

* Event Horizon *

Volume 3 Issue 3

January 1996

Editorial

Throughout this issue you will find pictures of all the Hamilton Amateur Junior Astronomers (HAJA) logo contest entries. On page 2 is the winning entry by Aaron Simpson.

Starting on page 5 is an article from the Murdoch Astronomical Society (MAS) in Australia. A number of astrophotos were e-mailed to Charles Baetsen along with the article and one of the images appears on page 6. I had to manipulate the image to get something that would survive being printed on my printer and subsequently be photocopied. This process doesn't do justice to the original image. If anyone with internet access would like to see the originals they can be found on my web pages:

<http://www.io.org/~stewart>
and on the HAA web pages:
<http://www.science.mcmaster.ca/HAA/index.html>

A number of our members now have their own web pages and I would like to publish a list of them in the next issue. So please send your addresses to me before the January 31 deadline. Also, Grant Dixon will provide links to our member's pages from the HAA pages. If anyone has found some good astronomy related pages they could also be published and have links provided.

Finally, I would like to offer my congratulations to Rob Roy for getting his name into Sky & Telescope ONCE AGAIN. The January 1996 issue has a description of his technique for parfocalizing eyepieces in the "Telescope Making" department by Roger Sinott.

Stewart Attlesey stewart@io.org

HAMILTON AMATEUR ASTRONOMERS

Chair's Report

Happy New Year everyone and my very best wishes for a CLEAR 1996!

I can't recall a more miserable fall in all the years we've been observing. Let's hope it gets clear soon and stays that way. Especially since 1996 holds the promise of a few celestial goodies: two lunar eclipses; Saturn's rings edge-on; the Perseid meteor shower during new moon *and* Starfest; and what seems to be an unending parade of comets.

In the meantime, there's plenty of activity around the HAA to keep you busy. Those of you having withdrawal symptoms because of the lack of observing can check out the Cosmology Discussion Group, Jim's ongoing ATM sessions, the fun, games & telescope

making at HAJA (our junior group) or perhaps an observing workshop or two.

The best part of this "job" is that I get to meet so many more of my fellow HAA'ers. I really enjoy hearing from all of you at our meetings, gatherings or over the phone & internet. Don't be shy. If you have any questions, suggestions or even complaints about the club, drop me a line, give me a call or see me after a meeting. I also want to hear about any observing you've done, whether it's a photometric study of unusual flare stars or a visual observation of a particularly beautiful grouping of the moon and stars.

The whole idea of an astronomy club is to share ideas and experiences. Let's do it!

Ann Tekatch

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The winning logo by:
Aaron Simpson



AJA has a Logo

The logo contest was a success! All of the logos were terrific, which made it a difficult task to choose one. We had a vote at the December council meeting to pick the logo. It was a close vote, but we chose the logo created by Aaron Simpson. We were so proud of the fantastic logo entries that we had to show them off. Have a look at them and I think you'll agree that we have some very creative junior members. I would like to thank all who entered for the time and effort put into the entries. They are great!

The December HAJA meeting was a fulfilled event. Not only did we reveal the new HAJA logo, but we also had a great discussion about space flight, handed out Certificates of Astronomical Achievement to all the kids, and started grinding the glass for the mirror of the telescope. What a night! I hope that the certificates will inspire the children to contribute to the newsletter because we desperately want them to bring in something written, drawn, or whatever for their own newsletter. I also hear that Uncle Grant is looking for contributions for the HAJA web site. So, parents encourage your children to bring something for the newsletter and it will also go on the home page!

The next meeting is on January 16 and we'll be talking about "Comets: Visitors from the Outer Reaches of the Solar System." See you there!

Raechel Carson
308-8041

A Galileo Update

I don't know about any of you, but I've been rather disappointed with the press coverage of Galileo's arrival at Jupiter on Dec. 7th. After many a tantalizing story in the years leading up to this momentous occasion, there has been precious little information now that the spacecraft has actually arrived at its destination and discharged its probe into the torrid Jovian atmosphere.

But I suspect this dearth of news is due more to the recent shutdown of all "nonessential" U.S. Government services than to a lack of interest by the media. For instance, a press conference scheduled for December 19th to announce the early Galileo probe results was canceled. The briefing will apparently be rescheduled once NASA employees are allowed to return to their posts.

A terrific source for anyone interested in the progress of this space probe is NASA's Galileo Home Page (<http://www.jpl.nasa.gov/galileo/index.html>), where one can get up-to-the-hour status reports. As of this writing, the spacecraft itself is about 11 million km above the colourful belts of Jupiter's atmosphere (to give some scale, that's 164 Jovian radii). The spacecraft is on an elliptical orbit that compromises between getting close to the Jovian system and staying out of the way of the dangerous radiation and magnetic fields of this giant planet.

