POLARIS

Royal Astronomical Society of Canada
London Centre Newsletter
January 2010

Less Is More

Patrick Whelan

There's more to observing than meets the eye. Or maybe there is less?

If you have ever used a filter while observing you will know what I mean. Using a filter means that there will be 'less' light getting to your eye. Hopefully that means less light pollution or less scattered light or less 'extremely bright solar radiation' or less of certain colours or less overall light in general.

Filters are used in many different types of scientific observations. I own a microscope (okay I own a few!) and there are many types of filters for it. You can also use dyes to colour the specimens and that is pretty much the best 'filter' to use. (not a real filter at all, but the colours bind to different structures to bring out details) Coloured filters are also great for telescope eyepieces. Wouldn't it be cool if we could actually colour a galaxy or nebula? Talk about omnipotent powers! We will have to satisfy ourselves with filters.

I am going to start with solar filters and go from there. Solar filters go over the front of the telescope to reduce the light coming in to the mirror or the objective lens. DON'T USE OLD EYEPIECE SOLAR FILTERS! They are very dangerous. These are the very dark screw in filters that go in the eyepiece. The heat generated by the unfiltered sun can cause these filters to crack letting in all the sun's rays into your eyes! Ouch! Can you say immediate blindness? There are a few different solar filters but I will group them into two groups. White light filters that let you observe sunspots and H-alpha filters that let you see prominences and detail on the sun.

White light filters can be glass or film. I have some of both. The film I bought was Baader solar film and then I made my own telescope filters with it. (give me cardboard/boxboard and glue and duct tape! Presto! Solar filter) The glass filters come mounted and ready for a certain size telescope. Some of these filters give the Sun a white colour and some give it a yellow colour. When you use these filters you will be able to see the sunspots on the sun. (right now we are at a solar minimum the likes of which has not been seen in decades. That means there are very few or no sunspots at all)

H-alpha filters let you see prominences off the sun as well as detail on the sun itself. These used to be the domain of professionals only. Coronado is one company that has brought solar viewing in H-alpha to the masses! Viewing in H-alpha is a 'you need to see it to believe it' phenomena. You will be able to see arcs of solar material circling off the sun and then back on. (prominences!) You can buy a H-alpha filter for your telescope or you can buy a dedicated H-alpha telescope.

Eyepiece filters come in two types as well. There are colour filters and then there are narrow band/wide band filters. (was that three types?)

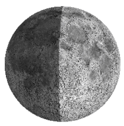
Colour filters are the cheapest and can give the most 'bang for the buck'. I will include neutral density filters in this group. They are light grey to very dark.

Use a neutral density (ND) filter for the moon or perhaps the planets. These filters cut down the total amount of light hitting your eye. Looking at the full moon through a 10" telescope is like staring at a 100 watt light bulb or worse! Don't worry about being dark adapted! Using a ND filter brings the overall brightness down so you can be more comfortable and also see more detail. You can get these filters as a single density or you can buy variable polarizing filters which are two pieces put together. You rotate one piece to get a range of darkness from very light to almost black. You can also use a ND filter to observe double stars if one star is much brighter than the other.

(Continued on page 5)

Moon Phases

January 15 2010



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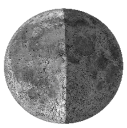

February 5 2010

Wavelengths of Light

Visible light is composed of many different colours. You can see these colours in a rainbow. Find drops of water in the air refract the Sun's light causing it to show us all the visible colours. The mnemonic for remembering the order of the colours is a fake person's name: Roy G. Biv.

