

Event Horizon

October 2005

Volume 12 Issue 11

OBSERVING THE MARTIAN MOONS

by Mike Spicer

Every 25 months Mars and the Earth come close together as each orbits the Sun. Around the closest approach the Sun, Earth and Mars are lined up and we say Mars is in "opposition" to the Sun as seen from Earth. At opposition Mars is like our full moon - rising at sunset fully lit and at its brightest, by midnight sitting on the meridian (a line from Polaris through the zenith and down to the S horizon).

During the last opposition, late in August 2003, I was very pleased to attend several public observing nights with my Nexstar 11" telescope. Mars never got more than 35° above the horizon at Hamilton but everyone could see surface features on the planet. At my telescope, many young people could see at least one of the little moons of Mars through the eyepiece!

This year Mars will come closer to Earth than at anytime in the next dozen years. This may be our chance to see the moons of Mars! To assist, I have picked a few occasions around opposition when Mars comes close to stars that can be compared with the little moons. If you have an 80mm+ refractor or a 6"+ reflector telescope, you might try to see Deimos and Phobos at these times. You won't need to use an expensive CCD camera and laptop to overexpose Mars just to get a blurry image of the moons - you can see them direct in the eyepiece!

Phobos and Deimos are both tiny...too small to be round and too small for Earth telescopes to show their irregular dimensions: Phobos is 17 x 14 x 11 miles and Deimos is 10 x 8 x 6 miles. At opposition this year, Phobos will be magnitude 10.9 and Deimos magnitude 11.9 and Mars will be high in the sky - in cleaner air offering better resolution.

The moons are in nearly circular orbits around Mars with orbits inclined only 1° from the equator of the planet. Like the Galilean moons of Jupiter, they appear to move in a line from one side of the planet to the other and back again ("eastern elongation" and "west-

ern elongation"). Phobos orbits just 3,700 miles and Deimos 12,500 miles above the planet's surface. Mars will be 20" (seconds of arc) in diameter at opposition, so Phobos will always appear less than one planet diameter from Mars, often lost in the planet's glare. Deimos, although almost three times fainter, will be easier to see near elongation because it gets three planet diameters away.

Phobos flies around Mars, moving from elongation on one side of the planet to the other in less than four hours; Deimos takes almost 16 hours to do the same thing. If you manage to watch Phobos, it is possible to observe an E and W elongation in the course of one night! There is a lot of useful information on the Martian moons at pages 59-60 of *Sky & Telescope* for October 2005.

I have selected a lucky seven nights that I think will be best for spotting the moons of Mars. With seven target nights, at least a couple must be clear for observing!

1. Saturday, 15-16 October: An Occultation

Tomorrow night is a spectacular opportunity to observe Mars. The planet will be high in the sky at midnight with Syrtis Major displayed, the greatest surface feature on the planet. Deimos will be three planet diameters away from the planet and should be easy to see.

At midnight Mars will be approaching a star of magnitude 11.1 - easily visible in an 80mm telescope or larger - and in fact the planet will occult (eclipse) the star at 3:40 a.m. If you watch that star as it approaches Mars, at 2 a.m. it will be about the same distance away from and on the same side of Mars as Deimos (but more than twice as bright, and easier to see) and very close to Phobos which will be 16" from Mars, the two moons and the star forming an almost perfect equilateral triangle!

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Email Reminder notice

We send email reminders before each meeting which describes the location, time and topic of the general meeting.

If you're not on the list, make sure that you receive your reminder by sending a note to: publicity@amateurastronomy.org

An Offer

Thinking of buying your first telescope but wondering what kind to get? Before you buy, consider this offer from Mike Spicer: a "loaner" 5 inch telescope with electronic alt-az controls. The scopes are lightweight, easy to set up and very easy to use. Mike is offering newer members of our club one of these telescopes to try out for a month or so. Interested? You can reach Mike by email at deBeneEsse2001@AOL.com or by phone at (905) 388-0602.

RASC publications: 2006 RASC handbooks and calendars



Order your 2006 RASC handbooks and calendars. Handbooks are \$20, calendars are \$12 each. E-Mail Margaret Walton <mwalton@cogeco.ca> to place your advance order. We will take orders at the meetings up to the December meeting.

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 \$25 individual or \$30 family membership fee for the year. Event Horizon is published a minimum of 10 times a year.

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Submissions to the web site or newsletter are welcome, and may be edited for size & content.

Chair's Report

by Glenn Muller

It feels kind of funny to say the year ends in October but, fiscally speaking, the HAA starts a new membership year, November 1st, and the best way to support your club at this time is by renewing your membership. There is a membership form attached to this newsletter and there are several levels of contribution to choose from.

For those just getting to know us, the small yearly fee helps to cover the costs of printing and mailing the Event Horizon, brochures, liability insurance, keys, locks, and other sundry items. As a non-profit organization, we are not allowed to accumulate great wealth so any worthwhile balance eventually gets pumped back into the Club in a manner approved by the membership.

While much of what we do is free to the general public; as a member you will receive a membership card, tax receipt for your donation, discount on your subscription to Sky & Telescope magazine, e-mail bulletins of coming events, e-mail links to the latest issue of Event Horizon or, if you're not online, an actual copy of the newsletter mailed to your door. And, as if that's not enough, you can also claim affiliation with one the best amateur astronomy club's this side of Vega!

Of course, at the heart of any successful venture is a dedicated steering committee. At the last executive meeting I polled the council and, true to form, each person agreed to continue with their role. Unless someone puts forth a reason to change the status quo, the present line-up of councilors will continue for another

year and I would personally like to thank each of them for their efforts. I would also like to express appreciation to those members who consistently volunteer their time, expertise and resources toward giving the HAA such vitality. Thank you all.

Now I hardly need tell you about Mars, but I hope to see the HAA traveling telescopes at Murray Street Park in Grimsby at 8pm on Oct. 28th (rain dates of 29th & 30th) and 8pm at Bayfront Park on Nov. 4th (rain dates of 5th & 6th). The media and public always respond well to these opportunities and a good turnout of members will ensure the success of these events. Directions and final confirmation will be posted per usual on the website.

