

Event Horizon

October 2001

Volume 8 Issue 11

Edwin Hubble

- Sheila Overall

Edwin Hubble was born in Marshfield, Missouri on 29 November 1889. He was the third of seven children. His father, John Powell Hubble was an insurance agent and his mother's name was Virginia Lee James.

Edwin entered college at the University of Chicago where he won a Rhodes Scholarship to study at Oxford University. While at school, he decided then that he wanted to be an astronomer. During his second year, one of his best professors, Albert A. Michelson, won the Nobel Prize for his work in measuring the speed of light.

During Edwin's third year, he won a Junior College Scholarship, then later got a job at Millikan's Laboratory. Hubble was voted the 1910 Rhodes Scholar in Illi-

nois. It was that same year that Halley's Comet streaked through the sky.

While at Oxford University, Hubble studied astronomy but, to please his father, studied law.

In 1914, after the death of his father, Hubble got a job at Yerkes Observatory to help finance his entrance into graduate school and started postgraduate work that led to a doctorate degree in astronomy.

Yerkes Observatory was



built and opened in 1897 and still has the largest refracting telescope in the world - 40". Some astronomers back then believed that there were no other galaxies outside the Milky Way. Hubble, with the use of more powerful telescopes, later proved otherwise, during the next ten years.

His work impressed Professor Frost, that in 1919, Hubble travelled to Pasadena to start work at the Mount Wilson Observatory. It had taken George Hale, Mount Wilson's first Director, eleven years to complete this 100" telescope.

Today, this telescope is rated as a mechanical masterpiece. In honour of his accomplishments, the telescope in orbit was named after him.

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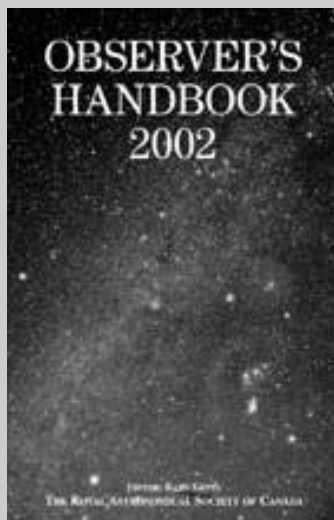
Chair's Report

Once again we are approaching the end of our club 'year' and it is time to choose a new council. I have enjoyed my year as chair. I would like to thank everyone who participated in our activities last year – whether on council, or volun-

teering at various events that we attended. Please consider joining the council for this coming year – you don't have to do any heavy duty work, you help the club, make friends, and have lots of fun.

Margaret Walton

Observer's Handbook 2002



It is time to order your Observer's Handbook once again. If you want one, be sure to get your order in soon. Cost is \$15.00. Email margw@icom.ca, call (905) 627-7361, or sign up at the club meetings.

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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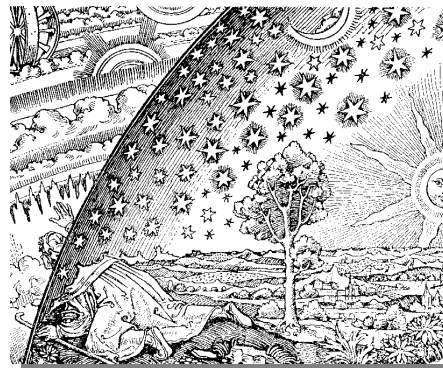
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Sudbury Astronomy Club 20th Anniversary

On Nov 2-3, 2001, The Sudbury Astronomy Club will be celebrating its 200th club meeting and 20th anniversary.

To mark the occasion, the S.A.C. is hosting a weekend banquet and we cordially invite all members, friends and fellow astronomers to come join us in celebrating this historic event.

If you'd like further information regarding banquet details, accommodations, etc. please feel free to contact one of the following coordinators below or check out our Web Site at... <http://ww2.isys.ca/astroclub>

