

Event Horizon

January 2003

Volume 10 Issue 3

THE SKY BOX *by Glenn Muller*

We all know the drill for buying diamonds, everything hinges on *cut, carat, clarity, and colour*. Though *cost* is curiously absent from that equation, I applied similar principles in my quest for the ideal binocular mount. Instead of four "C's", however, I went with four "P's": *portability, practicality, posture, and, naturally, price*.

Binoculars cover that observing gap between the naked eye and the telescope. Unfortunately, apart from the Canon Image-Stabilized models which are pricey and still have their drawbacks, even the modern, lightweight bins are susceptible to the ubiquitous handshakes. However, astronomers are a creative lot and solutions are just clicks away.

One of the better configurations pairs a tripod with a parallelogram type arm. Functional, but more than I wanted to spend. Narrowing my search to low-tech alternatives, I found gizmos with broom handles or crutches, bowling balls and plumbing pipes, lawn chairs and bunji cords, and inflatable dinghies. Red Green would love astronomy.

In turn, I rejected each one on grounds of zenith neck strain, constant hand contact or, simply, negative wife polarization - never underestimate the importance of spouse-friendly equipment.

Enter the Sky Window

(<http://www.tricomachine.com/skywindow/>).

Designed and patented by Dr. Emmanuel M. Carreira, a member of the Vatican Observatory, the machined aluminum unit points binoculars down at a swiveling *first surface* mirror. Set on a tabletop there is no neck strain and only minimal hand contact. But wait, they want \$269 U.S. (\$2.5 million CDN) - plus shipping and handling and duty, Oh my!

The fact I even considered making my own attests to its simplicity. My handyman skills are so inept that if

I'd built the Ark, Darwin's theory would have been based on strong swimmers. Certain there'd be other versions around, I soon found printable plans for a wooden "binocular box" at the Fraser Valley Astronomers Society website (<http://www.fvas.net/bino.html>). On the same page was also a source for reasonably priced *first surface* mirrors.

While contemplating the project, I identified two weak areas: 1) the binocular box still required a table, and 2) a first surface mirror ought to be covered when not in use. Since the unit was just a flat base with supporting stands for the mirror and binoculars, I realized that by making it a true box, with a cake stand style lid, I could protect the mirror and provide storage space for our binoculars. Going a step further, if the *base* sat on the *lid*, a table would not be necessary. I could add a set of legs to raise the unit to a comfortable height - good posture translates to longer and better observing. The legs could also be stored in the box - practical and portable.



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Chair's Report

Happy New Year! It has certainly been a cloudy winter so far. Perhaps January and February might allow a few clear, crisp nights of observing. Winter cold fronts can clean out the air quite nicely - and when timed near a New Moon, some very memorable winter observing can result.

This month's speaker is Geoff Gaherty, a Toronto amateur who, among other things, observes variable stars! Since this is a topic near and dear to my heart, I encourage everyone at the meeting to pay close attention. Amateur observers continue to play a significant role in many areas of variable star research. Beyond a telescope and eyepiece (or binoculars), no other special equipment is required to do visual observations. I have been involved with the AAVSO (American Association of Variable Star Observers) for almost 30 years now (sigh) and have found myself in very good company there. Check

out www.aavso.org if the thought of doing some "VSO'ing" appeals to you.

Amateurs with CCD cameras also have been playing an increasingly important role. One area which benefits from the near-robotic control that modern scopes and CCD cameras allow is the study of cataclysmic variables. One of my professional astronomer friends, Joe Patterson of Columbia University, runs what is called the "Center for Backyard Astrophysics". (Joe ran an "astronomy camp" in California while he was a grad student at the University of Texas at Austin in the mid-70's. I was one of the attendees at the time and it was one of the greatest summers of my life!) See <http://cba.phys.columbia.edu/> for more information on the CBA. Remember to share your observing and other astronomical experiences with your fellow HAA members in Event Horizon!

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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Making a mock-up out of 1/2" spruce to find the ideal measurements for our 10 x 50 Carton Adlerblicks, it became apparent that thicker wood might be more robust and, after all these years, I still can't cut a straight line.

