



Event Horizon



Volume 17, Number 10
October 2010

From The Editor

Time really does fly when you're having fun. This past year I've enjoyed being editor of the best astronomy club newsletter in the world. The Event Horizon is truly a club effort and I would like to thank everyone who has worked on it and made it shine this past year, especially our regular contributors: Steve Germann, John Gauvreau, Greg Emery, Jim Wamsley, Bob Christmas, Mario Carr and Alexandra Tekatch. Many others have contributed, too, including:

Bill Tekatch, Mike Jefferson, Andrew Bruce, Jackie Fulton, Heather Neproszel, Les Webb, Harvey Garden, Don Pullen, Kevin Salwach, Ray Badgerow, Ed Smith and Joe McArdle. Please let these folks know how much you enjoy their photos, articles and reports. How about you? Every one of our members has a story to tell. Consider doing an equipment review or book report for Event Horizon. Who or what sparked your interest in astronomy? When and where was your "Galileo Moment"? We would love to hear from you.



Continued on p.2



From the Chair by Steve Germann

It's been a great year for the HAA.

I have been impressed by the level of activity of our members at public events, and at our visits to local Scout, Guide, and cultural groups.

It's always a pleasure to show off my love of the night sky, every chance I get, and those who feel the same as me, many of them also on the HAA council, also make the most of their opportunities in this regard.

This being the October issue of the EH, it's also the last issue in our membership year. I encourage you to renew your membership at the AGM or by mail.

When I think of the HAA, I necessarily think about the resources it adds to this fine group of enthusiastic members.

Our access to the Binbrook Conservation Area, our meeting place, the Event Horizon, the website and blog, the distinguished speakers, our acceptance by the communities we share, our ability to get insurance so we can book events for the public, and our charitable status are all things your council and generous volunteers among the membership at large make possible. The money to pay for those things comes from our membership dues, and in some cases by gen-

Continued on p.2

IN THIS ISSUE:

- AGM Notice
- Treasurer's Report
- Through the Looking Glass
- September Meeting Report
- Make Your Own Observing Chair
- Member of the Month
- Astronomy Crossword Puzzle

- Black Forest Star Party
- The Sky This Month
- Dwarf Planet of the Month
- Cartoon Corner
- Crossword Answers
- Upcoming Events
- Contact Information

From The Editor (continued)

Next month we begin our 18th year as an astronomy club. Did you know that the Hamilton Amateur Astronomers was one of the first astronomy clubs with an active web presence? Because of our relatively early arrival on the web, we were able to score a great domain name: amateurastronomy.org. Our success over the years has been due, in large part, to staying on top of the latest technologies. It hasn't been a difficult job because the majority of our members are tech-saavy. (In fact, years ago, two former presidents of the local computer club were stunned by the high level of computer literacy in our club. They admitted to us that their own club paled in comparison!) I'm excited about exploring what we can bring to the Event Horizon in today's app-driven world.

In closing, I'd like to add that I've participated on every council since the club's inception and the current one is

certainly one of our best. There is an atmosphere of enthusiasm, warmth and co-operation that is reminiscent of our very first council when a group of friends decided to make a club whose first priority was to have fun. Thanks to my fellow councilors for realizing that tradition.

Clear skies!

Ann Tekatch
Editor@amateurastronomy.org

From the Chair (continued)

erous contributions of Royal and Patron members, and purchase of HAA items such as logo-wear clothing and calendars.

This is my annual chance to thank the HAA Council members in print. In addition to being avid members of the club, as you are, they have also helped as council members, where 'behind the scenes' work is done to ensure the club runs smoothly.

My thanks also goes to all the members of the 16 previous councils who helped make the club what it is today.

At the Annual General Meeting, you will see a sample of the fine work they are doing continuously for the club. I am grateful for their generous and effective provision of skills and time.

This is also my chance to mention the great support we are getting from the Hamilton Spectator, and to praise

again the excellent venue they are providing for our meetings, at a very reasonable price.

The Spectator Auditorium seems tailor-made for our requirements, and although it's usually not very dark after our meetings, given the number of artificial lights nearby, at least there's a spot where we can set up telescopes and get a peek at the Orion Nebula or Jupiter or Saturn, depending on the time of year.

It's a great thing that more than half of the membership attends our meetings on a monthly basis. I think that's probably some kind of world record.

As I look forward to the next year, I anticipate another group of talented and interesting speakers there, who will bring astronomy to you at our monthly meetings. I also anticipate our upcoming Telescope Clinic in November and our Imaging Clinic next March. Please come, and bring your friends!

Masthead Photo Credits: The Harvest Moon rises above the Red Hill Valley as seen from Mountain Brow Boulevard in Hamilton. The photo was taken by John Gauvreau in September 2009. He has this to say about the exposure: "I used an old Orion short tube 80mm refractor, which has a 400mm focal length, and a Canon XSi mounted on a simple camera tripod. The exposure was a single shot at 1/10 of a second at f/5. Photoshop used to balance the sky brightness with the moon."

Notice to Members of Annual General Meeting: October 15, 2010

This year's AGM will be held during our general meeting at 7:30 p.m. on October 15, 2010 at the Hamilton Spectator Building.

Any member who wishes to volunteer for a position on the 2010-2011 Council, is encouraged to do so by sending an email to: membership@amateurastronomy.org. Potential candidates must meet the qualifications outlined in our Constitution and Bylaws (available on our website) and have paid their membership dues for the 2010-2011 membership year.

We encourage anyone interested in helping to volunteer for council.



October 2010 Treasurer's Report by Don Pullen

(Unaudited)

Cash opening Balance (1 Sep 2010)	\$ 4705.35
Expenses	\$ 1130.00
Revenue	\$ 616.00
Closing Balance (30 Sep 2010)	\$ 4191.35

Notes:

1. Major revenue sources included: 50/50 (\$31), Memberships (\$585)
2. Major expenses included: Auditorium rental for year - prepaid (\$1130)



Through the Looking Glass by Greg Emery

Some people believe that everything happens for a reason. I am not referring to Karma, which suggests that bad things happen to you as a result of the bad or evil actions you have performed previously. I am referring more to (and there is probably a name for it, I just don't know what it is - or care enough to look it up!) the notion that you meet someone, and by meeting that person you have a positive influence on their life, or they on yours or both. While it may not matter to you that you meet someone and speak to them for a few moments, that chance meeting may be a key to that other person's life. (Okay I just caved in and looked it up, the name is kismet).

