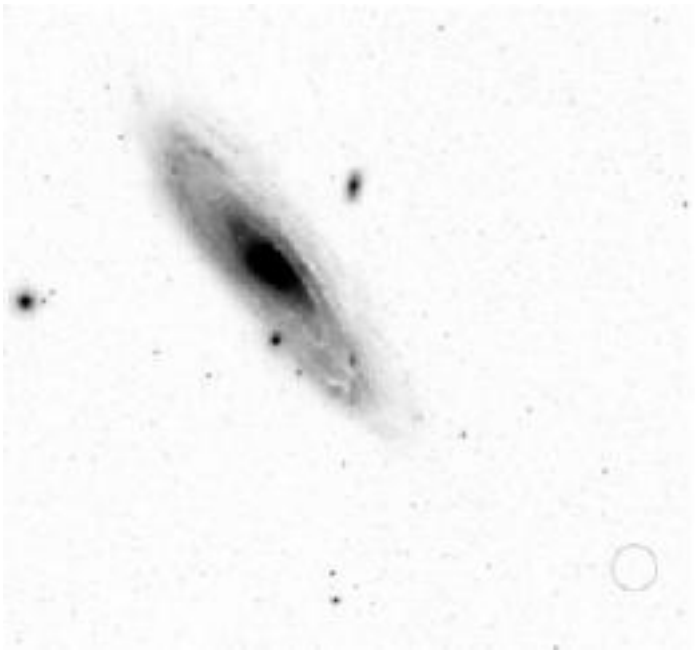
Hamilton Amateur Astronomers

Event Horizon

April 2002 Volume 9 Issue 6

Hunting for Globular Cluster G1 *by Marcel VanDalfsen*

Last month at the HAA meeting, we saw an image G1 during Steve Bickerton's presentation. It was suggested to me by Ann Tekatch to write a short article with some charts on how to find this globular cluster. G1 (also known as Mayall II) is the largest globular cluster which is part of the Andromeda Galaxy. G1 is located about 3° South-West of M31, and appears as a magnitude 13.7 object. It appears as the point of a triangle beside two other stars (magnitude 13.6 and 14.3). Its coordinates (for those with GO telescopes, etc) are $RA = 00^h32^m46.8^s$, and $Dec = +39°34'43''$ One method to locate this object would be to start at M31, head South about 2° to the claw/paw asterism around 32 And (a magnitude 5.3 star), and then head west about 2° to center on G1.



The first figure is an image of the area surrounding M31 and G1. This image was patched together using the Digitized Sky Survey (DSS), and covers a region 4° on a side. G1 is located in the small 15′ circle in the lower-right (SW). On the image you can also see M32 just South of M31, and M110 North-West of M31.

The second Figure is a chart showing the brighter stars down to about $10/11^{th}$ magnitude, in relation to M31 and G1. This chart has been adapted from Uranometria 2000.0, with extra stars added in by hand. The two circles encircling G1 are 15′ and 45′ in diameter. The bright star on the left edge (East) is ν And (magnitude 4.5), and the bright star on the bottom edge (South) is 32 And (magnitude 5.3).

Cont'd on Page 4 ...

Chair's Report

Thanks to the generosity of Rick MacDougall, in both time and money, the HAA now has its own domain name and hosting! By the time you read this, it is likely that you can change any HAA bookmarks to point to our new domain name:

`www.amateurastronomy.org`

This monicker was chosen to reflect what the HAA is all about. We figured that even given its length, it was better than www.thenewcityofhamilton-amateurastronomers.ca! (There is a good story about our attempt to get our first choice in the .ca top-level domain - but it is probably best that it not appear in print!)
We are, of course, grateful to the Faculty of Science at McMaster which hosted the website for many years, partly to recognize the role the HAA has played in public outreach through the William J. McCallion Planetarium.
Now that we are hosting on our own terms, it is possible for us to engage in a wider range of activities than might be considered appropriate for a university-hosted site. For instance, we can have book reviews which link to booksellers - one of the most common questions I get is "What books should I buy to begin to appreciate the night sky?"
Speaking of thanks, we owe a huge amount of it to Anthony Tekatch who has turned our website into a continually- updated astronomy resource. There has been no "link rot" since Anthony took over as both webmaster (and editor)! He has been responsible for making the switchover between the old website and the new one and has been the one interacting with Rick MacDougall to get all the details settled.
It is due to the initiative and hard work of folks like Rick and Anthony that our club just keeps getting better and better. Let's see what else we can do to make it even more interesting!
by 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.

