



NOVA

NEWSLETTER OF THE VANCOUVER CENTRE RASC

VOLUME 2002 ISSUE 1

JANUARY/FEBRUARY 2002

Leonid Meteor Storm	1
Astronomy and the Holidays	2
President's Message	3
Why? To Know...	6
Upcoming Events	7
Chasing the Leonids	8
New Observing Group	9

Looking Ahead

Remember, you are always welcome to attend meetings of Council, held on the first Tuesday of every month at 7:30pm in the G.S.O.

January: Chris Gainor: "Arrows to the Moon: How the demise of the Avro Arrow helped Apollo get to the Moon."

February: Ernie Pfannenschmidt: "Looking at telescopes differently," on how to choose the right telescope for your interest.

March: TBA

Next Issue Deadline

Material for the January Nova should be submitted by Monday, Dec. 31, 2001. Please send submissions to:

Gordon Farrell
(gfarrell@shaw.ca)

Leonid Meteor Storm by Doug Montgomery

It started on Friday the 16th when I got a phone call from Greg Price asking me if I was going to the Delta site on Saturday. I told him I would be there about 10:30pm. Greg informed me he was phoning everyone in the area to see if they would show up for the event. This kind of participation was welcome, as we did not do much promotion.

Saturday afternoon I loaded up my telescope and had a nap in preparation for a late night.

I arrived at the 72nd street site between 10:30 and 11:00 and there were 20 people there already. Greg had been there for a while and Mike Jensen and Wallace

Helter had their scopes set up on Saturn, Jupiter, and the Orion nebula.



Leonid smoke trail. Photo by Marcellus Redmond. 28mm lens; 5 minutes; piggyback tracked.

There were lots of people there by midnight, and at the peak

Astronomy and the Holidays

by Marc Verschuere

Many holidays and religious feasts have an astronomical origin or at least an astronomical connection. We just have another holiday period behind us. The religious feast in Christian society with the most detailed astronomical connection is, of course, Easter, with the date of the event determined by the Spring Equinox and the phases of the moon. The traditional end of the year festivities in our society are obviously linked to the Winter solstice. The actual origin of the exact date of December 25 is unknown to me. It probably goes back to the long forgotten traditions of earlier Christianity. But the date is safely set just after the possible dates of the Winter solstice. For us, New Year's is connected with this. But our New Year's date is of much more recent origin. It was introduced in England and its empire only in 1751. But now the two holidays are closely linked to the lengthening of the days; the returning of the light.

It is very understandable that a society without any theoretical knowledge of astronomy, and heavily dependent on agriculture, would celebrate the actual return of the sun. The sun stops its downward motion and begins to climb higher in the sky. We know the mechanics of this event quite well so we expect it to happen. But if all of this is mysterious it cannot be taken for granted that the event

will take place at all. If it does, it is a reason for celebration. However, the earlier societies did know the timing of the astronomical phenomena very well. We only have to refer to the alignments in buildings like Stonehenge and similar structures all over the world. But it must always have looked like a fantastic fact when the sun actually stopped and started to climb again. And in the dark days of winter, when the growing of crops is the only source of supporting life, this was worth a celebration.

We astronomers could of course be spoilsports and think of this time of the year as the shortening of the long dark nights, so good for observing. We do not really like all that light too much, even if most of us missed the comet Linear WM2 and the occultation of Saturn, thanks to the local climate. So much for the long dark nights of observing. One of the local newspapers had an editorial with an astronomical connection, something that does not happen very often. It did put the events on earth in a more cosmic context. Of course, if one thinks of the history of the solar system and its future development, then the events on earth look like puny and unimportant. And on a cosmic scale they may very well be. The destruction in New York does indeed not affect very much the development of cosmic history, but this is not exactly the relevant way to look at things. For us in our

daily lives we have to look at the details of this moment. Our lives occur on a totally different time scale. It is important for us that summer is coming. It is important that the sun is climbing again. For my life it is not very important that the sun will one day be a red giant.

