeded in finding a rather large body (150 km in diameter) some 40 AU from the sun, and have since discovered many smaller ones at similar distances. Estimates now place the population of the Kuiper belt at between 100 million to 1 billion comets,

constituting a total mass just under 1% that of the Earth. Indeed, the planet Pluto and its moon Charon may in fact simply be the largest members of the Kuiper comet belt. As Terrance Dickinson recently noted, were it not for decades of history, the title of "planet" might now be removed from the frozen outpost known as Pluto. The Kuiper belt itself, and comets in general, will continue to be a source of intrigue for Dr. Jane Luu. With comets playing a dual role as survivors from the early solar system and potential links to understanding distant stellar systems, it is not too hard to share her interest.

David Fleming



Halley's Comet of 684

Cosmology Corner

The next Cosmology Discussion Group meeting is tentatively set for 8:00 PM Saturday January 27, 1996. We will meet in room B148 (the room next to the Planetarium) in the Burke Science Building, McMaster University. Our topics will be the inflationary universe, Star Trek, and time travel. Chip in your two cents worth.

Bill Tekatch 575-5433

HAA News

An exciting new addition has been made to the HAA web site. We now have a site for the juniors. I haven't had a chance to see it yet, but I've heard that its colourful and lots of fun. Make sure you get your kids to check it out! You can get to the HAA home page through the HAA home page:

<http://www.science.mcmaster.ca/HAA/index.html>

or get to it directly:

<http://www.science.mcmaster.ca/HAA/HAA/haja.html>

Thank you Uncle Grant!

This month we are having a meeting on December 19th and the topic is "Adventures in Space Flight". We are going to talk about some of the "cool" things that have been done in space. We also hope to announce the winner of the logo contest and hand out Certificates of Astronomical Achievement to everyone so they can start collecting stars. All of the logos that we received will be proudly displayed on the internet at the HAA site, so make sure you have a look at these fine works of art.

Since I mentioned the certificates, I'd just like to remind everyone how easy and fun it is for the children to earn stars. They just have to tell us about an object they have seen, or about a subject they are particular fond of, or write a story, poem, etc. for the HAA newsletter, or... almost anything! If they inform us about it, we will give them a star for it.

The logos will also be displayed in the December HAA newsletter. The HAA newsletter is in desperate need of stuff from the kids. What kind of stuff? Any kind of astronomy related stuff that can be put on paper: poems, stories, drawings, facts, puzzles, and everything else that I'm missing. It will be in the newsletter and also posted on the HAA web site, how cool! The "stuff" can be hand delivered to the HAA meetings (or any other place you find me) or e-mail it to me. See you on the 19th.

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Roman Around

Mercury (Greek - Hermes) protected merchants in particular, and travellers in general. He was depicted as the messenger of Jupiter and even as his servant in his amorous exploits. The early Romans being above all countrymen, had no need for a god of commerce. The first temple of Mercury in Rome was built not far from the port of Rome, where the commercial centre lay. The date traditionally assigned to the founding of this temple is as recent as 496 BC. The sanctuary was built outside the *pomerium*, the religious boundary of the city, which suggests that the cult was of foreign origin. The cock was especially sacred to him. To portray him Roman artists generally drew upon representations of Hermes. They gave him a beardless face and for attributes, the caduceus (the wand), broad-brimmed hat, winged sandals and the purse, the symbol of the profit to be derived from trade.

Venus (Greek - Aphrodite), a very ancient Latin Divinity, had a shrine near Ardea which was established before the foundation of Rome. In the 2nd century BC. she was assimilated into the legend of the Greek *Aphrodite*. The *gens Julia*, which claimed to be descended from *AENEAS*, assumed that Venus was one of their ancestors. Venus too, in early days, occupied a very modest position in the Roman pantheon. With Feronia and Flora she symbolised spring and fruitfulness. She had her place in the *Floralia* (Apr. 28 - May 3) and in the *Vinalia rustica* on Aug. 9.

Ev Butterworth

Weather and Astronomy

The following article is reprinted with the permission of Todd Gross.

Weather and Astronomy by Todd Gross

How to dress for the cold while observing
1 2 / 1 / 9 5

My Home Page deals with BOTH Weather AND Astronomy, and can be tapped into on the World Wide Web at: <http://www.weatherman.com>. All the articles can be retrieved on this home page!

Please note, that while I may speak authoritatively, I am just an amateur astronomer, like you, and all the information above reflects my personal opinion(s) only based on my experiences to date.

Thank you!