From the Editor

This is the second newsletter in a row using LaTeX. It's turned out to be a huge learning curve for the first month but this months has been much easier to compile. LaTeX really is a programmer's dream, once everything is running smoothly I just type "make" and the newsletter is created :)

I'm very interested in anything that you send my way for the newsletter or the web page.

Please send your articles in the any of the following formats:

- o text file
- o Tex file
- o Word document
- o handwritten

The web page contains a new section on book recommendations (not Oprah's). If you have any books that you'd like to recommend to other HAA members then please send that info along. 15% of the cost of the books featured here will be given to the Hamilton Amateur Astronomy club (if they are ordered on the same "click through")

Also, 5% from **anything** ordered from Amazon when you "click through" to a purchase using the banner at the bottom will be given to the club to help keep membership fees low.

Anthony Tekatch
anthony@unihedron.com

Ask the Experts

If you have any questions about astronomy we have experts in the following fields that are ready to answer your questions; galactic astronomy, astrophysics, stellar physics and variables, astrophotography using emulsion/print film, polar-aligning an equatorial mount, scanning photos and image processing.

Send in your questions to editor@amateurastronomy.org

Q. How do astronomers know what our Milky Way galaxy looks like and how did they determine where we are located in it? *by Brian Chire*

A. First let's talk about the shape of the Milky Way. There are a few ways that have been pursued to answer this problem - I'll describe two: one using evidence from optical measurements and the other using radio.

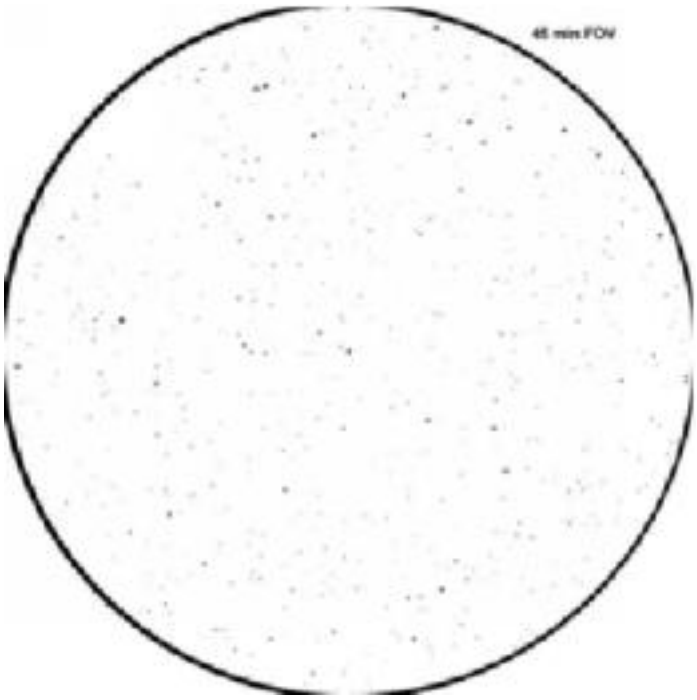
If you go out at night over the course of the year (and especially if you live nearer the equator or even in the southern hemisphere) you'll notice that the stars are not distributed evenly in the sky. During the northern summer you'll see a fuzzy band of light overhead, split more or less in half by smaller, dark band in the middle of it. (This band of light is visible at other times, but it's most pronounced during that time.) If you were to plot these things on a sky map, you would notice that the fuzzy band begins faintly at one end, gets a bit brighter and bulges in the middle, and then tapers off again (more or less symmetrically). Now repeat the process again with a telescope. The fuzzy band begins to resolve into individual stars, clusters, and gaseous regions. On the opposite side of the sky (i.e., in the winter) you don't find the effect to be nearly as pronounced and, in fact, you might see a few galaxies too. And if you look above and below the plane of the fuzzy band you also see, relative to the band itself, fewer stars and even more galaxies. What does this mean? Well, the star system we live in is flat, and has a concentration of stars in one direction (which means we're not near the centre) with a central bulge. If you keep working at this, you'll soon realize that we must be living in the plane of something pancake-shaped that has a central bulge. If you look "up" or "down" out of the plane of the pancake you see great distances into the universe - everywhere else you're looking through the plan of the pancake and your line of sight will be blocked by it. However, the exact details are hard to make out because of all the obscuring dust (e.g., the thin dark band which splits the fuzzy one in half) and gas. Comparing this to other galaxies we can see might lead you to the conclusion that we live in a spiral galaxy of some sort. Measuring the distances to stars, gaseous nebulae, etc. would reinforce this conclusion.