Speaking of turnouts, the Binbrook observing sessions are becoming more like mini star parties. However, we've had to change the combination locks and if you haven't received an e-mail, within the last month, on how to open them you should request instructions from publicity@amateurastronomy.org or call 905-945-5050.

Well, that might be it for this "fiscal year" but you can be sure of more astronomical adventures in the coming months, so I hope you can join us. Clear Skies!

Glenn invites your comments on these topics or any aspect of the club. He can be reached via chair@amateurastronomy.org



... cont'd from page 1 (OBSERVING THE MARTIAN MOONS)

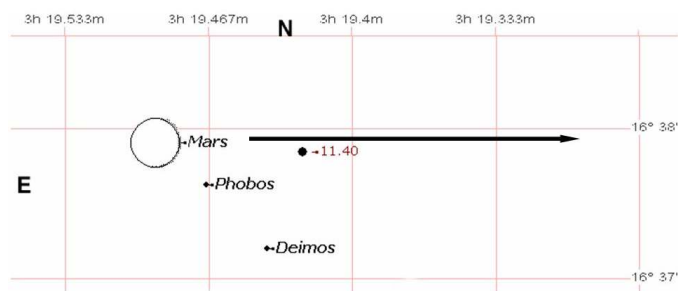


Fig. 1: 2 a.m. 16 October

Mars, moving W, will cover the 11th magnitude star at 3:40 a.m.

2. Sunday, 16-17 October: Take Your Appulse

Weekends are great for observing! If you can stay up late on Sunday night, Syrtis Major will still be displayed. Mars passes between bright stars (an apparent "near approach" is called an "appulse") that night.

Let me focus on 1:30 a.m. Monday morning, at the time of close approach: Mars will be about one planet diameter from GSC 1232-204/244, a pair of stars 10.6 and 10.7 magnitude - visible in some finderscopes! On the other side of Mars, three planet diameters away, another star of magnitude 9.9 and easy to see. The Martian moons are on the same side of the planet as that 9th magnitude star - Deimos 28" from Mars, Phobos beside it but only 13" from the planet. The star and moons make a triangle of 10th, 11th and 12th mag-

nitide diamonds!

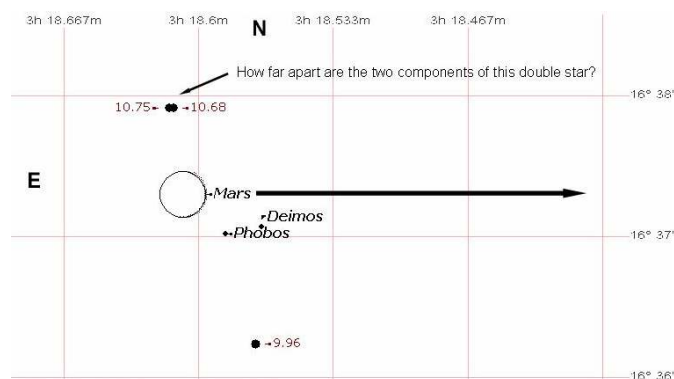


Fig. 2: 1:30 a.m. 17 October

Mars, moving W, passes between three 10th magnitude stars ("an appulse")

morning, 17 October

3. Saturday 22-23 October: The Line-up

Mars moves very fast against the background stars. By next weekend Mars approaches the 7th magnitude star HIP14910 (3h 12.7m, +16° 32'). Saturday evening at 9:30 pm Mars is only 6' away from that bright star and half the distance from TYC1232, a 10th magnitude star. You can see the planet and two stars all lined up even in binoculars.

As darkness falls and you have your scope all set up, Deimos will be almost exactly between the 10th magnitude star and the edge of the planet and the moon will be better placed for observing as the evening continues, until it is almost one minute of arc away from Mars. The star will be easy to see and Deimos should be seen, almost as bright. Phobos after dusk will be at elongation, 17" away from Mars on the opposite side of the planet.

During Saturday night Phobos will move from one side of the planet to the other... W elongation at 7 pm, E elongation at 10:30 and W elongation again at 2:20 a.m. At 10:30 pm if look away from Syrtis Major in the direction of the two nearby stars, you will see Phobos 17" away from the planet and a bit further out, Deimos at 60".

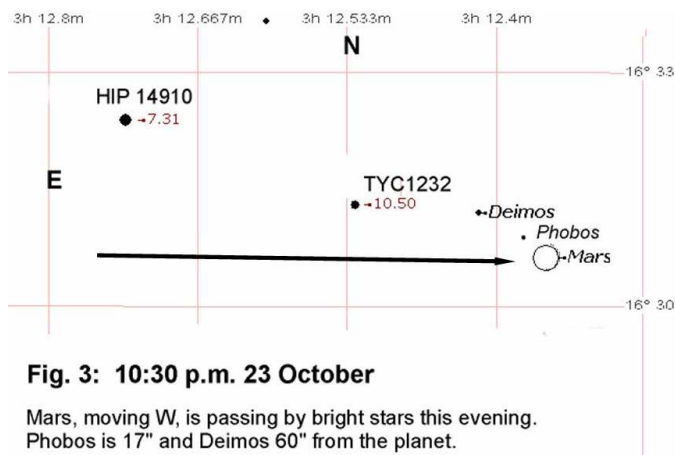


Fig. 3: 10:30 p.m. 23 October

Mars, moving W, is passing by bright stars this evening. Phobos is 17" and Deimos 60" from the planet.

4. Sunday 30-31 October, The Great Triangle Event

No one sleeps around Hallowe'en. The night before ghosts wander the streets, Mars ("planet" is Greek for "wanderer") will give you a great opportunity to spot Deimos in even a small telescope while the Syrtis Major is again displayed on the planet's surface.

Sunday night from 1:30 to 4 a.m. Deimos will stay about 60" away from a brilliant pumpkin-coloured Mars. Two stars exactly the same brightness as Deimos but further away from the planet will form a perfect triangle with the little moon. At 1:30 Phobos will be at maximum elongation and between the planet and Deimos... look for it! At 3 a.m. Deimos will start to pass right between the two stars... a line of magnitude 11.9 diamonds! You don't need a big telescope and an overexposed webcam image to capture the beauty of this event!