This is the time of the year we are reminded of the star in the east that the magi saw, very much part of the Christmas lore. Again we could spoil the fun and the magic a little bit here. It is difficult for a star to guide anybody. Polaris and stars close to it can point out a direction because they do not move very much in their daily motion. Other stars can be used instead of a compass if one knows approximately where they set. That does indeed give a direction. I am thinking here of the astronomical methods used by the Polynesians, but that assumes a great knowledge of the regular motion of stars. It would have nothing to do with a heavenly object that all of a sudden appears out of nowhere. Stars guide you if you have chronometers and almanacs, but the star of the wise men is a good mystery. Something to guide wise men looking for the truth.

For me, it would have been important if I had seen that occultation of Saturn, or the comet. ✱

President's Message

Happy New Year Everyone!

This year looks like it will be full of things to see and do. We are in the process of putting together the planned events for the year—they may even make it into this edition of NOVA. We have a number of things that we hope will get members out to participate in, not the least of which is Astronomy Day. We will also be attending the Fraser River Festival and holding another event with the GVRD at Aldergrove Lake Park.

We are also launching the "Explore the Universe" Certificate program this year. The program has been developed by the Observing Certificate Committee at National office and Vancouver Centre is one of the centres that will be issuing certificates for completed programs. I will be giving a short introduction to the program at one of our upcoming meetings and will always have copies of the program and sample log pages on hand.

We will continue to have an excellent choice of speakers this year as Barry already has several in the works who are sure to entertain us. Who knows, we might even learn something. I would encourage any member who has a particular speaker they would like to hear to get in touch with Barry and let him know any particulars you may have. Please remember that we are an astronomical club so please keep your suggestions on

continued on page 7

2002 Vancouver Centre Officers

President

Craig Breckenridge 604-437-3103
cbrecken@shaw.ca

Vice-Pres./Webmaster

Bill Ronald 604-733-7036
ronaldb@shaw.ca

Secretary

Marcellus Redmond 604-533-1830

Treasurer

Marc Verschuere 604-986-1485
marcv@telus.net

Librarian

William Fearon 604-939-3184
fearonbil@hotmail.com

National Representatives

Pomponia Martinez 604-215-8844
pomponia@telus.net

Bob Parry 604-215-8844
robpar@ballard.com

Membership

Sean Roddick 604-946-1137
smrgeog@yahoo.com

Chair, CARO Committee

Eric Fuller 604-540-2373
eriful@ballard.com

Director of Telescopes

Phil Morris 604-734-8708

Public Relations

Vacant

Speakers

Barry Shanko 604-271-0615
barry.mail@intouch.bc.ca

Merchandising

Doug Montgomery 604-596-7058
moondoug@home.com

Nova Editor

Gordon Farrell 604-734-0326
gfarrell@shaw.ca

Councillors

Dan Collier 604-732-6046
Jason Rickerby 604-502-8158
Norman Song 604-299-7924

Trustees

Sally Baker 604-324-3309
Lee Johnson 604-941-5364

About RASC

The Vancouver Centre, RASC meets at 7:30 PM in the auditorium of the H.R. MacMillan Space Centre at 1100 Chestnut St., Vancouver, on the second Tuesday of every month. Guests are always welcome. In addition, the Centre has an observing site where star parties are regularly scheduled.

Membership is currently \$51.00 per year (\$26.00 for persons under 21 years of age) and can be obtained by writing to the Treasurer at the address below. Annual membership includes the invaluable Observer's Handbook, six issues of the RASC Journal, and, of course, access to all of the club events and projects.

For more information regarding the Centre and its activities, please contact our P.R. Director.

NOVA, the newsletter of the Vancouver Centre, RASC, is published on odd numbered months. Opinions expressed herein are not necessarily those of the Vancouver Centre.

Material on any aspect of astronomy should be e-mailed to the editor, mailed to the address on page 5, or uploaded to SpaceBase™ at 604-473-9358, 59.