Using radio telescopes we can observe electromagnetic radiation from sources using frequencies which aren't as obscured by dust and gas. That is, you can probe much further into our galaxy. Repeating the above process at these wavelengths gives us a sharper picture of our galaxy. It also turns out that our galaxy also has a bit of a "bar" running through the central bulge. Most spiral galaxies do not have an obvious bar running through them, but a significant fraction do. Recent improvements in observational techniques shows that more galaxies than previously thought actually sport this feature, it's just not a particularly large or bright feature in many cases. Radio observations also allow us to trace the spiral arms in our galaxy by mapping where the gas and dust is (since usually you can't see stars

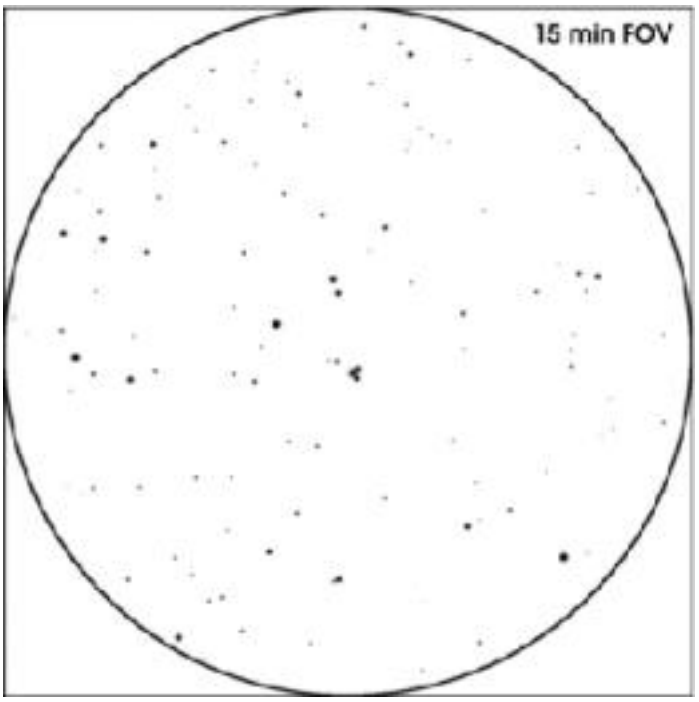
with radio telescopes - just weird ones like supernova remenants).

Okay, so now we have the general shape of the star system we're living in, but where exactly are we relative to the centre of it? Well we can deduce from the above we are neither at the centre or the edge. By determining the distances to the stars near us (a whole other story), we can start to figure out how bright different types of stars intrinsically are. We can then use this to make reasonably accurate guesses about how far away stars are that we can't directly measure the distance for. However, this is made somewhat uncertain because intervening gas and dust causes stars to appear fainter than they really are and it's really hard to know just how much of this stuff is obscuring our view. Anyway, you can start to build up a 3D model of our star system in this manner (along with a bunch of other techniques). If I recall correctly, it turns out we're about 2/3 of the way out from the centre of the visible portion of our galaxy in one of the several spiral arms that our Milky Way galaxy has. *by Tom Steckner*

... Hunting Globular cont'd from page 1



The third Figure shows the objects in a 45′ circle around G1. This figure was created using the DSS images, and may be difficult to see. The stars in this figure range from 9th magnitude to 15th magnitude.



Finally, the fourth Figure is a 15′ field-of-view around G1.

Happy Hunting!