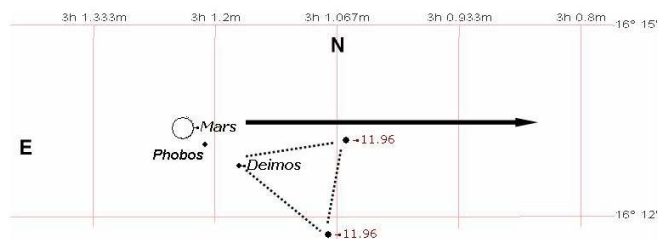


Fig. 4: 1:30 a.m. 31 October

Mars moving W, Deimos will make a triangle, and by 3 a.m. a line with 2 stars.

5. The morning after Hallowe'en

Eating all that Hallowe'en candy, you'll probably not be able to sleep. Or you may like to observe Mars in

the early morning before going to work.

Tuesday morning November 1st Mars is in the west as it approaches 10th magnitude star TYC 1224-756-1. At 5 a.m. Deimos is between the planet and the star; Phobos is on the opposite side of (and 16" away from) the planet. Watch how fast Mars moves - an hour later Deimos is the same distance from Mars but only 14" away from the star. If you can see the star at that time, Deimos is right above it, one third as bright!

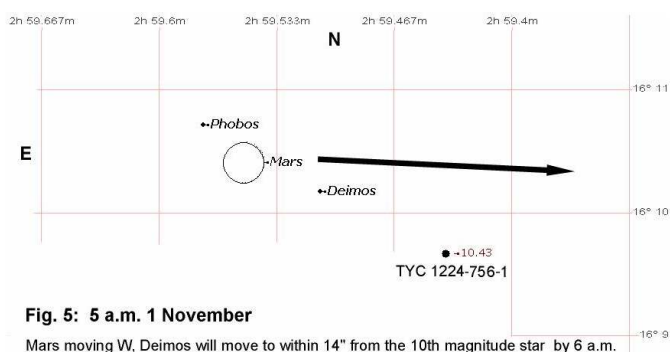


Fig. 5: 5 a.m. 1 November

Mars moving W, Deimos will move to within 14" from the 10th magnitude star by 6 a.m.

6. Dusk on 3 November: "Double Deimos"

Perhaps you like to set up after supper for a couple of hours before going to bed on a worknight. Here's your opportunity to spot Deimos in the early evening on Thursday November 3rd if you aren't attending another astronomy club's meeting. At 8 p.m. Mars will be approaching TYC1224-576-1, an 11.1 magnitude star in the constellation Aries about 20° above the horizon. Deimos is 50" from Mars, midway between the planet and the star. As Mars rises higher in the Eastern sky, Deimos is moving slowly away from the planet. By 8:30 pm Deimos is only 4" of arc from the star and less than half as bright. The two will be like a double star... the brighter component is easy to see, can you see Deimos?

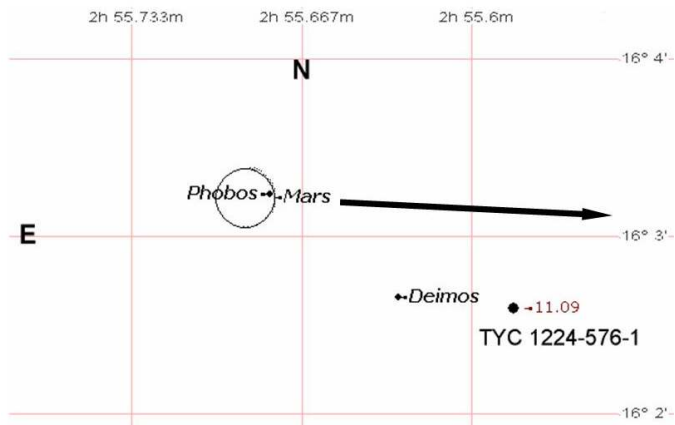


Fig. 6: Dusk, 4 November

Mars moving W, by 8:30 p.m. Deimos is only 4" from the star.

7. 7 November: Boxing Mars

I like to observe Saturn's moons, like tiny diamonds circling in the glare of the fabulous rings. I ask observers to identify Titan (easy), then Rhea, Tethys and Dione, and finally little Enceladus and Mimas. It's best to start with the brighter moons, then strain to identify the fainter ones.

With Mars, the close approach of stars can help. Monday evening 7 November offers a good chance to identify both Phobos and Deimos. Mars approaches two stars, one magnitude 10.3 the other 11.6. At sunset Deimos is at W elongation. By 9 pm, Phobos has reached E elongation and at magnitude 10.9 it should be visible 17" from the planet. Deimos at 9 pm is on the opposite side of Mars, 40" from the planet. The moons and two stars will make a rectangular box around Mars that should be visible even in a 3" refractor.

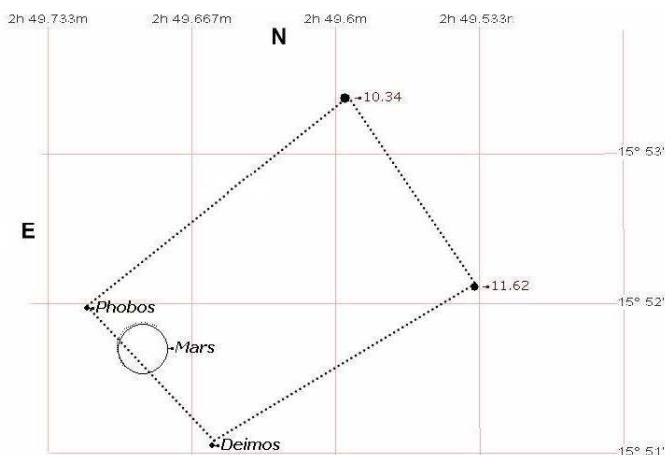


Fig. 7: 9 p.m. 7 Nov Phobos, Deimos and 2 stars make a "rectangle"

Observing Report

Club meeting summary Friday 9 Sept at Teamsters Hall

by Mike Spicer

Our first meeting of the season was very well-attended:

Of the nearly 50 amateur astronomers in attendance at our September meeting, fully half were new to HAA. Many mentioned the Hamilton Spectator advertisement calling attention to our meeting. Several took out memberships at the meeting. Our club is growing and it's always great to welcome new members.

