

# skynews



*this month*

## **Jim Stilburn**

### **Telescopes for Amateur Astronomy**

**December 12, 7:30 PM, Elliott Lecture Theatre, Rm 060, UVic**

With the availability on the market of many affordable telescopes for amateur astronomy, the amateur is faced with many choices regarding the best type of telescope to use for various types of observing. I will be explaining the basic principles of telescope optics and how they relate to telescope performance. Also I will discuss how a telescope can be used to maximum effect, and also how to clean and care for telescope optics.

#### **Bio**

Jim Stilburn recently retired from the DAO after 25 years of service, which was preceded by 9 years with the UVic Dept. of Astronomy and Physics. Jim's work at the DAO entailed designing and testing new instruments for the major observing sites used by the Canadian astronomers. He has built several amateur telescopes, including 6-inch and 12-1/2 inch reflectors, a 5-inch refractor, and most recently binoculars with 4-inch lenses. He now spends his time working at the DAO as a visiting worker continuing research on anti-reflection coatings, as well as working on various projects in his home workshop.

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#### *observers group*

RASC Victoria Centre and the NRC have signed a License to Use Land Agreement which gives members of Victoria Centre expanded access to NRC property on Observatory Hill.

If you are a member in good standing of Victoria Centre RASC, consider yourself an "active observer", and wish to take advantage of this opportunity, please send an email to the 1st or 2nd Vice President. More information on this program see: <http://victoria.rasc.ca>

*on the cover*

**John McDonald**  
**Orion Nebula**  
 November 30 2007

I took some test shots last night using the new Astrotrack mount with my modified Canon 350D and 300mm lens. I tried to image the whole region from the Horsehead to the Orion Nebula but the clouds moved in before I managed enough exposure for the horsehead. The nebula is pretty bright and came out fairly well. I cropped it from the full frame and have uploaded it to zenfolio.

Note that this crop is only 10 % of the area of the full frame and had only 29 minutes of exposure. Despite that it shows a fair bit of detail.

Modified Canon 350D with 300 mm lens on Astrotrack.  
 Exposure - 29 light frames at ISO 200 and f/4 for 60 sec each with dark and flat calibration.  
 Processing in ImagesPlus and Photoshop

*contact us on-line*

**Web Site**                      www.victoria.rasc.ca  
**New Members**            newmembers@victoria.rasc.ca  
**General Inquiries**        info@victoria.rasc.ca

*address change? information incorrect*

**Contact the National Office**

**Telephone** - 416.924.7973 or toll-free in Canada 888.924.RASC  
**Fax** - 416.924.2911  
**Email** - nationaloffice@rasc.ca  
**Post** - RASC, 136 Dupont Street, Toronto, ON M5R 1V2  
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*President's Report*

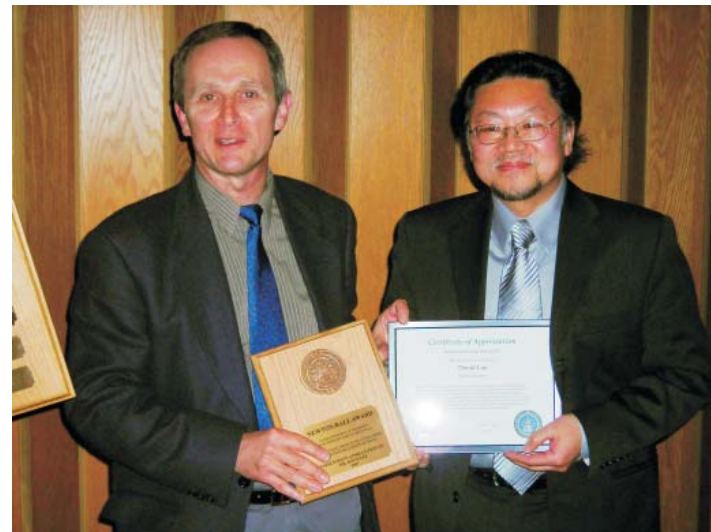
**President's Message**  
**December, 2007**



**The AGM**

Our Annual General Meeting for Victoria Centre was held on November 17, 2007. As usual, Gorge Vale Golf Club catering had a wonderful buffet dinner spread out for us. Of course, the whole purpose of this event is to elect a new Council, and Scott Mair our Past President took care of the nominations to Council. Most of us continue with our second term, however there was some shuffling of duties and we also have a new Treasurer - welcome Martin Shephard. Bruno Quenville is no stranger to Council, and has returned as a Member-at-large. Malcolm Scrimger and Dirk Yzenbrandt are also new Members-at-large.

