Hamilton Amateur Astronomers

Event Horizon

March 1996 Volume 3 Issue 5

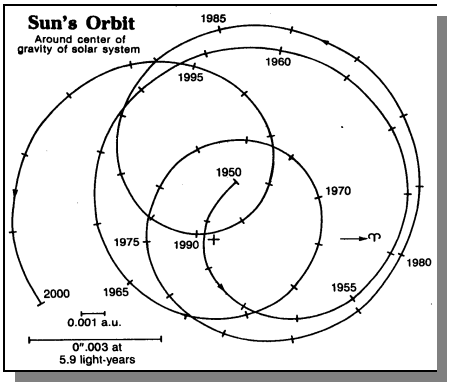
Could Aliens Detect our Solar System?

Recently, excitement spread throughout the astronomical community with the discovery of several extrasolar planets. The first one, dubbed Bellerophon, orbits 51 Pegasi, a naked eye 5.5 magnitude star. The detection of this planet, depended upon its having a large mass, on being very close to its parent sun and on having a very short orbital rotation period.

"The biggest problem is that the view of any planet would be swamped by the light from its parent star."

At just 8 million kilometers away from its star, Bellerophon is 1/8 the distance that Mercury is from our Sun, yet is probably as massive as Jupiter, more or less. This places the center of common rotation about 1/4 of the way from the star towards the planet. The significance is that this causes an enormous wobble in the star, which is visible spectroscopically every 4.2 days. With the equipment available, the planet could have been discovered a decade ago, only if the right astronomers had just looked at the data for 51 Pegasi.

Is the Hubble Space Telescope capable of detecting massive planets directly, then, even if they were much closer? The biggest problem is that the



view of any planet would be swamped by the light from its parent star. To provide the required contrast, HST's primary mirror would have to be 200 times smoother than it is now.

Our sister planets, notably Jupiter and to a lesser extent, Saturn, cause the Sun to wobble, too. Could alien astronomers either see us directly or detect the wobble in the Sun? Even if they were observing from a much closer system only 5.9 light years away, say around Barnard's star, they would see the Sun as a single star of magnitude +1.1. Jupiter, our chief planet, would never get brighter than +22, nor stray more than 2.7 arc seconds away. Visually, it would stay hidden in the glare of the Sun, 250 million times brighter.

Jupiter's presence could be detected, however, by the influence it has on the Sun, pulling it as much as 0.003 arc seconds from its normal path every dozen years or so. If it were closer, the effect would be more

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Sneaking a Peek at Hot Young Galaxies

It's often said of science that the unexpected discoveries turn out to be some of the most important.

The latest serendipitous finding comes to us from U of T astronomer Howard Yee and cohorts. During a high redshift survey they came across a galaxy far younger than its near neighbours. They have given it the hair-raisingly exciting moniker "cB58".

The interesting thing about this particular find is that it appears to be in a very early stage of formation. Age estimates for the object range from 10 million to a hundred million years. Of course, this is a long time, but not when compared with typical ages for stars (4.5 billion years for our sun) and galaxies (12-15 billion years for the Milky Way).

The reason Yee and crew think this galaxy is so young is that they have observed the characteristic signatures of P-Cygni stars. These are very young objects which are so hot that their

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inside...

Editorial

You have no doubt noticed the change in Event Horizon's appearance this month. I hope that you find the changes to be an improvement.

How did you do on last month's visual quiz? Here are the answers:

1) A Nosey Guy - Tycho Brahe
2) Heresy by thought, heresy by word, heresy by deed... - Galilei Galileo
3) Just say No - Douglas Lindsey Welch.
4) Eclectic, Elliptical, Elements - Johannes Kepler
5) Wilson and Palomar owe him a lot - George Ellery Hale
6) Double, double, toil and trouble. Here's a guy called: - Edwin Hubble
7) Not egocentric, but... - Nicholas Copernicus
8) Apple, or Fig? - Sir Isaac Newton

Next month's deadline for articles is **riday April 5**. Pictures are always appreciated. You can contact me via the following:

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Chair's Report

During the shortest month of the year, we managed to pack in a lot of activity. So much has been happening, I hardly know where to start!