Greg Emery gave a detailed visual presentation on collimating newtonian reflectors, interspersed with updates on his new home "HAA observing location West". Our first monthly door prize draw - free ticket to those who arrived before our 7:30 pm start time - a new Meade 26mm superplossl eyepiece, was won by Gary O'Brien.

Next, a powerpoint presentation by Mike Spicer on collimating Cassegrain telescopes. Mike had real photos of telescopes both collimated / not collimated, and demonstrated several collimating methods, including the novel use of a TV monitor and electronic eyepiece. Lastly, Tim Philp gave a well-researched and well-presented lecture on dark adaptation, including the debunking of several common myths about seeing in the dark. An evening of great astronomical information was topped off by a late dinner at Kelsey's for all those interested in late dining and discussion.

Saturday Observing, September 10

by Glenn Muller

Several HAA members came out early Saturday night to enjoy burgers, homemade pizza, potato salad, donuts, and the company of fellow observers before the night's observing session began. For many it was their first daylight look at the Binbrook Conservation Area and the park's natural beauty, with the sun setting over the reservoir, made a nice backdrop to the picnic.

As dusk approached, several more astronomers trickled in and by the time the Quarter Moon fell into the trees a variety of equipment belonging to about twenty people had been assembled and made ready for the night's session. Those in attendance who were fairly new to astronomy found the group a great resource of information on the use of their scopes, interesting targets, and various computer programs. In fact, a couple of folks practically doubled their knowledge in just a few hours.

Although the transparency could have been better, many of the brighter nebulae, open and globular clusters, double stars and galaxies (M31, M32, M110) were tracked down by reflector, refractor or binocular. Having arrived early, most people had their fill by midnight but, as we packed up, dessert was served in the form of a bright white auroral column. It was a nice way to close yet another enjoyable session.

A Bonanza Of Occultations Coming To Hamilton September 11

by Mike Spicer

If you are interested in occultations (fancy name for "eclipses") of stars by asteroids (large chunk of rock and ice) several occur over Hamilton in September!

The first is a weekend occultation of an easy-to-find star by a very faint asteroid, visible from Hamilton-Binbrook area... early in the morning on Sunday 25 September after you have observed Mars and Saturn, maybe we can time asteroid 139 "Juewa" as it passes over an 11.4 mag star in Gemini... if interested, go to this page for info and maps:

www.asteroidoccultation.com/2005_09/0925_139_3521_MapNA.gif

(Update, 25 Sept: Juewa wasn't merely clouded out, there were thunderstorms!)

Early on Friday 30 Sept little asteroid 243 Ida occults an 11th magnitude star just a few degrees east of the beautiful galaxy Messier 74, more info here:

www.asteroidoccultation.com/2005_09/0930_243_4695_MapNA.gif

Before the sun rises on Thursday 6 October, asteroid 61 Danae will eclipse an 11th magnitude star just E of Algol (Beta Persei) for about 10 seconds... do you want to time it?. More info and maps can be found here:

www.asteroidoccultation.com/2005_10/1006_61_3541_MapNA.gif

For all three of these occultations, the eclipse path passes right over Hamilton! To observe and time the occultation all you'll need is a sharp eye, a thermos of coffee, a small telescope, a tape recorder, a SW radio for accurate time signal beeps (I have that stuff)... a warm coat and clear skies.

Get Ready For Mars! September 13

by Mike Spicer

If you're observing after midnight these days, likely you have been looking at Mars. Unlike other planets we observe, you can look at the actual surface features of

Mars. Even a 3" telescope reveals the S polar cap, the bright orange-red Hellas Region, and various greyish-green equatorial markings (Syrtis Major was visible this morning). An orange or red filter will increase the contrast of the markings. A large telescope and sharp eyes will show the planet's small moons Phobos and Deimos.

The Red Planet is heading toward opposition in early November. Remember all the hoopla over how great the 2003 Mars opposition was? This year Mars will be better than 2003 for observing. The planet's disk will not be as large as in 2003 only 20" of arc compared to 2003's 25" across. But the planet will be 35° higher in the sky than it was in 2003, almost overhead. The the air overhead is thinner and the seeing is better. And Fall weather is usually much better for observing than summer weather, less humid and not yet "cold"!

Your Chance To Catch Iapetus This Week, September 13

by Mike Spicer

As you observe Mars with fascination, then catch the Trapesium in Orion's M42 (how many stars can you see?) and Gemini's twins Castor and Pollux (which one is the beautiful double star?) the time flies by. Enjoy these nights when you can still observe in a summer shirt... and then it's 3 a.m. and Saturn has risen!

Saturn is not just the colour of peanut-butter and honey... not just the beautiful rings at their most attractive tilt (see the A ring, the bright B and the dusky C rings? Shadow of the planet on the rings? Shadow of the rings on the planet? Cassini Division? Encke Division?) ... Saturn offers the chance to see Titan and many other moons. Even a 3" telescope will let you follow Dione, Tethys and Rhea as they circle the planet, a tiny triangle of diamonds just outside the rings. Big telescopes will reveal Enceladus and Mimas racing even closer to the planet.

Iapetus is the half-blackened moon that people find hard to locate. It's orbit is tilted above the inner moons. This week you have a great chance to see 11th magnitude Iapetus in a 3" telescope as it appears very close to the planet... this won't happen again for 6 weeks (October 23-24). So if you have patience, sharp eyes and a sharp telescope, under good conditions you may "bag" up to 7 moons of Saturn this week!

Observing in Sky Soup, 14 Sept 2005

by Mike Spicer

Last night was not good for deep sky observing due to the foggy conditions. Stars were obscured by an almost overwhelming haziness and the air was heavy with

humidity. If you didn't set up a telescope, you missed a great opportunity!