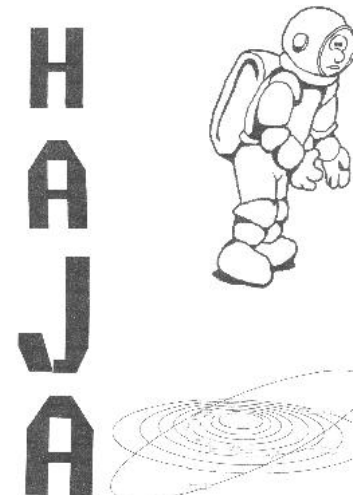
Galileo possesses a total of 10 instruments on board the orbiter and 6 more on the probe. The orbiter's complement of devices includes a magnetometer, a plasma-wave detector, a heavy ion counter (to look at the potentially dangerous particles in the orbiter's flight path), a UV spectrometer, and Extreme Ultraviolet detector. The spacecraft is divided into two sections: one that is stationary with respect to the Earth and another that rotates at 3 RPM.

The purpose of this "dual-spin" system is to carry out observation of Jupiter's extraordinary magnetic field, which require sweeping measurements, while providing a stable platform for cameras and other sensory devices.

Although we're not hearing much about Galileo now, it has already made some important discoveries. It has made numerous flybys of the Earth and Venus (mainly due to changes in its flight schedule after the Challenger disaster) and is the first spacecraft to have made close flybys of two asteroids, Gaspara and Ida. Among the discoveries during these encounters was a small "moon" (newly dubbed Dactyl) orbiting Ida; the first such object found in our solar system. In addition, Galileo has given us valuable information about the Shoemaker-Levy 9 impact and new data on interplanetary dust, apparently originating from Jupiter's ring system or volcanoes on Io.

Its next major encounter is the Ganymede 1 closest approach in slightly less than six months. Let's hope we hear something about the probe drop and orbiter before then.

Denise Kaisler
kaislerd@impatiens.physics.mcmaster.ca



Logo contest entry by: Andrew Cairns and Dustin Pickard

What's Your I.O.?

Welcome to another of your New Earth Years. Hope all had a safe and happy Christmas and New Year holiday. I'm still here. I got an ice pack in my stocking. Hope it will come in handy when I go home in the summer. Here are the answers for last month:

- 1) *False. Relativity theory was developed by Albert Einstein. Jacob Epstein was a sculptor.*
- 2) *False. Conrad was the third. He was commander of Apollo 12 (November 1969). He had been preceded by Armstrong and Aldrin in Apollo 11 (July 1969).*
- 3) *Because the Earth spins on its axis from west to east.*
- 4) *True. Iceland, on the borders of the Arctic Circle, has a much longer daylight period during northern summer than Spain. (The Arctic Circle grazes the northern part of Iceland, and passes through the island of Grimsay.)*
- 5) *True. The crater will be drawn out into an ellipse because of the effects of foreshortening. Even craters well away from the limb are foreshortened; thus Plato, the great dark-floored walled plain, is almost perfectly circular, but from Earth looks elliptical.*
- 6) *True.*

Well, I said look out for January. Here it is. After you've shoveled your driveway, relax with a hot drink and answer these teasers.

- 1) What is Black Drop, and when is it seen?
- 2) Areagraphy is (a) the study of stony meteorites, (b) a method of dating rocks by their radioactive content, (c) the geography of Mars, (d) a star-catalogue compiled by the Arabian astronomer Al-Sufi in the year 950, (e) Mesopotamian astrology.

- 3) T/F The average shooting-star meteor is about one inch in diameter.
- 4) T/F A famous Danish astronomer kept a pet dwarf, had a false nose, and equipped his observatory with a prison.
- 5) What is an orbit?
- 6) If you go to Australia, will you see the same stars as you do from England?

I like these hot drinks. We have none on Io. My favourite is tea with lemon. See you next month.

Io, Keeper of the Flame
Jupiter Co-ordinator



Logo contest entry by:
Allanah Nagy

Post 85 Io Occultation Mail

Subject: Your occultation 8-(

D e a r R o b ,

Well, it was unexpectedly clear (albeit a bit ***nippy***), so I dragged hubby off of the couch and got him to drag my 12.5" scope out to the backyard. (This "She Who Must Be Obeyed" thing is working out well even if I say so m y s e l f !)

I frantically tore the house apart

and found both my tape recorder and my shortwave radio. Then I frantically tore the house apart again and found fresh batteries for my tape recorder and my s h o r t w a v e r a d i o .

I feverishly printed up finder charts for SAO111235, took them, my excellent illuminated clipboard and my even more excellent observing chair out to the arctic circle (backyard). While I was star hopping (someday I'll explain this alien term to you), my considerate neighbours threw on their floodlights about 15' away from my vantage point. Ah well, better go get an observing h o o d

I returned to my scope, put the hood (well, actually it was a towel) over my head and continued my star hopping. After 15 minutes of following the wrong direction, I cleverly reversed the finder chart so that it presented an ACTUAL view and continued my star hop.