The last weekend of August my son's best friend's parents invited our family up to their cottage in Parry Sound for the weekend. The weather was amazing and the skies absolutely clear. Sitting on the dock after sunset I pointed out to my kids, or to anyone else who cared, that there is the teapot and Scorpius in front of it. My son's friend, Conor, and his father began to ask questions. I started to point out things. My sons then pointed out a satellite tracking through Cygnus. After a few minutes, low and behold, the ISS comes through - cutting Cassiopeia in half. I explained that that must be the ISS and why it is so bright. I was asked by my wife "Are you sure it isn't a plane, it has been crossing the sky for a long time?" (Upon returning home I checked - it was the ISS. By chance the ISS made a 4:28 pass that night - the longest show of the month for that dock). I sat Conor down on the dock, in a Muskoka Chair (Adirondack Chair for you Lee Valley types) and gave a few pointers on how to look for satellites. The next night Conor

Continued on p.4

Through the Looking Glass (continued)

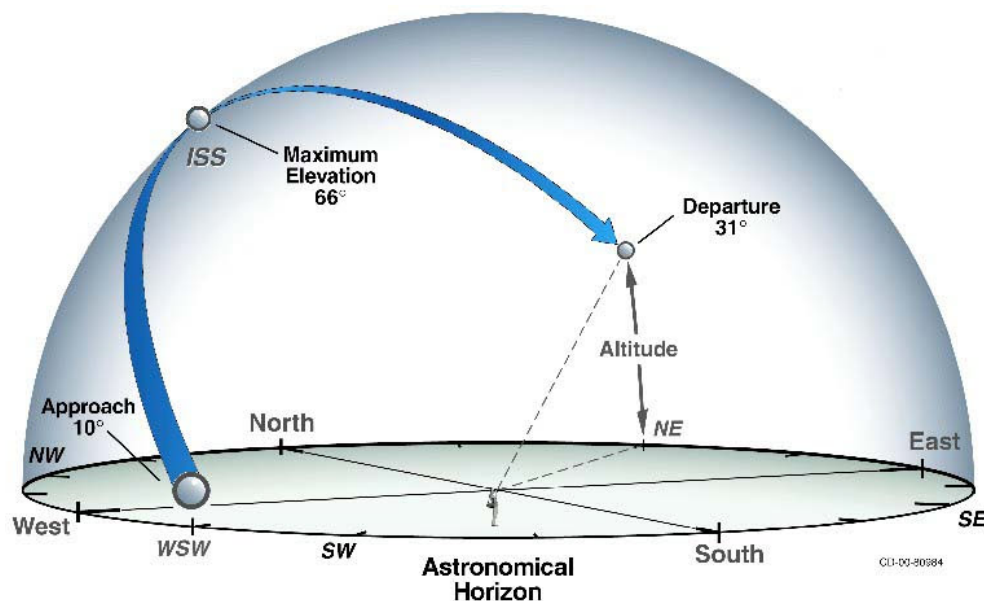
and my son went to the dock after sunset and Conor sat down and began to look for satellites. So has my presence been the spark that will lead Conor or my son on to be astronomers and to make some great discovery? Nahh, more likely Conor will hurt his neck sitting in the chair like I showed him, and thus go on to become a prominent trial lawyer specializing in personal injury suits. But technically if it weren't for me.....

Satellites can be considered to be big shiny chunks of celestial flotsam and jetsam (yes, yes I can hear you now pointing out that they are technically jetsam, not flotsam). The majority of satellites that orbit the earth will pass overhead with some degree of regularity. These transit times can be calculated - or better yet look up someone else's calculations on the internet!

The two most spectacular to see or witness are the ISS and the Iridium Flares. The ISS or International Space Station is large. It reflects a great deal of light from the sun, down to earth. The ISS is usually quite bright and visible for minutes as opposed to brief seconds. There are several web sites within NASA that predict the passage of the ISS for a given position on the earth. One such website is <http://www.spaceflight.nasa.gov/realdata/sightings> which produces a table of data (Table 1 below) which will tell you when, where and how long. There is a diagram below the table which helps to explain some of the information within the table. Basically you want an ISS passage that is long (multiple minutes) as well as high in the sky (Max Elevation column is big number) that occurs AFTER sunset on a CLEAR night.

Table 1 Possible ISS Transits

SATELLITE	LOCAL DATE/TIME	DURATION (MIN)	MAX. ELEV. (DEG)	APPROACH (DEG-DIR)	DEPARTURE (DEG-DIR)
ISS	Sat Oct 02/05:26 am	2	18	17 above SSE	15 above ESE
ISS	Sun Oct 03/05:52 am	2	61	40 above SSW	29 above ENE
ISS	Mon Oct 04/06:19 am	3	43	23 above W	17 above NE
ISS	Tue Oct 05/05:13 am	<1	24	24 above ENE	24 above ENE
ISS	Tue Oct 05/06:46 am	3	22	15 above WNW	15 above NNE
ISS	Wed Oct 06/05:39 am	1	33	33 above N	16 above NE
ISS	Thu Oct 07/06:05 am	2	21	20 above NNW	16 above NNE



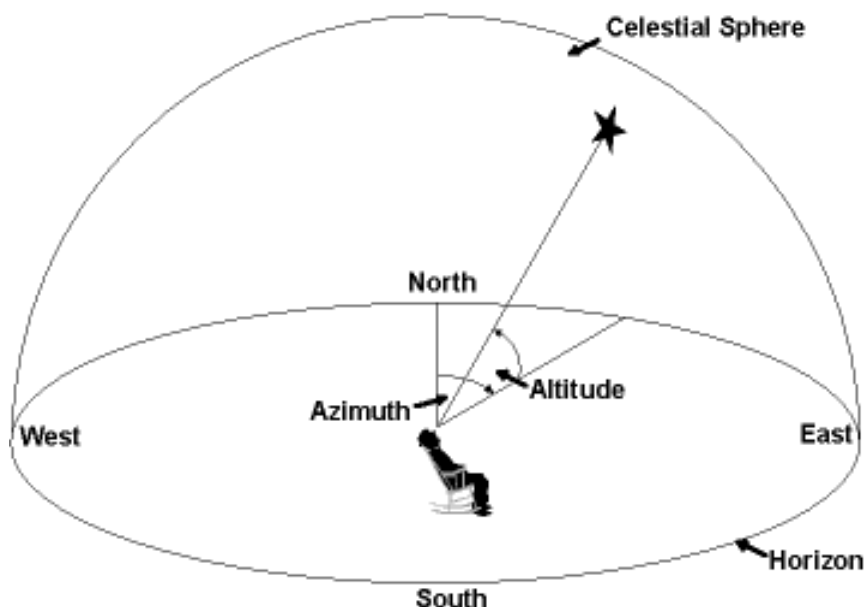
Continued on p. 5

Through the Looking Glass (continued)

The other type of satellites that are neat to see are Iridium Flares. These are named for spectral reflectance from a satellite that is part of the Iridium Communications Array of Satellites. These satellites, when positioned correctly with respect to the sun and our eye, can reflect so much light that they will appear to flash in the night sky. I like the analogy of driving on a highway on a bright sunny day. Every once in a while a bright flash from another car catches your eye - for a brief instant the shiny surface on the car, the sun and your eye were lined up just right. Now put the car into a circular orbit 500 to 700 km high and you have the potential for an Iridium Flare. What makes them so neat, to me anyway, is that they flash brighter than anything in the sky. Some have been measured/photographed at a magnitude of -8 (the full moon has a magnitude of -12 to -13, the Sun is about -26), which in the dark night sky is extremely bright.