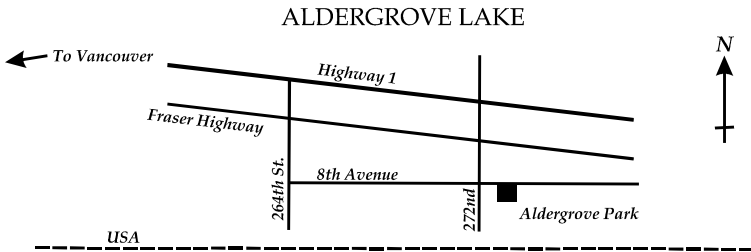
Advertising

Nova encourages free use of its classified ads for members with items for sale or swap. Notify the editor if you wish your ad to run in more than one issue.

Commerical Rates

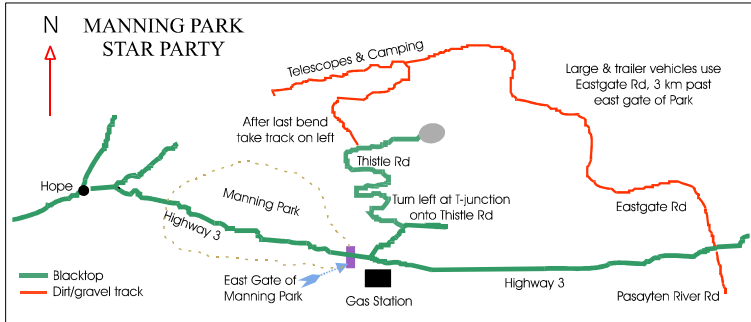
1/2 Page: \$25.00 per issue
Full Page: \$40.00 per issue
Rates are for camera-ready, or electronic files. Payment, by cheque, must accompany ad material. Make cheque payable to: RASC Vancouver Centre.

Observing Sites

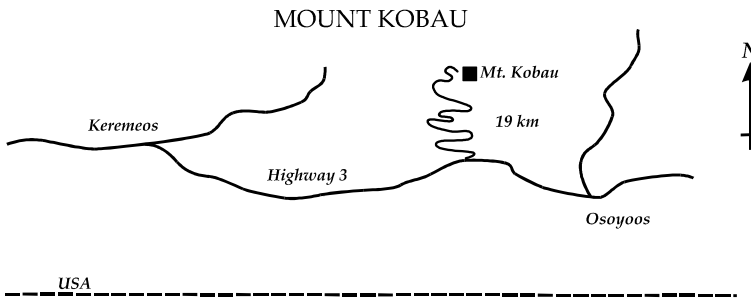


Dale McNabb Observatory in Aldergrove Lake Park (RASC Vancouver Centre's regular viewing site)

Contact Mike Penndelton (604-888-1505) or Howard Morgan (604-856-9186)



Site of the annual star party organized by the RASC Vancouver Centre



Site of the annual Mt. Kobau Star Party organized by the Mount Kobau Astronomical Society

continued from page 1

there were about 200 people cheering every time a bright meteor appeared. It was a good site to observe from because of the horizon. You could see all the way from the North Shore mountains to Mud Bay. The light pollution is not too bad at this site, but there is some. The advantages of this site are that it is reasonably dark and close to town.

As the night progressed more members showed up, Bob Parry, Pomponia and Tara Martinez set up sleeping bags in the back of Bob's truck and got comfortable. Later on I talked with Seamus Dunne and several other members, present and past.

Myself, I did not get a chance to count the meteors, but was told there were about 600 per hour—I was busy showing people the

planets in my scope. Judging by the oohs! and aahs! there must have been lots.

The parking area was full quite early but thanks to Hugh Gregory it was no problem for us at the end of the road. Hugh spent most of the night turning cars around before there was a problem. He later came to the end of the road to observe the meteors.

continued on page 5

continued from page 4

At about 3:00am people started to leave; I left a little after 4:00am. Mike Jensen was last to leave some time after 5:00am.

