Hamilton Amateur Astronomers

Event Horizon

February 2003 Volume 10 Issue 4

BIO BRIEF David Fabricius (1564-1617)

by Rita Griffin-Short

David Fabricius, clergyman, astronomer, cartographer, born Esens, East Frisia. He discovered the first variable star, Mira, in the constellation Ceti in 1596 using a quadrant and sextant made for him by Joost Burgi on Tycho Brahe's design. He corresponded with many contemporaries, visiting some: Kepler, Michael Maestlin, Tycho Brahe, spending time with the latter at Wandsburg in 1598 and again in 1601 in Prague. Brahe gave him a preliminary copy of his book on the supernova of 1572.

Kepler thought Fabricius the "finest astronomer in Europe after Brahe", though he chided him for rejecting Copernicus in his loyalty to Tycho's system, ultimately breaking off their correspondence. "...like a burning light" was how Fabricius described the 1604 supernova he observed near a conjunction of Jupiter and Mars from his Osteel observatory which he published in pamphlets in German and Latin.

His son, Johannes, while studying medicine in Leiden, bought some telescopes in 1610, both began observing and recording. Johannes discovered sunspots and argued that the sun rotated. He published his work in 1611. When Galileo found out he was not amused! His observations remained unpublished until he received a series of letters published under the name Apelles but written by the Jesuit, Christoph Scheiner (1573-1650) arguing that the sunspots were "tiny planets revolving erratically about the sun" to which Galileo responded through the Lincean Academy in 1613, declaring himself a Copernican and that the sun revolved! Scheiner published his Rosa Ursina in 1626.

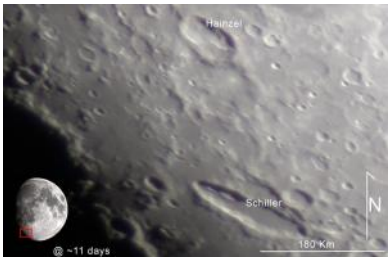
In England, unknown to them, Thomas Harriot (1560-1621) had observed and recorded the spots which he argued were on the sun, though he didn't publish immediately. However, none of these five men knew that in 1128 C.E. the chronicler, John of Worcester recorded sunspots and left us a drawing. The Korean and Chinese astronomers recorded them as early as 165 B.C.E. but no drawings until 1440 C.E.

Independent discoveries are made all the time; Leibniz and Newton, Huygens and Hooke come to mind. Johannes didn't live long enough to savour his coup; he died age 29 in 1616. The following spring, his father, strolling in the churchyard of Osteel, was struck and killed with a spade by Frerik Hoyer, a disgruntled farmer whom he had admonished from the pulpit for stealing some geese.

Reference:

- *Essays on Galileo and the History and Philosophy of Science*. Stillman Drake, Vol. I University of Toronto Press:1999.
- *On Tycho's Island* by John Robert Christianson Cambridge:2000
- *"The earliest drawing of sunspots", in Astronomy and Geophysics*. Vol. 40 December, 1999. 21-22

Photos by Bob Botts



See more at: `amateurastronomy.org`

Chair's Report

It seems more than appropriate that we are to have a talk regarding Venus on Valentine's Day. Rita Griffin-Short, a frequent contributor to Event Horizon, will be speaking to us this month on the historical importance of transits of Venus across the disk of the Sun. There are many wonderful accounts of the voyages of scientists who set off to distant lands to record past transits. If you haven't read it, I recommend locating a copy of Don Fernie's "The Whisper and the Vision" which retells several of these stories.

I'm sure that we were all saddened by the disintegration of the Space Shuttle Columbia during its re-entry on February 1st. Someone once said that space travel is *never* routine and that event certainly drove home that point. It is interesting that images and reports from amateur astronomers are playing a significant role in the reconstruction of events leading to Columbia's demise. Surely amateurs are some of the most reliable witnesses for unusual events in the sky. Needless to say, our thought and wishes are with the families of the astronauts.