Red: 650 nm
Orange: 590 nm
Yellow: 570 nm
Green: 510 nm
Blue: 475 nm
Indigo: 445 nm
Violet: 400 nm

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Find the Polaris newsletters on the internet at: www.patusratus.ca/Polaris

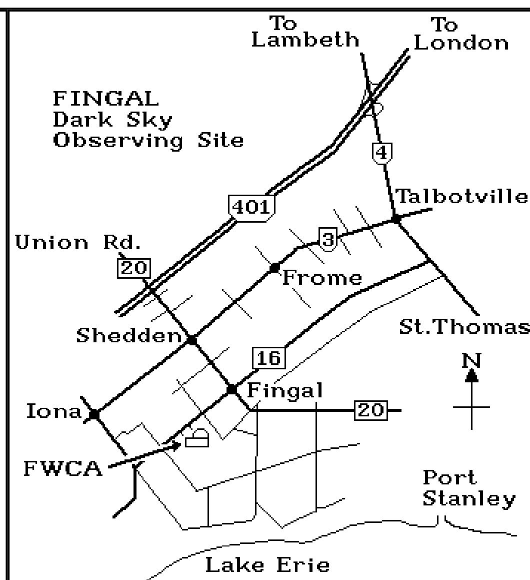
LONDON RASC MONTHLY MEETINGS

The London RASC group meets at Fanshawe college in London Ontario, September through July on the third Friday of the month at 19:00. They meet in room B1073.

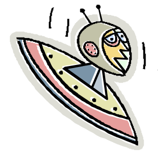
Everyone interested in astronomy is invited to attend and enjoy our guest speaker, member activity and observing reports, announcements of new discoveries and upcoming events, telescopes and telescope accessories show and tell, and other fun activities. Have a look at our future and past activities on our website to see what we are doing.

Parking is free on Friday evenings, and there is plenty of room in the east parking lot off Oxford St. and parking spaces on the south side of B building. Enter the college by B building doors near Oxford Street, just west of the bus stop. College signs at key hallway locations will help you find us.
The London RASC webpage can be found at:
www.rasc.ca/London

They have a preferred observing site at Fingal Wildlife Management area.



Sky Events for January 2010 and February 2010



January 15 Annular solar eclipse (Africa Asia)
January 23 Double shadow transit on Jupiter
January 25 Moon 0.03° N of Pleiades
January 27 Mercury greatest elongation
January 27 Moon 0.8° N of M35
January 29 Mars at opposition
January 30 Large tides
February 2 Zodiacal light
February 7 Antares 1.1° S of Moon
February 12 Mercury 2.0° S of Moon
February 18 Vesta at opposition

Mercury is in the morning sky
Venus is not visible
Mars is visible most of the night, going from Leo into Cancer
Jupiter sets by mid evening
Saturn rises near midnight
Uranus sets in late evening
Neptune is low in the western sky in the evening

R.A.S.C. London Centre Library
Books of the Month January 2010
By Robert Duff

In order to make our library collection available to members, I bring three books to our general monthly meetings. These "Books of the Month" are available for loan, to be returned at the following monthly meeting.

The books for January 2010 are as follows:

Burnham's Celestial Handbook: an Observer's Guide to the Universe Beyond the Solar System, by Robert Burnham. Revised and Enlarged Edition. c1978.

Volume Three, Pavo—Vulpecula.

Here be Dragons: the Scientific Quest for Extraterrestrial Life, by David Koerner, & Simon LeVay. c2000.

Universe on a T-shirt: the Quest for the Theory of Everything, by Dan Falk. c2002.

For a complete listing of our library collection please see our RASC London Centre Web site at: http://www.rasc.ca/london

If there is a particular book or video you wish to borrow, please feel free to contact me by telephone at (519) 439-7504 or by e-mail at rduff@sympatico.ca

London Astrophotography Email List

London Centre has a new email list with the purpose of being a forum for astrophotographers to communicate with and get assistance from other members on images that are being worked on.

If you are interested in, the URL to join is:

http://www.rasc.ca/mailman/listinfo/london-imagers

As this is list is about imaging, there will be no restriction on attachment size and therefore **email messages may be very large.**

Exploring the Stars, Cronyn Observatory
December 17th, 2009—January 14th, 2010
By Robert Duff

Please note that I attended all these Exploring the Stars events, bringing the RASC London Centre's photographic display and setting it up and laying out some London Centre brochures.