On February 2nd., we hosted a group of Area Bright Children for an astronomy workshop at McMaster University. Raechel Carson, our HAJA co-ordinator, gave the kids a hands-on demonstration of meteor craters with the help of Rosa Assalone and Nina Snaith. Grant Dixon then walked the kids through a clever exercise in determining the height of lunar crater walls. I offered a workshop in determining the brightness of variable stars and Patti Baetsen enthralled the crowd by demonstrating telescope making techniques. A planetarium show and attempt at viewing the sun (it disappeared behind a cloud and refused to reappear) capped off the afternoon. Looking back, I am struck by the depth of talent and knowledge in our club. Everyone involved is to be congratulated for putting on such a terrific workshop!

"Be sure to come out and join your fellow HAA-ers for what could be one of the best comets this century"

A quick count of heads at our February meeting showed a crowd of almost 70 in attendance. Our club continues to grow and I've just learned that new members from Mexico have joined us. The Ouyed family have made us an *international* astronomy club!

The Royal Ontario Museum has sent us an invitation to participate in their family Astronomy Day on Sunday, April 28th. They hope to attract 2,000 - 5,000 people in an effort to bolster support for re-opening the McLaughlin Planetarium. We've accepted the invitation (of course!) and we're looking for volunteers to help out. Give me a call if you'd like to enjoy a day at the ROM (admission is free to participating HAA members).

TV Ontario has contacted us

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HAMILTON AMATEUR ASTRONOMERS

Event Horizon is a publication of the Hamilton Amateur Astronomers (HAA).

The HAA is an amateur astronomy club dedicated to the promotion and enjoyment of astronomy for people of all ages and experience levels

The cost of the subscription is included in the $15 individual or $20 family membership fee for the year. Event Horizon is published 10 times a year.

Off The Beaten Path

Here are a few objects to try out this month. With Comet Hyakutake visible all night near the end of this month, you can check out some of the new scenery between views of this once (or twice) in a lifetime comet.

SEXTANS:

NGC 2974 This is a fairly bright but small elongated galaxy It is somewhat brighter in the middle with a 10th mag star is in contact with the west side.

"NGC 3115 is bright enough that it can be just seen in the 11x80 finder"

NGC 2990 This is another fairly bright galaxy located in this star poor area of the sky. It is large elongated object with a bright center.

NGC 3115 is bright enough that it can be just seen in the 11x80 finder. The center contains a bright envelope with very bright nucleus, all of which at elongated in the same way as the main body of the galaxy.

LYNX:

NGC 2419 A pretty bright and large open cluster, round and much brighter in the middle.

NGC 2776 Located near the bear's hind foot, this bright large galaxy has a bright center with an almost stellar nucleus. Located near by is a nice nice yellow and blue double star.

PK 164 +31.1 is a planetary nebula which has been mistaken for NGC 2474 in several references. This planetary is very faint and large which makes it very difficult. To see it requires at least an UHC filter. The nebula is so faint that turning on the very dim red flashlight to make a drawing makes the planetary disappear for a few seconds.

Charles W. Baetsen, Observing Director
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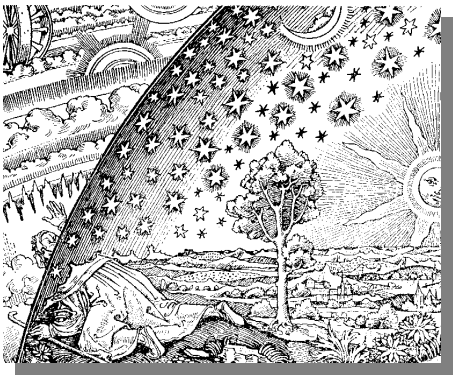

Could Aliens Detect...

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marked.

Shown on page 1 is a plot of what an alien civilization would see looking down upon the plane of the Sun's motion. They would have to watch for 50 years, carefully subtracting out the Sun's proper motion and parallax. The large loops of about a dozen years duration are caused mainly by our two giants, Jupiter and Saturn.

We don't know their technology, of course, even if they do exist, but it's a safe bet that aliens aren't going to find us this way.

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Adapted in part from "The Wandering Stars of Allegheny", Sky and Telescope, Oct., 1987. Plot reprinted with the kind permission of the author, Roger W. Sinnott.
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Chair's Report ...