I nudged the scope higher and suddenly the eyepiece was...lower. Thinking I had encountered one of the seemingly innumerable space-time warps experienced by the crews of the various Enterprises, I said: "What the hell?!" and investigated.

Do you remember the night my 8" reflector's optical tube came loose in it's cradle? The tube slid right out of the box that supports it on the mount. Guess what? Deja vu!! My dearly beloved (and soon to be departed) husband had smacked the 12.5" scope down on the living room floor before carrying it out to the south pole (backyard). In the -17 degree temperature (that's on the Kelvin scale), we experienced some tube shrinkage. This shrinkage, combined with the earlier *thump*, dislodged my optical tube! Every time I tried to lift the



Logo contest entry by:
Miranda Botts

scope up above the horizon (where it would be of most value), the @#\$\$ ^&*! optical tube would slide out and bury itself in a snowbank (igloo).

Determined NOT to be so easily thwarted, I dashed (waddled) into the house to retrieve my trusty (now that it's bolted to its cradle) 8" scope only to discover that the aforementioned space-time warp had NOT slowed time and it was now 7:50 p.m. - the occultation was over.

> s i g h <
A n n T e
"She Who Must be Obeyed"

.....

Subject: "Et tu, AnnTe?" (What do you mean- MY occultation 8-?)

D e a r A n n ,
You think that YOU had p r o b l e m s ?

Leaving myself lots of time, I started to load up the car at 18:50. I set up over on my country neighbours' driveway, totally exposed to a howling wind at 461 on the Rankin scale. Seems plenty "hot" unless you know what you're doing and realize that this is o n l y 2 5 6 K e l v i n s !

Unlike SOME city slickers, observing in their backyards, protected by nearby houses, I was exposed to a wind chill that probably brought the apparent temperature down to 240K. Considering the conditions and the fact that my beloved daughter had borrowed my thin, feel-through astrogloves, I put the scope, battery, numerous cords, heaters and dew (ha! ha! at 240K!) cap together in record time.

I leveled the scope and found two alignment stars through teary eyes. By using Aldebaran as the second star, I would be fairly close to the target, SAO 111235. The keypad "freezes" up and won't do a thing. Too thick gloves had caused me to improperly insert the k e y p a d c o r d .

I started the alignment procedure all over again, pausing to adjust my hat to cover my frostbitten right ear. Same thing happened again-different cord. "Better do a 1 star alignment- running out of time." Finally got to ask for SAO 111235. Scope rudely responded with, "No matching object." "What?" Maybe, through my non-feeling gloves, I had pushed a wrong button "No matching object", again. "Running out of time- I'd better find o Tau and star hop." I thought I could hear familiar voices in ghostly gales of laughter- must have been the wind.

"Remember!- finder scope is upside-down and backwards." "Where's the #%\$^&* star chart I printed?" Back lighted clipboard too faint- dying from the cold. Hold chart up in the air, in the wind, with red flashlight behind. To the finder- tweak scope back and forth- "There's o Tau, I think." Moved scope to center where target 'should be'. "My brain must be freezing, too." "I could have given the scope coordinates and told it where to go." (Isn't THAT an understatement?) "Too late, now- I'll m i s s i t . "

To the main eyepiece- "Should be here, somewhere.- Oh, I'll just stare at them all." One hand on the stop watch, the other trying to protect my eye from frosting over. Wait... An eternity later- "I'll just take a quick peek at my watch to see how much time I have left." It's now five minutes AFTER the event! "What happened?" "Humbug! Phooey! Enough of this nonsense! I'm going h o m e ! "

Mental note for next star hop- (ghostly laughter, again) "Only the finder i s u p s i d e d o w n ! "

R o b R . .
"He Who Must Learn How To Star Hop"



Logo contest entry by:
David Chin

1996 Lunar Occultations

S Since the moon moves eastward about one of its diameters every hour, occultations of stars are frequent. Occultations can last as long as an hour, but less if they are not central.

During the first half of the lunar cycle, when the moon is waxing, stars instantly and dramatically disappear behind the dark limb and reappear from behind the bright limb. The opposite is true during the second half when the m o o n i s w a n i n g .

Particularly spectacular are grazing occultations which occur right at the north and south limb of the moon. Observers within a few miles of the edge of the limit of visibility and on the correct side of it can see the star winking off and on as it passes mountains and valleys near the Moon's poles.

For the remainder of this year, the Hamilton area will be witness to the total occultation of several bright stars (<mag 5) and one star cluster. We are also close to the edge of visibility of two bright star grazing occultations. Details of many more occultations of fainter stars (up to mag 7.5) and of double stars are available in the RASC Handbook.

