

Seasons Change, and So Do We

by Stan Runge, President

With so many positions open for change this year, it's a great time to get involved or reinvolved with Centre activities. If you're short on time but long on desire, a Councillor position is a good way to participate without divorcing yourself from your other commitments.

Duties: Executive Council

The *President* arranges and presides over council and Centre meetings. The president is an *ex officio* member of all committees.

The *First Vice-President* assists the President in all duties, assists with and directs the business and affairs of the Centre, and also presides over all council and Centre meetings in the President's absence.

The *Second Vice-President* assists the President and First Vice President in all duties of the Centre.

These executive council jobs prerequisite nominees to be members in good standing for two years prior to nomination.

1994-1995 Positions — Winnipeg Centre, RASC

Position	Current Member	Status
President	Stan Runge	OPEN/2yr term
1 V.P.	Paul Paradis	OPEN/2yr term
2 V.P.	Scott Young	OPEN/2yr term
Treasurer	Chris Brown	no set term/ agreed to stay
Secretary	Gil Raineault	no set term/ agreed to stay
Councillors	Andora Jackson	to serve 2nd year of term
	Mike Wegner	to serve 3rd year of term
	Chris Rutkowski	to serve 3rd year of term
	Kevin Black	to serve 3rd year of term
	Guy Westcott	OPEN (can serve 2nd term)
	Jay Anderson	OPEN (can serve 2nd term)

Councillors

RASC Councillors assist in public observing and other public relations activities, act as a contact person for Centre and astronomical information to members and the public, and fulfills other duties as delegated by the executive council.

A seat as Councillor prerequisite nominees to be mem-

bers in good standing for one full year prior to nomination.

To nominate a current member for any of the above positions, or to get more information about the open positions, contact nomination committee chairman Chris Brown at 775-6392. Your participation is what makes our Centre practical and fair for all members. ●

Out & About

Upcoming Manitoba Planetarium Events

China Star

Starting September 20th, 1994

This latest planetarium show will examine the wonders of the ancient Chinese astronomical and astrological universe.

Get into Space with Astronomy

Starting October 12th, 1994

This set of astronomy classes runs for six consecutive Wednesday evenings at the Planetarium. Our very own Bill Crosney is instructing. An excellent course for budding observers!

Course Cost: \$65

Nat'l Science & Technology Week

October 14th-22nd, 1994

To celebrate this week of science and technology, the Manitoba Planetarium will be holding an Open House on Saturday, October 15th. There will be a number of events, including observing sessions and live star shows.

For more information about Manitoba Planetarium events, please call 943-3142.

Scope For Sale

For sale: Celestron SP-C6, 6" Newtonian scope on a German-equatorial mount. With or without astro-photography accessories. This is a good scope; I'm just not finding the time for it. Chris Brown, 775-6392. ➤

Winnipeg Centre T-Shirts

I am currently measuring interest in Winnipeg RASC t-shirts. The shirt could be worn at special events, such as public star parties, and for Astronomy Day. The shirts would be sold at cost, as a part of our public relations and advertising activities. While the selling price has not yet been established, I imagine it will be in the \$12-\$15 range, taxes included. The final price will depend on the number ordered. The shirt will be of heavyweight black cotton with white lettering. It will sport the Bison asterism logo, with the caption 'R.A.S.C. Winnipeg Centre' underneath. Please see me at the September Meeting if you are interested, or give me a call at 253-4989. ➤

— *Gil Raineault*

Going to New Mexico?

Monday, October 17 is Comet Day at the HyperVelocity Impact Symposium (HVIS 1994), Sweeney Convention Center, 201 West Marcy Street, Santa Fe, New Mexico

Dr. Eugene Shoemaker will give the keynote address: 'The Crash of Shoemaker-Levy 9 Comet with Jupiter' Other interesting events

include an informal poster session, a series of presentations by modelers and observers entitled 'Impact on Jupiter: Models and Results' and technical sessions on planetary impact and space debris shields.

A buffet reception will be offered at the Eldorado Hotel

A special \$100.00 One-Day Registration Fee is being offered for this event. ➤

For further info and early registration contact:

Alita Roach

Los Alamos National Laboratory

MS P915,

Los Alamos, New Mexico 87544

Phone: (505) 665-6277 Fax: (505) 665-3407

email: alita@lanl.gov

Andora's Shrinking Corner

I do love it when I have no room left in which to ramble. Many thanks to Gil, Scott and Ken for their special assistance with this issue. As always, any member with an opinion, report, argument, proposal, notice, observation or apophthegm that needs to get out can submit their astronomical words on paper, diskette (almost any format will do) or e-mail.

As the nights get colder and darker, I expect all our observers will be looking up a lot more—so drop me a line (or two) about what you're seeing. And for those of you more comfortable near the fireplace, tell me about the astronomy-related book you're curled up with. It's a long winter!