(Continued from page 2)
for permission to interview some of our younger members and they plan on doing some filming at our junior group's (HAJA) April 16th. meeting. TVO's Studio Two will be using the interviews and footage on their April 20th. Astronomy Day show. Exciting stuff!

And if all of this good news wasn't enough for you, Charles Baetsen's scheduled February 16th. observing night at the Binbrook Conservation Area was CLEAR!!!! Congratulations, Charles!

As Comet Hyakutake brightens in the northern skies, we're all holding our breath, crossing our fingers and hoping for clear skies to continue. We have contacted the Dundas Valley Conservation Area and arranged for a public star party on March 26th. (See the notice inside for more details.) Be sure to come out and join your fellow HAA-ers for what could be one of the best comets this century. If you've got a telescope or a pair of binoculars, bring them with you!

The lunar eclipse of April 3rd. is being overshadowed (pardon the bad pun) by Comet Hyakutake. Don't forget to watch for that celestial happening, too!

Our April 12th meeting will be a "Members' Night" with various short presentations by HAA members. Bring your experiences, slides, photos and share them with us.

Keep looking up and let's have fun out there!
Ann Tekatch 575-5433

Roman Around

Juno (Greek - Hera) originally was one of the three divinities honoured on the Quirinal and then on the Capitol, namely Jupiter, Juno and Minerva. Sister and consort of Jupiter, Juno was a very great Italic goddess. In the remotest epochs she was found among the Sabines. the Oscans, the Latins, the Umbrians and the Etruscans. She also had other sanctuaries, notably under the name of Moneta 'the goddess who alerts people' or 'she who makes people remember'. She was worshipped in the citadel. The saving of Rome at the time of the Gallic invasion in 390 BC. was attributed to Juno Moneta. Geese which were reared in her sanctuary sounded the alarm and made it possible for Manlius Capitolinus to force the invaders to retreat.

Goddess of light, she was by derivation the goddess of childbirth, for the new-born baby is brought into the light. The goddess was then Juno Lucina. Under this name, Juno watched over childbirth. It was forbidden to take part in offerings to Juno Lucina unless all knots were untied, because the presence of a belt, knot or the like on any participant could hinder the delivery of the woman for whom the sacrifice was offered. In a general way Juno was the protector of women and particularly of those who were legally married. The *Matronalia* in her honour took place on the calends (first) of March and were celebrated by Roman matrons. The date of this festival was sometimes said to be the birthday of Mars, the god of war and the son of Juno, and sometimes the anniversary of the end of the Roman-Sabine war. After a ceremony in the sacred grove of the Palatine it became a family festival. The mistress of the house was its central figure; she received a present from her husband and served her slaves at the table. The festival recalled the part played by the Sabine women in throwing themselves between their fathers and their young husbands and re-establishing harmony between the two peoples.

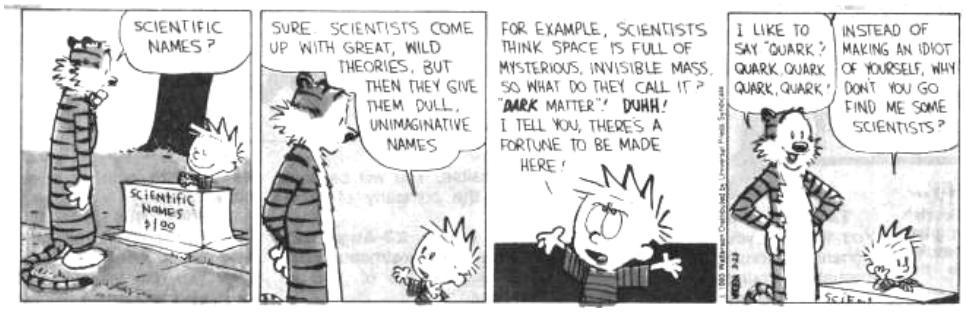
In this aspect she occupied an important part in the ceremonies of marriage and afterwards. She had many titles: Juno Pronuba watched over the arrangement of marriages; Juno Domiduca conducted the bride to the house of her husband and saw that she crossed the threshold; Juno Nuxia coated the doorposts with perfume; Cinxia unknotted the bride's girdle. Later, Juno Lucina protected the pregnant wife, strengthened the bones

(Continued on page 5)

What's Your I.Q.?