1st Ingersoll Baden Powell Traditional Explorers, December 17th, 2009

Cloudy skies greeted 27 visitors, including 17 children and 10 adults, from the 1st Ingersoll Baden Powell Traditional Explorers, for Exploring the Stars at the Cronyn Observatory, Thursday, December 17th, 2009. Graduate student Amanda Papadimos began her digital slide presentation, "Constellations," shortly after 6:30 p.m. This was followed by Amanda showing them the red light on the communications tower in south London through the big 25.4cm refractor in the dome, using the 32mm Erfle eyepiece (137X). I showed them the weather vane on the roof of the Engineering building through the RASC London Centre's 25.4cm Dobsonian, using the 17mm Nagler eyepiece (67X). Amanda handed out Galileo Moment cards down in the lecture room afterwards. Everybody had an enjoyable and informative evening. People were gone and we closed the Observatory around 7:40 p.m.

27th London Sparks, January7th, 2010

Cloudy skies with snow flurries greeted the 27th London Sparks as they arrived at the Cronyn Observatory on Thursday, January 7th, 6:00 p.m., for an evening of Exploring the Stars. There were 32 visitors in all, including 18 children and 14 adults. Graduate student Emily McCullough made her digital slide presentation, "Constellations." This was followed by the activity, "Rocket Races," with the Sparks making model rockets from plastic water bottles, which were then attached to a cardboard tube and propelled along a nylon rope with air rushing from an attached balloon.

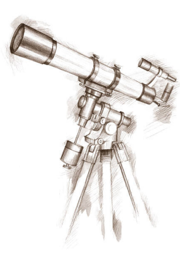
Since the lecture room table was already taken up with materials for the "Rocket Races" activity, I set up the RASC London Centre's photographic display and IYA2009 poster board on the table in the Observatory dome.

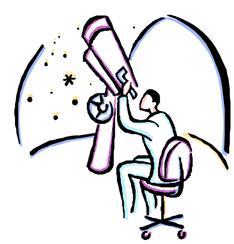
I gave the Sparks, their leaders and other adults, tours of the big 25.4cm refractor in the dome in two groups. Emily gave the leaders Galileo Moment cards to distribute. The evening ended around 8:00 p.m. with the Sparks doing a connect-the-dot constellation activity on paper with pencil crayons.

January Pocket Sky Atlas Challenges

With the New Year starts another orbit around the Sun. There 365 potential star gazing nights, and if we make an effort to plan ahead, maybe we can be successful. On those cloudy nights, take some time to draw up observing plans for a few weeks or even a month or two in the future, When you plan ahead, you can take full advantage of a clear night by already having an observing plan ready. Planning also lets you dig a little deeper into the atlas, past the usual 110 suspects and any wanderers that may be in the celestial neighbourhood
I've indexed the object to its star chart page.

Naked Eye:
Arneb page 16; Nihal page 16; can you make out the Throne of Jawzā'?
Sirius page 27, Procyon page 25
Small Scopes and binoculars:
M 67 page 24; NGC 2182 page 25





Larger Scopes:
Lower's Nebula page 25; Ced 34 (Cederblad catalog object) page 15

Bonus objects:
NGC 1817 and NGC 1807, Page 14; NGC 2403 page 21

For those heading south this winter:
Fornax Dwarf Page 6

Happy hunting.
John Kulczycki

(Continued from page 1)

Colour filters are really the domain of the planets. The only exception is the minus-violet or V-blocking or anti-fringing filter. It is used to reduce the violet fringing that you can see when using a standard refractor telescope.

I personally found the blue filter to be the best overall filter for me. Here is a list of colour filters and what others think they are good for. If you want the best filter for a job, you just have to try all the filters you have to see what works for you!

#8 Light Yellow: see detail in: maria on Mars, belts on Jupiter, Neptune and Uranus in general
#11 yellow green: see detail in: dark surface features of Jupiter and Saturn, maria on Mars and Neptune and Uranus in general
#12 Yellow: see detail in polar cap of Mars, enhance red and orange features on Jupiter and Saturn
#21 orange: increase contrast between light and dark areas on Mars, bring out the red spot on Jupiter
#25a Red: increase contrast on polar cap and dust storms on Mars, define features on Jupiter
#38a dark blue: increase contrast between clouds and red areas on Mars
#56 light green: increase detail on Mars, rings of Saturn and belts on Jupiter. General viewing of Moon
#58 dark green: increase detail on lighter parts of Jupiter, polar cap on Mars and cloud belts on Saturn
#80a blue: increase detail on Jupiter's bright areas, Mars clouds, Saturn, increase contrast on the Moon
#82a light blue: about the same as #80a blue but can also increase structure detail in galaxies

Broadband/narrowband filters are not colour filters so much but block/transmit certain specific frequency ranges. They quite often look like a mirror when you look at them in your hand.

