Hamilton Amateur Astronomers

Event Horizon

Febrary 2005 Volume 12 Issue 4

Telescope Contest

Meade DS80

The Hamilton Amateur Astronomers are pleased to announce the HAA Student Scope Contest. The purpose of this Contest is to facilitate student interest in astronomy by providing a telescope to the chosen winner in each of two categories.

The telescopes are motorized Meade DS 80 refractors with motorized tracking mounts and electronic hand paddle controls.

Winners will also receive a one year family membership to the Hamilton Amateur Astronomers.

One year family memberships will also be awarded to the runner up of each category.

The contest is open to students attending grades 6-12 at schools in the Greater Hamilton Ontario Area. Submissions must be made online by logging on to `www.amateurastronomy.org` and selecting the **Contest** button.

The deadline for entries is March 31, 2005. Entries are limited to one per student.

Winners will be announced on, or before, April 30, 2005.

For more information, see `www.amateurastronomy.org` or phone 905-945-5050

Upcoming Events

Event: See the Moon, Jupiter, and Saturn should be visible.

Date: Saturday evening March 19, 2005

Location: Hamilton Bayfront Park

Admission: Free. Everyone is welcome!

Event: Messier Hunt

Date: Saturday evening March 12, 2005

Location: Binbrook Conservation Area

Admission: Free. Everyone is welcome!

Event: HAA meeting

Date: Friday April 8, 2005 7:30PM

Location: The Spectator building.

Admission: Free. Everyone is welcome!

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

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

Council meetings

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

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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Chair's Report *by Glenn Muller*

The Moon is bigger than Pluto – True or False? That is just one of the questions in the HAA Student Scope Contest that was officially launched on February 1^{st}. Open to those attending grades 6-12 in all Hamilton-Wentworth school boards, the contest offers 2 telescopes and 4 family HAA memberships to the winners. Our aim is to facilitate student interest in astronomy and, possibly, enhance a curriculum that appears to have an increased interest the cosmos.

And the first entry has already poured in!

Of course, it's early days yet. Generally, a week or two is normal for promos to trickle through the media channels, and for flyers to sift their way into the classrooms. Still, we are expecting a healthy response once the word gets around. The deadline for entries is March 31/05 and, at the April meeting, your votes will help us determine who gets the prizes.

If you want to check the contest out for yourself simply click the "Contest" button on the main page of our website. I do request, however, that unless you are eligible please do not fill out the forms. The questions and answers will be posted after March 31^{st}, and will be presented at the April meeting prior to the selection of the winners.

Our usual method of getting people involved in astronomy continues with frequent observing nights. Mike Spicer and Greg Emery avail themselves several times a month to facilitate a window to the night sky for, both, club members and the general public. Despite numerous clear nights in the past few weeks, the cold temperatures have dissuaded many from going out. In the next few weeks, though, we hope to have a couple of special events. They happen in March, but since the first one is a Messier hunt at Binbrook on March 12^{th} I thought I'd give you a heads up so you can plan your session. The other date, March 19^{th}, will be a public event at Bayfront Park. Mark your calendars!

According to membership director; Stewart Attlesey, and treasurer; Cindy Bingham, our numbers continue to grow. To our newer members I not only extend a welcome but an invitation to contribute items to our newsletter, be they your own articles or interesting web links you might have come across. Also, while we do our best to lasso presenters from all fields related to astronomy, some of our best meetings are those filled with speakers from our own ranks. So, why be mute – when you can contribute!

And that concludes my contribution for this month. Clear Skies!

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

Observing Notes *by Mike Spicer*

OBSERVING NOTE: 27 JANUARY by mike

Diffraction rings are visible on stars under high magnification, but only on nights of very steady air ("good seeing"). This was one of those nights: after 10:30 pm the air was very steady and even faint stars showed diffraction rings, a sign that my 11" SCT was well collimated. Yes, it was cold, cold enough to wonder if there are such things as battery-powered socks (my toes were asking) and gloves (fingers, mostly). If it goes below -20° I might put a rectangular Kendrick Meade Autostar heater in my boot. Hey, did you know binoviewers shrink when it's "below zero"? It's hard to get some eyepieces out of the socket-holders.