Noah would have loved *Home Depot*. With plan in hand, I got them to cut all the wood from a single 3/4" pine board, 16" x 96". All I had to do was glue, screw, and paint. In fact, I completed the box before the mirror arrived. Well-packed, the 1/4" thick glass was a true 10" x 5" rectangle but, advertised as *pristine*, I expected smoother edges, and two small scuff marks along one edge nearly had me send it back. However, these flaws would not affect performance and, confident that Bill (William Bixby – fsmirrors@att.net) would replace it if I wasn't happy, I fixed the mirror to its platform with five blobs of silicon adhesive. A word to the wise: a gentle swipe with a lens cloth is enough to mar the aluminizing of a first surface mirror – clean it as you would a telescope's primary.



So, how well does it work? Brilliantly. The different colours of binaries pop right out and a miniature M 31, The Andromeda Galaxy, showed us lovely wispieness around its bright core – and this from our backyard's mag. 4.6 skies! Gail commented on how comfortable it was to use, and we both liked the ease of sharing the wide, stable, views. This would be an ideal instrument for children.



In summary, the whole package weighs just over 20 lbs with binoculars aboard and, satisfying all four "P's", the price came to about \$90 U.S. (\$135 in Canadian Tire coupons) only because I needed to buy everything (except binoculars). No doubt it could be made for less with what you might have floating around your workshop. Look to the HAA website for pictures and plans of this project and remember; if I can make this – you can too!

UPDATE: When Bill received my e-mail, outlining the flaws in the mirror, as I expected he offered to exchange it. He will send the new one before I have to return the flawed one so, in his words, "there will be no down time". He also mentioned that for those with 60mm, 70mm or larger instruments an 8" x 10" mirror is available.

Glenn and Gail Muller observe from their backyard in Grimsby, On. They invite you to view their website at:

<http://home.interlynx.net/~mullers/>





Frisbees in Space by Dr. Tony Phillips

When Pete Rossoni was a kid he loved to throw Frisbees. Most kids do-it's pure fun. But in Pete's case it was serious business. He didn't know it, but he was practicing for his future career - in space exploration.

Grown-up Pete Rossoni is now an engineer at NASA's Goddard Space Flight Center. His main project there is figuring out how to hurl spacecraft into orbit Frisbee-style.

The spacecraft are small-about the size of birthday cakes. "This wouldn't work with big satellites or heavy space ships like the shuttle," notes Rossoni. But a cake-sized "nanosatellite" is just right.

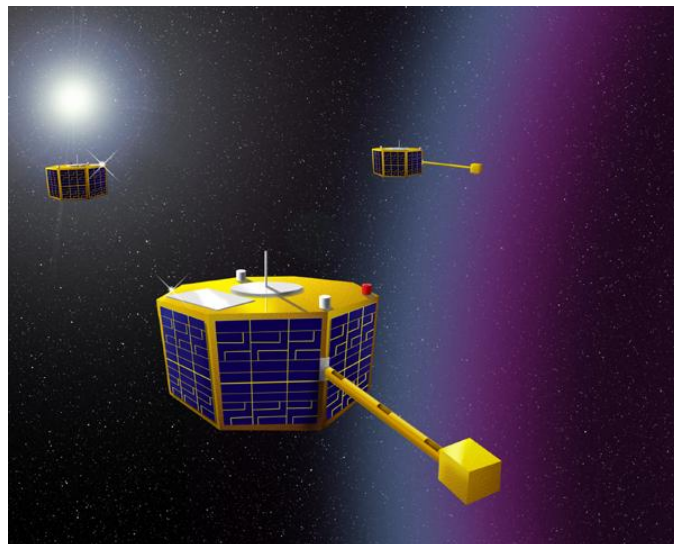
Nanosatellites-nanosats for short-are an exciting new idea in space exploration. Ordinary satellites tend to be heavy and expensive to launch. The cost alone is a deterrent to space research. Nanosats, on the other hand, can travel on a budget. For example, a Delta 4 rocket delivering a communications satellite to orbit could also carry a few nanosats piggyback-style with little extra effort or expense.

