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Ottawa Centre, Royal Astronomical Society of Canada

The Ottawa Centre is one of 27 centres of the Royal Astronomical Society of Canada—an organization dedicated to the advancement of astronomy and allied sciences. The Ottawa Centre, formed in 1906, has approximately 500 members. Centre facilities include the Fred P. Lossing Observatory near Almonte, which houses several instruments including an excellent 16-inch reflector. The Centre also operates an astronomical book library and a telescope loan library.

Membership in the Ottawa Centre is $50 per year for regular members (outside Canada, US$50) and $31.25 for junior members. Members receive the annual Observer’s Handbook, the bimonthly RASC Journal, the Canadian bi-monthly magazine SkyNews and 10 issues of the Ottawa Centre’s newsletter, AstroNotes.

The Centre can be contacted at P.O. Box 33012, 1363 Woodroffe Ave, Ottawa ON K2C 3Y9; at (613) 830-3381; or via Internet at ottawa.rasc.ca.

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2 AstroNotes December 2004
You Want Me To Keep a Logbook?
by Tim Cole, Editor

In one form or another, that's a typical reaction from a student in an introductory astronomy course. The reaction can range from a querulous comment to a quirked eyebrow, but you could bet that damned few in the class will have started a logbook by the end of the course. It's not even sloth. Keeping a logbook means keeping a record of what you've done. Or not done. Or done badly. What if someone looks at it?

Of course, keeping a logbook implies a degree of discipline that doesn't seem to go well with a hobby. But when you come down to it, what hobby doesn't require discipline? What else do you call endless hours at golf driving ranges, on a tennis court, or even with a book of crossword puzzles? The only real difference is that dratted paper, and writing down your actions for anyone else to read. There are very few of us who are willing to face scrutiny. Writing something down makes it seem so official.

As with many people trained in science and engineering, I have to make an effort to keep my logbooks from getting sterile. At least I don't have a lab tyrant (er, I mean instructor) insisting I must write in third person. ("A 17mm eyepiece was placed in the diagonal...." That's just too horrible to contemplate!)

I've gotten computerized and perhaps a bit lazy. Now, most of my log entries are in SkyTools' electronic logbook. My sketches don't usually get to the scanner, and I end up testing my skills at verbal description. (In longhand, thank you! Trying to make sense of Dreyer's abbreviations in the DSO handbooks has made me shudder at trying to keep track of my own.) There are compensations to the electronic logbook. I can, for example, extract all my attempts to observe a particular object and try to see what I've been doing wrong. Or what I finally did right. It really doesn't have to be negative.

Take a look at the extract from Pat Browne's logbook. It's a strikingly personal view of a slice of her evening. It took a lot of self-confidence for her to let a few hundred strangers read it. Thanks, Pat. Better than a head shot any day.

Cover Photo: Logbooks and Atlases
Photo Courtesy Tim Cole

An assortment of quaint paper books from the old days of planning and recording observations.
2004 Observer of the Year Award
by Mike Earl, Ottawa Centre Meeting Chair

One of the more joyous responsibilities that I have had during my term as Meeting Chair is the selection of the Observer of the Year. In order to select the winner of the award, I carefully read every entry that is submitted. Although this is no small task, it is very enjoyable to read over everyone’s observations and their perspectives concerning the many objects they have observed over the year.

It is a difficult task choosing the final recipient, mainly because every entry reflects the enthusiasm of the observer and his/her specific interest in the subject of astronomy, which can differ greatly from those of the other contestants. I normally look at the number of objects the person observed over the year, the enthusiasm demonstrated through the observations (whether they be logbooks, images, or sketches), the organization of the observations, and finally the difficulty of the objects that were observed, given the equipment the person had available.

This year, I had the great joy of reading over the observing logs of an Ottawa RASC Member who greatly enjoyed every observation she made, as well as described and organized her observations extremely well. It was with great pride that I presented the 2004 “Observer of the Year” award to Pat Browne at the 2004 Annual Dinner because of her dedication to her logbooks and enthusiasm she put into every entry.

I am hoping that every Ottawa RASC Member will congratulate Pat for this well-deserved award for her dedication to observing and the enthusiasm she has for the subject of astronomy. I wish to thank all Members who submitted their observations for this year’s award, and I would also encourage Members to submit their observations next year to compete for the 2005 Observer of the Year Award. I will certainly be one of the contestants next year!

Pat Browne asked that her photo not be used in AstroNotes. Instead, she suggested I print a page from her observing notebook, which you can see on the facing page.
— Editor
23. 50% 10% 12% 31% 23% 31% 15%

Deep - twisters in sky

Go the work that was not be up.  NGC 6503

Find by any point

G: from 8 on line of score to

midpoint of opposite side

Then go up to 8.