Are you all looking forward to what you call the March snow blizzards? I can hardly wait. Stoke up the fire or cuddle up with someone and tease your brain with these questions. First, as always, the answers for last month.

1) The apparent magnitude which a star would have if it could be seen from a standard distance of 10 parsecs (32.6 light-years). Thus from this distance Sirius would shine as a star of magnitude 1.4, but Deneb would be -7.5!
2) R Arae, which is an Algol-type eclipsing binary. All the others are long-period variables (Mira stars).
3) False. It was a globe 7.3 feet in diameter made by H. Busch in Denmark around 1654-64. It was a crude ancestor of the modern planetarium; the audience sat inside it, and looked at the artificial stars painted on the inside of the globe.
4) True. Since Alpha Centauri is only about 4.3 light-years away, the constellation patterns would not be very different from those we see, and the Sun would indeed be in Cassiopeia.
5) True. In ancient times it was thought that the 'evening star, Hesperus, and the 'morning star', Phosphorus, were different bodies, though at a fairly early stage it was realized that they are the same - Venus.
6) False. The number of stars visible with the naked eye is approximately 5800. This means that it is seldom possible to see more than about 2900 stars with the naked eye at any one time (since faint stars near the horizon are bound to be lost). 2500 is a more reasonable figure.



Don't forget to sweep your sidewalks. I heard that on the radio. You people do an awful lot of sweeping. We just let the dust settle. Here are your new questions.

1) Name the 'odd one out': Hubble, Ryle, Hale, Shapley, Curtis.
2) What are the three types of solar eclipses, and what is the difference between them?
3) What is the solar photosphere?
4) T/F Between 1832 and 1838 Sir John Herschel, son of Sir William, took a large telescope to New South Wales to carry out a systematic study of the stars which are too far south to be seen from Britain.
5) T/F Hyperion and Phoebe are the only satellites of Saturn to have retrograde motion.
6) T/F The south celestial pole lies in the Large Cloud of Magellan.

April Showers are coming up next month, and some milder weather. Get out your slickers.
Io, Keeper of the Flame
Jupiter Co-ordinator

Roman Around ...

(Continued from page 4)
of the infant (Juno Ossipago) and assured the mother's supply of milk (Juno Rumina). Juno Sospita received fervent invocations at the time of labour and delivered the baby.

"The date of this festival was sometimes said to be the birthday of Mars, the god of war and the son of Juno"

As a goddess of childbirth she was naturally invoked by wives who were barren. It was Juno Lucina who rescued the Sabine women from the scourge of sterility with which they had been stricken after their abduction. To sum up, Juno Lucina was the goddess and symbol of the Roman matron - a logical consequence of her own title of spouse of Jupiter, the supreme god.

Her role of goddess of childbirth was not confined to the protection of the Roman wife, under the name Populonia, Juno also watched over the multiplication of the race. Under the name Martialis, mother of Mars, she was the goddess of birth and finally of fertility - Caprontina. This is what they said of the origin of this epithet: taking advantage of Rome's weakness after the invasion of the Gauls, the neighbouring tribes marched against the city under the leadership of Posthumius Livius. They threatened to destroy Rome unless all the women and girls were turned over to them. Some female slaves offered to go the camp of Posthumius, disguised as free women. The stratagem was successful. But that night, when the enemy was asleep, the women unfurled from the top of a wild fig-tree a signal to the Romans who hastened to come and slaughter the aggressors. The slaves were set free and rewarded by the State; and their act of heroism was commemorated every year on July 7th., known as the Nonae Caprotinae.

Juno Moneta, after having been the adviser of those about to be married, became the adviser of the Roman people. When the Gauls attempted to scale the walls of the citadel of the Capitol it was Juno';s sacred animals, the geese, who warned the defenders of the peril. Later this epithet Moneta changed its meaning, due to the installation near the temple of Juno of the mint where *money* was coined.

Juno Sospita, protectress of confinements, became in a broader sense she who was always willing to help, the liberator. She had two temples at Rome. At Lanuvium, Juno Sospita had a temple which was guarded by a serpent. Every year a maiden would offer cakes to the serpent. If it accepted, this was a sign that the girl was a virgin. Its refusal was an evil omen and a year of sterility was to be feared.