Amateurs can contribute valuable data by timing the beginning and end of occultations. Methods of collecting data and where to send them

Haja.

Logo contest entry by:
David Chin

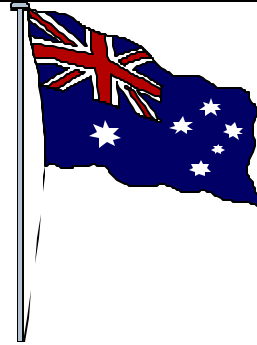
can be found in the RASC Handbook, in selected issues of 'Sky and Telescope' and 'Astronomy' or on the Internet.

The table below gives the dates of some local occultations of brighter stars. Shown first are Universal Date and Time. R, D or G indicate reappearance or disappearance of the star or a grazing occultation. Next are the star and its magnitude. Finally, the limb at which the occultation occurs: Bright- waning moon, D a r k - w a x i n g m o o n .

NOTE: To observe the Mar. 30 grazing, you have to be just south of a line which is just above Toronto. To observe the Dec. 22 grazing, you have to be just north of a line which is just below Guelph. Aldebaran is the brightest star which can be occulted by the moon.

Try something different from looking at M or NGC objects and time an occultation

RobRoy a5817394@mcmaster.cis.
m c m a s t e r . c a



Pole to Pole

De a r C h a r l e s ,
It has been some time since I have been in contact with you. I hope you are well and that the observing is good. Shortly I will be leaving university and will not be contactable by email. If you want to contact the MAS by email you should contact Elaine Walker on:

w a l k e r @ f i z z y . m u r d o c h . e d u . a u .

My snail-mail address is 4 Bishops Close, Quinns Rocks 6030 W e s t e r n A u s t r a l i a .

To bring you up to date with what has been going on over here. Comet Schwassmann-Wachmann 3 has been putting on a great show, peaking at just below naked eye visibility and with a 2 degree tail. At my last observation 2 weeks ago it was still magnitude 7.6 with a 0.5 degree tail and a small anti-tail. Hale-Bopp is still fairly small and faint at

about mag 10.5, however it is starting to develop a good central condensation. Comet d'Arrest is still visible at mag 10.6, however it is very large and d i f f u s e .

Recently I spent 3 nights observing at Akira Fujii's observatory at Yericoin. As well as using the 12" for astrophotography, I also had a 17.5" dobsonian for visual observation. (An autoguider is a great accessory!) Among some of the more difficult objects I observed were Stephen's Quintet, several faint galaxies in Canis Major, the Eridanus cluster (very easy), and a number of small planetaries in Canis Major, Puppis, and Vela. While observing in Vela I realised I was very close to the Gum Nebula so I decided to have a go at observing it. I was very surprised to find that it was very easy to see. Almost as easy as the brightest sections of the Veil nebula. Several of the filaments could be followed for several degrees. The skies had a naked eye limiting magnitude of 6.9 and the limiting magnitude for the 17.5" was 1 6 . 5 .

While observing Stephen's quintet, the field of view was suddenly flooded with light. I thought that a car must be approaching. However when I looked away from the telescope, I was just in time to see the end of a bright fireball which was about magnitude -6. It lit the landscape with a brilliant blue- w h i t e l i g h t .

The conjunction between Venus, Mars, and Jupiter was very

1996 Lunar Occultations

Univ. Date	Univ. Time	Event	Star	Mag.	Limb
Feb 13	10:07	R	chi Oph	4.9	Bright
Feb 15	11:00	D	M25	6.5	Bright
Mar 28	1:49	D	lam Gem	3.7	Dark
Mar 30	4:10	D, G	alp Cnc	4.3	Dark
May 5	5:10	R	chi Oph	4.9	Bright
Jul 29	6:36	D	rho Sgr	4.0	Bright
Nov 4	9:19	R	omi Leo	3.8	Bright
Dec 22	22:30	G	alp Tau	0.8	Dark



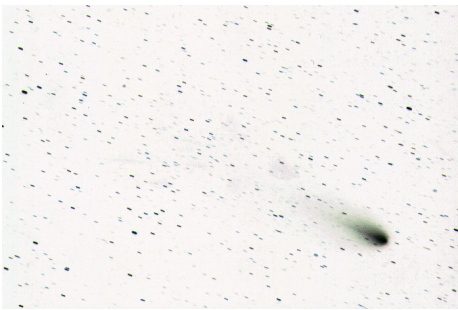
Logo contest entry by:
David Chin

interesting and when the moon joined them it made a very good sight. I did take a number of photos of this event, however they are all 120 sized slides and I have not yet been able to make any prints from them.

Attached to this message are a number of photos that I have taken recently. Most of them were taken with the 12" f/6 newtonian at Mr Fujii's observatory. They were taken at prime focus on Fuji Super G 400 film. Below are the individual details. I hope you like the images.