The website <http://www.heavens-above.com/> allows users to enter the viewing location on a Google map, then get predictions for the Iridium Flares, ISS and lots of other neat stuff. I generated the table below for Hamilton. The table column of Azimuth refers to the angle measured clockwise from the observer's north. Simply put, due East has an Azimuth of 90°, South 180° and west is 270°. North is of course 0°.

Date	Local Time	Intensity (mag.)	Alt.	Azimuth	Distance to flare centre	Intensity at flare centre (mag.)	Satellite
01 Oct	20:25:17	-8	36°	8° (N)	1.1 km (W)	-8	Iridium 53
02 Oct	20:19:06	-5	38°	9° (N)	8.7 km (E)	-8	Iridium 54
03 Oct	05:56:57	-A23	46°	196° (SSW)	16.2 km (W)	-8	Iridium 19
03 Oct	20:12:54	-8	40°	9° (N)	3.4 km (E)	-8	Iridium 83
04 Oct	20:06:45	-1	41°	11° (NNE)	30.4 km (E)	-8	Iridium 56





September General Meeting Report by Bob Christmas

The September meeting at the Hamilton Spectator auditorium was kicked off by HAA chair Steve Ger-mann at 7:30 pm. Steve handed off the floor to Mike Jefferson, who talked briefly about the LOFAR radio antenna. Then Ann Tekatch announced that past HAA Chair and HAA co-founder, Dr. Doug Welch of McMaster University's Department of Physics and Astronomy has just won the Royal Society of Canada's McNeil Medal, and that there was an article in the Hamilton Spectator about this.

Without further adieu, the main speaker of the night, HAA member Kerry-Ann Lecky Hepburn, took the floor for her much-anticipated talk on her long-time hobby of astrophotography.

Her first dabbling with night-sky photography was part of a grade-11 science project, in which she was studying variable stars. Her project included taking a time exposure of the variable star Algol through her 4.5-inch Newtonian reflector.

Her astrophotography hobby grew from there, with photos of the moon, some of the planets, some aurorae, and Comets Hyakutake and Hale-Bopp. She even made use of York University's observatory telescope to take close-up images of Comet Hyakutake and the Orion Nebula (M42), under astronomy professor Paul Delaney's stewardship.

Kerry obtained a Canon Digital Rebel 300D and a Celestron 6-inch Schmidt-Cassegrain scope in 2007, as well as new techniques of digital imaging and processing. Since then, her imaging equipment, imaging optics and her processing techniques have grown increasingly sophisticated, and continue to do so. Today, her repertoire of equipment includes an AT8RC Ritchie-Chretien scope and a Sony QHY-8 CCD camera.

Kerry has given astro-imaging clinics to HAA members, and has had many of her works, as well as collaborations with fellow astrophotographers Paul Mortfield and Stephano Cancelli, featured in magazines such as SkyNews, and as NASA Astronomy Pictures of the Day (APOD).

If you have not done so already, check out Kerry's astrophotography on her website, <http://www.weatherandsky.com/main.php>. She has some amazing work.

After Kerry's talk, and the usual intermission, Alex Tekatch drew the door prizes and the 50/50.

Then it was HAA Observing Director John Gauvreau's turn at the podium, for his talk about the sky for September. John's main theme this time was variable stars. On that note, he gave a brief history lesson about John Goodrich, who discovered the variable nature of the eclipsing binary star Algol (the same star Kerry imaged for her science project!). He touched upon ancient mythology as it pertained to some of the fall constellations, including Cepheus, Perseus and Andromeda.

Sticking to his theme of variable stars, he gave a brief description of the nature of Cepheid variable stars, and how information and data gleaned from such stars have helped determine that "island universes" like the Andromeda "nebula", are indeed galaxies like our own Milky Way Galaxy, separated by enormous distances that could be estimated by studying Cepheid variables located within these galaxies.

John pointed out some interesting sights in the fall sky, including the prototype Cepheid variable, Delta Cephei, as well as Herschel's "Garnet Star", a deep-red supergiant located in the same constellation, Cepheus. He also reminded us that Jupiter and Uranus are still in the same wide telescopic field of view, near opposition, and therefore, for a little while anyway, visible in the sky all night long.

Always looking for a climactic finish, John re-showed the opening slide of his presentation, which was an image of a very close pair of very bright "stars" in an anonymous starfield... nothing out of the ordinary... except that this very close "double-star" is the Earth and the Moon, as imaged by the Mercury Messenger spacecraft!



Make Your Own Observing Chair by Jim Wamsley

During my recent trip to Cherry Springs State Park for the Black Forest Star Party, I noticed many people using observing chairs. Several club members have them also. I often thought that I could put one to good use, particularly when polar aligning my scope. Being able to lower the seat to align, and raise it for observing would be very handy.

Now finding myself at a star party, and having a little designated “astro-cash” in my pocket, of course I made my way over to the vendors’ tents to see how to put this hard earned money to best use. I looked over all the toys, (trying not to get drool all over them), and felt a little sorry for myself for not having a thicker wallet. I gave hard consideration to buying a commercially made chair. The prices ranged from \$140.00 to \$170.00 for metal and \$250.00 and up for the beautiful hand carved hardwood chairs. Quickly realizing that my astro-cash was in no way going to stretch that far, I put observing chairs on the “maybe later” list, and used the funds on some other small, but useful stuff.

When I got home, I started thinking that if something is commercially available but pricier than one would expect, you can be sure that someone has made a home built model and put the plans on the internet. After a quick Google search, I had several sets of plans in hand. Here are just a few:

www.cuslm.ca/astroclubnb/chairjim.htm

www.schlatter.org/Dad/Astronomy/chair.htm

www.backyard-astro.com/equipment/accessories/Cat/cat.htm

I printed these and retreated to my workshop. Checking the materials I had in stock, I chose to make the Dad Astronomy chair as it was simple, can be cobbled together in less than an hour, and it looked like it would carry my more than considerable bulk.