A temple to Juno Lucina was built on the Esquiline in 735 BC. only a few years after the foundation of Rome. In the temple of the Capitoline Triad, built by the Tarquins, Juno's title was Regina. There she held the golden sceptre, the Patera and the thunderbolt. She then played the role of august consort of Jupiter and protectress of the Roman people. Her cult was spread throughout the Empire.

While every man had his 'Genius' so every woman had her 'Juno' - a divine double which personified and protected for femininity. Inscriptions record a Juno of the goddess Dia and of the goddess Virtus, and so on.

Juno Regina is almost always represented standing; her attributes are the sceptre, the patera, the veil and the peacock. Juno Sospita is armed with spear and shield. Juno Lucina carries a child in her arms; there are two more at her feet. She is also represented with a child in her arms and in her hand a flower which recalls the circumstances in which she conceived the god Mars.

Ev Butterworth

Sneaking a Peek ...

(Continued from page 1)
atmospheres have expanded into semi-transparent balloons. Also, the color of this galaxy is consistent with that of a young, blue population.

cB58 is creating new stars at the prodigious rate of several thousand suns per year. Starburst activity isn't a unique phenomenon. Perseus A (to quote an obscure example) is forming not only stars, but what appear to be globular
clusters down in it's active core. New stars are being born in most galaxies, including our own Milky Way. But cB58's star formation is occurring not just in one place but throughout the entire galaxy. This makes cB58 extremely luminous. It is 100 times brighter than M31, our nearest large neighbour.

Yee and the gang estimate that there are about 10 of these bright young
galaxies in every square degree of sky. But don't expect to find one in
your telescope some evening. At visual magnitudes of around 24, you'd need a bigger scope than most of us can dream of.

Denise Kaisler

Daytime Polar Alignment

How do you set up your equatorial mount for proper northern alignment during daylight?
Well I will tell you, though the method is only accurate to within a half of a degree.

The method depends on knowing the direction of magnetic north relative to true north. Many people are aware that the magnetic north pole is not at the same place as the northern pole of Earth's rotation. So, although you can't directly use a compass to set up your RA axis, a compass can assist you if you have some additional information. The information

"The method depends on knowing the direction of magnetic north relative to true north"

is available from aviation maps and from a publication called the Canada Flight Supplement.

What you need is the deviation in degrees of the north magnetic pole from true north for your location. Aeronautical charts plot lines of magnetic deviation from true north and the Canada Flight Supplement lists the deviation for all airports in Canada. Using a compass, you find magnetic north at your location and then rotate the compass so that the needle points to N plus the deviation on the compass for west deviations, and to N minus the deviation for east deviations. For example if the deviation for your location is 9°W, as it is for Hamilton, then you would rotate your compass so that the needle points to 9°, and the direction of N on your compass dial then points to true north. If the deviation for your location is 9°E, then you would point the compass so that the needle points to 351°, and again the N mark would will indicate the direction of true north. The above assumes that your compass has a fixed dial and a moving needle.

Hamilton	9°W
Toronto	10°W
Mount Forest	9°W
Ottawa	14°W
Montreal	16°W
Halifax	21°W
Winnipeg	7°E
Regina	14°E
Edmonton	21°E
Vancouver	21°E

If you have a compass that has a moving dial, the N always points to magnetic north, and the pointer on the compass will indicate the direction of true north when placed at 9° on the dial for 9°W deviation.

Deviations for some areas in 1987 were as follows:

These values are from 1987 as that is the latest Canada Flight Supplement that I have on hand and today's deviations could be over one degree different than these. The north magnetic pole does not stay in the same place over time, but rather it wanders around. Therefore the deviation for your location should be determined from the most recent information available. To find the most recent deviation for your location, call your local airport flight training company, weather

HAJA Needs Your Help

We are looking for volunteers to help out at the junior meetings. It is great fun and very rewarding. If you are interested, please get in touch with me. We also need parts for the telescope that the children are making. Patti has more details on the specific parts that we require so please see her if you have something kicking around that you think would be useful.

Official business out of the way, I will tell you about the excitement at our February meeting. We had a wonderful discussion about the sun. The children were particularly enthusiastic last meeting and it was a good thing considering what we had planned for them. Rosa explained to them why the sun is necessary for life; Nina explained nuclear fusion (I'm serious); and I talked about the sun's magnetic field and the sun spot cycle. If that wasn't enough, Patti then had the children determine the focus of the mirror for their telescope. It was amazing how easily they soaked up the information and were ready for more.