2.) From 8 can see

Trace a line line from through and a star

and continue in that direction.

Galaxy next to star - not very obvious

in 95-110 mm - 18mm obvious.

Finished with 10-14mm. Nice!

Looked at field for FB7 (near M102)

Cassiopeia M52 - some elusive in here

If kept 30+ Grown 40mm - tracked 18mm

Attempt at Bubble Web (F9) first to SW.
A Meeting Chair’s Humble Farewell
by Mike Earl, Ottawa Centre Meeting Chair

As you are reading this article, I will be preparing and organizing the 03 December Ottawa RASC meeting. This meeting will be the final one of my term as your Meeting Chair.

I am vacating the position for two reasons. First, two years of me is quite enough for anyone. Seriously, it is time for a new face, with a different perspective and personality, to chair the meetings. Second, it is time for me to move on and experience other interesting facets of the RASC.

I have loved the subject of astronomy as far back as I can remember. I have always enjoyed imparting my excitement and enthusiasm for the subject to others. As Meeting Chair, I had the opportunity to do just that nearly every single day, as I discussed the meetings with, and received images from, fellow Members. I have always believed that Astronomy should be for everyone, young or old, rich or poor. I have primarily tried to chair the meetings with this important principle in mind.

I also consider myself very fortunate to have been your Meeting Chair during such interesting times in astronomy. If you simply count the observational wonders we have seen during the past two years, you can remember three total lunar eclipses, an unusually close approach of Mars, two supernovae appearing in a galaxy at nearly the same time (from our perspective), numerous fairly bright comets, and, of course, the first Venus Transit in 122 years. A solar eclipse or two would have been nice, but one cannot have everything! If you also consider the milestones in space exploration, you can remember the Spirit and Opportunity probes landing on and exploring Mars, the Cassini probe reaching and orbiting Saturn, and SpaceShip One’s successful flights that won it the $10 million X-Prize.

However, I can also remember the February 2003 meeting, which began about 12 hours after the space shuttle Columbia disintegrated over Texas. I could barely talk at that time, as I was still in a deep shock, as were many of us.

I have been especially impressed by the selfless generosity portrayed by many Members as they assist beginners, answer questions, and work on difficult problems (without pay, mind you) related to the subject of astronomy. I have indeed been very fortunate to be amongst such dedicated people.

Many Members have offered me many useful ideas relating to preparing, organizing, and running the meetings, and I thank all of you for your contributions. I could not possibly have achieved the same all by myself.
As I vacate the position of Meeting Chair, I will take with me very fond memories of receiving Members' images, talking with many Members about anything and everything, and both talking and laughing with the audience during and after the meetings. All suggestions and comments from Members that I had received during my term were always taken seriously, so that I could strive to make each subsequent meeting better than the last. Of course, as you know, this effort did not always work, but overall I am hoping that you had a great time, and I look forward to maintaining the acquaintances and friendships I obtained.

I sincerely wish the next Meeting Chair all the best as he/she experiences the unique position of preparing and organizing the meetings every month. Since the subject of astronomy is ever changing, it is fairly certain that his/her meetings will be totally different than mine. I also offer any assistance the new Meeting Chair sees fit.

My last meeting as Meeting Chair will be a very sad one for me personally, because it means I can no longer receive or display the wonderful images taken by beginning and advanced Members alike, nor will I be able to talk to Members about the meetings as much as I once did. It will also mean that I will no longer have the privilege of talking with the Observing Coordinators to prepare and discuss important astronomical events. Of course, it also means no frantic last-minute preparations, no pre-meeting jitters, no dressing up in formal attire, and I can finally sit and relax with fellow Members for the entire meeting.

After 03 December, I will have the satisfaction of knowing that I had a very unique and wonderful position within the Ottawa RASC that I will certainly never forget. In other words, being Meeting Chair rocks!

Thank you all!

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Note: The position of Meeting Chair is now an elected voting Council position, with the term limited to two successive years.
— Editor
Galactic Surprise
by Patrick L. Barry and Dr. Tony Phillips, NASA/JPL

Open an old astronomy textbook. The basic sketch you’ll find there of galaxy formation is fairly simple: a vast cloud of diffuse hydrogen and helium gas condenses under gravity, and dense spots in the cloud collapse to form stars. Voila! A galaxy.

But real galaxies are much more complex than that. A galaxy is a swirling “soup” of billions of stars and roaming black holes, scattered clouds of gas and dust, random flashes of star birth and exploding supernovas, and an unseen and mysterious substance called “dark matter.” Over time, all these ingredients mix and interact—pulling and compressing and colliding—and somehow that interplay leads to the galaxies we see today. No wonder it’s such a hard problem to solve!

Just over one year into its three-year mission, GALEX is already shedding some new light on the problem.