Regards,
Maurice

clark@fizzy.murdoch.edu.au



comet Schwassman-Wachman 3

Image	Exposure
HorseHead nebula	45 minutes
Trifid nebula	40 minutes
M42	40 minutes
Tarantula nebula	45 minutes
NGC 55	45 minutes
comet d'Arrest	30 minutes
comet Schwassman-Wachman 3	15 minutes October 18, 1995
comet Schwassman-Wachman 3	20 minutes October 18, 1995
comet Schwassman-Wachman 3	20 minutes November 22, 1995
Eta Carina nebula	300 minutes 300mm f/2.8 lens



Logo contest entry by:
Robbie Welch

Roman Around

Janus (Greek - Ephialtes, to push forward and Otus, to push backward - twin sons of Poseidon and Iphimedeia)

One of the oldest of the gods in the Roman pantheon. Janus is unique in that he was an essentially Italic god or, more precisely, Roman. He was represented as having two faces, one looking forwards and the other backwards. According to some mythographers, Janus was a native of Rome, where at some point he had ruled with CAMESUS. Others claimed that Janus was a native of Thessaly, who was exiled to Rome where he was welcomed by Camesus, who shared his kingdom with him. Janus was supposed to have built a city on a hill, which was consequently called Janiculum. He came to Italy with his wife Camise or Camasenea and they had children, the best-known being Tiberinus. Janus was also said to have married the Nymph Juturna and to have had a son by her, the god FONTS or Fontus. After the death of Camesus, he ruled Latium alone. Janus received Saturn when he was driven from Greece by Jupiter. While Janus ruled on the Janiculum Saturn ruled over Saturnia, a village situated on the heights of the Capitol. During the reign of Janus people were perfectly honest; there was plenty; and there was also complete peace. Janus was said to have invented the use of money. Janus was said to have civilized the first natives of Latium, although this was sometimes attributed to Saturn.

The origin of his name is uncertain. One hypothesis suggests a form Jana, sometimes employed for Diana, of which the root diumevokes the idea of the luminous sky. This theory agrees with the established fact that Janus was in origin a solar deity. But his functions were wide and important and derived one from another. Janus was first the god of all doorways: of public gates through which roads passed, and of private doors. His insignia were thus the key which opens and closes the door, and the stick (virga) which porters employed to drive away those who had no right to cross the threshold. His two faces (Janus bifrons) allowed him to observe both the exterior and interior of the house, and the entrance and exit of public buildings.

Being god of the gates he was naturally the god of departure, and return and, by extension, the god of all means of communication. Under the name Portunus he was the god of harbours; and since travel can be either by land or sea, he was supposed to have invented navigation.

Janus was also the god of 'beginnings'. As a solar god he presided over daybreak. He was soon considered as the promoter of all initiative and, in a general way, he was placed at the head of all human enterprises. For this reason the Romans ascribed to him an essential role in the creation of the world. He was the god of gods Janus Pator. Ovid relates that Janus was called Chaos at the time when air, fire, water and earth were all a formless mass. When the elements separated, Chaos took on the form of Janus: his two faces represented the confusion of his original state.

The cult of Janus was established either by Romulus or by King Numa and always remained popular among the Romans. Janus appeared at the head of religious ceremonies and, in his quality of father of the gods, was the first on the Romans' list, coming even before Jupiter. He was honoured on the first day of every month and first month of the year (Januarius) bore his name.

In the Forum he had a temple

whose gates were open in times of war and closed in times of peace. The reason for this custom is not certain. The gates of the temple of Janus were, however, rarely closed: once under Numa, three times under Augustus, then under Nero, Marcus Aurelius, Commodus, Gordius III, and in the fourth century.

When Janus died he was defied. Other legends were attached to him: after Romulus and his companions had carried off the Sabine women. A Roman woman was bribed by jewels to show the enemy the path to the citadel. Titus Tatius and the Sabines attacked the city. One night TARPELA delivered the citadel into the hands of the Sabines. They had already scaled the heights of the Capitol when Janus - whose function it was to open a channel for fountains - launched a jet of hot water which frightened them and put them to flight. To commemorate this miracle it was decided that in time of war the door of the Temple of Janus should always be left open so that the god could come to the aid of the Romans. It was closed only if the Roman Empire was at peace.

We possess no statue or bust of Janus, but on coins his effigies are numerous. The oldest bronze Roman coins had the effigy of Janus on one side and the prow of a boat on the reverse. He is normally represented with a double face, or as an older man with a beard. The crown of laurel does not appear on all his images.

Ev Butterworth

Logo contest entry by:
David Chin

Another Bright Comet!

In case you don't have enough bright comets ...