Another sad event since our last meeting was the bushfire which consumed Mount Stromlo Observatory near Canberra, ACT, Australia. This event was particularly poignant for me due to my connection with the people there through the MACHO Project. Furthermore, I had spent nearly three weeks on the now destroyed 74-inch telescope in April 2001. Thankfully, no lives were lost at the site, although at least two astronomers had there homes destroyed by the bushfire. The HAA has made contact with the Canberra Astronomical Society which used Mount Stromlo telescopes for observing and public education to see if there is anything useful we can do to assist them.

On the positive side, we now have some decent planets up in the evening sky! Please make sure to take the time to show Saturn and Jupiter to a few children (and adults!) before the summer arrives and they are lost again in the Sun's glare.

Doug Welch

Doug Welch is the current chair of the HAA and also a founding member. You can find out more about Doug at: `http://www.physics.mcmaster.ca/people/faculty/Welch_DL_h.html`

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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Web: `amateurastronomy.org`

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Stuff for Sale

- Magellan 310 GPS receiver with serial interface cable ... $100
- 90mm Maksutov-Cassegrain Optical Tube Assembly "Canadian Geographic" label, rubberized, flip mirror. Minor defects *behind* secondary coating (where it will not affect performance). Tripod screw mount. ... $225
- If interested, please contact Doug Welch by phone (905) 627-1563 or e-mail welch@physics.mcmaster.ca

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BIO BRIEF William Parsons, 3rd Earl of Rosse (1800-1867)

by Rita Griffin-Short

Parsons, an Irish astronomer, graduated from Oxford with a first in mathematics, then sat in Parliament as Lord Oxmantown before succeeding to the title. He experimented with fluid lenses and made improvements to specula cast for reflecting telescopes that were pioneered by James Short, M.A. F.R.S. in the early 18th c.

In 1842, Lord Rosse began building, on the family estate in Ireland, what was the longest reflector at the time, 'the Leviathan of Parsonstown' (now Birr), with 6-foot mirrors each weighing 4 tons. It faced south to observe nebulae as they crossed the merdian. By April 1845, he had discovered the spiral nebula M51. Between 1848-1854 he served as president of the Royal Society.

Reference:

- Cambridge Illustrated History of Astronomy Michael Hoskin, Editor. 2000. 253-255

WebWatch

I was shocked and saddened to hear of the loss of the space shuttle Columbia on 2003, February 1. NASA has a special web page devoted the STS-107:
http://www.nasa.gov/columbia/

The Galactic Core Gazette http://my.core.com/~carhart/

This 12 minute tour of the universe is well worth the time. http://spacewander.com/USA/english.html

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Astronomical Highlights of 2003