Mars and Saturn were spectacular last night. The planets are so bright that haze does not adversely affect observing. Nights when the air is steady offer a chance to see (and image) amazing detail. Last night the seeing was very good and even a simple imager like the Meade Electronic Eyepiece captured many features on the surface of Mars. A better (colour) imager like the ToUcam CCD camera when attached to a computer, captures the planet's beautiful hues as well as the surface details. Don't let the haze and paucity of stars in the sky deter you!!

Observing at Binbrook Wed. 21 September

by Mike Spicer

Five HAA members, several telescopes, binoviewers, imaging equipment and binoculars were set up at Binbrook on Wednesday night. Summer-like weather let us observe in T shirts or jackets. A light breeze kept dew at bay. In the early evening, Sagittarius was still on display for the interested observer. The sky was clear and some imaging took place with a new USB2 laptop and DSI.

Later in the evening the past-full Moon lit up the sky offering wonderful views of the terminator. Mars only 6° away from the Moon was not drowned out. Even 80mm refractors permitted views of Syrtis Major and the small S polar cap. We packed up at 1:30 a.m. as haze and cloud set in. When winter's winds whip the walls, memory of these warm evenings will comfort us.

OBSERVING PROJECTS FOR 2005

by Mike Spicer

Fabulous fall weather brings out the observer in all of us. A list of objects to observe is something we can all use! Planetary Nebulae are fascinating to observe under excellent conditions; globulars are bright and large enough to see even under so-so conditions. Both types are relatively bright and suitable for imaging. For 2005 you can draw on my Observing Planetary Nebulae or Observing Globular Clusters. I distributed them at the May 2005 meeting but you can download a copy by clicking on the HAA "Tools" button.

Each 12 page booklet lists about 100 objects by RA and Declination, designation, size in " or ' of arc, description or concentration class, brightness, and the constellation where the object can be found. There are even

some photos or drawings of representative examples. Members are encouraged to use the recording sheet included with the Globular Cluster list and to draw what they see. I'd like to hear about your observing experiences and we can post those here on the "Activities" page..

A warm Friday Night at Binbrook, 23 September

by Mike Spicer

Five observers, binoculars and four varied telescopes were planted on the Hill Friday night. A cool evening with a breeze and some thin high cloud, but our chance to observe globular clusters in Sagittarius and to follow the milky way across the sky. A pumpkin coloured moon rose on the NE horizon about 11 pm. We gathered around the TV to watch Mars. Gary announced he had ordered a binoviewer after looking through Heather's the other day. Glenn's 6" scope showed M22 beautifully. The 9.25" SCT was turned on the "S" galaxy NGC7479 high in the eastern sky. Cloud finally moved in on us at midnight.

Observing Notes, 27 Sept 2005

by Mike Spicer

There are nights of absolutely beautiful transparency, when stars of magnitude 5 can be seen naked eye from my back patio in Hamilton. Tuesday night was like that. Hurricane Rita blew by over the weekend; its rain scrubbed the air clean. I set up the Nexstar 11 on its pier and wedge and started observing an hour before dusk. A friend joined me later and we watched Mars go through a quarter rotation during the night, using an electronic eyepiece, followed by a ToUcam Pro and binoviewers.

Transparent air is not always calm. The seeing on Tuesday night improved as the temperature dropped but never exceeded 2 or 3 arc-seconds. A great night for 135mm film photography. M42 showed its wings in low power views from the patio, and 14mm eyepieces were able to resolve 6 stars in the Trapesium. We took images of Mars but the highlight of my evening was spotting little Deimos near the planet in an 8.8UWA.

The Moon was not interfering with observations of nearby Saturn. How the rings have closed since the summer! And it was easy to spot Titan so near the planet; Rhea, Tethys and Dione, and even little Enceladus. Iapetus has moved away from Saturn but formed a line with 2 stars not too far off. Mimas still eludes me, needing steadier air. Fall has blown off the hazy nights of summer.

Occultation tonight visible from town in an 80mm scope or larger!! September 29

by Mike Spicer

Friday in the early morning (just after 07h 52m UT, quarter to four EDT) Asteroid Ida will occult a star near M74 in the eastern sky for about 3 seconds. Details and a map are at www.asteroidoccultation.com/2005\09\0930\243\4695_MapNA.gif

You can time the occultation visually, of course. Make a note of EXACTLY where you are located in your notes and time with a short wave radio time signal and a small tape recorder to record your excited "off!!" and "on!!".

One way to record the occultation is to set up your scope and DSI-type imager without perfect polar alignment (that should be easy!). Make a 60 second exposure starting at 3:52 a.m. ... as the stars trail a little in your image, you will notice that your target star fades from mag 11.1 to mag 14.1 and back... the line will get fainter during the occultation! If you are imaging from exactly 3:52, you can measure the exact time of the occultation and its duration by measuring the line on your image!

Observing Report from the Hill:, 1 October

Nine of us met up on the hill with a fine assortment of telescopes and binoculars for observing till midnight. A cool wind kept dew at bay as we enjoyed views of objects in Sagittarius through Mike's 11", Greg's large dob, Gary's Mak and Heather's fine 80mm Nighthawk. It was a night for high-powered views of Mars, heavy moisture-laden air, losing stuff in the lengthening grass, the electrical snafus and a lot of camaraderie. Fall observing in a great club atmosphere!

Observing Report, Monday 3 October 2004

by Mike Spicer

Yesterday's very warm weather and a temperature inversion over Hamilton meant that the city was covered in a very thick coating of purplish smog. How thick? I took photos from Sam Lawrence Park and could barely see Stelco belching fire and smoke into the air. On a clear day it's easy to see the tall buildings of Toronto almost 50 miles away. Yesterday the lakefront of Burlington was merely a darkening in the haze.

Does air pollution affect astro-observing? Certainly the transparency of the air is diminished. Last night stars of mag 3 weren't visible from the patio, so the air was absorbing 50% more light than usual. Street

lights were shrouded in smog. The effect on imaging was severe - images of Mars were much darker than usual and the reddish hue on processed images was very noticeable. No surprise that when environmental workers reported for work Monday morning, a smog alert was issued right away.