- Amateur Astronomy buff, and weatherdude.. Todd Gross

Last winter, while browsing the newsgroup sci.astro.amateur, on the Internet, I ran across some very amusing posts from my perspective. There were a few California (USA) amateur astronomy buffs who were experiencing a lot of difficulty observing because of the supposedly "cold" temperatures in the mid 40s (Fahrenheit, about 7C). What was so amusing of course, is that in interior New England (USA) where I am from, mid 40s is commonplace in the SUMMER at night, and while not exactly "shorts" weather, certainly can be dealt with in short sleeves and a very light jacket. In fact for short time periods, I have been known to run out of my house literally in my underwear for a short observing session even when temperatures hover near freezing.

Well, last winter was the first time I observed heavily in not only sub-freezing temperatures, but in fact near 0

degree weather (-18C). This may be no big deal for a Canadian, but I have to admit, at those temperatures, I WAS cold. Even as warm as 25F (-4C), I was often dressed wrong, and frostbite would start to set in after a couple of hours. I decided to start dressing right.

The first change I made, was to stop wearing just sneakers when the temperatures fell below freezing. Hiking boots are better, but sometimes the lining is totally inadequate. Boots made for snowmobilers are usually very cozy, and ski shops also probably can sell you a warm pair of off the slope boots. One pair of socks will suffice with the right boots.

As a weatherman, I always recommend "layers" of clothing. While I usually wear just jeans, long underwear bottoms work wonders on keeping the legs warm...sometimes too warm. On top, thermal underwear also works, but a long sleeve, or even short sleeve shirt will suffice with the following: A warm sweatshirt with a hood, followed by a warm, preferably "down" jacket. This match up will really keep you warm!

Some down jackets can be VERY warm, I have one that can bring me down to 30 below zero w/o feeling cold. Others are not very effective. Look for the "puffiest" one possible. Find these at specialty outdoor stores, such as REI, o r E M S .

Very important: don't forget a warm hat, not a cap, but a HAT, and gloves. I personally, have never found gloves that keep my hands totally warm, but anything works better than no gloves at all. Make sure that you can maneuver your fingers so you can handle eyepieces, e t c .

Hats are my specialty, some of the cheap, KMART \$3.99 specials are the warmest.. you know, those ski hats sometimes with a Pom Pom on top. I wear them everywhere. I probably look pretty stupid in some of them, but I must tell you I do not get very cold. Much of the heat from one's body (up to 40%) is lost through your head, so a hat really can help a tremendous amount if staying out for awhile in the cold, observing.

Taking breaks to go indoors will keep you going. Have a snack, or a c u p o f coffee or tea, or hot chocolate. DO NOT have alcohol, that will warm you up briefly, but not in any sort of EXTENDED observing session.

While most of this advice is obvious, I hope that those not used to dressing for cold weather observing sessions can make use of some of my advice above. If you are dressed properly, it really will not bother you very much to observe outdoors in the winter, especially when it is in the relatively "mild" 20s and 30s. Of course, the wind makes it feel that much colder.. so I highly recommend observing on very cold nights, but when the wind isn't t o o b r i s k .

Whatever the weather this winter, I wish you clear skies (at night!)

For those of you who live in Eastern Massachusetts, you can access my weather forecasts via a special Weather Hotline with the astronomer in mind. I discuss the chances of having a night with good transparency/stability, and I even update upcoming astronomical events such as conjunctions between the Moon and planets!

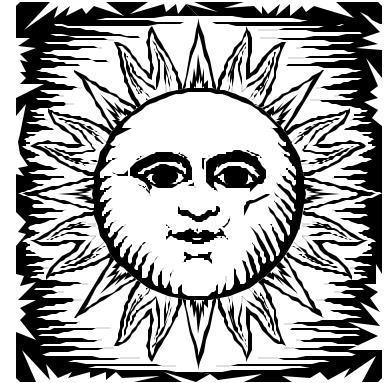
The number is 976-6200, and runs 65c/minute (direct dial from 508 or 617)... so limit your calls to when it is most important, such as before a Star Party!

Thanks!

- Amateur Astronomy buff, and weatherdude.. Todd Gross

(Thanks to Rob Roy for passing along this article. Now we need to convince Todd to move to our area. - Ed.)