Clear skies! — *Andora*. ➤

with their own scopes to observe and see if these "holes in Jupiter" really were visible in amateur instruments.

It took a while to set up the equipment and lay the cables, and to focus the scope before dark but finally, all was ready. The sun had just set, and Jupiter was visible to the unaided eye in a deep blue sky. It was that particular hue of deep blue, shading to indigo, that an amateur astronomer comes to know intimately: the curtain unveiling on a celestial drama.

Our first view of Jupiter floored the assembled audience. The most obvious markings on the Jovian disk were some irregular dark spots in the extreme southern hemisphere—the impact sites. They were easily seen on the monitor without any enhancement. There was a second or so of stunned disbelief, followed by a chorus of variations on 'Wow!' (some of which are not fit for printing).

A shout from outside told us that the spots were also visible in the smaller scopes parked outside on the observing pad. I spent the next several hours flitting between the video monitor and the scopes outside, observing these spots that we should have been able to see. The smallest scope that was present, a 6" reflector, easily showed the impact sites to even novice observers.

The greatest excitement came about the predicted time of impact V. The seeing had degraded as Jupiter sunk lower into the murky horizon, and there was a lot of scintillation. We saw a possible flash on the limb of Jupiter, and the dome erupted in shouts of 'Impact!'. However, after reviewing the tapes, it seems that we did not actually see an explosion of a cometary fragment. Other observatories with better sky conditions did not see an impact.

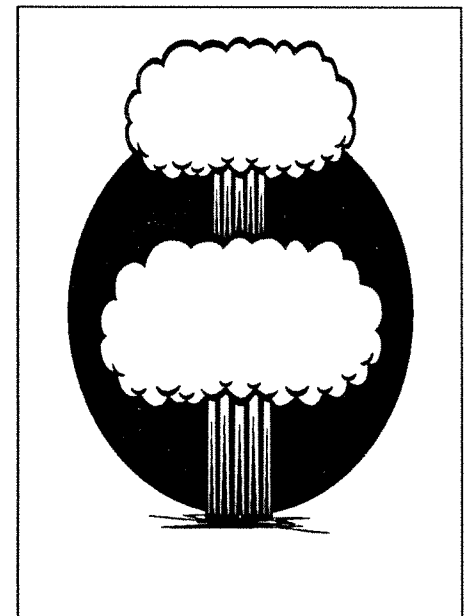
We got over three hours of video tape (just in case). You can see highlights of it at the September meeting, when I present a summary of 'the greatest hits.'

As we go to press, the nature of the dark spots is still uncertain (although astronomers using the Hubble Space Telescope have reported sulphur molecules at the impact sites). In the following months, astronomers will analyze nearly 5,000 images of Jupiter in an effort to learn as much as we can. Rob Landis suggested that the dark spots may be visible for a year or more, allowing us to track the winds of Jupiter's atmosphere with unprecedented accuracy.

This cosmic crash has a greater significance than merely providing fireworks for astronomers. Comets are pieces left over from the formation of the solar system, and they can tell us about the prehistory of our own Earth. Comets collided with

the planets as they formed, supplying water, ices and perhaps organic molecules. There is growing evidence that a comet slamming into the Earth 65 million years ago was responsible for the extinction of the dinosaurs, which may have paved the way for mammals, and eventually humans, to evolve. By studying this once-in-a-thousand-lifetimes event, we can watch a planet's recovery from such a catastrophic collision without experiencing it directly, and perhaps learn a little more about the origins of our own fragile planet. We will also be able to more accurately judge the effects such a collision could have on our modern Earth, and measure our own facilities for dealing with such a cataclysm.

Just in case. ●



Perseids *from page 3*

drinks and snacks and we were off to the observatory! We set up our stuff on the cement pad, opened the dome, got comfortable and waited.

We were not disappointed. Meteors were easily visible from the car during the trip out. They appeared all over the sky, right to the horizon, in all brightnesses and durations. It was true that most could be extrapolated back to around the constellation of Perseus. Some were quite dim, with almost no tail, but nothing else could move that fast. Others were the brightest things in the sky, with long, sparkling tails reminiscent of fireworks. Once (unfortunately I was inside looking at Saturn) my son observed what could only have been a fireball. He said it started overhead and streaked down until it disappeared behind the trees to the northwest of the dome. He said it was bright and had a long tail, but made no sound. We tried counting seconds between meteors. Ranging from three simultaneously to 35 seconds at the most, we guessed the average from 02:30 to 04:00 was 1 per 10 seconds, or 360 per hour! This, apparently, is what they mean by a *meteor storm*.