I was very pleased to present the Newton Ball Service Award for 2007 to David Lee. David is a most deserving candidate, and a good friend. We also honored three of our fellow members whose considerable talents with astrophotography deserved some recognition: Guy Walton, John McDonald, and Charles Banville. Stephen Courtin was recognized for



*Joe Carr presents David Lee with the 2007 Newton Ball Service Award*

his ongoing volunteer work with our public outreach efforts over the past several years.

I was fascinated with the presentation about a new type of underwater observatory from our speaker, Brian Bornhold, Project Scientist, NEPTUNE Canada Regional Cabled Observatory.

If you didn't attend the AGM, you missed lots of interesting happenings! See the photos at <http://victoria.rasc.ca/events/2007/2007agm.htm>

### Observatory Project

I'm pleased to report we have raised \$11,275 to date - \$1,000 more than last month! Our Project Manager Bruno Quennville made a detailed presentation to the attendees at Astronomy Café on Nov 26th and signed up several volunteers. The construction should start in December, and Bruno expects the basic components of the building will be put in place quite quickly (unless Mother Nature gives us a harsh winter).



*AGM guest speaker, Brian Bornhold, Project Scientist, NEPTUNE Canada.*

### Observing

Comet 17/P Holmes continues to delight all who look up at Perseus on clear nights. Refer to Observing Highlights for our members' observations, sketches and photographs. Refer to our Zenfolio RASC Victoria Centre Astrophoto Galleries for photos and sketches of the comet and lots of other beautiful phenomena as well.

December 23rd holds a special treat for us, assuming the weather cooperates. Mars will be occulted by the Moon, and only those of us here on the west coast of Canada will see it! When Mars puts on a show for us, I always think of our good friend Ernie Pfannenschmidt. If he were still alive, I know he would be out in his driveway at every opportunity observing and sketching Mars. Mars is the largest it will appear until 2012, so even if you miss the occultation event, be sure to get out there and observe Mars this month.

## Spot the Great Andromeda Galaxy By Joe Rao SPACE.com Skywatching Columnist

Now that the bright Moon has left the evening sky, it's a good time to turn our attention to one of the most amazing sky objects.

This object was known as the "little cloud" to the Persian astronomer Abd-al-Rahman Al-Sufi, who described and depicted it in his Book of Fixed Stars in 964 A.D. But it may have been commonly known to Persian astronomers at Isfahan as far back as 905 AD, or even earlier. An expert on star nomenclature, Richard Hinckley Allen, once reported that it also appeared on a Dutch star map from the year 1500. Today we know it as the great Andromeda Galaxy.

Galileo's rival, Simon Marius, is usually credited with the first telescopic observation of this object in December of 1612. He described the nebula as an indefinite glow "like a candle shining through the horn window of a lantern (lantern)."

Even today, binoculars and telescopes reveal this "cloud" as little more than a smooth oval blur, which gradually brightens in the center to a star-like nucleus. While it will certainly look larger and brighter than with your eyes alone, there is little to suggest the grandeur of this object as it is often shown in long exposure observatory photographs. It's oval because from our vantage point we're viewing it not far from edgewise, but in fact, it's a nearly circular, flat spiral assemblage of star clouds.

The light from that "little cloud" is actually the total accumulation of light from more than 400 billion stars. It is listed as Messier ("M") 31, in Charles Messier's famous catalogue: hazy objects resembling comets, but later proved to be galaxies, nebulae and star clusters.



*A superb image of M31 and friends by RASC Victoria Centre member, Guy Walton.*

Here is the most distant object that can be seen with the unaided eye. M31 has been estimated to be nearly 200,000 light-years in diameter or one and a half times as wide as our own Milky Way galaxy. Its bright nucleus is the hazy patch

that is visible to the unaided eye. Like our own galaxy, M31 has several attendant satellite galaxies. Two of these: M32 and M110 can be picked out with low magnification in a small-to-medium sized telescope, in the same field of view as M31. There are yet two other smaller companions (NGC 147 and 185) which are much fainter and placed much farther away, close to the border of nearby Cassiopeia.

As you look at the Andromeda Galaxy tonight you'll be doing something that no one else in the world except a stargazer can do; you will actually be looking back into the distant past.