Saturn has emerged from the open cluster NGC 2420. The planet's disk and rings at 600x are simply staggering. 2005 may be your last chance to see the Encke division in the A ring, since as the rings "close up" such objects become impossible to discern. Huge Titan looked orange, 3.5' E of Saturn with bright Dione 1' W of the planet and like a diamond neclace, little Rhea, Tethys, Mimas and Enceladus bunched close to the E side of the rings, a tiny line of gems piercing the honey glow surrounding the planet. Tonight was your chance to glimpse the 5th and 6th stars in M42's Trapesium; hard to spot when the air is turbulent and the brighter stars dance in scintillation, they were easy tonight despite the bright Moon.

Aperture isn't everything. I mounted the Orion ED80 apo refractor on the 11" SCT tonight and it threw up outstanding images of Saturn in a 3mm Radian at 200x. Every bit as good as the Tele-Vue 102 apo that I recently sold to a fellow in Saskatchewan. I was imaging Saturn tonight and Saturn looked really good (though dimmer) in the ED80 using a T-V 5x barlow. Please call to borrow an imaging camera if you want to try capturing images of Saturn and Jupiter on your computer or with a VCR. I run long wires into the house from the scope on the patio, a wire for the controller, for the JMI focuser and for the imager. I can image from inside the house while the scope operates out in the cold. Try it!

Anyone up for a little observing Friday night? Deep blue Sky Clock, and the weatherman promises a warming trend throughout the weekend. Up and at 'em!

Thursday January 27 by mike WOW! CLEAR SKIES UNTIL NEXT WEEK! LOOK UP!

The Clear Sky Clock is almost solidly navy blue from now on through the weekend. Sure, it has been a bit nippy out - but what rewards! Anyone game for some Saturn observing or imaging tonight? Friday night? Saturday? You know the rule...with every additional day of High pressure, seeing (image steadiness) improves. And Saturn is passing right through the small open cluster NGC2420... the planet seems to have a dozen "moons", can you separate the moons from cluster stars?

Last night (Wednesday) a number of HAA members were invited to observe through a local observatory's new 16" telescope. -17°C wasn't that cold but things seemed to seize or freeze up quickly (we did NOT break it)... so we switched to a lower-tech 10" dob and had some nice views of M42 and Saturn's moons. Lesson in this: always bring your scope along. Comet Machholz is still quite a sight, eh? Streaking through Perseus toward the pole star, still naked-eye visible. Anyone want to photograph it? Pull on wooly winter socks and give us a call or email!

OBSERVING NOTE 24 JANUARY by mike

Darrell and Sandy took me up on my offer to observe from the patio with the 11" SCT from 7 pm on Sunday evening. It was cold so we took several breaks to warm up inside with a cup of tea or a look into the reference books. The moon was almost full, I invited Darrell and Sandy to count the craterlets inside Clavius since they were close to the terminator and made a pretty curving sight inside the foreshortened and enlongated larger crater.

Saturn was the object of concentration this evening. The proximity of the nearly-full moon did not diminish our chances of counting moons. We tried a few sets of eyepieces and had the most success with 14mm Widescans in the binoviewer. Darrel reported seeing Titan, Dione, Rhea and Tethys and even tiny Enceladus off the tip of Saturn's rings. Ringa A, B and C were clearly visible and the three belts on Saturn's disk were colourful as well. Darrell could make out the inky darkness of the Cassini division but not the Encke division. He remarked about how much detail was visible every few moments when the image was completely steady for half a second at a time.

Thanks for coming over, folks! We'll have to do that again when it's too cold to spend hours at a time, out at Binbrook.

NOTES FROM OBSERVING IN THE SNOW 21-23 JANUARY by mike

Experienced observers say that a lot of detail is visible when the "seeing" is good. Good seeing means the air is steady and incoming light is not refracted this way and that by the atmosphere. The naked eye perceives good seeing as a minimal star twinkle. In a telescope at high power, good seeing lets one see the concentric circles of diffraction rings around individual stars.

Experienced observers also say that haze in the air can be a sign of good seeing, since the air is steady if not transparent. Friday night the air was hazy but Patricia talked me into observing Saturn with an 11" compound telescope. The air was steady although it was very cold (does -30°C ring a bell?). We could see a lot of detail on Saturn though Mimas and Enceladus were not visible. Some say a big telescope can see through clouds and trees... looking up from the binoviewer, I noticed it had started to snow - snow was accumulating on my telescope! Apparently when it is VERY cold, snow can fall out of a hazy sky that has good seeing. We kept observing because it was so cold that the snow did not stick to anything and a photo blower just blew the snow off... but it was my first time observing while it was actually snowing.