OII filter: (Oxygen 3 filter) Lots of nebulae produces light from doubly ionized oxygen and this filter enhances the viewing. This is one filter that really performs. I use mine all the time when viewing nebulae. The difference in contrast is amazing!
H-beta filter: (hydrogen beta filter) These are designed for visual observation of extremely faint nebulae, such as the Horsehead, the Cocoon, or the California Nebula. They isolate just the Hydrogen-beta line of the spectrum.
LPR filters (light pollution filters) These block the wavelengths of light produced by mercury vapor lights, high and low pressure sodium vapor lights, often called skyglow. These filters can also be called Skyglow filters!
UHC filters (ultra high contrast filters) a light pollution filter which enhances the three nebula wavelengths

As you can see there is a lot to learn about filters! I think the best advice is to borrow some and try them out. Some of these filters can be quite expensive. I have heard some of the broadband/narrowband filters do not work so well in smaller telescopes because they block so much light the image becomes dim. On the documentation I received with my Orion OIII filter it said it was not recommended for telescopes less than 8 inches in diameter. Your mileage may vary.

Be picky about what photons hit your retinas: Use a filter!

The Ten Commandments for Amateur Astronomers

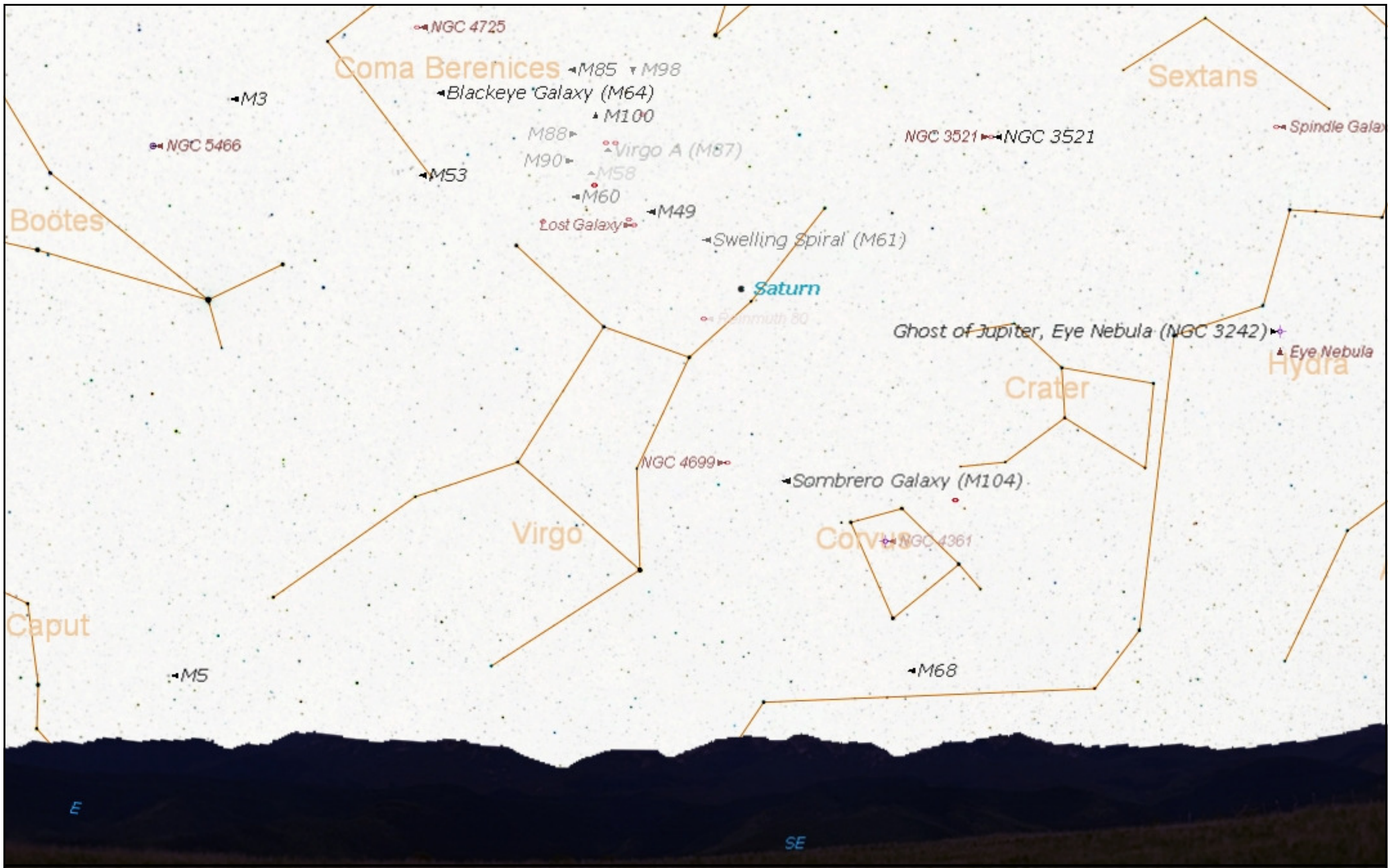