"Once the nanosats reach space, however, they have to separate from their ride," says Rossoni. And that's where Frisbee tossing comes in.

Rossoni has designed a device that can fling a nanosat off the back of its host rocket. "It's a lot like throwing a Frisbee," he explains. "The basic mechanics are the same. You need to impart the spin and release it cleanly-all in about a tenth of a second." (The spinning motion is important because it allows the science magnetometer to measure the surrounding field and lets sunlight to play across all of the nanosat's solar panels.)

The ST5 nanosats are designed to study Earth's magnetosphere-a magnetic bubble that surrounds our planet and protects us from the solar wind. But their primary goal, notes Rossoni, is to test the technology of miniature satellites.

"We haven't done anything like this before," says Rossoni. Soon, however, the concept will be tested. A trio of nanosats is slated for launch in 2004 on the back of a rocket yet to be determined. The name of the mission, which is managed by JPL's New Millennium Program, is Space Technology 5 (ST5).



Can groups of nanosats maintain formation as they fly through space? Will their internal systems-miniaturized versions of full-sized satellite components-satisfy the demands of both the harsh space environment and critical science measurements? Is Frisbee-tossing as much fun in orbit as it is on Earth?

ST5 will provide the answers. Read about ST5 at at <http://nmp.nasa.gov/st5> . Budding young astronomers can learn more at http://spaceplace.nasa.gov/st5/st5_tortillas1.htm

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>

Seti@Home

Doug Welch has created a "HAA - Hamilton Amateur Astronomers" group at the Seti@Home site. Please join up if you have been crunching away on your own.

Read more about the Seti@Home project here:
<http://setiathome.ssl.berkeley.edu/>

In The News

Speed of gravity revealed:

“The landmark experiment shows that it travels at the speed of light, meaning that Einstein’s general theory of relativity has passed another test with flying colours.” Read more here:

<http://www.newscientist.com/news/news.jsp?id=ns99993232>

<http://science.slashdot.org/science/03/01/08/017222.shtml?tid=134>

A New Transiting Extrasolar Giant Planet

OGLE-TR-56b: “Whizzing around its star every 29 hours, the distant planet is shrouded in clouds made not of water droplets but of iron atoms.”

Read more here:

<http://www.cnn.com/2003/TECH/space/01/07/us.planetsear.ap/index.html>

<http://arxiv.org/abs/astro-ph/0301052>

Upcoming HAA meetings

Date Friday, February 14, 2003

Speaker TBA

Location Spectator Building

Date Friday, March 14, 2003

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

Topic Globular Clusters in Galaxies: Improving the Metallicity Distribution Function

Location TBA

Date Thursday January 25th, 2003

Comet C/2002 X5 (Kudo-Fujikawa)

Url [http://www.utahskies.org/solarsystem/comets/C2002_X5_\(Kudo-Fujikawa\)/index.shtml](http://www.utahskies.org/solarsystem/comets/C2002_X5_(Kudo-Fujikawa)/index.shtml)

Notes ”On December 13th, Japanese astronomer T. Kudo discovered a new comet cruising through the constellation Bootes. The comet was independently discovered on December 14th by Shigehisa Fujikawa, also of Japan. Named C/2002 X5 Kudo-Fujikawa, the comet is the 6th to carry the Fujikawa name. Currently visible at about mag 8, the comet is expected to brighten to approximately mag - 3 at perihelion on Jan 25th.

Date January and February 2003

Comet C/2002 V1 (NEAT)

Url <http://www.skyhound.com/sh/skyhound.html>

Notes This comet has proven to be much brighter than it originally appeared to be. As the month opens it is in Pisces at 7th magnitude. By the end of the month it may become as bright as 5th magnitude and still be quite high in the evening sky for all but the most southern observers! It could become as bright as 2nd magnitude early next month.

February 2003

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16	17	18	19	20	21 Observing Night	22 Observing Night																																				
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For observing info, call Stewart Attlessey 827-9105, Rob Roy 692-3245, Ann Tekatch 575-5433																																										
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