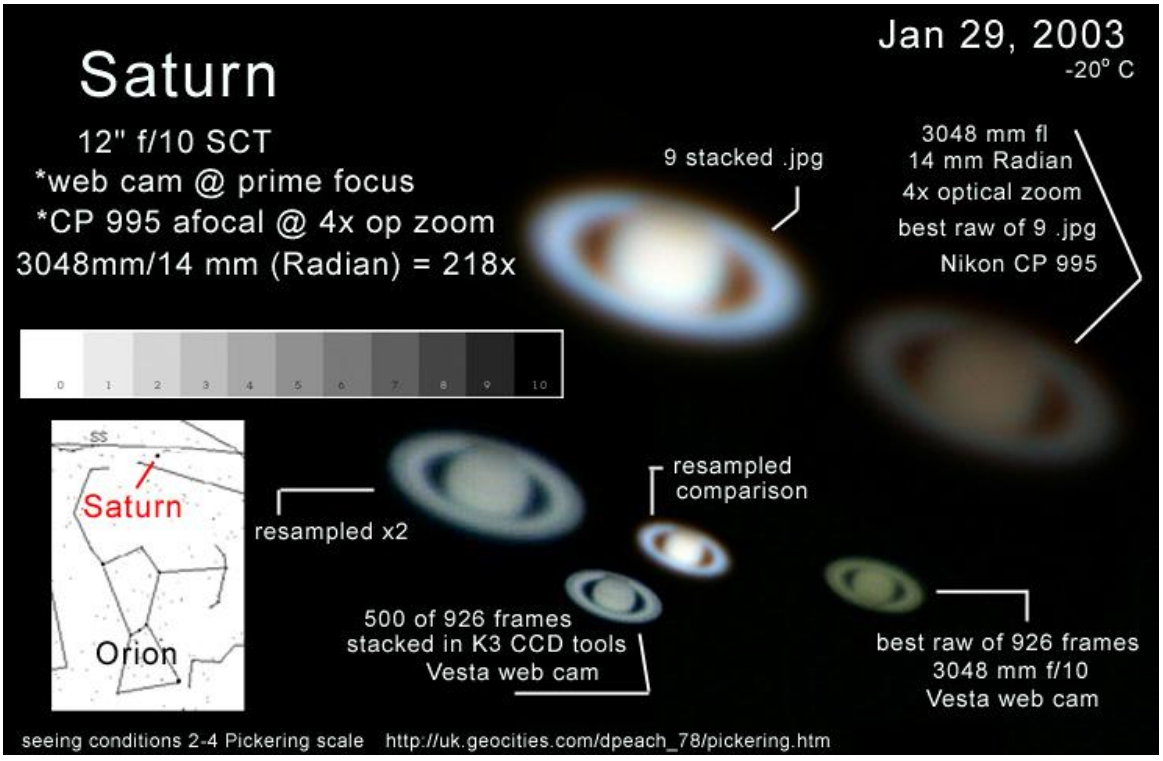
by Ray Badgerow

Here is a somewhat belated summary of some major astronomical events of 2003,based upon the Astronomical Calendar 2003.

- Early Jan.,and again in late December: Saturn is nearest and brightest(with rings wide open) in its 30 year cycle.
- May 7: Transit of Mercury visible from Asia and Europe,and before sunrise from easternmost North America.
- May 16: Total lunar eclipse visible from the Americas,Europe,Africa ,and Asia.
- May 31: Annular solar eclipse visible from Northern Scotland,Iceland,and Greenland.
- Aug. and Sep.: very fine apparition of Mars,centered on August 27-28 when it is nearest in many millenia.
- Oct.-Nov.: one of the best visits of Comet Encke,for the Northern Hemisphere, in its long history(possibly naked-eye).
- Nov. 9: Total lunar eclipse, visible from the Americas,Europe,and Africa.
- Nov. 23: Total solar eclipse , visible from Antartica.
- Dec. 31: Opposition of Saturn.

by Ray Badgerow
rbadgerow@mountaincable.net

Photos by Bob Botts



See more at: amateurastronomy.org

NASA's Space Place

Invisible Tornadoes

by Dr. Tony Phillips

The biggest problem with tornados-next to the swirling 300-mph winds-is that it's hard to see them coming.

But soon scientists will be able to foresee, not merely tornados, but the severe storms that spawn them, hours before there's even a cloud in the sky! Mind you, this isn't a vague "30 percent chance of rain today" type forecast. Thanks to a new satellite technology being co-developed by NASA, NOAA and the U.S. Navy, emergency personnel will actually watch the invisible beginnings of a storm unfold.

"They're going to know where the storm centers are forming before the storms are there," says James Miller, project manager for Earth Observing 3 (EO3), a satellite that will test out this new technology in 2005 or 2006.

Unlike the tiny water droplets that make up clouds, the water vapor that feeds storms is invisible to the human eye. Water vapor is easy to detect, however, at infrared (IR) wavelengths. EO3 will use an IR-sensitive device called GIFTS-short for Geosynchronous Imaging Fourier Transform Spectrometer-to make 3D movies of temperature, pressure, and water vapor in Earth's atmosphere.