I made a few minor changes from the plans to accommodate the materials I had at hand, and I also added a bungee to keep downward pressure on the seat when I’m not sitting on it. Finally, I padded and upholstered the seat.

I have only used the chair once since completion, and have found that the substitution I made in materials for the seat platform was too weak and I plan to make improvements to it. Should have picked up that 3/4" plywood!!!!



Jim’s new “throne”. All photos are by the author. - Ed.





Member of the Month: Doug Black by Mario Carr

Over the years since joining the club it has been a privilege and honor to know Doug Black.

Doug has been an HAA member since 1995, when Stewart Attlesey, who was one of our club's founders, just happened to invite him to an HAA meeting. The club awakened a dormant interest in astronomy for Doug.

An interest that was 30 years dormant! Doug was instantly hooked and has been an active member ever since.

When Doug was a child growing up in the country beyond Binbrook, the stars at night he says were amazing and this kindled an interest in astronomy. He was also fascinated by what he read about space travel, and probably like most of us, for a while he even wanted to become an astronaut.

Unfortunately, this was not to be. He temporarily gave up on all things astronomical and went to study physics at McMaster University. After graduating, he helped design Canada's nuclear reactors. He started working in radiation physics and later introducing Unix and Linux computers to the engineers.

Like a lot of us, Doug enjoys observing. He has binoculars and a 10 inch Meade LX200 he bought a few years back, and would love to be part of running an observatory at a dark site. Since the mid-90s he's attended and enjoyed Starfest every year, especially anything to do with spectroscopy, and of course looking through other people's big scopes.

Doug says that he is at least halfway to being an armchair astronomer. He's one of those folks who is especially interested in a good understanding of the big picture. To Doug, that means astrophysics, cosmology and all plane-

tary things. One of Doug's favorite books is Beatty and Chaikin's The New Solar System and it may have had a lot to do with his interest in the big picture. But for Doug that particular big picture also includes other sciences like biology, exobiology, evolution and even linguistics.



He enjoys reading and learning about these subjects when he's not busy renovating an old house, trying to understand urban planning or improving his knowledge of France. Doug is interested in France because he has a daughter studying at university there.

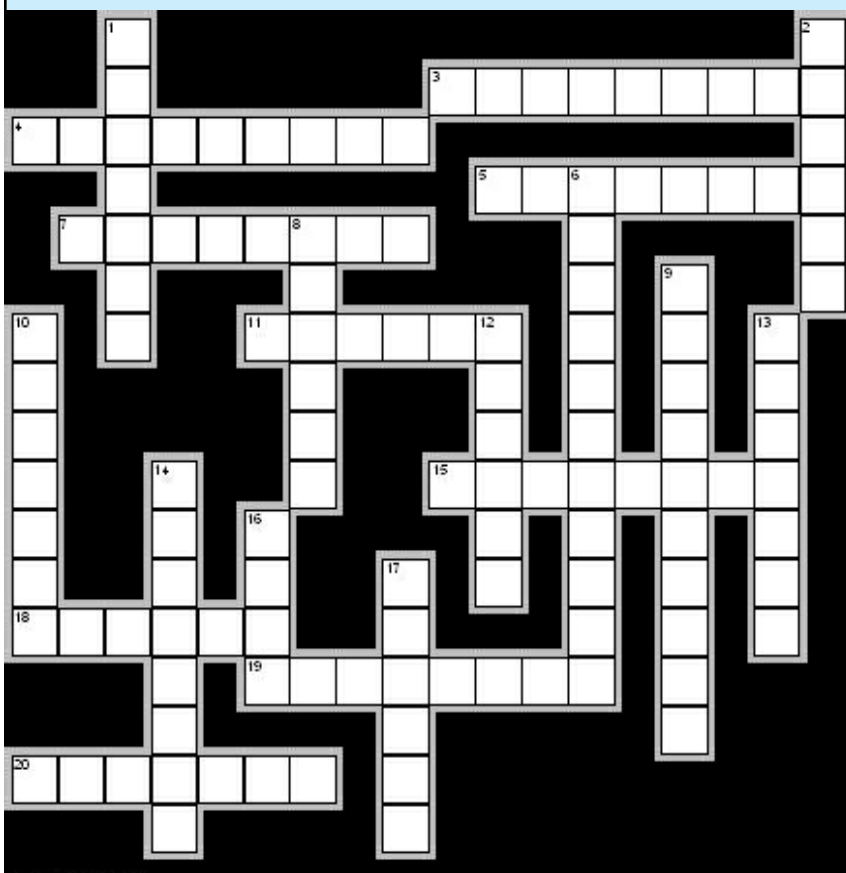
Doug is very enthusiastic about two things that the club started last year. "John Gauvreau had the excellent idea of reviving our Cosmology Discussion Group, and Mario Carr started our very first HAA Book Discussion Group," said Doug. He recommends to all members to become involved with these groups.

If you see Doug at one of our meeting or events say hello. He is friendly and always has interesting comments.





Astronomy Crossword Puzzle by Mario Carr



Across

3. Star brightness
4. Last month this online observatory started streaming Canada's northern lights live on the internet
5. Sets a little after 8 p.m. in October
7. Resolved M30 into stars
11. A dwarf planet
15. October meteor shower
18. An amateur astronomer who had a birthday on September 14
19. The Hubble Deep Field reveals thousands of these objects
20. King of the sky during September 2010

Down

1. First full moon after the autumn equinox
2. In 1838 this astronomer calculated the first distance to a star.
6. An autumn zodiac constellation
8. A star cluster
9. A naked-eye double star: Alpha
10. This type of vision is useful for astronomers
12. A type of galaxy
13. He first spotted M30 as a fuzzy blob in 1764
14. Who said this quote? "What is inconceivable about the universe is that it should be at all conceivable."
16. A nebula
17. Less than a degree from Jupiter in September 2010

(Answers on p. 17)



Black Forest Star Party - September 2010 by Jim Wamsley

Four H.A.A. club members made the trek to Cherry Springs State Park, Pennsylvania in September. John G., Don P., Steve G., and I arrived on the Tuesday early in the afternoon and there were already over a hundred people set up on the observing field. The weather was cloudy and the forecast was less than promising. We set up our camp but held off on the scopes, as we were expecting a lightning storm later in the evening. After supper, we chatted for a while then decided to get some sleep and get up a little later if the weather cleared. By 2:30 a.m., a few sucker holes opened up and we all got up to observe with John's large binoculars. It was very peculiar viewing the open clusters in Auriga M36, 37, 38 while the lightning was flashing all around, providing us with another light show. As the night progressed, we also got a look at M13, the Pleiades and just before dawn, the Orion nebula.