The event was very successful for us to show the public what we do. Several people showed interest in our club and future events. For me this was the best public event since Hale Bopp. Finally, I would like to thank all the members that helped here and all the different sites around the lower mainland and Fraser Valley for all there help, with special thanks to Greg Price for phoning and Hugh Gregory for directing traffic. ★

ASTROCOMPUTING

SpaceBase™ (604-473-9358,59). Affiliated since 1992 with RASC Vancouver, our link to RASC Net, RASC Members only chat area. Future data distribution hub for CARO Project. Features include latest HST images, current world space news and astronomy programs. Provides a file uploading facility for submitting articles and imagery to Nova.

LIBRARY

The centre has a large library of books, magazines and old Nova's for your enjoyment at the GSO. Please take advantage of this club service and visit often to check out the new purchases. Suggestions for future library acquisitions are appreciated.

RASCVC on the Internet

<http://members.shaw.ca/rascvan/>
or <http://www.rasc.ca/vancouver>

H.R. MACMILLAN SPACE CENTRE

The Pacific Space Centre Society is a non-profit organization which operates the H.R. MacMillan Space Centre and Gordon M. Southam Observatory. Annual Membership (\$30 Individual, \$65 Family) includes a newsletter, Discounts on Space Camps, special programs and lectures, Vancouver Museum Discounts, and free admission to the Space Centre. Admission to the Space Centre includes: Astronomy shows, Motion Simulator rides, multimedia shows in GroundStation Canada, and access to the Cosmic Courtyard Exhibit Gallery. For Membership information, call Mahi Jordao at 604-738-7827, local 237 for information. You can also reach them on the Internet at <http://www.hrmacmillanspacecentre.com/>

MEMBERSHIP HAS ITS PRIVILEGES!

New members, did you know? The Vancouver Centre has 6 telescopes available for loan free of charge! We have telescopes ranging from 3" to 10" diameter. For more information call Phil Morris, Director of Telescopes at 604-734-8708, or see him in the lobby of the GSO after the members meeting. The loaner period is for one month only. All telescopes are to be picked up and returned after the members meeting. No telescope will be allowed to circulate outside of these meetings!

Your greatest opportunity as a member of the R.A.S.C. is to take advantage of the company of other enthusiasts to increase your knowledge, enjoyment and skill in astronomy.

The best thing you can do to gain the most from your membership is to get active! Take in the club meetings; engage other members with questions; come out to observing sessions (also known as "star parties"), and, by all means, volunteer to take part in our many public events.

Observing takes place at the Dale McNabb Observatory in the Aldergrove Lake Park, located in Langley, on 8th Avenue, just east of 272nd Street. We are there most clear nights. Contact Mike Pennedlton at 604-888-1505 or Howard Morgan at 604-856-9186.

RASC
1100 Chestnut Street
Vancouver, B.C.
V6J 3J9
604-738-2855

Why? To Know that There Exists a Domain Beyond Knowing

by Dan Collier

(second in a series)

I am a traveller. A dark night is a wilderness, and my telescope a machine to explore it. Finding a galaxy is a reward, for I move in a world so large one need never follow the same road twice.

Unknowable domains are a concept that Canadians of my generation can grasp physically. We are, after all, the custodians of much of the world's remaining wilderness. My imagination has often taken me to many wild places like the American Southwest, the Arctic, even the Moon, but an extraordinary experience during a flight to Europe may have forever damaged my ability to connect with the wilderness. It happened as the airplane surfed the jet stream along a polar route well north of "sixty," giving me my first opportunity to see my country's northlands.