Saturday there was a lot of snow and a lot of wind. But Sunday morning at 5 am the sky was rather calm and very clear (although again, it was very cold... the kind of cold that gives your fingers a burning sensation). I kicked snowdrifts off the back patio and set up a 5" refractor to look at Jupiter. "What about the glare from the bright Moon", you ask? The house blocks off my western sky and no glare was visible. Jupiter can show a lot of detail in a 4.7mm UWA eyepiece if the air is steady, and the bright colours of the belts, bands and festoons become detailed pictures in moments of exceptional clarity. On the other hand, it was really cold and with no guest to impress, I brought the scope in after 90 minutes.

Sunday (today) promises to be a great observing opportunity and I am again inviting people over to look at Saturn, the Moon and perhaps some other objects. Email if you are interested.

OBSERVING NOTES 20 JANUARY by mike

It wasn't very cold Thursday morning, but the sky was crystal clear. Time to set up a telescope quickly and

watch the transit of Jupiter's Great Red Spot! The giant planet is rising before midnight now and observers are enjoying the noteworthy changes in disk features. For visual observing, rough alignment and a simple electronic controller (up/down and side to side control) is all you need. I was set up in five minutes with a 5" refractor using a binoviewer, and a 3.5" refractor guidescope for comparison. I spent an hour marvelling at the planet and enjoying the relaxed views using 15mm, 8mm and 4.7 UWA eyepieces in the binoviewer. Wide angle eyepieces eliminate the "confined" view of orthoscopics and have much better eye relief. In cold weather, an eyepiece can fog up if your eye is close - a drawback of short focal length ortho and plossl eyepieces.

Jupiter is fascinating to observe. In the good old days members used to make drawings of the disk features; today digital imaging and "making" a stacked image has all but replaced drawing. It's a shame, really. Drawing Jupiter educates your eye to subtle distinctions and you quickly become an experienced observer. Yes, it takes longer to make a drawing. Yes, it's less than objective to make a drawing. HAA has a few members who are interested in resurrecting this sort of observing. If you are interested, let us know.

OBSERVING NOTE: 18 January 2005 by mike

Monday night through Tuesday morning was one of those rare opportunities when the air was so clear and crisp that you can test telescope optics. After collimating the 11" SCT I was ready to compare various sets of binoviewing eyepieces on Saturn and some double stars.

Alas! Saturn looked so beautiful in the still air that I almost forgot to make notes on the eyepieces I tested! The planet's three rings stood out in such vivid contrast, I was reminded of a plate photo of the planet taken by the Palomar Observatory - the divisions so black, the crepe ring so brown, the B ring so white...and so many moons of Saturn were visible! Iapetus and Hyperion just below a nearby star that rivalled Titan in brightness; Tethys and Dione neck-and-neck racing outside the rings with Rhea much further away; Enceladus a little west of them, right below the planet and tiny Mimas at magnitude 12.6 as bright as it ever gets. Splendid in 14mm eyepieces and without the binoviewer, in an 8.8mm UWA. Put in a low power and you could see the little open cluster NGC 2420 nearby!

On clear nights when the thermometer dips and the wind whips, HAA members may not want to venture out to Binbrook but are always welcome to observe from Mike Spicer's patio on Hamilton Mountain. Don't let the cold deter you.

OBSERVING REPORT 14-15 JANUARY AT BINBROOK by mike

Friday night after the HAA meeting the sky clouded over enough to thwart parking lot observing and send us to East Side Mario's; it was clear again by the time we arrived. A few members observed after the festivities, but Jupiter looked a little blurry and we weren't sure if it was the result of poor seeing, cold, wind, fatigue, or beer.

Saturday 15 January it was definitely clear (and cold but not windy). Mike drove to Binbrook Conservation Area for 7 pm to find members waiting at the gate! The driveway through the park was paved and mostly clear of snow and ice, but we set up in the furthest interior parking lot, not on "the hill", for safety.

There was spectacular observing for a couple of hours! Fabulous transparency and little sign of the auroral activity that's sure to follow the recent X burst from the sun. At 7 pm Orion was high above the horizon and Comet Machholz just 2° from Algol was almost overhead. Luckily, Glenn Muller brought his binocular-box permitting one to sit down, look down into a mirror system and see the comet overhead without any neck strain. Many of us could pick out the comet naked-eye about half the size of the moon, just East of Algol. It was a great evening for taking photos of Machholz but there was also lots to talk about, and Heather was tutoring Harvey on how to align his go-to scope (thanks, Heather)

In all we had almost a dozen observers and half a doxen scopes at the site, including new member Harvey and his 4" go-to Maksutov (welcome, Harvey!). Just after 10 pm Greg Emery came to relieve me and take the lock so he could stay on and count clouds float by after I left (thanks, Greg)

The crescent moon sailed westward in glory, but we didn't look at it much. The real attraction of the evening was Saturn with its triple ring system now closing and a number of satellites showing, and obviouely our throughts were turned to Titan and the Huygens now on its surface. A great night for the HAA observers! We will have to do this again soon! Thanks to all who came.