There is a very good reason that this patch of light appears so very faint to the naked eye. When you see it tonight, consider that this light has been traveling some 2.5 million years to reach you, traveling all that time at the tremendous velocity of 671 million mph.

The light you are seeing is around 25,000 centuries old and began its journey around the time of the dawn of human consciousness. The light you are now getting is at least 480 times older than the Pyramids; the distance it has traveled is so inconceivable that even to write the number of miles is all but meaningless.

When it began its nearly 15-quintillion (15, followed by eighteen zeros!)-mile journey earthward, mastodons and saber-toothed tigers roamed over much of pre-ice-age North America and prehistoric man was struggling for existence in what is now the Olduvai Gorge of East Africa.

For a very long time, M31 was popularly referred to as the Andromeda "Nebula." Although big reflecting telescopes such as Lord Rosse's 72-inch at Birr Castle in Ireland were in operation during the mid-19th century, it was not until astronomer Edwin P. Hubble finally resolved M31 into individual stars with the 100-inch telescope at Mount Wilson Observatory in 1923 that M31 was recognized as a distinct galaxy.

Yet there were those who many decades earlier suspected that M31 was much more than just a luminous cloud. Read this prophetic comment out of W.H. Smyth's *A Cycle of Celestial Objects* written back in 1844:

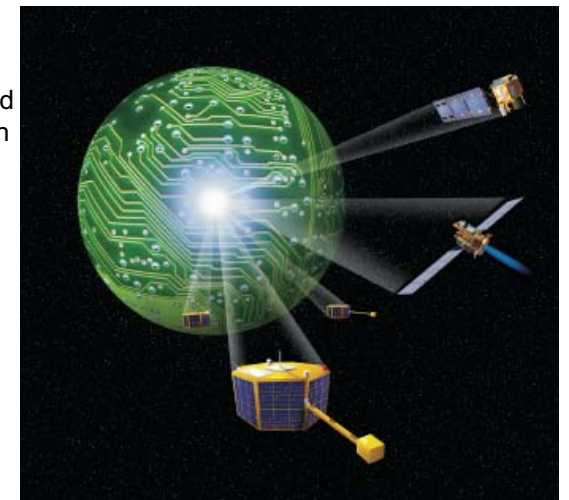
"Sir John Herschel . . . concludes that it is a flat ring, of enormous dimensions, seen very obliquely. It consists probably, of myriads of solar systems at a most astounding distance from ours, and affords a distinct lesson that we must not limit the bounds of the universe by the limits of our senses."

## Going My Way?

Not many endeavors require that you plan the mode of transportation before you even know what it is you are transporting. But weighing the physics and economics of getting any sort of cargo to space is a major part of designing a space mission.

It's one of the first issues that NASA's New Millennium Program (NMP) considers when planning a new mission. NMP has the forward-looking job to identify promising new technologies for space exploration. It then helps to mature the technology so it will be available to space missions of the future. If the technology cannot be tested adequately on Earth, the last part of this process is to actually send the technology into space. With carefully documented test results, future mission planners can confidently incorporate the new technology into their designs.

But where to begin? On call from the start, Linda Herrell is the New Millennium Program Architect. Given a list of proposed technologies, she has the job of figuring out the feasibility of wrapping a mission around them.



*NASA's New Millennium Program selects breakthrough technologies that will be of the greatest use to future space and Earth science missions and that are perceived to be risky to the first user.*

"We might be considering six or more technologies, anything from solar panels to imagers to masts for solar sails to more intelligent software. Of those, we may choose four. My job is to answer the question—can the selected technology be transported to and operated in space within the constraints of a low-cost technology validation project?"

Along with the list of possible mission payloads (the technologies), Linda also has a list of spacecraft to put them on, as well as a list of launch

vehicle parameters. All she has to do is try them out in every possible combination (of which there are thousands) and see what might work.

“Fortunately, we have a software tool to help with this analysis,” says Linda. When it comes down to it, her job is primarily to figure out how to get the technologies into space.

“Sometimes, it’s like figuring out how to get across town when you don’t have your own car. You have to get creative.”

She keeps a database of all possible options, including riding piggyback on another spacecraft, hitching a ride on a launch vehicle as a secondary payload, or sharing a launch vehicle with other NASA, Department of Defense, or even commercial payloads.

Her assessment is but one of a gazillion factors to be considered in planning a mission, but it is indeed one of the very first “details” that forms the foundation for the rest of the mission.