1. Thou shalt have no white light before thee, behind thee, or to the side of thee whilst sharing the night sky with thy fellow stargazers.
2. Thou shalt not love thy telescope more than thy spouse or thy children; as much as, maybe, but not more.
3. Thou shalt not covet thy neighbor's telescope, unless it exceeds in aperture or electronics twice that of thy wildest dreams.
4. Thou shalt not read "Astronomy" or "Sky & Telescope" on company time, for thine employer makes it possible to continue thine astronomical hobby.
5. Thou shalt have at least two telescopes so as to keep thy spouse interested when the same accompanies thee under the night sky or on eclipse expeditions to strange lands where exotic wild animals doth roam freely.
6. Thou shalt not allow either thy sons or thy daughters to get married during the Holy Days of Starfest.
7. Thou shalt not reveal to thy spouse the true cost of thy telescope collection; only the individual components and that shall be done with great infrequency.
8. Thou shalt not buy thy spouse any lenses, filters, dew shields, maps, charts, or any other necessities for Christmas, anniversaries, or birthdays unless thy spouse needs them for their own telescope.
9. Thou shalt not deceive thy spouse into thinking that ye are taking them for a romantic Saturday night drive when indeed thou art heading for a dark sky site.
10. Thou shalt not store thy telescope in thy living room, dining room, or bedroom, lest thou be sleeping with it full time.