Saturday January 01 by mike

STARTING OFF THE NEW YEAR RIGHT !!!

The mildest January 1st in years came with champagne and transparent skies. After toasting the New Year, it was out to set up the telescope with guests and

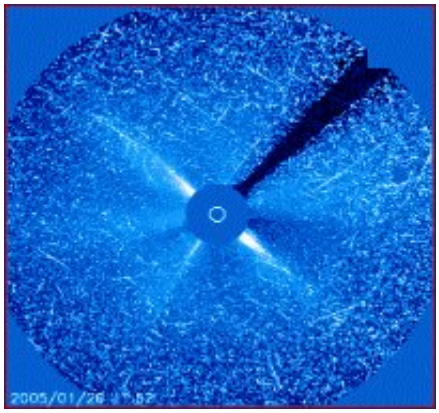
while the scope cooled down, search for Comet Machholz in binoculars. I never noticed before, how well the Hyades fill a binocular field of view. The "V" pointed right to 4th magnitude Comet Machholz just 7° below it, a bit brighter now than it was a week ago and much higher in the sky, on its way to meeting the Pleiades on January 7th.

The Moon, long past full made a bright observing object requiring a 90% filter. This was a great time to peer over the double rim mountain ranges into Mare Orientale. When the sun is at their zenith, some craters appear dark grey while others nearby glow white.

Saturn is at its peak this month, almost overhead after midnight with the rings tilted almost 20°. Tonight we could see Iapetus on the opposite side of Saturn from Titan - Titan, about to have its atmosphere penetrated by the Huygens probe from Cassini. Rhea, Tethys and Dione sparkled about the planet like a small triangle. I could not see the two 13th magnitude stars offset from the moons although Starry Night Pro showed them. Jupiter low on the horizon looked like a tangerine but the odd arrangement of its 4 moons all to one side, was remarkable.

In short the HAA rang in a successful New Year's observing! Happy New Year! May we have many more! See you Friday the 14th at the Spectator!

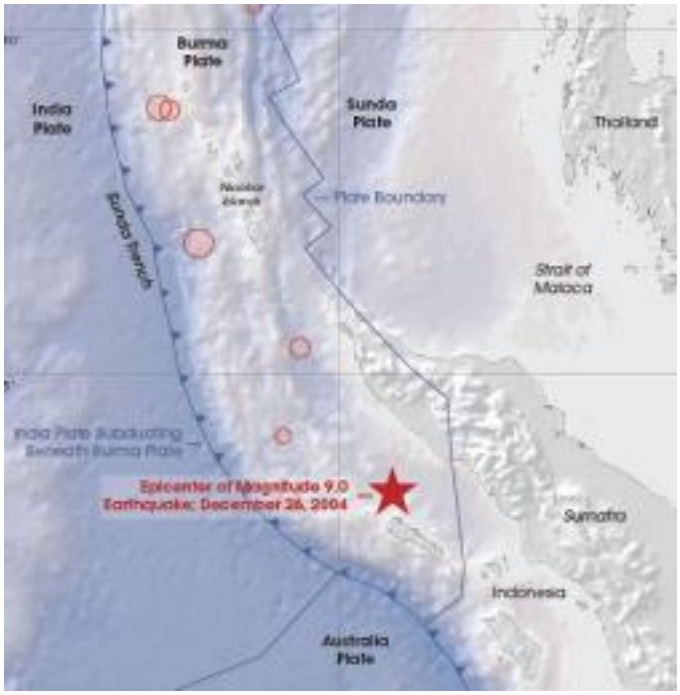
Web Watch



Title: Sickening Solar Flares

Description: The biggest solar proton storm in 15 years erupted recently. NASA researchers discuss what it might have done to someone on the Moon.

Site: `science.nasa.gov/headlines/y2005/27jan_solarflares.htm`



Title: How the Earthquake affected Earth

Description: NASA scientists have calculated that the recent earthquake has changed the rotation of the Earth by 2.68 microseconds.