Wednesday, Thursday and all day Friday was spent praying for the clouds to depart, socializing, and checking out the vendors' tents. You meet some of the most interesting people at star parties. We all had a great time walking around, looking at scopes and talking to the owners. I know I made many new friends.

Finally the skies cleared Friday evening and we all got our scopes set up in anticipation of a great night of observing. I have asked John Gauvreau to write a few lines about his night of observing:

John Gauvreau: "Of course, any telescope performs much better under a dark sky, and my small refractor was no exception. Wide-field views of the Milky Way, the North American Nebula and the Andromeda Galaxy—all seemed to take on added dimension. But visiting

Continued on p. 10

Black Forest Star Party - September 2010 (continued)

other telescopes is a treat that one can rarely pass up at a star party and I took advantage of the many fine scopes around me. Right beside us were a few 18 and 20 inch dobs, and the owners were very nice and generous with their views. M33, the faint but large face-on spiral galaxy, showed the spiral arms well in a 20" scope and even showed a number of HII regions, which are basically the nebulae of the galaxy where new stars are being formed.

A 32" dob (that's right, a 32", the biggest scope there!) gave a fine view of M13, the great globular cluster in Hercules. It was resolved right across the field and looked like a Hubble photo. The owner of the 32" then turned it to M57, the Ring Nebula, which showed as a bright oval with the interior filled with mottled gas. Best though was my first view of the central star of the Ring, which just showed at 250 x. but was steady and clear at 340 x.

Returning to the neighbours near our campsite, I was beckoned over to a 18" dobsonian that was pointed

at the Veil Nebula. I have seen the Veil though many scopes and it is an object that always has more to give you as you move to larger and larger apertures, but I have never seen a view this good. Even the owner of

the scope said that it was his best view of the Veil! The eastern section (NGC6992) showed twisting filaments of gas, bright and clear, while the highlight of the western section (NGC6960) was the Witch's Broom, a splay of tendrils that spread out like a river delta. Even the central section, Pickering's Triangle (NGC6979) showed impressive detail.

In the end though, the Best of Show award has to go to the naked-eye view of the Milky Way. With the silhouette of trees in front of the starry sky, and the dark dust lanes cutting the Milky Way into clearly defined sections, the sky seemed to take on three dimensional qualities, as one could almost sense the dark clouds of gas sitting in front of that ever receding disk of distant stars. Truly magical!"



Cherry Springs' Magical Milky Way - photo by John Gauvreau.



A beautifully designed dobsonian reflector. Photo by Jim Wamsley.

More photos next page

Black Forest Star Party - September 2010 (continued)



Photos clockwise from above:

- Some of the big guns lined up by their owners, who hope for clear skies.
 - John's small but mighty scope stands ready.
 - Don admires a 32" telescope.
 - Vendors provide lots of astro toys to covet.
 - Steve and Don are dwarfed behind a homemade 6" f/15 brass refractor.
- all photos by John Gauvreau.





The October sky is so different from what we have been used to recently. The Milky Way and the Summer Triangle, beacons of summer, are still there, but now disappear quickly into the west. In their place are the more subtle constellations of fall. As the ground below brightens into a glory of colour, leaves turning into a spectacle of red and gold, the sky above quietly calms itself, offering an evening of subtle beauty for those that care to slow themselves and appreciate the softer hues of an autumn night.

This season brings one of the most remarkable sights visible in the night's sky; the Andromeda Galaxy, visible to the unaided eye from a dark site. Not far from it lies M33, another large spiral galaxy. Since it is a face-on spiral, it is much dimmer than M31. Since this makes it quite a challenge to observe through even a little bit of light pollution, it is always rewarding when one does see it through the scope. A recent view from a very dark location and through a 20" telescope showed the spiral arms knotted with HII regions, and was one of my favourite observations of the summer. Remember though that you don't need a big scope to see this object; binoculars show it well, and for a real challenge, a very dark sky is required for a naked eye view.

The glittering jewels of the Double Cluster in Perseus are always a delight, and binocular views of these objects often outperform those through larger telescopes. Be sure to turn those binoculars to other open clusters, like M36, 37 and 38, that can be swept up in mere seconds, thus providing a context for their position in space. The globular cluster M15 in Pegasus is one of the finest of autumn's offerings, and looks great in any instrument, from binocular to small telescope to large dob. Repeated viewings reveal an abundance of detail in the core. It was once said that a telescope of at least 100mm (4") was needed to resolve it, but with today's fine optics, can anyone do better?

One light that will shine brightly this month is **Jupiter**. Having passed opposition in September, it is well up in the south-east by 9pm at the beginning of October, and high in the south at

the same time come the end of the month. Jupiter always offers plenty of detail for telescopic observers, and on the nights of the 23rd and the 30th you can watch a **double shadow transit**. First Ganymede's shadow and then Europa's will cross the planet, and then only a week later the same two moons repeat the performance. What an amazing opportunity!

Few other planets are visible this month, with **Saturn** in conjunction on October 1st, **Mercury** on the 17th and **Venus** on the 29th. **Mars** is so low in the west that it is barely visible. Don't forget though that both **Uranus** and **Neptune** are well placed and visible most of the night. With all the other planets but Jupiter shying away from our gaze this month, you'll find no better excuse to look for these most distant of planets. This past month I had opportunity to observe both of these distant gas-giants, and it is well worth it to compare colour and brightness. While Uranus looked to be a well defined disk with a soft blue colour through Don's fine 5" refractor, Neptune looked much dimmer (no surprise at its much greater distance) and was resolved as a disk, but only just.

The **Moon** begins the month at last quarter and is new on the 7th. First Quarter on the 14th is the perfect time to share a view through your telescope with a friend or neighbour. **Full Moon**, known as the Hunter's Moon, arrives on the evening of the 22nd, rising at 5:53pm. The Harvest moon of September gets all the attention, but remember that this month's full moon will show many of the same characteristics, rising on consecutive nights at about the same time.

Were you one of the lucky ones to see Halley's Comet in 1986? Or perhaps you are waiting until its next return in 2061 (I did in fact see it in '86 and I plan to see it again in '61, a feat I can accomplish if I live to be 100!). But why wait? You can see the discarded remnants of this most famous of comets as the Earth passes through the debris stream left behind as the comet orbits the sun. The **Orionid Meteor Shower** lets us

Continued on p.13

The Sky This Month: October 2010 (continued)

see these leftovers as they plunge into the Earth's atmosphere, and peaks on the nights of the 20th and 21st. This shower is not too strong and not too weak, but occasionally, and unpredictably, it puts on a much better show. On a clear night from a dark sky, how many will you see? Remember that you will likely see more after midnight than before.