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Regards,

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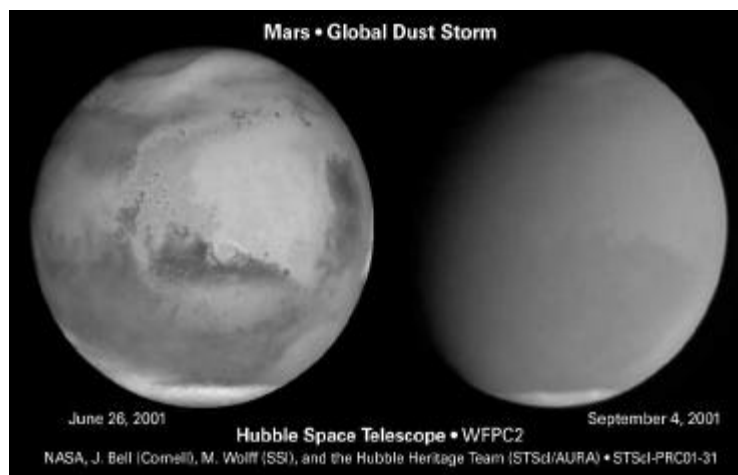
A Dust Storm on Mars

A pair of NASA spacecraft, the Mars Global Surveyor (MGS) and Hubble Space Telescope, is allowing scientists to closely study the biggest global dust storm seen on Mars in several decades. The storm began three months ago, but it is now finally subsiding.

Dust storms on Mars warm its atmosphere. The temperature of Mars' upper atmosphere soared 80 degrees Fahrenheit during the storm -- a result of sunlight heating airborne dust grains. However, the planet surface has begun a cool period because of the large quantity of dust in the atmosphere.

The Thermal Emission Spec-

trometer (or "TES") -- an infrared instrument on MGS -- has been tracking the dust storm from Mars orbit by measuring temperature changes



Above: These Hubble Space Telescope images show the Mars before (left) and during (right) the great Martian dust storm of 2001.

Of course, Earth has dust storms, but none come close to the size of the storms on Mars. No one knows exactly how Martian dust storms become so large. However, it is hoped that the work being observations being made by the two NASA spacecraft will provide some answers.

that trace the amount and location of dust in the atmosphere. Meanwhile, the spacecraft's Mars Orbiter Camera (MOC) has captured detailed pictures of the Martian surface in visible light. Such close-up monitoring has allowed scientists to pinpoint places where dust was being raised, and to see it migrate and interact with other Martian weather phenomena and surface topography. It has also provided an unprece-

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M51, the Whirlpool Nebula, NGC5194/5195

About this image

This image of M51 (NGC5194/5195), was made by combining three CCD frames, taken at the Kitt Peak 0.9m telescope in 1991. By using different filters in front of the monochrome detector, corresponding approximately to the primary colors red, green and blue, it is possible to recreate a true color picture. Each image was processed to correct for detector sensitivity variations and to remove incorrect regions caused by manufacturing defects and by the arrival of cosmic rays at the telescope. *Note that this image was re-worked in July 2000 to provide a better looking and scientifically more accurate color balance.*

This picture was made using the 'drift scan' technique, in which the telescope is held fixed, not tracking against the Earth's rotation in the usual manner. As the sky passes across the detector, each row of the array is 'clocked' along to the next row in step with the apparent motion of the astronomical image. This makes it possible to take a picture of an arbitrarily long strip of the sky, and specialized tele-



scopes exist solely to take advantage of the simplicity of a fixed, non-tracking mounting. The large size of the M51 system, famous as the first clearly recognized spiral nebula, made it necessary to use the drift scan technique.

Orientation: N to the left, E down.

Note that smaller telescopes with a larger field of view can take such pictures without drift techniques, and can often approach the same quality, especially with clever processing, as this picture from the Kitt Peak Visitor Center's Advanced Observing Program demonstrates.

About this object

M51 (also known as Arp~85 and VV~1) comprises the large spiral galaxy NGC5194 and its smaller, barred and more amorphous companion NGC5195. Some features are better seen in a color picture: note, for example, how NGC5195 takes on a reddish tinge due to the fact that it is behind the dust-filled arm connecting it to NGC5194. M51 was the first astronomical object in which spiral structure was discerned, by the Third Earl of Rosse in 1845. The spiral arms are perhaps the most perfect 'textbook' example in any nearby galaxy, and their very perfection points to the presence of a long-lasting confining mechanism. This

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M51...

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may be provided by the tidal pull of NGC5195, whose gravitational effects can generate the necessary spiral density waves. This pattern also shows up in radio emission, suggesting that the magnetic fields in the Whirlpool are also compressed by the density wave. The innermost core of NGC5194 contains a bright ultraviolet source, as well as one of the brightest known compact radio sources. Although smaller and less massive than our own Galaxy, M51 is considerably brighter, due to recent star formation and the resultant dominance by young, hot, bright stars of types O and B.