Site: `science.nasa.gov/headlines/y2005/10jan_earthquake.htm`

Visible Asteroid in 2029

The 320 metre wide asteroid "2004 MN4" should be visible to th naked eye, scientists say, in the year 2029.

At one point it was thought that this asteroid may come close enough to hit the Earth, but further observations and calculations show it to be a near miss at 6,350 kilometers from center of the Earth.

You'll have to go to Europe, Africa and western Asia to see this one.

At magnitude 3.3, "2004 MN4" will appear to be a fast moving star.

You can read more at `space.com`

March Madness *By Greg Emery*

The month of March is special, especially in the Northern Hemisphere. March heralds the coming of Spring. The NCAA has it's National Championship Tournament dubbed "March Madness". However, with all due respect to millions of basketball enthusiasts, March is the month of the Messier Marathon.

Charles Messier (1730-1817) was an astronomer who is credited with finding various deep sky objects in his quests for comets. I have been told that "Messier found some of the objects, but never found a comet. Charles Messier had found or catalogued all of the objects on the Messier list, but never nailed a comet". Historical records indicate that this is urban legend. Charles Messier discovered or independently co-discovered 20 comets during his time. The Messier List as we know it consists of 110 objects. The list is comprised from Messier's catalogues which included information from the likes of Herschel, Mechain as well as himself. This list had 109 entries, the last entry being added in the 20^{th} Century (to give a round number, perhaps?).

The new moon closest to the Spring Equinox allows for the chance to view all 110 objects in a single evening/night. This event only occurs at the Spring Equinox, not the Autumnal Equinox. The reason for this is simple, when measured in terms of right ascension (RA), there is a gap of 1^h40^m with no Messier Objects. If we discount the cluster M52 to the north, this gap becomes roughly 3^h wide. This gap is just at or below the western horizon at the start of the marathon, and rises in the east with the morning Sun. The Sun is not placed in this gap during the Autumnal Equinox, which is why the Marathon is in March and not September.

The concept of the Messier Marathon is easy, find a favourable night, start viewing early and stay out real late. The first objects which must be viewed early are two galaxies M74 and M77. These two galaxies are located in Pisces and Cetus, respectively and will set by 1900 or so, depending upon your local horizon. The next targets afford more time but need to include M31 and satellite galaxies M32 and M110 as well as M33. Open clusters M52, M103, M45, M39 and M34 maybe viewed.

This brings us towards the galactic plane, which has quite a few objects to check off. All the objects in this grouping can be seen by 00 hours. It is time to take a brief break when you finish this grouping – but not too long. The next grouping is busy. Making their way out of the east towards the zenith is the galaxies in the Virgo Cluster. We also have the galaxies in Ursa Major to play with.

After exhausting your patience and straining your eyes, we have time for another brief break (the better you are at finding the faint fuzzies, the longer the break you have). Another freight train is coming out of the southeast, globular clusters, open clusters and nebulae abound in Serpens, Ophiuchus, Sagittarius, Scutum and Scorpius. And well your playing there, do not neglect M13 in Hercules, M27 in Vulpecula and .... Well you get the idea.

The exact list and order can be found on the web or from other sources. Below are some links for information as well as target lists and suggested order – enjoy!

```
www.messiermarathon.com/log_sheets.htm
www.seds.org/messier/xtra/marathon/marath1.html
www.seds.org/messier/xtra/marathon/marath1.txt
www.astras-stargate.com/messlist.htm
members.aol.com/_ht_a/billferris/marathon2.html
```

NASA's Space Place

Stardust Up Close

by Patrick L. Barry and Dr. Tony Phillips

Like discarded lumber and broken bricks around a construction site, comets scattered at the edge of our solar system are left-over bits from the "construction" of our solar system.

Studying comets, then, can help scientists understand how our solar system formed, and how it gave rise to a life-bearing planet like Earth.

But comets have long been frustratingly out of reach – until recently. In January 2004 NASA's Stardust probe made a fly-by of the comet Wild 2 (pronounced "vilt"). This fly-by captured some of the best images and data on comets yet ... and the most surprising.