The Sky This Month as a regular feature is something that has appeared in *Event Horizon* for only a few years, and for the past two of those years it has been in my care. Since its inception though, the HAA has been about getting out and enjoying astronomy, in all its forms and guises, and that has included observing. The EH has always had plenty of material for the backyard observer. Current editor Ann Tekatch has not only allowed me to present my

material in the manner of my choosing, but helped tremendously in creating a great look and format for the column. That includes the inclusion of a complete mag 7 star atlas over the past year of the EH, and wonderful colour images and charts permitted by the exciting new electronic format. I am most appreciative though, of Ann's generosity in stretching the occasional deadline for me, her tardiest contributor, and offering encouragement to this most inexperienced of writers (I have always held that I am lucky to get my first name in front of my last). The EH has also been a forum for readers to share their observing experiences with their fellow members. I have enjoyed sharing my view of the universe with you, and look forward to seeing you out under the stars for plenty more observing!

THE SCOPE STORE

at CAMTECH

588 Concession St
Hamilton, ON L8V 1B1

The Largest Selection Of Scopes
in the Golden Horseshoe.

Dealers for Orion, Celestron,
Bushnell, Pentax, Nikon, Swift
and Zeiss.

Telescopes, Spotting Scopes, Microscopes,
Binoculars and Accessories. Starry Night
Software.

905-389-8545

www.camtechphoto.com



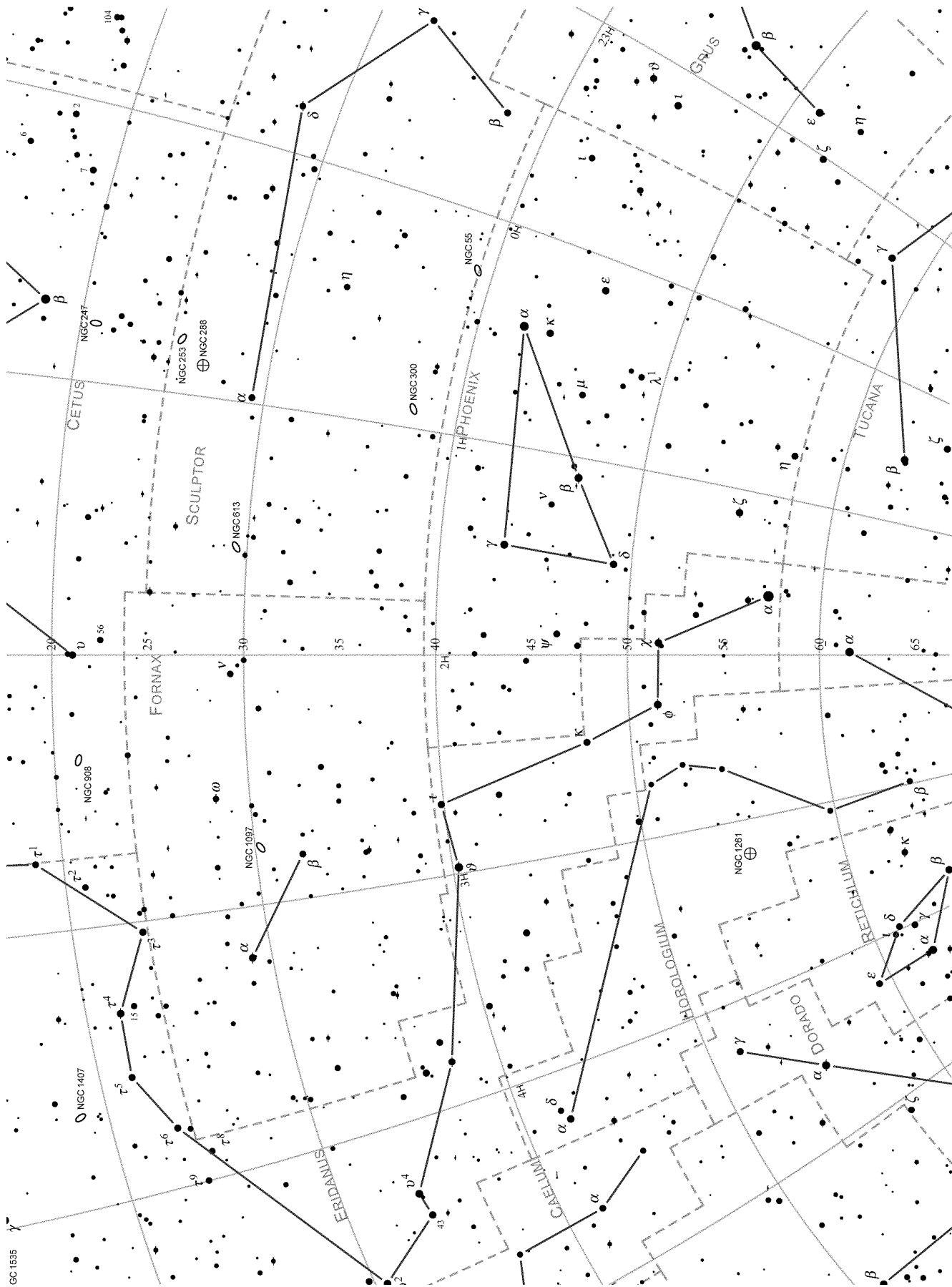


Chart 14: RA 0^h to 4^h, Declination -20° to -65°

Mag-7 Star Atlas Project (version 2.0)