Beforehand I looked up the constellations that would be visible from my window during the flight. But thanks to a bright navigation light on the wing's

trailing edge, not a single star was to be seen—only the lights of a few towns, and soon nothing at all. My wife nodded off, leaving me to face a host of unresolved anxieties alone. Petty concerns always follow travellers onto planes, but mine were much worse than usual. The noise and vibration invoked a feeling that the horizon, already limited by the starless darkness, was shrinking around my body, squeezing it. I was in the grip of a waking nightmare. Something darker than I could imagine was waiting for me just beyond that navigation light.

You see, my first career was in its final stages of collapse. As we winged into the night, hours from any airport, the stress finally caught up with me. A more embarrassing scene can hardly be imagined. Pain wracked my body. I writhed in my seat while the call went up among the passengers for a doctor. The two doctors who answered the call saw through my predicament and assured me that there was nothing wrong. The panic slowly loosened its grip; the pain subsided. I tried to get some sleep.

After the miserable, restless

period that followed, I pushed up the window shade and was stunned by the spectacle of dawn breaking over the ice deserts of Baffin Island. It had beauty beyond the power of words. As a youngster, I often tried to imagine the harsh lives of the men and women who lived there. A wave of emotions washed over me—awe, relief, thankfulness, belonging, loneliness. I was greatly moved, then saddened with the realization that this experience could come only once in a lifetime.

Today, my favourite observing site no longer seems remote. Civilization has encroached on it quite suddenly. Property development in British Columbia's dry valleys has brought light pollution, chain saws and trail bikes, and the risk of ruinous wildfires.

But to my mind, the jets are the most intrusive of all. By day, and much of the night, a constant rumble is heard overhead as jets fly over the radio beacon on the next mountain. No doubt their multi-layered plastic windows are filled with the faces of people admiring the country below.

Sic transit, gloria mundi. ✱

Upcoming Events

February

TBD – Public opening of GSO's new telescope

March

9 – Idea fair at Anmore Elementary School

15-17 – Messier Marathon at Boundary Bay

TBD – Artificial Star Party (may be in April instead)

April

20 – Astronomy Day

15-20 – Moon passes by all 5 visible planets

May

3 – Space Day

17-19 – 2002 GA in Montreal

June

2 – Fraser River Festival

7 – Sidewalk Astronomy #1 (rain day: June 8)

10 – Annular Solar Eclipse (45% in Vancouver)

July

5-7 – Manning Park Star Party #1

TBD – Manning Outreach

August

3-11 – Mt. Kobau Star Party

12 – Perseid meteor shower peaks; observation at Aldergrove Park

September

6-7 – Manning Park Star Party #2

October

4 – Sidewalk Astronomy #2 (rain day: Oct. 5)

November

18 – Leonid meteor shower peaks

December

10 – Annual General Meeting *

continued from page 3

topic.

There will be many changes this year on a number of fronts and one of the most predominant will be further refinements to our NOVA. This issue should see the new format in place and we continue to improve our electronic delivery. We have sent a letter to the Computer Use Committee at National with some suggestions to their database that will be of benefit to all Centres. Hopefully they will see the virtue in the changes we have proposed.

As this year gets off to a great start, I would like to take a couple of lines to remind people of a

couple of things:

When we as a Society attend any event, we are representing a respectable and recognized organization; this means we should present ourselves in a responsible manner. The manner in which we behave can have an adverse affect upon the Society as a whole as well as upon the individual that is representing us. People tend to remember the unbecoming incidents before they think of the well-mannered ones. Please act in a proper manner at all times when you are representing us, even to your friends.

The second thing that members should be aware of is that

we are representing the Society at all times, even when we are not performing some official task or function. Thus we should always be on our best behaviour when out in public. This does not mean we need to be formal and tight laced at all times, casual will suffice. What we choose to do in our own homes is one thing, but the image that is given to the public must reflect well upon us.

I look forward to meeting with members throughout the coming year and I hope that we will continue to forge ahead into new areas of learning and enjoyment.