by Marcel VanDalfsen

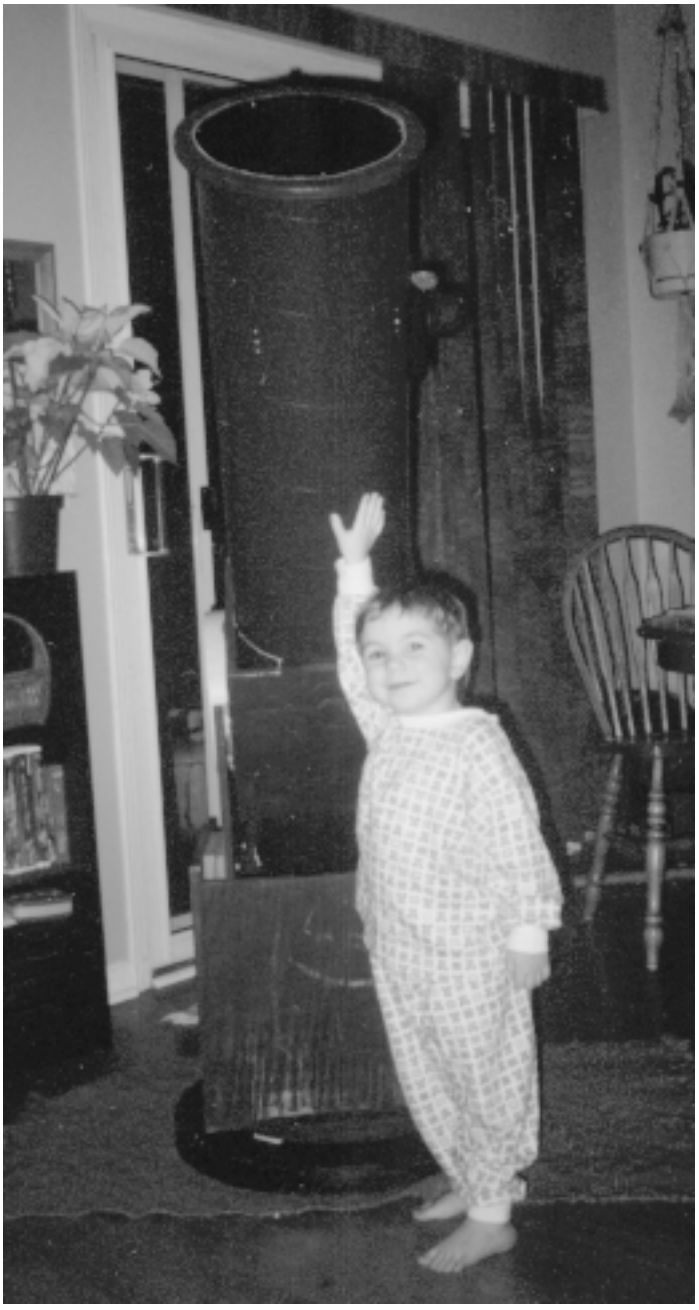
Marcel VanDalfsen is currently an Astronomy Ph.D. student at McMaster University working on the topic of globular cluster systems. He has been interested in astronomy since early childhood. He has a website at `http://impatiens.physics.mcmaster.ca/vandalfs/home.html`

First Light By Greg Emery

One day in November 2000, my wife came home with a $35 telescope for the kids. I started thinking how I have always been fascinated by the stars and astronomy (I considered majoring in it, but thought who would want to work in a remote place with one of those huge telescopes?). After doing a little research I learned that I could build my own telescope. Now this is for me! I'm an engineer! I finished my basement by myself! I know how to use tools! I just read Richard Berry's book!

Fast forward the calendar to August 2001, while hunting for sources for mirror blanks I come across a company in the Dundas yellow pages. I phone the number – always a fax machine. Undaunted I go to the address, knock on the door and explain my plight. The person on the other side of the door looks at me quizzically and then invites me in to talk. The next day, Saturday August 11, I go to the HAA dark site in Binbrook to find out what real telescopes are like (I have still NEVER looked through a real telescope in my life to this point).

At the Binbrook site I park and see two telescope being erected: Ann Tekatch's 12.5" and Stewart Atlesey's behemoth. Now the engineer in me says " A telescope you need a ladder to use? – Awesome". The person from the other side of the door in Dundas was there also – none other than Doug Welch. After this experience, building a telescope is no longer a question – it is a necessity.



Fast forward again, past all of the building, reading, trip to the Hospital and cloudy, miserable nights to March 21, 2002. I've finally gotten a handle on what collimation is and how to do it, my telescope is ready , it is cold, it is dark and I see First Light. The craters along the terminator of the moon are fabulous. I practice what I've learned and celebrate my telescope by finding M13, M81 and M82 (Which until recently I thought were highways in Britian!). When I found M13, I was standing by myself at 12:30 and simply uttered "Now this is so cool". I am hooked, obsessed, enthralled and exhilarated – I have seen First Light.

Greg Emery is a new member of the HAA and has only been active as an amateur astronomer for about 1 year. Greg's interests in astronomy lean more towards deep sky objects as opposed to planetary observing. In addition to observing, interests also include optics design and amateur telescope making.