Three or four hours before the storm clouds are visible, meteorologists will notice water vapor converging toward an area. This water vapor, which provides the "fuel" for the coming storm, is too close to the ground for today's weather satellites to see. Then meteorologists will check precisely how the air temperature over that area varies vertically (something else ordinary satellites can't do). This temperature variation determines whether the humid air will rise to form storm clouds. And when these conditions look ominous, the meteorologists can alert the public.

The goal of EO3 is to "test drive" this new technology and prove that it works. If successful, NOAA plans to incorporate GIFTS-style sensors into its next generation of weather satellites.

These future satellites will give meteorologists exactly what they need in order to give the people exactly what they need: an earlier warning that tornados may be on the way.

GIFTS and EO3 are managed by NASA's New Millennium Program. NASA and NOAA will operate EO3 during its first year in geosynchronous orbit above the United States. If the technology works as planned, the U.S. Navy will assume control of EO3, move the satellite to a point above the Indian Ocean, and use it to monitor weather in shipping lanes there.

For adults, the EO3 web site at `http://nmp.jpl.nasa.gov/eo3` has more about the mission and the GIFTS instrument. For children, The Space Place web site at `spaceplace.nasa.gov/eo3_compression.htm` has a jazzy, interactive "squishy ball" demo of the data compression methods that will be used on EO3.

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

This severe tornado hit south of Dimmitt, Texas, on June 2, 1995.

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

`http://spaceplace.nasa.gov`

Upcoming Events

Date Friday, March 14, 2003

Speaker Waldemar Okon (Ph.D. student at McMaster)

Topic Globular Clusters in Galaxies: Improving the Metallicity Distribution Function

Location Hamilton Spectator Building

Date Saturday, April 12, 2003

Location Delphi Hall in Niagara Falls

Speaker Ivan Semeniuk

The Niagara Centre of the RASC would like to extend an invitation to our colleagues in astronomy to join us for our Annual Banquet at our new venue. We are pleased to welcome Ivan Semeniuk as our guest speaker for this year's Annual Banquet. Ivan has been the astronomy reporter for the Discovery Channel's daily science news program, Daily Planet (formerly `@discovery.ca`), since 1999. He has also written about astronomy for SkyNews, New Scientist and Sky & Telescope. Ivan was the club's guest speaker in the early 1990s, and is looking forward to visiting again with the Niagara Centre.

The banquet will be held Saturday evening, April 12, 2003, at the Delphi Hall in Niagara Falls. We look forward to seeing many club members and guests at the banquet. We hope everyone will stay for the music & dancing after Ivan's talk. Recently constructed, the Delphi Banquet Hall features a beautiful setting and excellent food. It is a new addition to Chatters Eatery & Bar which is the location of the Niagara Centre's 'post-meetings'.

This event has drawn members from the southern Ontario RASC centres and the western/central New York astronomy clubs and has over the years been a great opportunity to meet with a wide cross-section of astronomy enthusiasts in a social setting.

New This Year: Music and dancing! We've had many requests for further entertainment after the dinner, speaker, and door prizes to round out the evening, so this year we have it.

We hope that our long-time attendees will be pleased with our new venue - your feedback would be appreciated.

`http://www.vaxxine.com/rascniag/banq2003.htm`

Here is a summary of Ivan' talk:

ARISTOTLE'S FOREST - EXPLORING THE NEW COSMOLOGY

We are living in the golden age of cosmology. For the first time in history a coherent picture of the universe and our place in it is beginning to emerge. The result is rather like finding our way out of a vast forest that our intellectual ancestors, the ancient Greeks, first plunged into 2,500 years ago.

In this wide-ranging presentation, Discovery Channel producer and astronomy columnist Ivan Semeniuk explores the results and implications of a new scientific revolution by focusing on three questions: Where in the universe are we? How did we get here? Are we alone?