*

Chasing the Leonids

by Gordon Farrell

So this was to be the big year for the Leonids, and I was going to be ready. I was determined to document the event. With this in mind, I decided to forego the local events in favour of darker skies. Our regular readers will by now have guessed that this brought me to my parents' home in Qualicum Beach. I had it all planned out. I would perch my camera atop my equatorial mount tripod, click in the drive, and capture the Leonids as they streaked through trail-free vistas of background stars. That was going to be great! As luck would have it, this was the one instance where I would have been better off with the light pollution. Why? Well, let me tell you.

As I pulled up to my parents' home and got out of the car, I looked skyward, just to reassure myself that there would be a show to see. I was rewarded with a spectacular view; even the Milky Way was visible through the glow of the street light at the end of the driveway. So far, so good. As the night wore on, I would periodically poke my head out the window to check the skies. Ten o'clock and all's well. Eleven o'clock and all's well. Midnight and all's well (even an early Leonid to whet my appetite). One o'clock—time to go. My brother, mother and I bundle up and head out the door (my father's marginal interest in things astronomical wasn't exactly kindled by the hour of the event, so he was content to

be briefed the following morning).

As I cart my equipment into the backyard, ready for a good night's viewing, my brother utters two terrible words: "It's cloudy." I looked up and saw he was right. Sometime in the last hour, a patchy layer of either low cloud or high fog had rolled in from the straight. On the bright side, there were many holes in this fast-moving marine cloud cover, and we could periodically catch glimpses of various regions of the sky. Orion here, Leo there, but each would come and go all too quickly. During a period when Orion was obscured, half of the sky lit up with a brilliant flash from that corner of the sky, as if lightning has struck. Oh, how I wish I had seen the source! From what I've seen from other people's observations, I'm sure this flash would have left a "smoke trail," a meteor trail that can hang in the sky for up to 30 minutes, twisting and swirling in the upper atmospheric winds.

Given the conditions, we had a dilemma. Should we stay at the house and hope for a solid break in the clouds, or hop in the car and drive around, hoping to find a clear area. After some humming and hawing, we decided to take to the streets. With my mother driving, my brother riding shotgun, me in the back seat with an overhead view through the hatchback, and the tripod in the trunk, we started driving inland towards Coombs. We kept driving inland for about 15 minutes, as I watched the

clouds thicken overhead. Getting discouraged, we turned the car back towards the water, heading towards Parksville, then on back to Qualicum.

As we drove along the water north of Parksville, a miraculous event occurred. As if by magic, the clouds simply vanished. By this time, it was about 1:50am, and the show was well underway. Through the hatchback window, I could see meteor after meteor streaking overhead. Since I was the only one with a really good view, my play-by-play reports were unappreciated by my fellow travellers. Panic ensued as we tried to find a place to get off the road so we could watch the show. Our first candidate, a commercial marina, proved unsuitable as the parking lot was doing its best impression of daylight. All was not lost, as there was an incomplete housing complex just across the highway from the marina. Sure, there were some streetlights, but we found a vacant lot, stopped the car, and walked out into the waist-high grass to observe the peaking storm.

The show was phenomenal. Meteor after meteor streaked by, most of them bright fireballs. The best activity seemed to be in and around Orion. Being about halfway across the sky from Leo, this was the area of the sky with the longest meteor trails; some of them stretching halfway across the sky. One such meteor's trail

continued on page 9

New Observing Group and Initial Targets

by Craig Breckenridge

As a new approach to encouraging observing in our Centre this year, we are going to hold regular observing nights from the Boundary Bay site at the south end of 72nd (see the map on the web site [*Editor's note: a map will appear in NOVA in the next issue*]). We will start by going over the new Beginning Observer's Certificate Program and will graduate to the other certificate programs dependant on experience level. The first two certificates (The Explore the Universe Certificate and the Messier Certificate) should be fairly easy for most members to obtain and there will be experienced observers at the site on most nights. We plan to hold these regular sessions on Thursday

nights starting about 8:30 to 9:00 PM, meeting at the foot of 72nd. We will hold these on every clear Thursday throughout the year and will start with the first on Thursday, January 10th, 2002 (weather permitting). Anyone who is interested in attending is welcome to come out. The initial group of us who are planning to attend are a rather eclectic bunch and the conversation will be interesting and fun.