The March meeting was held earlier this week so the next meeting will be held on April 16. The topic will be "The Milky Way and Other Galaxies." See you there!

Raechel Carson
308-8041

We Have Seen The Horsehead Nebula!!!

There is a comfort in the strength of Astronomy,
'Twill make a thing endurable, which else would o'erset the brain
And break the heart.....(Plagiarism from Tennyson)

WE HAVE SEEN THE HORSEHEAD NEBULA!!! WE HAVE SEEN THE HORSEHEAD NEBULA!!!

Ah, the excitement of it all. But, let us start at the beginning. On a beautiful typical Ontario day (snowing to beat the band) we piled into our rented RV and departed for sunny shores. It was exactly 0833 hours on the seventh day of February in the year of our Lord nineteen hundred and ninety-six. Bucking a head wind and snow squalls (three between Georgetown and Windsor) we traversed the 401 and crossed into the United States at 1400 hours. With spirits at a real high, we travelled I-75 and as the day began to wear we got off at exit 161 and entered a neat little place called Shady Trees Camp ground in Findlay Ohio. Of course, one must realize that in February even in Ohio, there are no leaves on the trees, so there was no shade. None-the-less, what made this place so homely was, one slides twelve dollars under the door of the locked office and follows directions to take a site on the south side of the little lake on the premises. Our first stop in a motor home. As it is winter and there is no water in the RV, also no water hookup at the site, no showers, no flush you-know-what's, no sewers, no people, in fact...nothing. Fortunately, for what is is worth, there was hookup for hydro. What this means for the non RV fans is that we can now switch the refrigerator to electric, from propane. Ah yes, we have a propane stove, and with this, within a few minutes, Oksana had prepared a sumptuous banquet. Travelled 525 kms today.

"scopes ranged from 4 inch reflectors to the mammoth 36 inch"

0310 hours, 8 Feb 96.

We are wide awake. Must be the excitement. So after a great breakfast, at 0400, we are on our way. At 0820 hours, we entered the Blue Grass State, Kentucky. Weather holding quite nicely. A little rain, but not enough to impede our progress. One of our surprises at this point in our travel was the amount of snow in the surrounding hills and along the sides of the highway. We pulled in to a rest area where there had definitely been a lot of snow, but there are apparently no means of removal. Travelling through the Smoky Mountain Range is very beautiful.

TRUMPET FANFARE!!!!!!!
HEAR YE! HEAR YE! HEAR YE! BE IT KNOWN THAT AT 1205 HOURS ON THIS DAY WE SAW
THE SUN FOR THE FIRST TIME.

After driving 927 kms, we pulled into a KOA campground. Aaaah, hot showers, flush you-know-what's, sheer luxury. You have probably noticed that I do make mention of the flush you-know-what's quite frequently. The reason for this is: in a motor home (RV Recreational Vehicle) when one enters the rest room, one must exit to turn around. These cubicles are built for travellers who weigh a maximum of 110 pounds. So the mere thought of being able to you-know-what comfortably is quite pleasing.

0630 9 Feb 96

The day greets us with a nice moon shining and some stars. The temperature is 13 degrees Celsius. Starting to get envious yet? Wait a bit, there is more to come. Travelled through Atlanta, Georgia, the home of the Olympics. As it was 0850 hours as we arrived here, we joined the 3 million commuters going to work. It gave us a chance to see the new buildings and sites being prepared for the big event.

At 1440 hours we entered the Sunshine State, Florida. The

temperature is now, are y'all ready for this??? 22 degrees Celsius. So there. Rather than continue south on I-75 we decided to detour and go along highway 27. It was quite scenic and a nice change from the freeway. Saw one armadillo (dead along the side of the road) and one alligator (or was it a crocodile) swimming across a little lake.
Temperature is now 28C.

Monday 12 Feb 96, 0800 hours.