Update: Report from the Hill: October 05

by Mike Spicer

Nine avid observers, several telescopes, binoculars and imaging equipment enjoyed what may be the last warm night of 2005. It was 20°C at set-up time with a bit of fog. As night descended and the Milky Way appeared overhead, we started observing objects in Sagittarius before it set. Gary and Heather showed some visitors Messier objects to make their trip from Niagara Falls worthwhile. Mars was high enough to image by 10:30 and several avi files were collected in the calm air.

It was a damp night but the sight of the Little Dumbbell, the Ring Nebula, Uranus, Neptune and a host of globular clusters warmed us up. Of course, Mars was the attention-grabber. Thanks to Gary, Steve, Heather, Mike and Tim for making the event a success. As one member said to me, "It's great to observe, but observing in the company of other astronomers is much better than being alone." It's the getting out as a group to actually do astronomy that makes this club the best!



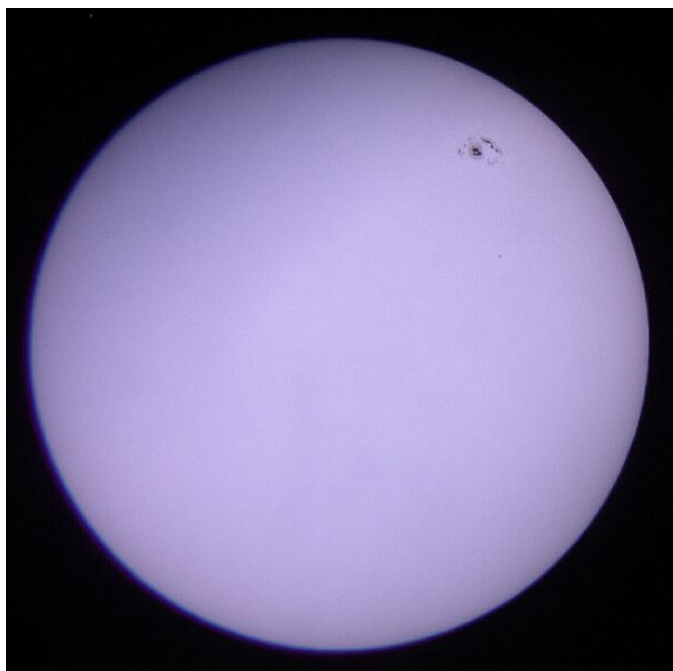
Binbrook picnic and observing session Saturday night September 10th.
Photo by Sandy Maude

EyeCandy





Image of Mars Oct 6 2005
 Scope: 8" F5 Newtonian
 Barlow: Televue 5x Powermate
 Camera: Philips ToUcan Pro
 Capture: 640 x 480 @ 30FPS, 0.04sec exp,
 1min capture duration, Saved to AVI
 Process: Registax 1639 frames Saved as Tiff,
 Converted to Jpg
 Photo by Clyde Miller



Here's a couple of point and shoot pics of Region 10808, the sunspot responsible for strong solar flares this past week, and which may produce aurora in the next few days. The pictures were taken with a Toshiba PDR-4300 at f8.0 ISO 100 1/250sec exposure time

Photos by Glenn Muller





Open Cluster NGC 457, the "ET" Cluster

This cluster is known as the "ET" Cluster and the Owl Cluster, because of its shape. It appears to be standing with arms outstretched. There are two glowing eyes, the brighter of which is Phi Cassiopeiae.

This cluster is also Number 13 on the Caldwell List of deep sky objects.

South is up.

Extract from 400mm f/5.6 image.

Date: Sunday, October 2, 2005

Location in Sky: Cassiopeia

Location on Earth: Spectacle Lake, near Barry's Bay, Ontario

Exposure: 8 minutes

Film: Fuji Superia 1600

Photo by Bob Christmas



Mars

Registax of 500 images
9.25" SCT, el. eyepiece
Mike Spicer, Hamilton



On the evening of Thursday, September 1, 2005, Venus and Jupiter passed within about 1.2 degrees of each other in the sky. Venus is the lower one, Jupiter above. This was taken from Thorpe Park in Burlington with Fuji Superia 200 film @ f/2.8; exposure: 10 seconds.

Photo by Bob Christmas

Web Watch

Get ready for Mars to really shine - check out this article from NASA:
science.nasa.gov/headlines/y2005/22sep_doublemars.htm?list85548

Submitted by Glenn Muller

Paul Francis (Gemini Science Committee member) captures these eerie sounds from space:

<http://www.mso.anu.edu.au/~pfrancis/Music/>

Submitted by Doug Welch



Where No Spacecraft Has Gone Before

Dr. Tony Phillips

In 1977, Voyager 1 left our planet. Its mission: to visit Jupiter and Saturn and to study their moons. The flybys were an enormous success. Voyager 1 discovered active volcanoes on Io, found evidence for submerged oceans on Europa, and photographed dark rings around Jupiter itself. Later, the spacecraft buzzed Saturn's moon Titan—alerting astronomers that it was a very strange place indeed! —and flew behind Saturn's rings, seeing what was hidden from Earth.

Beyond Saturn, Neptune and Uranus beckoned, but Voyager 1's planet-tour ended there. Saturn's gravity seized Voyager 1 and slingshot it into deep space. Voyager 1 was heading for the stars—just as NASA had planned.

Now, in 2005, the spacecraft is nine billion miles (96 astronomical units) from the Sun, and it has entered a strange region of space no ship has ever visited before.

“We call this region ‘the heliosheath.’ It’s where the solar wind piles up against the interstellar medium at the outer edge of our solar system,” says Ed Stone, project scientist for the Voyager mission at the Jet Propulsion Laboratory.

Out in the Milky Way, where Voyager 1 is trying to go, the “empty space” between stars is not really empty. It’s filled with clouds of gas and dust. The wind from the Sun blows a gigantic bubble in this cloudy “interstellar medium.” All nine planets from Mercury to Pluto fit comfortably inside. The heliosheath is, essentially, the bubble’s skin.

“The heliosheath is different from any other place we’ve been,” says Stone. Near the Sun, the solar wind moves at a million miles per hour. At the heliosheath, the solar wind slows eventually to a dead stop. The slowing wind becomes denser, more turbulent, and its magnetic field—a remnant of the sun’s own magnetism—grows stronger.