Circular No. 6281

[stuff deleted]

COMET C/1995 Y1 (HYAKUTAKE)

[stuff deleted]

The following preliminary parabolic orbital elements, by the undersigned, are from 18 observations, Dec. 26-28:

T = 1996 Feb. 23.938 TT
 Peri. = 45.516
 Node = 195.863 2000.0
 q = 1.06376 AU
 Incl. = 54.220

Total visual magnitude estimates:
 Dec. 26.86 UT, 10.5 (Y. Hyakutake, Hayato, Japan, 25x150 binoculars);
 27.52, 10.2 (A. Hale, Cloudcroft, NM, 0.41-m reflector; coma diameter about 4 ') .

1995 December 28 (6281)
 Daniel W. E. Green

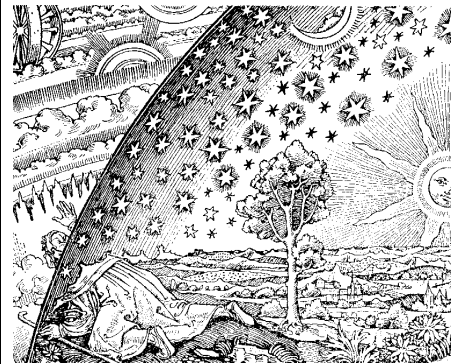
1995/96	R.A.	Decl.	Delta	r	Elong.	Phase	m1
Dec. 19	13 53.16	-25 39.9	1.897	1.514	52.4	31.0	10.7
Dec. 24	14 10.86	-25 06.5	1.812	1.461	53.5	32.8	10.4
Dec. 29	14 29.45	-24 19.4	1.730	1.409	54.5	34.6	10.2
Jan. 3	14 48.96	-23 16.5	1.650	1.359	55.4	36.6	9.9
Jan. 8	15 09.44	-21 55.6	1.574	1.312	56.2	38.5	9.7
Jan. 13	15 30.88	-20 14.4	1.503	1.267	56.8	40.5	9.4
Jan. 18	15 53.25	-18 11.2	1.437	1.225	57.2	42.4	9.2
Jan. 23	16 16.48	-15 44.6	1.379	1.187	57.4	44.3	8.9
Jan. 28	16 40.47	-12 54.5	1.330	1.154	57.5	46.0	8.7
Feb. 2	17 05.08	-9 42.6	1.290	1.124	57.4	47.5	8.6
Feb. 7	17 30.14	-6 12.1	1.262	1.100	57.0	48.7	8.4

Cosmology Corner

The next Cosmology Discussion Group meeting will take place at 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



Galileo Mission Status

December 15, 1995

The Galileo spacecraft, now in orbit around Jupiter, finished delivering the first round of data from its atmospheric probe on Wednesday. Collected during the probe's one-hour plunge through Jupiter's clouds on Dec.7, the data represent the first direct measurement of an atmosphere of an outer planet.

Galileo Project Scientist Dr. Torrence Johnson and Probe Scientist Dr. Rich Young confirmed that all the instruments seem to have worked properly and provided data during the probe's brief descent mission. The probe sent data to the Galileo orbiter for 57 minutes during its descent.

Transmission of probe data to Earth has now been temporarily suspended as planned, because Jupiter is passing behind the Sun as seen from Earth and the communications link between the Galileo orbiter and Earth has, as expected, become very noisy. The spacecraft is currently more than 940 million kilometers (584 million miles) from Earth. Data transmission will resume in January, when Jupiter and the

Earth move out of this alignment.

Scientists are continuing to analyze the data in preparation for a briefing on the initial probe science results scheduled for 10 a.m. PST on Tuesday, Dec. 19, at NASA's Ames Research Center, Mountain View, CA.