Moon is up, last quarter. Sitting in the shade of the RV. Uniform of the day: T shirt and shorts. At 1420 hours, we entered the site of the Winter Star Party. One thing we have learned from all this is: ignore the printed word. In the paperwork we received from the Star Party personnel, we were told explicitly that no one would be allowed on the site until 1400 hours. When we arrived, after having gone to Key West just to put in time, we found that the management had been forced to open early because there was such a large backup of vehicles on the shoulder of the road that it was causing a traffic problem. So by the time we got in, the place was 93% occupied. Another thing: we were told that if one wanted power, bring a battery. Hah! There were hydro cables running all over the place

Horsehead ...

like tentacles of octopi. Anyway, we settled in, and our first night of viewing was quite spectacular. Everyone, after the long travel days and excitement, retired early, about 2300 hours.

Tuesday 13 Feb 96.

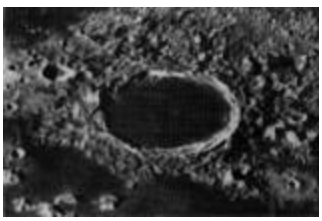
Pleasantly cool in the morning, gave us a chance to see around the site. Ontario was represented with six vehicles, British Columbia was there. There was a crew from the Netherlands with six new refractors 4 to 8 inches. CCD was ever present, with their laptop computers and hi tech stuff. But the dominant apparatus on the scene was the Dobsonian. These scopes ranged from 4 inch reflectors to the mammoth 36 inch. There were a number of refractors and Schmidt-Cassegrains, and a fascinating number of home built jobs. One astronomer from Texas had only one arm, so he built his 10 inch Dobsonian with that in mind. He was interviewed by the press, and demonstrated his ability to disassemble and reassemble the scope. He won one award for workmanship, and another for ingenuity. He had some rather interesting mechanical devices which allowed for slewing the scope from a remote site. To me it looked like a Selsyn system. Another amateur was a gent rather elderly whose mode of transport was an electric trike. He also built his 10 inch Dobsonian with his difficulty in mind. Of course, there were many commercial scopes there also. Meade, Celestron Lumicon, Perceptor were some of the manufacturers and businesses represented. Being a Star Party there were a number of vendors and swap tables and seminars. Viewing all night and resting all day, the only seminar we attended was the one given by John Dobson. Being a very popular individual, the seminar hall could not contain the crowds, so it was moved out of doors to the area of the bonfire pit. John is a very interesting character but his answers to questions and his talk got to be way too technical for the average layperson.

A wee bit about the site itself. It is a girl scout campground, situated on the east side of Summerland Key. It is right on highway US1, and as a result one hears the traffic noises 24 hours a day. The dining hall is on the second floor of the vendors building, and had a nice selection of dishes. On the daily menu there would always be a choice of entree. It would read Salmon steak OR chicken cacciatore. Being an engineer I would see that as an OR gate. So I would, in my mind complement the statement and come up with Salmon steak AND chicken cacciatore. Anyway the food was excellent and there was a lot of it. One very nice thing about the dining hall was that it was always open till the wee hours for hot stuff.

Back to the good stuff. All the Dobs were pointed to Orion and it seemed that the challenge was to see the Horsehead Nebula. There were actually ten big Dobs, 18 to 36 inches, so we had a good choice of what instrument we would like to examine. The one night I took a look through a 25 incher, but I could not see, or perhaps I should say that I could not interpret what I saw, as the Horsehead. Many people did see it. The following night, however, I climbed up the ladder and looked though the eyepiece of the 36 incher. WOW!!! No doubt about it. There it was. What an AWESOME sight. It took my breath away. First of all, I did not expect to see such a large image. That was the first surprise, and then I was stunned by the clarity and surrounding colour. That was the second surprise. Oh how I would like to live next to someone who had such an instrument. Well now, since I now know what to look for, and what to expect to see, and where it is located R. A.05 hr 38m Dec -2 30', I zipped over to my 10 inch SCT put in the coordinates, veerrry gently slewed a few seconds in a circular pattern, and guess what? There it was. In my own scope, I have seen the HORSEHEAD NEBULA. It was worth the two weeks travel and the $3000 spent, just to see that.

There were so many innovations that individuals had designed into their scopes that it would take an entire book to list them all. At one of our meetings I hope to be able to share some of what we learned and observed.

Lou C Darcie
Astronomaire Extraordinaire.