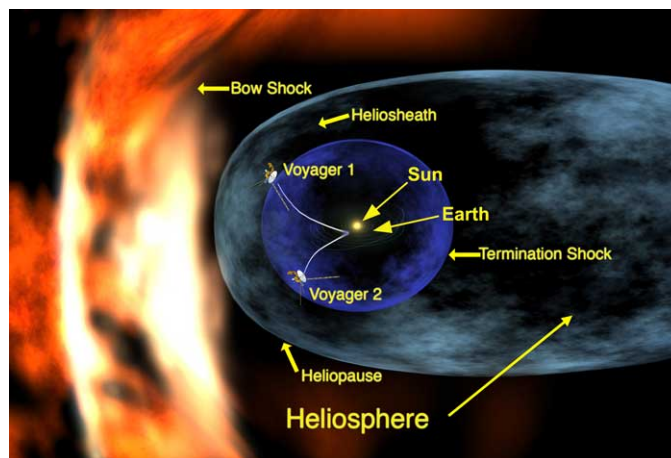
So far from Earth, this turbulent magnetic gas is curiously important to human life. “The heliosheath is a shield against galactic cosmic rays,” explains Stone. Subatomic particles blasted in our direction by distant

supernovas and black holes are deflected by the heliosheath, protecting the inner solar system from much deadly radiation.

Voyager 1 is exploring this shield for the first time. “We’ll remain inside the heliosheath for 8 to 10 years,” predicts Stone, “then we’ll break through, finally reaching interstellar space.”

What’s out there? Stay tuned...

For more about the twin Voyager spacecraft, visit voyager.jpl.nasa.gov. Kids can learn about Voyager 1 and 2 and their grand tour of the outer planets at spaceplace.nasa.gov/en/kids/vgr_fact3.shtml.



Voyager 1, after 28 years of travel, has reached the heliosheath of our solar system.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Council meetings

All club members are welcome to attend the council meetings. Contact info@amateurastronomy.org for details.

Subscription Offer for Members

Members of the club are eligible for a discount on Sky & Telescope Magazine subscriptions. The regular annual rate is \$49.95 (U.S.). HAA members pay only \$39.95 (U.S.). Contact Ann Tekatch for information on how to sign up; tekatch@sympatico.ca 905-575-5433

The Next 4 weeks at a glance

All times listed as local time (EDT/EST where applicable) in 24 hour format

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9	10	11	12	13	14 19:30 HAA Meeting	15
16	17 5:51 Start of Partial Lunar Eclipse 8:14 Full Moon	18 21:30 Moon 6° from Mars	19 23:00 Moon 0.3° S of Pleiades (M45)	20	21 5:00 Orionids peak	22
23	24	25 5:00 Moon, Saturn & M44 in binoculars	26	27	28 Public Observing Night - Murray Street Park, Grimsby	29 23:19 Mars' closest approach for 2005
30 2:00 Daylight Savings Time Ends	31 Zodiacal light vis. in E before morning twilight for next 2 weeks	November 1 21:25 New Moon	2	3	4 Public Observing Night - Bayfront Park, Hamilton	5 5:00 S. Taurid Meteors peak
6	7 Mars at opposition	8 15:00 Neptune 5° N of Moon	9	10 5:00 Uranus 3° N of Moon	11 19:30 HAA Meeting	12 Public Observing Night Mountsberg Conservation Area, Campbellville

October 17 Partial Lunar Eclipse - Start 5:51

This will only be a partial eclipse and with the moon setting within 2 hours of the start, I would not expect to see too much unless you are lucky enough to be in western Canada.

October 18 9:30 p.m. - The Moon will be close enough to Mars tonight to allow both naked eye objects to be seen together in most binoculars. If you have not seen Mars before, tonight will be an ideal night to locate it. Go outside about 9:30 p.m. and look east to the Moon. The bright (mag -2) reddish "star" below and to the left of the Moon is Mars.

October 19 11:00 p.m. - If you go out the next night, and look in the same area of sky, you will see the Moon approach one of the brightest open star clusters - The Pleiades. Often referred to as the Seven Sisters,

most observers can only see six stars clearly with the naked eye, but binoculars or a telescope reveal many more stars. Tonight with the bright Moon so close by, even binoculars will reveal few stars, so remember to return a few nights later when the Moon has moved on.

October 21 5:00 a.m. - The Orionids peak this morning. This is a minor shower with rates of about 20 meteors per hour. With the bright gibbous Moon in nearby Taurus so close to the radiant located near the top of Orion, I am not expecting to see too many.

October 25 5:00 a.m. - Not all observing is done in the evening and for our next event, you will need to get up early but I am sure it will be the nicest binocular view of the month. Go outside about 5 a.m. and look east to the Last Quarter Moon. In binoculars you should find the Beehive Cluster (M44) and Saturn be-

low. This will be an impressive site I am sure and won't be one I will want to miss!

October 28 – Public Observing Night - Murray Street Park, Grimsby. Come and bring your scope or look through one of ours. Rain dates are October 29th / 30th. More information available in the Chairman's Report

October 29 11:19 p.m. – Mars will make its closest approach to the Earth for this year. At about 11 p.m. look ESE and Mars will be almost 45° high in the sky. Later that night around 1:40 a.m., Mars will rise to over 60° at transit making this close approach much better for telescopes in our area than in 2003.

November 4 – Public Observing Night – Bayfront Park, Hamilton. Come and bring your scope or look through one of ours. Rain dates are November 5th and 6th. More information available in the Chairman's Report

November 5 5:00 a.m. – The Southern Taurids peak on this Saturday morning. Although the crescent moon will be dim and well placed for this shower, expect only about 10 meteors per hour – half that of the Orionids! Look low in the west to find the radiant between Mars and Aldebaran.

November 7 – Mars at opposition (i.e. Mars and the Sun are directly opposite each other from the

Earth's perspective). What does this mean to us? We will be able to follow Mars all night tonight as it rises at sunset and sets at sunrise.