In order to get things off to a good start, I will write a series of articles basically listing the Explore the Universe program. I would encourage anyone with access to the Internet to visit the Certificate program site at the National web page in order to get the full program. Due to the large volume of printed matter required

to fully cover the program, I will not be printing out the complete package. I can provide the program in Adobe PDF format if you have a computer but no Internet access.

The first section of the Explore the Universe Certificate is the section on Constellations and Bright Stars. The Committee has provided 24 target objectives of which 12 are required for the certificate. The first page is the explanation to the program and the abbreviations used. I will list only the Constellations and the bright stars within the constellation. Much greater information is available in the Explore the Universe Certificate package.

continued on page 10

continued from page 8

persisted in the sky for a good 30 seconds—long, but not long enough to be distorted. Even the grouse in the nearby marsh seemed impressed.

I also noticed something when one of these long meteors zipped by, but didn't pay it much attention at the time (assuming I imagined it). As the meteor passed, I heard a faint hissing sound. It turns out that many people report hearing such sounds, but until recently, there was no explanation for it—whatever sound waves a meteor might cause can't travel that far, and certainly not that fast. The current theory is that some meteors emit very low frequency radio

waves as they ionize the atmosphere, and that field is converted into "electroponic sound" by suitable transducers on the ground like aluminum foil, pine needles, dry, frizzy hair, and, presumably, waist-high grass.

We stayed out in the field until around 2:15, by which point the storm was dying down a bit and our miracle hole was filling in again. Assuming the night was over, we piled back into the car and headed for home. But the clouds had other plans. Back at the house, we found the magic hole again! The show was picking up again, so I grabbed the tripod and decided to try taking some pictures after all.

Funny thing about photographing meteors. I would never have guessed they were so camera shy. It seemed that the best way to get the meteors to stop falling in a certain area of the sky was to point my camera at it. I tried chasing them around the sky for a while, and thought for sure I had captured a couple of them, but alas, all I photographed were stars. All I can offer as advice for prospective meteor photographers is to use a wide-angle lens instead of the standard 50mm.

All in all, I would still have to call this a good Leonid experience, but if it's clear next year, I'll stick to the mainland. ✪

continued from page 9

Season: Spring

Ursa Major (The Great Bear);

Bright stars: Dubhe and Merak.

Leo (The Lion); Bright Stars: Regulus and Denebola.

Virgo (The Maiden); Bright Star: Spica.

Libra (The Scales); Bright Stars: Zuben El Genubi and Zuben Eschamali.

Bootes (The Herdsman); Bright Star: Arcturus.

Ursa Minor (The Lesser Bear); Bright Stars: Polaris and Kochab.

Season: Summer

Scorpius (The Scorpion); Bright Star: Antares.

Hercules (Hero of Greek Myth); Bright Star: Ras Algethi.

Sagittarius (The Archer); Bright Star: Nunki.

Lyra (the Lyre or Harp); Bright Star: Vega.

Aquila (The Eagle); Bright Star: Altair.

Capricornus (The Sea Goat); Bright Stars: Al Giedi and Dabih.

Cygnus (The Swan); Bright Stars: Deneb and Albireo.

Season: Autumn

Pegasus (The Winged Horse); Bright Star: Markab.

Andromeda (Cassiopeia's Child); Bright Star: Alpheratz.

Cassiopeia (The Queen); Bright Star: Schedar.

Aries (The Ram); Bright Stars: Hamal and Sheratan.

Perseus (Rescuer of Andromeda); Bright Star: Mirfak.

Season: Winter

Taurus (The Bull); Bright Star: Aldebaran.

Auriga (The Charioteer); Bright Star: Capella.