The Evening's Program

5:30 p.m. Doors open. Bar opens

6:30 p.m. Deluxe Buffet Dinner

8:00 p.m. "Aristotle's Forest - Exploring the New Technology" by Ivan Semeniuk

9:00 p.m. Draws for door prizes, 50/50 draw

9:30 p.m. - 'till? Music and Dancing

Tickets are $45. To order tickets, please send a cheque payable to Niagara Centre, RASC to the mailing address below:

Niagara Centre, RASC P.O. Box 4040 St. Catharines, ON L2R 7S3

For more information, please contact:

Joyce Sims, Banquet Ticket Sales, at 905-262-5276

Alternative Contacts:

Glen Pidsadnick, Niagara Centre President, at 905-468-7419

John VanderBrugge, Niagara Centre Secretary, at 905-935-9355

BIO BRIEF Friedrich Georg Wilhelm Struve (1793-1864)

by Rita Griffin-Short

Struve was born in Altona, then part of Denmark, now absorbed by Hamburg (Germany). Denmark was neutral during the Napoleonic War but on a sunny, summer day in 1808 he was abducted by French recruiting officers and made to join the army. Housed in Hamburg he managed to escape by swimming to a Russian ship in the harbour. Russia would be his new and permanent home. There he worked his way through Dorpat University in Estonia, using its new 10" refractor to begin measuring double stars which he published in 1837 as Mensurae Micrometricae.

In 1834 he was presented to Tsar Nikolas, receiving permission to draw up plans for an observatory to replace the inadequately equipped one at St. Petersburg. The new observatory was built on Poulkovo Hill, Imperial land 12 miles from St. Petersburg. It opened in 1839, a desolate location, alive with wolves whose nightly howling disturbed astronomical observations. Its principal instruments were a 15 inch refractor, then the largest in the world, by Fraunhofer (1787-1826), that could be used for double observations; a large transit instrument by Ertel for accurate star position observations in prime vertical and a meridian circle by Rhepsold.

Struve's early work was devoted to establishing accurate star positions to determine the constant of aberration that he finally recorded in 1843 as 29".4451. From this work he determined the velocity of light as "497.8 seconds, corresponding to the mean distance of the sun from earth". His work on stellar parallaxes during Poulkovo's first eight years was published as Etudes d'Astronomie Stellaire, the first of its kind.

Poulkovo was visited by astronomers from around the world. Its library held Kepler's original manuscripts. In 1919 it was besieged for several days by White Russian troops without serious damage. However, it would not survive the German onslaught of 1941 that destroyed it and much of Leningrad. Its loss was equated with the final destruction of Alexandria's great library by Amur Ibn al-As in 641, and the destruction in 1449 by the son of Ulugh Beg the poet and astronomer, builder of Samarkand's magnificant observatory with its 40 meter radius meridian arc.

Struve became the patriach of a family of illustrious astronomers, fathering 18 children! Six of his sons followed in his footsteps through to Otto Struve (1897-1963), astronomer and biographer of his ancestor and Poulkovo. **Reference:**

- "The Poulkovo Observatory (1839-1941)" by Otto Struve Sky and Telescope. February:1942. Vol. 1 No. 4, 3-4. This is one of 154 articles he wrote for this journal.

- For image of Ulugh Beg's meridian arc see Bernard Lewis's Islam and the Arab World. Knopf:1976.

March 2003

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 **Observing Night**
2	3	4	5	6	7 **Observing Night**	8
9	10	11	12	13	14 **HAA General Meeting**	15
16	17 St. Patrick's Day	18	19	20	21	22
23	24	25	26	27	28 **Observing Night**	29 **Observing Night**
30	31		For observing info, call Stewart Attlesey 827-9105, Rob Roy 692-3245, Ann Tekatch 575-5433			

February 2003

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2	3	4	5	6	7	8
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16	17	18	19	20	21	22
23	24	25	26	27	28	

April 2003

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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			