Lunar Crater Plato

"Weighing" Jupiter

I meant to mention during my talk last month that the data I presented on the orbits of Jupiter's moons is publicly available. In fact, in 1991 I submitted an article to "Sky & Telescope" on the subject. Though the article was not published, I think you might find it interesting, as it leads you through the philosophy and practical matters of measuring Jupiter's mass and mean density, and discusses the analysis of the errors involved in the procedure. I will bring copies of the article to the next couple HAA meetings, if anyone would like a copy. Also, I will put the data on my WWW homepage, so you can retrieve it electronically.

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http://www.physics.mcmaster.ca/PDF_Layden/index.html

April Skies

A Date for Easter

This year, Easter falls on April 7. The last time it did that was only 11 years ago, in 1985 and before that, in 1912 and in 1901. That's it for the 20th. Century. See any pattern yet? Not likely, as the grand cycle of Easter dates takes exactly 5 700 000 years to complete.

Easter is always the first Sunday after the full moon which occurs on or next after the March equinox. It sounds like an astronomical event, but it's not. The full moon is reckoned according to an ancient Ecclesiastical calculation which seems to go all the way back to the Council of Nicaea in A.D. 325. Similarly, March 21 is always assumed to be the date of the equinox, when in fact, astronomically, it can occur a day or two earlier.

The earliest possible date for Easter is, therefore, March 22. This happens to be the rarest date, turning up on average only once every 210 years. The last time was in 1818, the next not until 2285. In fact, as many as 1887 years can elapse before a March 22 date repeats.

"Easter is always the first Sunday after the full moon which occurs on or next after the March equinox."

The most common date for Easter is April 19, occurring precisely 220 400 times in the grand cycle. On average, we have to wait just 11 years until an Easter date recurs, although the minimum interval is 5 years. This brings us back to our current April 7 date. Although it occurs just twice in the next century, in 2075 and 2080, they are only the minimum of 5 years apart.

On the other hand, there are never less than 57 years between Easters on April 25, the latest of the 35 possible dates. The last was in 1943, the next in 2038. Fortunately, we just have to flip open a calendar to know when to dust off the Easter bonnet or buy a new one or when to plan the trip to Grandma's for Easter Sunday dinner.

Rob Roy
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CALENDAR OF EVENTS

- Sat. March 16, 1996 **COMET WORKSHOP** Call Charles Baetsen (ph:524-0148 or e-mail: charlesb@abelcomputers.com) for more details.
- March 22 or 23, 1996 8:00 PM **BINBROOK OBSERVING NIGHT**- On the first CLEAR night of the two dates. Call Charles Baetsen (ph:524-0148 or e-mail: charlesb@abelcomputers.com) for more details.
- Mon. March 25, 1996 7:30 PM **AMATEUR TELESCOPE MAKERS** - are meeting at the home of Jim Winger in Caledonia. For directions and details please call Jim at 765-4649.,
- Fri. March 29, 1996 7:30 PM **COUNCIL MEETING**- at the home of Rob Roy Call Ann Tekatch at 575-5433 if you're interested in attending.
- Sat. March 30, 1996 8:00 PM **COSMOLOGY DISCUSSION GROUP** - Mac Burke Science Building Rm B148 (Beside the Planetarium) "Star Trek, and Hitchhiker's Guide to the Galaxy." We will view comet Hyakutaki after the meeting if the sky is clear.
- Thu. April 4, 1996 8:00 PM **ROYAL ASTRONOMICAL SOCIETY OF CANADA Hamilton Centre**- General Meeting - McMaster University Medical Building Room 1A6
- Fri. April 12, 1996 7:30 PM **H.A.A. GENERAL MEETING** - Spectator Auditorium, The guest speaker will be Les Nagy, "Something Different"
- Mon. April 15, 1996 7:30 PM **AMATEUR TELESCOPE MAKERS** - are meeting at the home of Jim Winger in Caledonia. For directions and details please call Jim at 765-4649.,
- Tue. April 16, 1996 7:00 PM **HAMILTON AMATEUR JUNIOR ASTRONOMERS** The topic will be "The Milky Way and Other Galaxies."
- Mon. April 29, 1996 7:30 PM **AMATEUR TELESCOPE MAKERS** - are meeting at the home of Jim Winger in Caledonia. For directions and details please call Jim at 765-4649.