The Galileo Probe

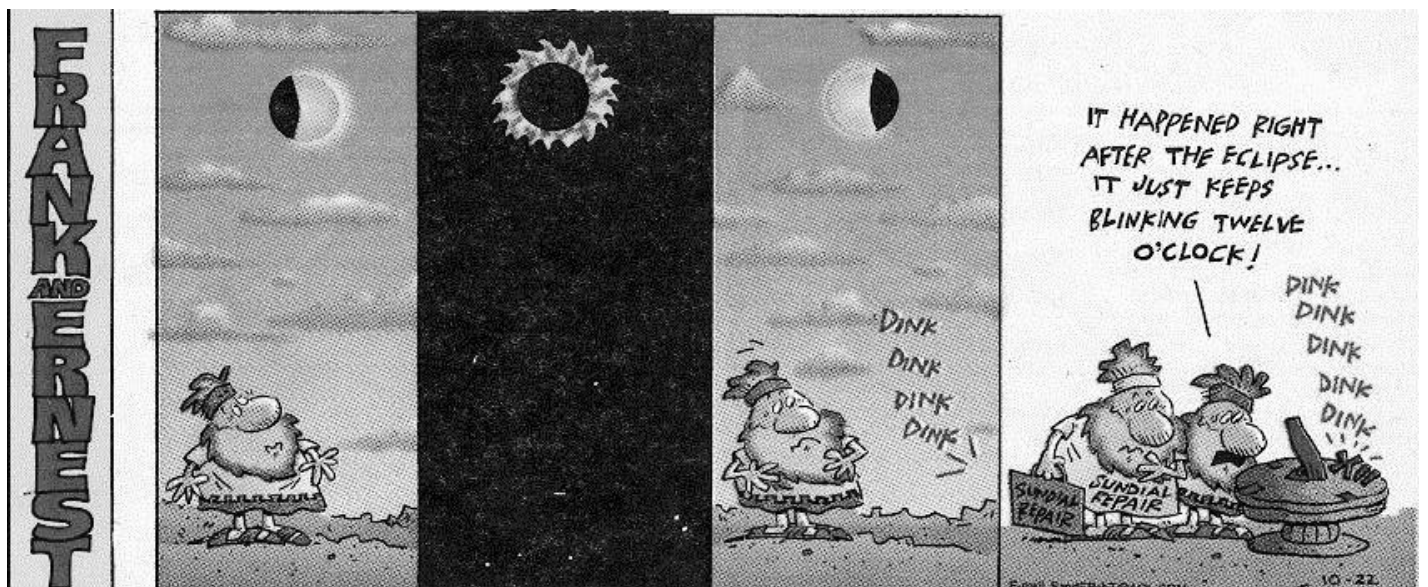
The Galileo Probe became the first atmospheric probe to study a gas giant on 7 December 1995.

The key events which occurred were (times are the time of the event at the spacecraft given in Eastern Standard Time):

Time/Event

- 11:04 a.m. Coast timer initiates probe operation
- 12:46 p.m. Orbiter flyby of Io (~1000 km) (No imaging or spectral data collected)
- 2:04 p.m. Energetic Particles Investigation (EPI) begins measuring trapped radiation in a

- region previously unexplored.
- 5:04 p.m. Probe entry and data relay
- 5:05:52 p.m. Pilot parachute deployed
- 5:05:54 p.m. Main Parachute deployed
- 5:06:02 p.m. Deceleration module jettisoned
- 5:06:06 p.m. Direct scientific measurements begin
- 5:06:15 p.m. Radio transmission to orbiter begins
- ~5:08 p.m. Visible cloud tops of Jupiter reached
- 5:12 p.m. Atmospheric pressure the same as Earth's sea-level pressure
- 5:17 p.m. Second major cloud deck is encountered (uncertain)
- 5:28 p.m. Water clouds entered (uncertain)
- 5:34 p.m. Atmospheric temperature equal to room temperature on Earth
- 5:46 p.m. Probe enters twilight
- 6:04 p.m. End of baseline mission. Probe may cease to operate due to lack of battery power, attenuation of signal due to atmosphere, or being crushed.
- 6:19 p.m. Orbiter ceases to receive probe data (if still transmitting)
- 7:27 p.m. Ignition of Galileo main engine (49



minute duration) to insert into Jovian orbit 12/08/95 3:00 a.m. Estimated time at which the probe will have been completely vaporized by the heat in Jupiter's atmosphere.

A more detailed version of this timeline is available from:

http://ccf.arc.nasa.gov/galileo_probe/htmls / probe_mission_events.html

Did You Know That

Now that it has been repaired, the Hubble Space Telescope can resolve two objects separated by as little as 0.1 arc seconds. "That's equivalent to distinguishing between a car's two headlights from a distance of 4000 Km (2500 mi.)"

A good mirror is useless if it

can't be held steady. The telescope has been equipped to slew its 11 600 Kg (25 500 lb) bulk to within 0.01 arc second of a desired object and remain within 0.007 arc second of that position for as long as 24 hr. "It's like hitting a dime in Hamilton with a laser situated in Kingston and keeping it on target while moving."

Rob Roy

For Sale

I am selling my library of science/physics/astronomy books. There is approximately \$1200. worth of books, but I'm selling them for \$300. (over 80 books) Call for details or list.

Also selling Carlton 8 x 56 mm multi-coated binoculars. \$50.