Planet Watch

This month is great for viewing Venus, Mars, Saturn and Jupiter. In fact the moon will mark the location of each planet. Look to the west just after sunset:

- April 14 ☽ Moon and ♀ Venus
- April 15 ☽ Moon and ♂ Mars
- April 16 ☽ Moon and ♄ Saturn
- April 18 ☽ Moon and ♃ Jupiter

Binoculars will reveal the moons of Jupiter and a small telescope will reveal the rings of Saturn.

WordFind

Find The Following Words:

ASTEROID	BINOCULAR	EARTH
GALAXY	JUPITER	MARS
MERCURY	NEPTUNE	SATURN
STAR	SUN	TELESCOPE
URANUS	VENUS	

G	E	A	R	T	H	Y	D	R	K
A	P	G	C	M	R	I	A	E	S
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Comet Watch

On March 21st I found Ikeya-Zhang with my 7x50 binoculars. It was my first chance to see it. It sure is a cute little comet! Not terribly impressive from my light-polluted front yard, but certainly visible in the binoculars.

It seemed a bit brighter than Mesarthim in Aries, so I estimated its magnitude at about 3.7. I couldn't begin to judge the length of its tail, though. The sky was too bright to see much of it.

Has anyone else had a look at it recently?

by Ann Tekatch

WebWatch

Doug Welch's suggestions:

`http://www.pha.jhu.edu/kgb/cosspec//` *The Cosmic Spectrum and the Color of the Universe*

Marcel VanDalfsen's G1 info:

`http://impatiens.physics.mcmaster.ca/vandalfs/g1/` *G1 globular cluster*

`http://cadcwww.dao.nrc.ca/` *DSS web site at the Canadian Astronomical Data Center*

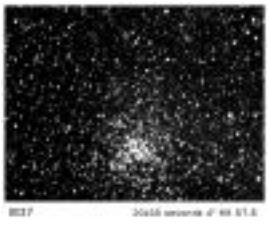
Suggested links by Steve Willis and Marg Walton:

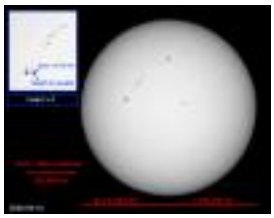
`http://www.inconstantmoon.com/sitemap.htm` *Moon Music*

`http://www.ency-astro.com/` *Encyclopedia of Astronomy and Astrophysics*

Astro photography of Bob Botts:

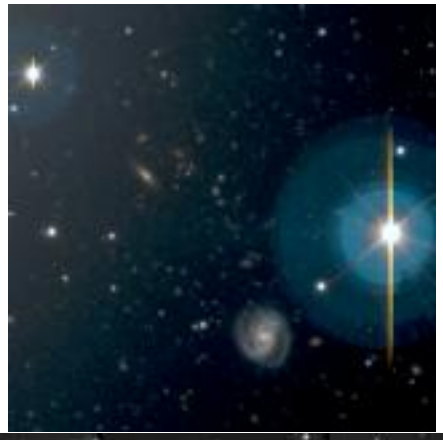
Bob Botts has contributed a large number of Astro photos to the web site, many have interesting notations as well. See them plus more at `amateurastronomy.org/gallery.html`





Marcel VanDalfsen's M104 - The Sombrero Galaxy page:

`http://impatiens.physics.mcmaster.ca/vandalfs/m104.html`



Send your interesting links into the editor at `editor@amateurastronomy.org`

May 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 GRS 1:13am 9:04pm	3 **Observing Night**	4 GRS 2:52am 10:44pm **Observing Night**
5	6 GRS 4:31am	7 GRS 12:23am 8:15pm	8	9 GRS 2:02am 9:54pm	10 **Observing Night** **HAA General Meeting**	11 GRS 3:41am 11:33pm **Observing Night**
12	13	14 GRS 1:12am 9:04pm Moon near Venus	15 Moon near Jupiter	16 GRS 2:51am 10:43pm	17	18 GRS 4:31am
19 GRS 12:22am 8:14pm	20	21 GRS 2:02am 9:53pm	22	23 GRS 3:41am 11:32pm	24	25
26 GRS 1:12am 9:03pm Penumbral lunar eclipse, centered on 12:03 UT and visible from Australia and the Pacific.	27	28 GRS 2:51am 10:43pm	29	30 GRS 4:30am	31 GRS 12:22am 8:14pm **Observing Night**	
		GRS: Jupiter's Great Red Spot visible at night. Eastern time is used.	For observing info, call Stewart Attlesey 827-9105, Rob Roy 692-3245			

April 2002

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June 2002

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