The clouds rolled in again at about 04:00, so we took a few looks at Mars through the C14 in good seeing, packed it up and went to bed contented. I am sure now that that was the best meteor shower I am likely to see for a while, and I

am doubly pleased that I could include it as one of my son's childhood memories. ●

BOOM! *cont. from the front page*

At 2:54PM CDT on the 16th of July, fragment 'A' of Comet S-L/9 slammed into the backside of Jupiter at 60km/second. The Hubble Space Telescope and numerous ground-based observatories, as well as nearly every amateur with clear skies, were watching the giant planet for any kind of hint that the impact had occurred. The conference delegates (who were in daylight for the first impact) waited breathlessly for the first Hubble images to come over NASA Select TV (kindly provided by the hotel).

The first press conference from STScI released the now-famous image of the 'hole in Jupiter'. I videotaped the entire conference (just in case) from my hotel room, holding a Minicam up to the TV (a bit wobbly, but not too bad). The excitement of the astronomers and scientists was mirrored in the two hotels full of conference delegates. I immediately called home to tell my family to watch TV, only to find that I had already received 3 calls from the media, requesting interviews. I did two interviews for Winnipeg radio stations from the hotel lobby that afternoon.

The reaction from the delegates was incredible. Believe it or

not, most Planetarium people are amateur astronomers at heart, and they congregated down at the beach, staring up at the bright point of light in the sky, or running around yelling, 'There's a hole in Jupiter!', to the amusement of the other people on the beach.

I flew home on the evening of the 17th, and immediately made plans to observe Jupiter. I had booked the C-14 at Glenlea for the night of July 21 (just in case) and wanted to do as much as possible that evening. Impact 'V', one of the few impacts clearly visible from Winnipeg, occurred that night. I planned and prepared and prayed for clear skies.

As the evening of the 21st approached, other impacts left even larger spots in Jupiter's atmosphere. Over the Internet, we received a few reports that the spots were visible in small telescopes. At first they were passed off as wishful thinking, but the number of reports steadily increased. I finally got a call from Susan Cannon in Calgary, who told me that she and Alan Dyer had observed the spots in a 4" telescope.

Wow.

To enable a large group to view the event, I decided to use the C-14 for video observing. With a camera graciously lent by the U of M, and my little TV, I set up to observe Jupiter. Over a dozen other members came out

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(cont. from previous page)

cific family, such as the goose or heron families.

The influence of astronomy on this kind of birdwatching is striking. Amateur birders note the time of each recorded observation, together with the direction of flight. The direction is noted by recording where the bird enters the moon, and where it departs, in terms of the nearest half-hour, on an imaginary upright clockface (in at 4:30, out at 10 o'clock). The size of the bird is compared to the size of the crater Tycho, and is recorded as 1/2 T, 1T, 2T, and so on.

Many thousands of birdwatchers participate in witnessing the annual parade of migration in just this manner. This activity had its heyday about 40 years ago when thousands of birders from over three hundred sites throughout North America participated in an annual count. Although not as common today, this pursuit remains popular within the community of amateur ornithologists.

When the Scrabble game ended, I invited my brood to witness this parade which is virtually invisible to the unaided eye. They pronounced it as 'neat' and 'cool' I continued observing alone for the better part of an hour, vowing to repeat the experience of seeing the annual bird migration in this fashion in the years to come.

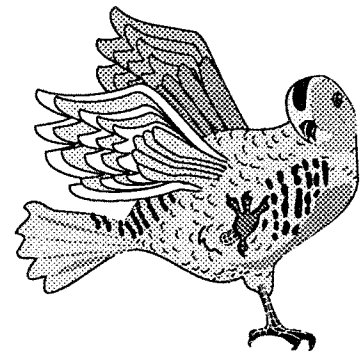
During the month of September, the chill in the night announces the first hint of fall. The natural sounds of summer nights begin to be replaced by the sounds of a season

in transition. The sound of birds overhead calling out in the darkness gives us the opportunity to sharpen our senses and observe first-hand one of Nature's grander wonders. In their excellent book, *The Backyard Astronomer's Guide*, Terry Dickenson and Alan Dyer refer to amateur astronomers as 'naturalists of the night, captivated by the mystique of the universe that is accessible only under a dark sky'. I like this definition of what we are. It suggests an openness to new experiences. The hoot of the owl and the yapping of the distant fox are just as much a part of that experience as is the gathering of precious photons from distant points of light.

Fall is a wonderful season for being a naturalist of the night, for experiencing new things. In ending, I would like to quote the renowned ornithologist and author Roger Tory Peterson: 'There is real drama in the procession of winged silhouettes crossing the whiteness of the moon toward an unknown destination'

Happy observing. ●

Thanks to Dr. Bob Nero for his assistance in the preparation of this article.