“Some of the discoveries GALEX has made will change our understanding of how galaxies develop and when, where, and why stars form in galaxies,” says Peter Friedman, a researcher at Caltech and Project Scientist for GALEX.

This small space telescope, called the Galaxy Evolution Explorer (GALEX for short), makes its discoveries by taking pictures of millions of galaxies scattered over the whole sky. Some of these galaxies are close by (at least by astronomical standards of “close”), while others are as much as 10 billion light-years away. Because light takes time to travel through space, we see these distant galaxies as they appeared billions of years ago. Comparing young galaxies from the distant past with older, modern galaxies will teach scientists about how galaxies change over time.

Looking at these pictures, scientists were surprised to find many newborn stars in the outer parts of old, mature galaxies. Scientists had assumed that as a galaxy ages, the clouds of gas needed to form new stars in these outer reaches either got used up or blown away. Finding so many new stars in these regions of old galaxies (such as Centaurus A, Messier 101, and Messier 81) shows that, apparently, they were wrong.

Friedman says that astronomers don’t know yet how to explain these new findings. Rethinking and improving theories to explain unexpected discoveries has always been the way science makes progress—and GALEX is certainly making progress.
One thing is certain: It's time to re-write some old textbooks.

For more information, see http://www.galex.caltech.edu/. Kids can do a galaxy art project and learn more about galaxies and GALEX at http://spaceplace.nasa.gov/en/kids/galex/art.shtml.

M81 is 10 million light years away. The image on the left was made from GALEX data and shows UV light from hot, new stars. These star forming regions are not detectable in the visible light image on the right.

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

I thank Thomas Wray for his comments on my review of William Hartman’s recent book *A Traveler’s Guide to Mars* (AstroNotes, November 2004). Mr Wray suggests that the Mariner Valley on Mars is not the longest and largest valley in the Solar System, and points to the Mediterranean Basin and the Atlantic Ocean Basin as contenders for this title. In so doing he raises an interesting point: what do geologists mean when they speak of valleys? The term refers to elongate topographic depressions. In the case of glacial valleys, river valleys and wadis, they are formed by the erosional effect of flowing ice, running water, or flash floods, respectively. Rift valley floors are down-dropped blocks of the same material that forms the high-standing valley walls, commonly covered by a thin veneer of younger sediments or rocks. While the Mariner Valley is comparable in length with the Great Rift Valley of Africa, the latter is significantly narrower with an average width of 100 km, compared with 250 km for the former. At its widest, the Mariner Valley is 400 km across at Melas Chasma, even discounting the contiguous Condor Chasma branch on its north side. It is also 400 km wide at its eastern end (Eos Chasma). Geometry aside, most planetary geologists consider Mariner Valley to be an erosional feature, rather than a rift.

Ocean floor and continents on Earth with the water and vegetation removed. Note the segmented mid-ocean ridge in the middle of the Atlantic Ocean. Similar segmentation is even better developed in the eastern Pacific Ocean, especially to the south. Note also the jumble of oceanic crust and continental material in the Mediterranean Basin between Africa and Europe.
Now consider the Atlantic Ocean Basin. It is indeed flanked by the American, European and African continents. However, it is not an erosional feature, and its floor is not underlain by continental (Si-Al rich granitic) material. Instead, it is an ocean basin floored by new (Fe-Mg rich basaltic) crust that formed as the flanking continents drifted apart in response to sea-floor spreading. Hence, it is not a valley by any geological definition. Nonetheless, there is a narrow rift valley that runs along the entire length of the mid-ocean ridge that is the site where new oceanic crust is still forming today. However, the width of this rift is two orders of magnitude narrower than the Mariner Valley. More importantly, it is made of many of independent segments whose individual length is measured in hundreds of kilometres, as compared with the 3600+ km length of the Mariner Valley, even discounting the Noctis Labyrinthus sector at its western end.

The Mediterranean Basin is not a valley either. It comprises an extremely complex jumble of oceanic crust and continental nuggets that formed in response to jostling of the European, African and Asian continents that flank the basin. The various “seas” and island chains identified within the Mediterranean correspond geographically to openings in the basin floor into which new oceanic crust rose, but which were arrested in their development before they could become full-fledged ocean basins. This has occurred repeatedly throughout relatively recent geological time, ever since the African and European continents collided to form the Alps and related mountains.

The interesting point raised by Mr Wray’s comment is this: when is a topographic depression not a valley? To which one answer is, when it’s an ocean basin, even a complex failed one. The key to understanding the distinction is the difference in the mechanisms and processes involved in the formation of the different structures: erosion and/or rifting vs continental drift and the formation of new ocean crust through sea-floor spreading. In short, the Mariner Valley is the longest and largest valley in the entire Solar System, until such time as a large, shrouded planetoid such as Titan reveals something even larger.