Magnitude: 0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0

Copyright © 2007 Andrew L. Johnson

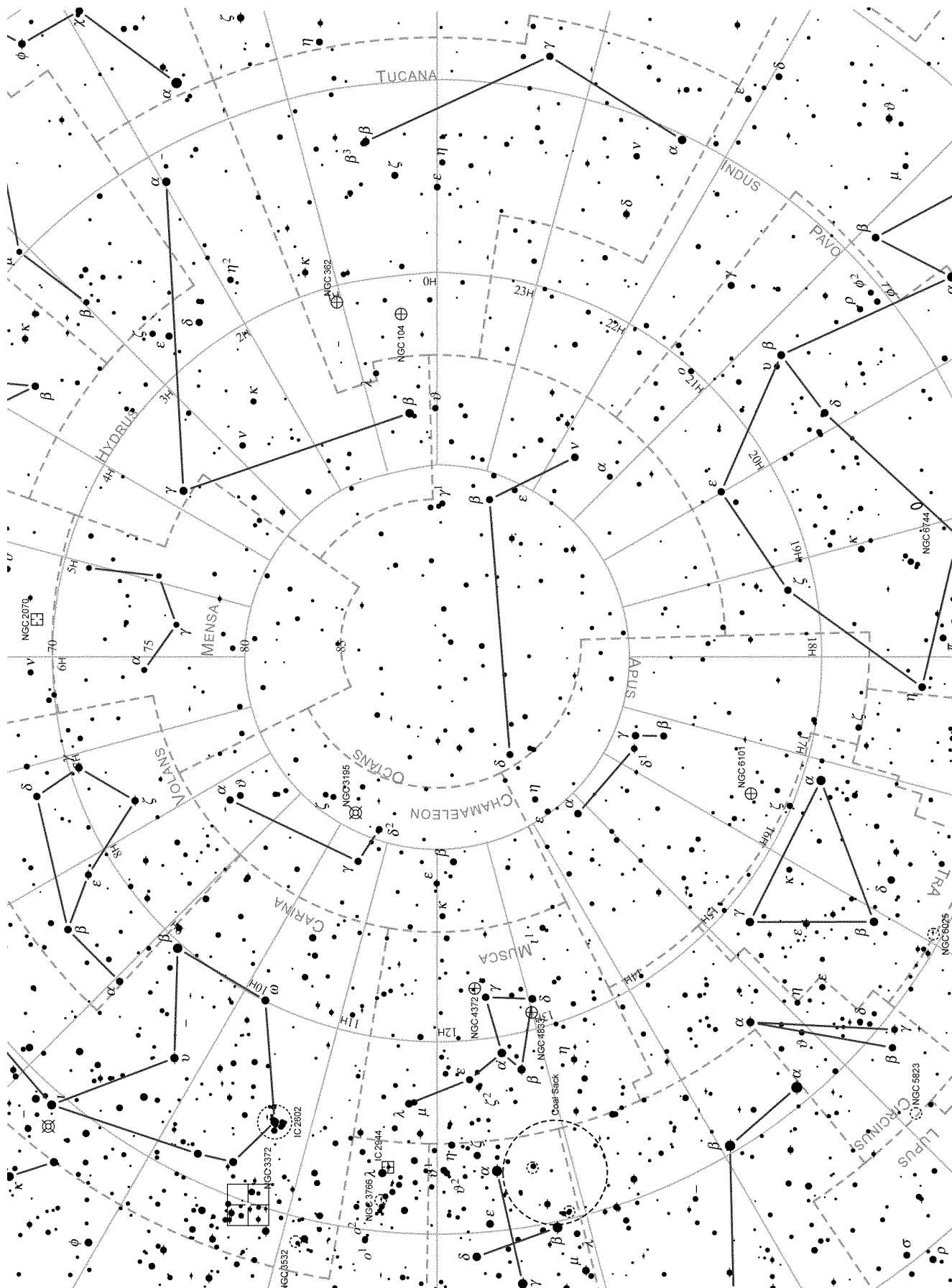


Chart 20: Declination South of -65°

Magnitude: 0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0



Dwarf Planet of the Month: Juno 3 by Steve Germann

This month's Dwarf planet is Juno, and this article considers all things Junonian. (That's the official adjective for it).

Discovered on September 1, 1804, by German astronomer Karl L. Harding, Juno was named after the mythological figure Juno, the highest Roman goddess. (Most early asteroids were named after female figures)

Of the known asteroids, Juno is the 5th largest, as shown in this graphic:

http://en.wikipedia.org/wiki/File:Moon_and_Asteroids_1_to_10.svg

It is estimated to contain about 1% of the mass in the Asteroid Belt.

Originally, Juno was estimated in 1811 to have a diameter, 2290 km, rivaling Earth's Moon, but how the true diameter of about 267 km was computed is an interesting story.

Like most of the famous dwarf planets, Juno was the subject of some scientific 'firsts'.

In fact the first measurement of a stellar occultation by an Asteroid was on Feb 19, 1958 when Juno occulted the relatively dim star SAO 112328. Juno was subsequently the subject of several occultation projects, and on December 11, 1979, 23 stations watched, and 15 stations registered the occultation. Those

measurements allowed Juno's profile to be determined, and a reasonable estimate of its diameter to be made. No Junonian satellites were detected at that time.

It turns out that there's a big crater on Juno, about 100 km in diameter, and it's been postulated that the chondritic meteorites come from there, since there's a lot of material available from a hole that big.

Importantly, the occultation data showed that previous estimates of its size were too small by about 6 percent.

Juno held the record for having the greatest eccentricity 0.2559, of any known solar system object, until 1854, when a new record-holder was discovered. Eccentricity is an interesting figure. It's computed as the square root of the difference of the squares of major and minor axis, divided by the major axis. It is close to 1 for extremely long and narrow ellipses, and near 0 for orbits that are close to circular. So for Juno, that means its perihelion is at 1.98 AU and its aphelion is at close to double that figure, at 3.35 AU.

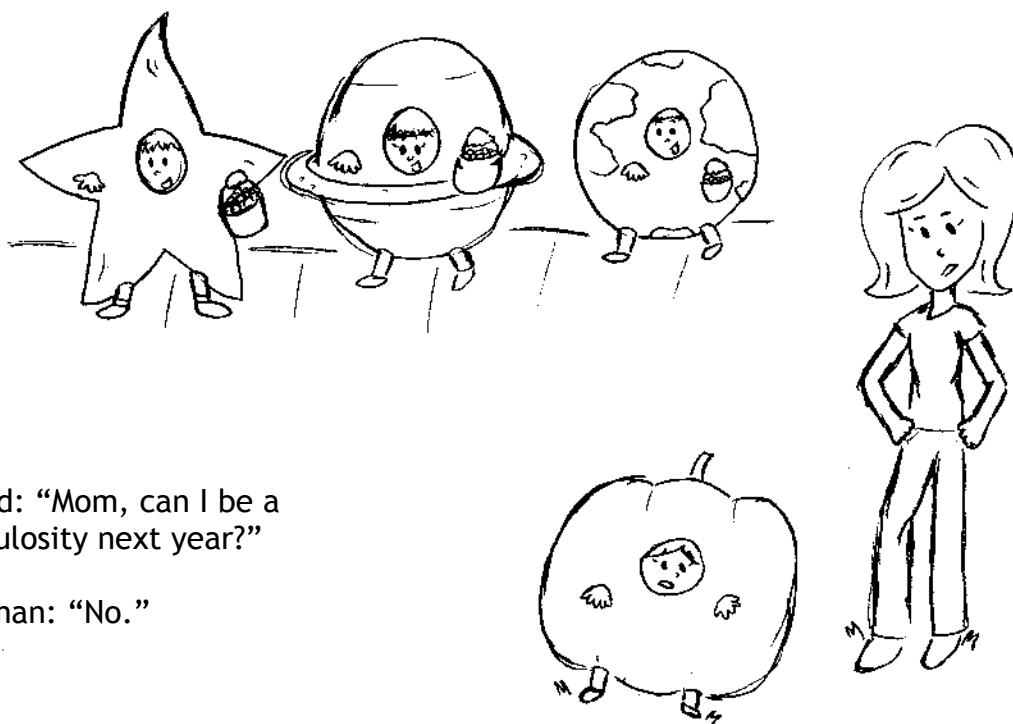
Estimating the Junonian Mass is another interesting story. Using radio signals from spacecraft on and in orbit around Mars, the contributions to Mars' orbit from other masses, including the asteroid belt, have been carefully es-

timated. Juno was found to be relatively dense.