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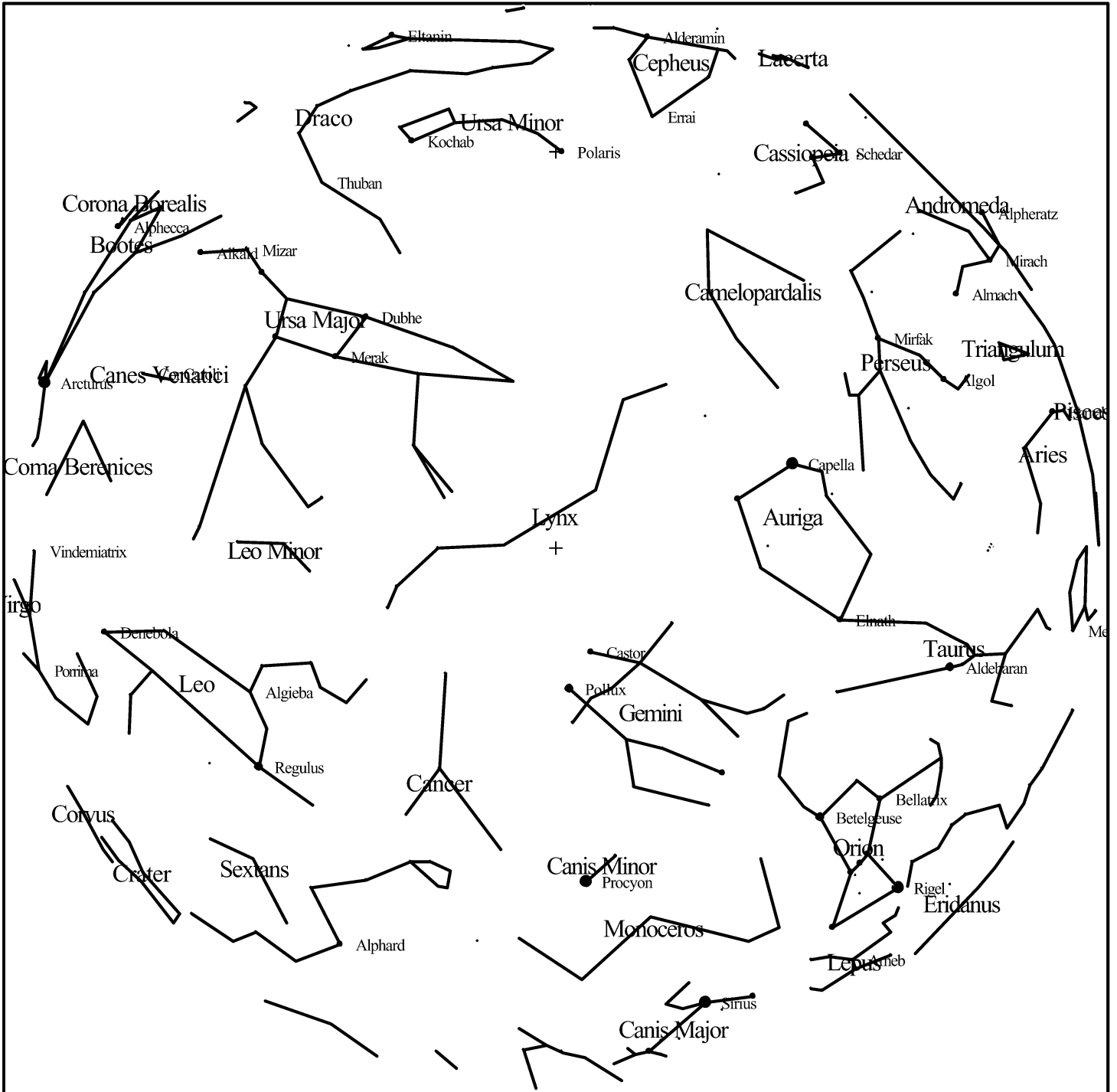
http://www.io.org/~stewart

DEADLINE:
January 31, 1996

Most text 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

- ◆ Tue. January 16, 1995 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
- ◆ Fri. January 19, 1995 7:30 p.m. **COUNCIL MEETING** - at the home of Stewart Attlesey
You don't have to be a council member to attend a council meeting.
Call Ann Tekatch for directions or information.
- ◆ Mon. January 22, 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.,
- ◆ Sat. January 27, 1996 8:00 PM **COSMOLOGY DISCUSSION GROUP**
- Mac Burke Science Building Rm B148
"The Inflationary Universe, Star Trek, and Time Travel"
- ◆ Thu. February 1, 1996 8:00 PM **ROYAL ASTRONOMICAL SOCIETY OF CANADA Hamilton Centre-**
General Meeting - McMaster University Medical Building Room 1A6
Speaker: To be advised
- ◆ Fri. February 9, 1996 7:30 PM **H.A.A. GENERAL MEETING** - Spectator Auditorium, The guest speaker will
be Andy Layden from McMaster University
- ◆ Tue. February 20, 1996 7:00 PM **HAMILTON AMATEUR JUNIOR ASTRONOMERS MEETING**
- Mac Burke Science Building Rm B148
"The Sun: Our Nearest Star"
For more information, contact Raechel Carson, at 308-8041



ECU V3.0 (Star Atlas Mode) - February Night Skies

UTC: 1996/02/16 at 03:30
LMT: 1996/02/15 at 10:30pm

RA=07h52.6m Dec=+43°06'
Field=180.0° Azim=356°27' Alt=+90°00'