Joking Off

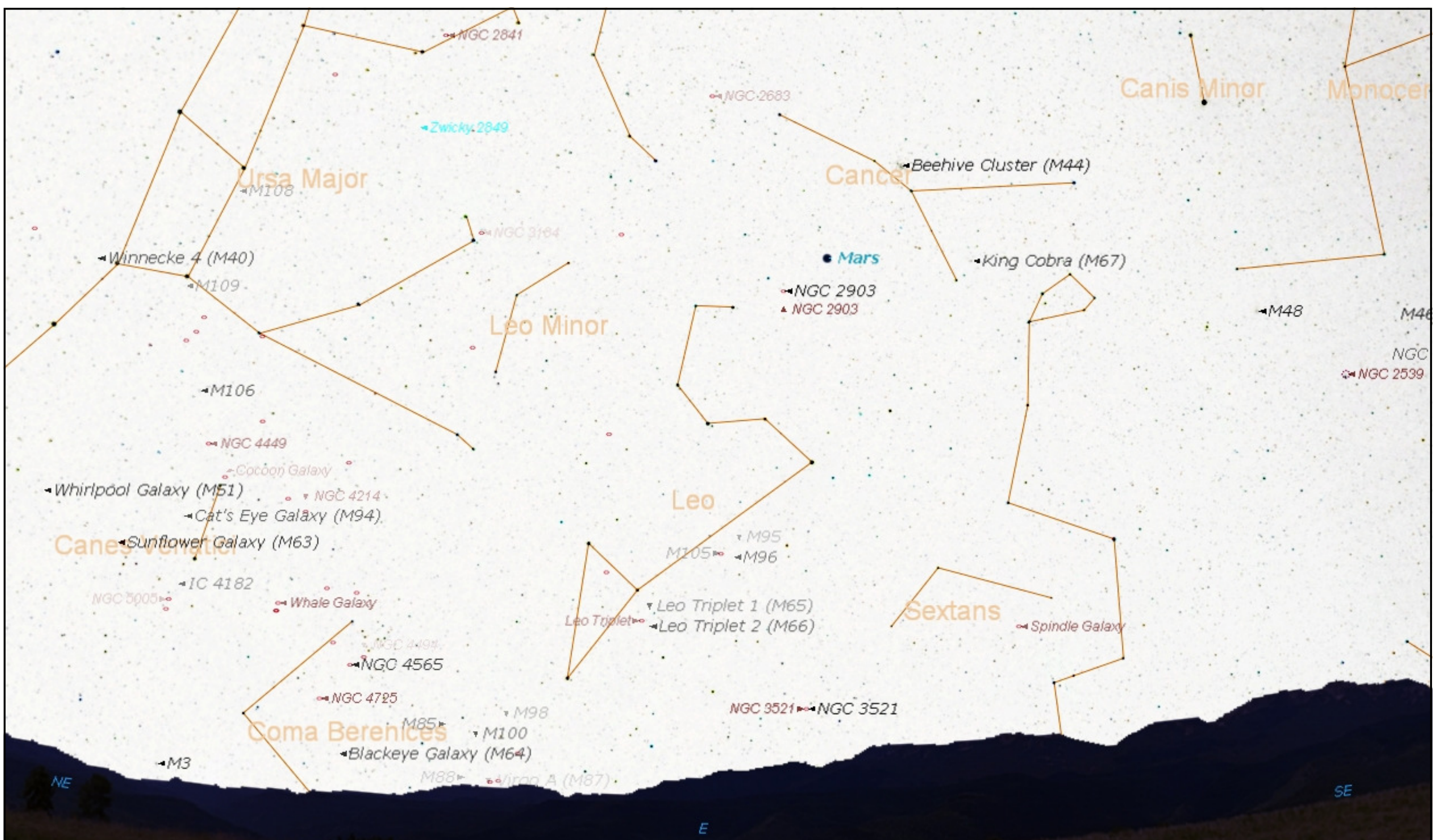
There is this farmer who is having problems with his chickens. All of the sudden, they are all getting very sick and he doesn't know what is wrong with them. After trying all conventional means, he calls a biologist, a chemist, and a physicist to see if they can figure out what is wrong. So the biologist looks at the chickens, examines them a bit, and says he has no clue what could be wrong with them. Then the chemist takes some tests and makes some measurements, but he can't come to any conclusions either. So the physicist tries. He stands there and looks at the chickens for a long time without touching them or anything. Then all of the sudden he starts scribbling away in a notebook. Finally, after several gruesome calculations, he exclaims, 'I've got it! But it only works for spherical chickens in a vacuum.'

YOU MIGHT BE A PHYSICS MAJOR...

if you have no life - and you can PROVE it mathematically.
if you know vector calculus but you can't remember long division.
if you chuckle whenever anyone says 'centrifugal force.'
if you've actually used every single function on your graphing calculator.
if it is sunny and 22 degrees outside, and you are working on a computer.
if you always do homework on Friday and Saturday nights.
if you know how to integrate a chicken and can take the derivative of water.
if you have a pet named after a scientist.
if you laugh at jokes about mathematicians.
if the Humane society has you arrested because you actually performed the Schrodinger's Cat experiment.
f you avoid doing anything because you don't want to contribute to the eventual heat-death of the universe.
if you consider ANY non-science course 'easy.'



The view from London at 3am January 15



The view from London at 11pm January 14