Juno's orbit appears to have changed slightly in 1839. Perhaps due to perturbations from a passing asteroid, not yet found. Another possibility is that it was struck by a fairly large impactor. For that to have happened in 1839, we should see fragments in similar orbits. So far none have been found. However, it's known that Juno has a very large crater, with a dark albedo, suggesting a fresh impact site.

At Mount Wilson Observatory, Juno was imaged by the Hooker Telescope in 1996. Adaptive optics were used to get a good image of it, even though it's only 0.3 arc second in apparent size... like looking at a dime 7 miles away.

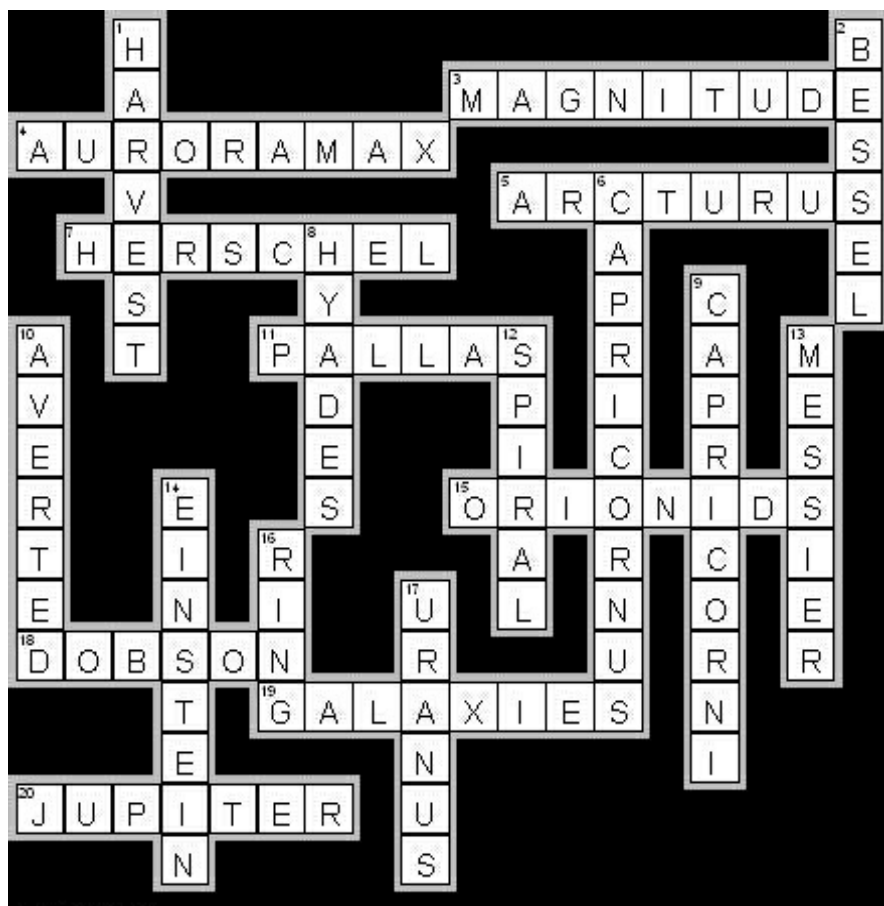
Juno will be at Opposition on March 13, 2011. At that time it's expected to appear at magnitude 8.9, and be about 1.78 AU away, which would put it out of range of regular binoculars. However, with a star chart and a telescope, you should be able to see it moving against the background stars at a pretty good clip. I estimate it will be moving 1 arcsecond per minute, and that means its motion should be easily detectable in half an hour. However, the earth will also be moving in a similar direction at the time, and the actual apparent motion might be about half that.



Child: "Mom, can I be a nebulousity next year?"

Woman: "No."

Answers to Astronomy Crossword on Page 9



UPCOMING EVENTS

Friday, October 15 - Hamilton Amateur Astronomers' Annual General Meeting, 7:30 pm at the Hamilton Spectator auditorium.

Saturday, October 23 - Astronomy Book Club meeting, 7:30 pm. Discussion will centre on the topic of the Lunar X Prize, a \$30 million international competition to safely land a privately funded robot on the surface of the Moon By Dec. 2014. Please contact Mario Carr (mariocarr@cogeco.ca) for location and information.

Friday, Nov. 12 - General meeting, 7:30 pm at the Hamilton Spectator auditorium

2009-2010 Council

Chair	Steve Germann
Second Chair	Jackie Fulton
Treasurer	Don Pullen
Membership Director	Jim Wamsley
Observing Director	John Gauvreau
Event Horizon Editor	Ann Tekatch
Webmaster	Bob Christmas
Recorder	Mike Jefferson
Secretary	Wayne Stansfield
Public Education	Mario Carr
Councilors at Large	Brenda Frederick Ray Badgerow Harvey Garden Andrew Bruce Darrell Maude Joe McArdle

Domain name and web hosting for the Hamilton Amateur Astronomers club supplied by
Axess Communications
Corporate and Residential DSL and Web Hosting
www.axess.com
Support@axess.com

Contact Us

Hamilton Amateur Astronomers
PO Box 65578
Dundas, ON
L9H 6Y6
www.amateurastronomy.org

General Inquiries:

secretary@amateurastronomy.org

Membership:

membership@amateurastronomy.org

Meeting Inquiries:

chair@amateurastronomy.org

Public Events:

publicity@amateurastronomy.org

Observing Inquiries:

observing@amateurastronomy.org

Newsletter:

editor@amateurastronomy.org

Observing site for the HAA provided with the generous support of the

Binbrook Conservation Area

Come observing with the HAA and see what a great location this is for stargazing, a family day or an outdoor function.

Please consider purchasing a season's pass for \$70 to help support the park.

<http://www.npca.ca/conservation-areas/binbrook/>

905-692-3228

**HAMILTON
AMATEUR
ASTRONOMERS** 