- T o d d -



Shakespeare, No Astronomer

The Bard of Avon, unlike Chaucer, Dante, or Milton, seldom made use of astronomy or astrology. He never employed horoscopes, for example, to emphasize the traits of his characters. For all his numerous writings there are but few references, s u c h l i n e s a s

There's not the smallest orb which thou behold'st But in his motion like a angel s i n g s , (Merchant of Venice, V.i)

The fault, dear Brutus, is not in our stars, but in ourselves. (Julius Caesar, I.ii)

Saturn and Venus this year in conjunction! What says th' almanac to t h a t ? (2 Henry IV, II.iv)

The exhalations whizzing the air Give so much light that I may read by them. (Julius Caesar, II.i)

Since the Greeks thought that comets were exhalations of the atmosphere, this latter passage shows that Shakespeare was erudite enough to k n o w t h i s f a c t .
However, in Act III, Scene 1,

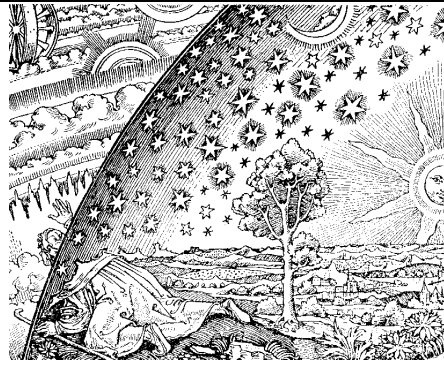
the Bard is guilty of a great blunder.
C a e s a r s a y s :

*But I am as constant as the northern star,
Of whose true-fix'd and resting quality
There is no fellow in the firmament.
The skies are painted with unnumber'd sparks,
They are all fire and every one doth shine,
But there's but one in all doth hold his place:*

Now, in Shakespeare's time, Polaris was about 2 degrees from the north celestial pole, close enough to appear fixed. But since Julius Caesar is speaking in 44 BC, some 1650 years before Shakespeare put the words into his mouth, Polaris was at that time 10 degrees from the pole and could not have been considered as fixed. In Caesar's time, both Polaris and Beta Ursae Majoris described circles of 10 degree radius.

Therefore, one concludes that Shakespeare did not know anything about precession, though Hipparchus had discovered the phenomenon in the first century BC.

R o b R o y



January Meeting

Friday, January 12, 1996, 7:30 p.m. GENERAL MEETING - Spectator Building, Frid Street, Hamilton. Our speaker will be Doug Welch and his presentation will be Science with a CCD Camera. Don't miss this talk! Doug spoke at Starfest to a mesmerized audience and had magazine editors chasing him afterwards for articles. Even if you don't own a CCD camera, you'll find this presentation fascinating.

Ann Tekatch, 575-5433

Editor's Address

Please send articles, drawings, pictures, comments and suggestions to Stewart Attlesey:

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DEADLINE:
December 26, 1995

Most file formats are acceptable but Microsoft Word with Times Roman font size 10 is preferred. Graphics can be in just about any format you can think of, but tif files seem to give the best results

CALENDAR OF EVENTS

- ◆ Sat. December 16, 1995 8:00 PM **OBSERVING SESSION**-Binbrook Conservation Area.
Call Charles Beatsen at 524-0148 for directions or details.
- ◆ Tues. December 19, 1995 7:00 PM **HAMILTON AMATEUR JUNIOR ASTRONOMERS MEETING**
- Mac Burke Science Building Rm B148
"Adventures in Space Flight"
For more information, contact Raechel Carson, at 308-8041
- ◆ Fri. December 15, 1995, 7:30 p.m. **COUNCIL MEETING** - at the home of Bill & Ann Tekatch.
You don't have to be a council member to attend a council meeting.
Call Ann Tekatch for directions or information.
- ◆ Thu. January 4, 1995 8:00 PM **ROYAL ASTRONOMICAL SOCIETY OF CANADA Hamilton Centre-**
General Meeting - McMaster University Medical Building Room 1A6
Speaker: To be advised
- ◆ Fri. January 12, 1996, 7:30 p.m. **GENERAL MEETING** - Spectator Building, Frid Street, Hamilton.
Our speaker will be Doug Welch and his presentation will be "Science with a CCD Camera".
- ◆ Tue. January 16, 1995 at 7:00 PM **HAMILTON AMATEUR JUNIOR ASTRONOMERS MEETING**
- Mac Burke Science Building Rm B148
"Comets: Visitors from the Outer Reaches of the Solar System"
For more information, contact Raechel Carson, at 308-8041
- ◆ Sat. January 27, 1996 8:00 PM **COSMOLOGY DISCUSSION GROUP**
- Mac Burke Science Building Rm B148
"The Inflationary Universe, Star Trek, and Time Travel"