Scientists had thought that comets were basically "rubble piles" of ice and dust – leftover "construction materials" held together by the comet's feeble gravity. But that's not what Stardust found. Photos of Wild 2 reveal a bizarre landscape of odd-shaped craters, tall cliffs, and overhangs. The comet looks like an alien world in miniature, not construction debris. To support these shapes against the pull of gravity, the comet must have a different consistency than scientists thought:

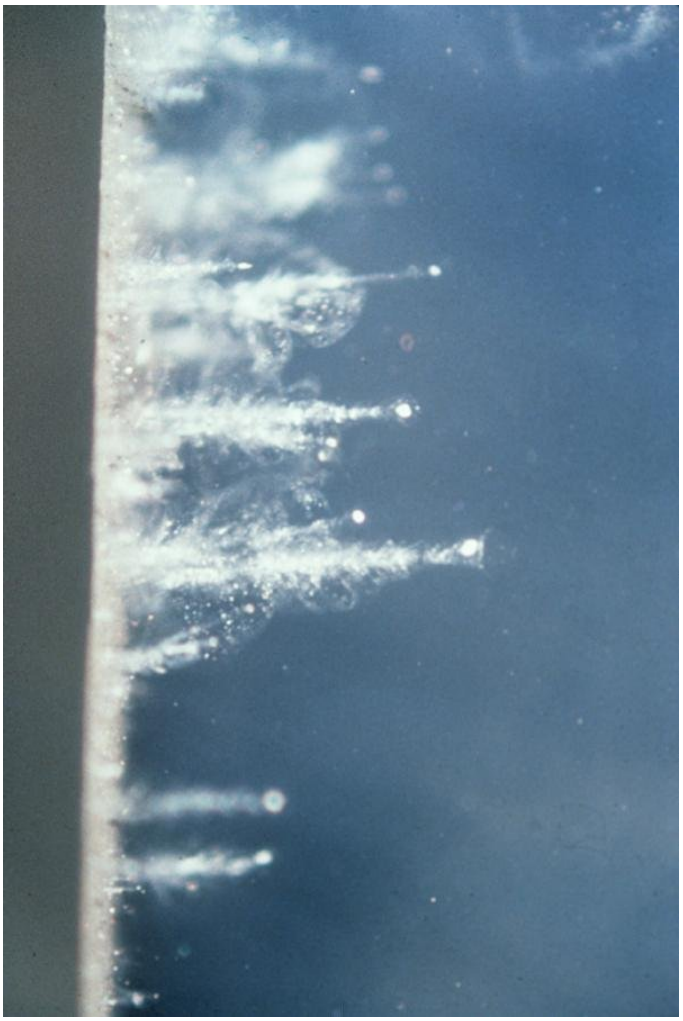
"Now we think the comet's surface might have a texture like freeze-dried ice cream, so-called 'astronaut ice cream': It's solid and can assume odd, gravity-defying shapes, but it's basically soft and crumbles easily," says Donald Brownlee of the University of Washington, principal investigator for Stardust.

Scientists are currently assembling a 3-D computer model of this surface from the photos that Stardust took. Those photos show the sunlit side of the comet from many angles, so its 3-dimensional shape can be inferred by analyzing the images. The result will be a "virtual comet" that scientists can examine from any angle. They can even perform a virtual fly-by. Using this 3-D model to study the comet's shape in detail, the scientists will learn a lot about the material from which the comet is made: how strong or dense or brittle it is, for example.

Soon, the Stardust team will get their hands on some of that material. In January 2006, a capsule from Stardust will parachute down to Earth carrying samples of comet dust captured during the flyby. Once scientists get these tiny grains under their microscopes, they'll get their first glimpse at the primordial makings of the solar system.

It's heading our way: ancient, hard-won, possibly surprising and definitely precious dust from the construction zone.

Find out more about the Stardust mission at stardust.jpl.nasa.gov. Kids can read about comets, play the "Tails of Wonder" game about comets, and hear a rhyming story about aerogel at `spaceplace.nasa.gov/en/kids/stardust/`.



The Stardust spacecraft used a grid holding aerogel to capture dust particles from comet Wild 2. In this test, high velocity dust particles are stopped unharmed at the end of cone shaped tracks in a sample of aerogel

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

March 2005

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11 HAA General Meeting at the Spectator building	12 Messier Hunt at Binbrook Conservation Area
13	14	15	16	17 St. Patrick's Day	18	19 HAA public event at Hamilton Bayfront Park
20	21	22	23	24	25	26
27 Easter Sunday	28	29	30	31		

For observing info, Rob Roy 692-3245, Greg Emery greg.emery@mohawkcollege.ca, http://amateurastronomy.org/events.php

February 2005

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April 2005

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