Orion (The Hunter); Bright Stars: Betelgeuse and Rigel.

Canis Major (The Big Dog); Bright Star: Sirius.

Canis Minor (The Little Dog); Bright Stars: Procyon and Gomeisa.

Gemini (The Twins); Bright Stars: Castor and Pollux.

As you can see from the list, these are all naked eye objects that can be seen from almost anywhere in the Lower Mainland at some point in the year. We will have charts on hand and will confirm you have found the listed objects for you. This is a great way to learn the sky if you are a beginner and a good way to practice your teaching skills if you are experienced.

One of the things that is strongly encouraged is to start a log book to record your observations. These can be in almost any form but the Observing Committee has provided us with a sample that contains most section you would require to fully record your experience. I will bring copies of these sample forms to meetings so you can pick one up and reproduce it at your leisure. Again, I would encourage all observers to get out and do some looking up. We have a lot of fun trying new targets and as I said above, the conversation can be quite interesting. ★

Members' Gallery



Marcellus Redmond

Leonids emerging from the radiant (the 2 meteors are enhanced in the inset images).

28mm lens, piggyback mounted for tracking;
5 minute exposure.

Marcellus Redmond
Leonid in Orion (the meteor is enhanced in the
inset image).

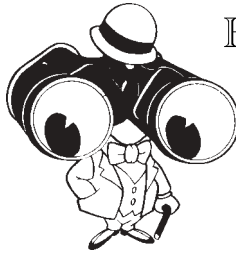
28mm lens, piggyback mounted for tracking;
5 minute exposure.



RASC MERCHANDISE

Available for purchase after meetings:

Calendars	\$12.00
Beginners' Guides	\$15.00
Observers' Guides	\$20.00
Star Charts	\$10.00
Cloth Crests	\$11.00
Lapel Pins	\$ 6.00
L.E.D. Flashlights	\$22.00



HARRISON SCIENTIFIC INSTRUMENTS LTD.

**Telescopes - Binoculars
Microscopes & Accessories
Weather Instruments**

DEALER FOR

**ZEISS • PENTAX • CELESTRON •
BUSHNELL/BAUSCH & LOMB • SKYWATCHER •
OLYMPUS • STEINER**

CD-ROM Astronomy Skymaps for PC's
"Like New" Consignment Equipment

1859 West 4th Avenue, Vancouver, BC V6J 1M4
tel: 604-737-4303 fax: 604-737-4390
e-mail: harscope@direct.ca

Vancouver Telescope Centre

Telescope, Binocular, Microscope Specialists

PROPRIETOR JOHN HARTLEY

2565 Yew Street, Vancouver, B.C. V6K 2E3

Phone 604-738-5717

New

Telescopes, Binoculars, Spotting
Scopes and accessories by

**MEADE
CELESTRON
BAUSCH & LOMB
OMCON-KOWA
BUSHNELL
SWAROVSKI-STEINER
SWIFT-PENTAX
CARL ZEISS-NIKON
SKY WATCHER
VISTA ANTARES**

Assorted eyepieces, barlows,
star diagonals 0.96" - 2"

New and second hand

Visit our Web site at

www.vancouvertelescope.com

e-mail: john_hartley@telus.net

Second Hand

Omcon 813SV 5"	\$ 399.00
Omcon 119DRG. 93mm/E/M M/drive	\$ 500.00
Pentax 65ED. E/M, accessories	\$ 900.00
Celestron G-N8 E/M, accessories	\$ 1500.00
JMI NGC Micro-max (C8/GP mount)	\$ 300.00
Meade 4" Ring Tube C/Weight	\$ 45.00
Meade APO Universal Thread Adaptor	\$ 39.00
Meade 2080 8"SC + many accessories	\$ 2500.00
Sky Instruments E/mount, M/drive, tripod	\$ 99.00
Ortho 1 1/4" 4/7/12.5mm	each \$ 39.95
1 1/4" colour filters	each \$ 13.00