Find out some of the technologies that NMP has already validated or is considering at [nmp.nasa.gov/TECHNOLOGY/innovative-tech.html](http://nmp.nasa.gov/TECHNOLOGY/innovative-tech.html). Kids will enjoy watching Linda’s cartoon alter-ego talk about her job at [space-place.nasa.gov/en/kids/live](http://space-place.nasa.gov/en/kids/live).

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



*RASC calendars*

2008 RASC Observers Calendars are now available of only \$15 (it’s \$22 if you order it from the national website). You can purchase your calendar at our Monthly meeting.

*job jar*

If you are a member and wish to volunteer for one of these jobs, please contact the Council member indicated below.

**Social Coordinator at General Meetings** After Victoria Centre’s monthly meetings, many members adjourn to the Astronomy Lounge in the UVic Elliott Building for some socializing. We need someone to make tea and coffee and ensure there is a supply of cookies available. Skills: food shopping, making tea and coffee. 1 hr/mo. Sid Sidhu

**Star Party Coordinator** Victoria Centre’s Annual Star Party is planned to be held August 29-31, 2008 at Victoria Fish and Game Association’s property atop the Malahat. We need someone to act as overall coordinator for this event, and to report to Victoria Centre Council on a regular basis. Bruno Quenville is our former Star Party Coordinator, and is willing to help the new person for the first year. Skills: people and organizational skills. 2 hrs/mo, 3 full days during the event. See Bruno Quenville for info.

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## Astrophotography



**Joe Carr**  
**Moon - Mars**  
**Conjunction**

November 26, 2007  
*It was cloudy and snowing in the afternoon, but by 10:30pm the clouds parted and we experienced a beautiful clear sky, revealing this lovely conjunction of Mars with the Moon two days past full phase; they are only 1.4° apart.*

Camera: Un-modified Canon 30D dSLR  
Lens: Canon 400mm L f/5.6 telephoto at f/10  
Exposures: 1 each at 1/125 sec (Mars) and 1/640 sec (Moon)  
ISO: 800  
Mount: Manfrotto 3 axis head on Manfrotto tripod

**Charles Banville**  
**Godin/Newton Observatory,**  
**Pearson College**

November 29, 2007  
Optics: Canon EF 17-40mm f/4L USM. Used at 17mm f/4  
Camera: Canon 20Da on tripod  
Exposures: One single RAW light frame of 30 sec at ISO 3200. Taken at 20:01 PST.  
Process: White balance correction in Canon DPP. Noise reduction with Neat Image.



**David Lee**  
**Comet 17P/Holmes**

November 29, 2007

Telescope: Televue NP101is 101/5.4 modified with IDAS light pollution suppression filter  
Camera: Fuji Finepix S2 Pro  
Sensor ISO: 1600  
Exposure: 20 light frames of 30 seconds stacked with Registrar 1.0; noise reduction with Astronomy Tools actions and fine tuning with Adobe Photoshop CS2.



## RASC victoria council

this month

monday nights

**President/Website Editor/  
Email Lists**

Joe Carr  
president@victoria.rasc.ca

**First Vice President/  
Telescopes / Schools**

Sid Sidhu  
vp@victoria.rasc.ca

**Second Vice President**

John McDonald  
vp2@victoria.rasc.ca

**Treasurer**

Martin Shepherd  
treasurer@victoria.rasc.ca

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Li-Ann Skibo  
secretary@victoria.rasc.ca

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Charles Banville  
librarian@victoria.rasc.ca

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Scott Mair  
scottmair@gmail.com

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nationalrep@victoria.rasc.ca

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**New Member Liaison**

Bruno Quenville  
newmembers@victoria.rasc.ca

**Astronomy Cafe**

Fairfield Community Centre,  
1330 Fairfield, Victoria  
7:30-11pm  
Call John at 250.480.0928 for directions and information.  
New comers are especially welcome. Come and enjoy!

**ASTRONOMY  
CAFÉ**



second wednesday of the month

**Monthly Meeting**

7:30 PM, Elliott Lecture Theatre,  
Rm 060, UVic.

as sky and interest dictate

**New Observers Group**

Hosted by Sid Sidhu.  
1642 Davies Road, Highlands.  
Call 391-0540 for information and directions.

by email

**Observer/CU Volunteers/  
Members email lists**

Contact Joe Carr to subscribe to these email lists for important, timely, member-related news.