November 8, 9 & 10 – On November 8th the Moon will be close enough to Neptune to be seen in most binoculars as a magnitude 7.9 "star". In a telescope, Neptune will appear as a blue disk. On the next night, the moon is located between Neptune and Uranus. Uranus, at magnitude 5.8, will appear as a green disk in a telescope or as a star like object in binoculars. Finally on the 10th, the Moon will pass close enough to Uranus to allow both objects to be seen in binoculars. Just go out on these nights and look south to help locate these two dim planets.

November 12 - Mountsberg Conservation Area, Campbellville (in support of Phil Mozel's program). Come and bring your scope or look through one of ours. Rain dates are October 29th / 30th. More information available in the Chairman's Report

Information gathered from various sources including:

- "Observer's Handbook 2005" Edited by Rajiv Gupta ©RASC 2004
- science.nasa.gov/headlines/y2005/27may_approachingmars.htm

Imagetech-Ontario Introduction & Astronomy Imaging Contest

We'd like to introduce ourselves to your astronomy club. We are Imagetech-Ontario www.imagetech-ontario.com/. Our primary business is to enlarge and print astronomical images and photographs.



We are the only company in the world dedicated to enlarging and printing your astronomical imaging. We rely on a Chromograph - the best piece of hardware to do the job. In the 1990s, the Chromograph cost

US\$750,000, but it was rendered obsolete from commercial production at our printing plant imatec.com, because it works slowly and far exceeds today's enlargement needs. This level of quality is no longer required in today's commercial printing applications, but it certainly is in astronomy imaging. This is what sets Imagetech-Ontario apart from any other commercial enlargement company.

We also sell images, and will broker the sale of your images on a commission basis.

We have four main reasons for contacting your club.

1. Imaging and Processing Contests!

Several astronomy imaging and processing contests are planned for the next year, with one starting soon. Imagetech-Ontario and Diffraction Limited will cosponsor a contest that runs from October 1 to December 15, 2005. Diffraction Limited www.cyanogen.com produces a suite of astronomy software such as MaxIm DL. To find out more about this

imaging contest, visit www.imagetech-ontario.com/contestmaximdlccd/index.htm

2. Learning Centre

We want to develop online information to help astrophotographers take and process better pictures. We want to provide a forum for educational purposes, so everyone can make great astronomy images. We would like everyone to contribute to this section, even if they do not use our services. The answers to questions such as those listed below are just the starting point for the educational forum discussions:

- Why are my stars bloated? How do we reduce star bloat?
- Why are my stars egg-shaped or crescent-shaped?
- How long should the exposure be?
- How many flat, bias and dark frames should I use?
- What are the black or white spots that I see after applying flat, bias and dark frames? How do I get rid of these spots?
- How can we smooth the background while improving the sharpness of the foreground?
- When sharpening an image, black rings sometimes appear around the stars. What are these rings? How can we get rid of them?
- What are the benefits of various processing techniques, such as adding co-added and blurred luminescence frames to LRGB images? [This is a technique for image processing in which we take a number of luminescence frames, add them together, blur them and then add them to a compiled picture that consists of four parts - Luminescence, Red, Green and Blue (LRGB) co-added frames. This helps to bring out the details in the spiral arms of a galaxy.]
- How do you add Ha and Hb to LRGB images? [These are Hydrogen Alpha and Hydrogen Beta filters. They are specific to capturing very narrow light wavelengths, and are added to the picture to bring out details.]

Our website features a display of “problem pictures” in which viewers can compare their problem pictures to these ones (see www.imagetech-ontario.com/

[education/problemimages.htm](http://www.imagetech-ontario.com/education/problemimages.htm)). We explain what is wrong and how to fix it. Your problem photo contributions are welcome.

It is our hope that, as your astrophotography skills improve, you may someday want to use our image-enlarging services.

3. Print on demand

Many clubs incur costs for educating the public. Imagetech-Ontario will support your club’s educational efforts by selling at our not-for-profit rate. This special rate will help you to offset the costs associated with carrying the astronomy message to the public. It will also allow your club to make a few dollars to offset some of your event-related expenses. This offer is only available through the club president. (8.5”-x-11” laminations sell the best at club events with the public.)

Imagetech-Ontario will support individual efforts to directly sell images over the Internet, and will print on demand. This means that you do not have to order prints in advance of sales.

4. Coming Soon: It’s a job offer!

We will create a photo registry for the general public. If a person or organization wishes to purchase a picture, Imagetech-Ontario will facilitate the sale on behalf of the contributing astrophotographer, who will be advised of the pending transaction. When a three-way agreement is reached, Imagetech-Ontario will process the transaction and a commission will be paid to the astrophotographer. We will display your “for sale images” on our website at no charge.

If a customer requests a specific image that is not currently available, Imagetech-Ontario will post the request on its website. If the astrophotographer is interested in providing or shooting the desired image, Imagetech-Ontario should be advised and we will make arrangements. The astrophotographer will be paid a commission.

For more information, please contact,

John Courtney
 President, Imagetech-Ontario
 2826 Goodin Road, R.R. #2
 Spencerville, ON KOE 1X0
 Tel. 1-888-658-3443 (toll free)
 Tel. 1-613-658-3443
www.imagetech-ontario.com/

Hamilton Amateur Astronomers Membership Renewal November 1, 2005 - October 31, 2006

Name:	
Address:	
City:	
Postal Code:	
Phone:	
E-mail:	
Do you want the newsletter emailed?:	

Type of Membership:

Individual (\$25 Cdn/year)	
Family (\$30 Cdn/year)	
Royal (\$50 Cdn/year)*	
Friend (\$100 Cdn/year)*	
Patron (\$250 Cdn/year)*	
Voluntary Donation \$	

* These levels of membership confer the same rights and privileges as a Family membership. We greatly appreciate the additional financial support our members provide by signing up as a Royal, Friend or Patron.

All membership dues are eligible for tax receipts.

Total:	\$
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Please make cheque payable to:

Hamilton Amateur Astronomers
P.O. Box 65578
Dundas, Ontario
L9H 6Y6
CANADA

Membership renewals are due November 1.