Location: 13 27 50 +47 29 (1950.0), constellation of Canes Venatici.

Distance: approximately 31 million light years.

Size: over 65000 light years across.

**Todd Boroson/NOAO/AURA/
NSF**

Mars...

(Continued from page 3)

dented detailed look at how storms start and "blossom" across the orange arid planet.

The Hubble Space Telescope doesn't offer continuous Mars coverage, as MGS instruments do, but it does reveal the whole planet in a single snapshot and shows the full range of dust activity from sunrise to sunset. Together, Hubble and MGS provide a complete picture.

"What we have learned is that this is not a single, continuing storm, but rather a planet-wide series of events that were triggered in and around the Hellas basin," says Mike Malin of Malin Space Science Systems, Inc., lead investigator for the MOC. "What began as a local event stimulated separate storms many thousands of kilometers away. We saw the effects propagate very rapidly across the equator -- something quite unheard of in previous experience -- and move with the Southern Hemisphere jet stream to the east."

"By the time the first tendrils of dust ... had circumnavigated the Southern Hemisphere, which took about a week, separate storms were raging in three main centers. The most intriguing observation is that a

regional storm in Claritas/Syria has been active every day since the end of the first week of July," said Malin.

After three months, the air is finally beginning to clear on Mars. The planet's surface has cooled, allowing the winds to die down and the fine dust to begin settling. However, Mars is approaching the closest point of its orbit to the Sun (called perihelion). Mars will be at perihelion on October 12, 2001. Now that the atmosphere is beginning to clear, the return of unfiltered solar radiation could increase the surface temperature, trigger additional high winds and kick up the dust all over again.

Some scientists hope that the storm starts up again. Each storm provides clues to the mystery of the Mars' dusty climate.

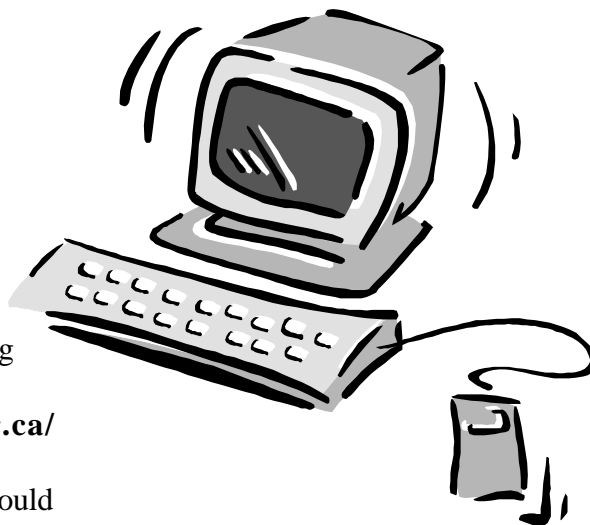
From a NASA press release, by Dr. Tony Phillips

HAA Website

You have probably noticed by now that Anthony Tekatch has done an amazing job on the HAA website.

(www.science.mcmaster.ca/HAA)

If you have anything you would like added to the website, such as photos, etc., send Anthony an e-mail at tekatch@idirect.com



CALENDAR OF EVENTS

- October 13, 19, 20
November 10, 16, 17
- Friday, November 9, 7:30pm
- November 18, predawn
- Friday, December 12, 7:30pm

BINBROOK OBSERVING NIGHTS - For confirmation or directions call Ann Tekatch 575-5433, Marg Walton 627-7361, Rob Roy 692-3245

HAA GENERAL MEETING - The meeting will be at the Spectator Building auditorium.

LEONID SHOWERS -A burst lasting perhaps two hours is expected. The maximum rates should occur at 5:00 a.m. EST

HAA GENERAL MEETING - The meeting will be at the Spectator Building auditorium.

Hamilton Amateur Astronomers

Membership Renewal

November 1, 2001 - October 31, 2002

Name: _____

Address: _____

Province: _____ Postal code: _____

Phone number: (____) _____ E-mail: _____

Type of membership:

Individual \$25.00/year _____

Family \$30.00/year _____

Royal \$50.00/year* _____

Friend \$100.00/year* _____

Patron \$250.00/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 member. *All membership dues are eligible for tax receipts.*

Total: \$ _____

Please make your cheque payable to:

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



Membership renewals are due November 1, 2001