Simon Hanmer, Ottawa Centre

Do you have comments about articles or photos you’ve read in AstroNotes? Write to the Editor with your opinions. This is your newsletter — speak out and join the discussion. Send your articles or letters by e-mail or snail-mail. Most common formats are fine: text, recent versions of common word processors, even marks on paper!
Peeking Back at Mother Earth
by Rob Dick, Ottawa Centre

What better way to waste away a cloudy day than to look upon, and marvel at, one of the Universes most beautiful goddesses — our Earth. Standard coffee table books will show you the Earth. But if you really want to see her revealed in all her varied glory, visit the Earth Observatory web site http://earthobservatory.nasa.gov/.

It is a great site to learn about how we learn about our Earth through remote sensing. But if you are really interested in eye candy, you can get on their e-mail list. (A link to subscribe to Earth Observatory is near the bottom of the page.) You will receive weekly notices of the newest postings on their site.

Follow the link to an explanatory page with a small version of the target image. Then click on the hi-res link!

The picture below is a close up of just one example of the bizarre features of our home planet. It’s not an impact crater but an eroded dome of a sedimentary feature in Mauritania.

So, what has this got to do with astronomy? Well, a great deal. Our world is a planet, so this is a form of planetary astronomy. But it goes beyond this.

Consider studying another world — like Mars. All we have are images from orbit and detailed images of a few acres. If we have difficulty interpreting features on our home planet - a planet whose environment, erosion processes we experience every day, with what confidence should we have interpreting images from an alien world to which we have never visited.
When I look at the images provided by the Earth Observatory site, I am humbled. I have travelled to some very interesting places on our planet but I am still amazed at how little I have seen of our own world. Indeed, with the help of NASA's CD-ROM sets of Mars, Venus, and the Moon, we may think we know these other worlds better than we know our own.

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About This Image (Courtesy SRTM Team NASA/JPL/NIMA)

This prominent circular feature, known as the Richat Structure, in the Sahara desert of Mauritania is often noted by astronauts because it forms a conspicuous 50-kilometer-wide (30-mile-wide) bull’s-eye on the otherwise rather featureless expanse of the desert. Initially mistaken for a possible impact crater, it is now known to be an eroded circular anticline (structural dome) of layered sedimentary rocks.

Extensive sand dunes occur in this region and the interaction of bedrock topography, wind, and moving sand is evident in this scene. Note especially how the dune field ends abruptly short of the cliffs at the far right as wind from the northeast (lower right) apparently funnels around the cliff point, sweeping clean areas near the base of the cliff. Note also the small isolated peak within the dune field. That peak captures some sand on its windward side, but mostly deflects the wind and sand around its sides, creating a sand-barren streak that continues far downwind.

This view was generated from a Landsat satellite image draped over an elevation model produced by the Shuttle Radar Topography Mission (SRTM). The view uses a 6-times vertical exaggeration to greatly enhance topographic expression. For vertical scale, note that the height of the mesa ridge in the back center of the view is about 285 meters (about 935 feet) tall. Colors of the scene were enhanced by use of a combination of visible and infrared bands, which helps to differentiate bedrock (browns), sand (yellow, some white), minor vegetation in drainage channels (green), and salty sediments (bluish whites). Some shading of the elevation model was included to further highlight the topographic features.

- **View Size:** 68 kilometers (42 miles) wide by 112 kilometers (69 miles) distance
- **Location:** 21.2 degrees North latitude, 11.7 degrees West longitude
- **Orientation:** View toward west-northwest
- **Image Data:** Landsat Bands 1, 4, 7 in blue, green, red.
- **Date Acquired:** February 2000 (SRTM), January 13, 1987 (Landsat)
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  - Olympus OM T-mount adapter $10
- Package: OM-1, Intenscreen, T-mount adapter $320 ($30 off, no haggling!)

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We set up after every meeting beside the coffee table. We accept cash and checks made out to Starlight Theatre.

Contact Robert Dick at sht@starlight-theatre.ca
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*Atlas of Finest NGC Objects* covers 110 FNGC objects and over 130 other NGC objects on 107 charts. Charts are 3 x 4 degrees with limiting magnitude of 12.4. Info on objects is summarized at the bottom of each page. Includes 26-page, mag. 7.3 Star Atlas. 145 pages. *Messier Atlas* covers all Messier objects; same format as *FNGC Atlas*. 140 pages. Both atlases available in “Correct Image” and “Mirror E/W” formats. Prices are $20.00 each atlas or both for $35.00. For more information, call Harry Adams at (613) 584-4804 or e-mail far.star@sympatico.ca

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Next RASC Ottawa Centre Meeting

Canada Science and Technology Museum
8:00 PM Friday 07 January 2005

Best of the Season!
and
Clear Skies!