Astronomy for the Birds

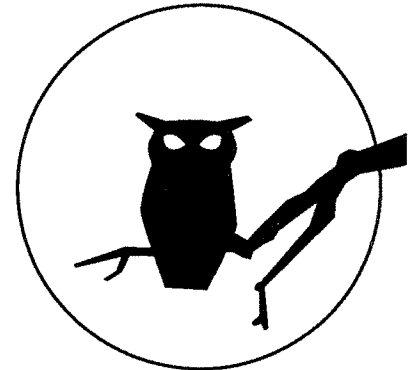
by *Gil Raineault*

The evening of Sunday, September 13, 1992 remains a memorable one for me, as on that night I discovered a new facet of my hobby through a serendipitous event. A delicious supper of roast chicken with all the trimmings capped off a perfect late summer day. I declined a challenge from my wife to join the family in a game of rough and tumble Scrabble, and went outside for some fresh air. The Harvest Moon in its fullness hung very low over my neighbour's house, while a gentle breeze spread the heavy, sweet scent of the petunias throughout the backyard. I decided then and there to do some observing. Over shouts of 'It's a word...not!' coming from the dining room, I set up a pair of 16x80 binoculars on a sturdy tripod on the patio and set about to observe the moon.

When the moon is full, many of its features seem to flatten and disappear, but this time of the lunar cycle sees the ray systems around several prominent craters become brighter and more obvious. Also, the time of the Harvest Moon allows the full moon to be seen in the early evening for several nights in a row, as there is a difference of only about 20 minutes in its rising and setting from night to night.

I settled in to observe. Within a few seconds, a bird flitted across the moon's face, then another one, then another! Soon after that, a flock of ducks in V-formation zoomed through my field of view, silhouetted against the moon's bright face. I decided to make five one-minute counts of the birds crossing my line of sight. I counted a total of 55 birds, with a high count of 17 for an elapsed time of 1 minute, and a low count of 8. I later found out that this rate of bird traffic over the moon is exceptionally high.

Many birds migrate at night. Most amateur astronomers are familiar with the honking of geese overhead at midnight, and also the sound of unseen songbirds in full flight. Not surprisingly, lunar ornithology is a pursuit actively practiced by some avid birdwatchers. The only requirements for this activity are a small telescope or binoculars, warm clothes, enthusiasm, and a thick skin to repel wise-cracks about this 'loony' pastime. Although many birds pass by in a fraction of a second, and although they are quite small (indeed invisible to the naked eye), it is amazing how clearly and easily they are seen through binoculars. In most cases, the birds cannot be identified, although the larger birds can often be recognized as belonging to a spe-



(continues...)

Please Mail To:

Nominations Committee

R.A.S.C. Winnipeg Centre

Room 110, St.Paul's College

430 Dysart Road

Winnipeg, MB R3T 2M6

Official Nomination Form for Election to RASC Winnipeg Centre Executive Council 1994/1995

I, _____ being a member in good standing of the Winnipeg Centre of the Royal Astronomical Society of Canada, hereby nominate Centre member _____ for the position of _____ for the 1994/95 membership year.

Signed this _____ day of _____, 1994

Signature _____

Witness _____

I, _____ being a member in good standing of the Winnipeg Centre of the Royal Astronomical Society of Canada, do hereby accept the nomination above.

Signed this _____ day of _____, 1994

Signature _____

Mail this form or a facsimile by October 1st, 1994 to:

Nominations Committee
RASC Winnipeg Centre
Room 110, St. Paul's College
430 Dysart Road
Winnipeg, MB R3T 2M6

Galileo and Magellan Update

Information from...

PUBLIC INFORMATION OFFICE
JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF
TECHNOLOGY
NASA
PASADENA, CALIF. 91109.
TELEPHONE (818) 354-5011

The first **Galileo** images of the July impacts of comet Shoemaker-Levy 9 on Jupiter were released during August. These were partial photometric scans of the fragment K event and a four-image sequence of the arrival of fragment W. This week the team is concluding a long-planned series of engineering activities, including preparations for software changes that will ready the spacecraft for its Jupiter approach, atmospheric probe entry and relay, and orbit insertion activities late next year. On September 9, the Galileo flight team will transmit the next operating sequence to Galileo, commanding the spacecraft to resume transmitting Shoemaker-Levy data stored on Galileo's onboard tape recorder. This will continue, with an interruption for solar conjunction, through January 1995. The transmissions may include more views of fragment W and more photometric scans on fragment K. Scientists will also be seeing infrared, ultraviolet and photometric data on the very large fragment G impact, permitting comparison with Earth-based observatory measurements.

Galileo is now 708 million kilometers (440 million miles) from the sun, a distance increasing by more than 400,000 kilometers (a quarter-million miles) each day. It is 222 million kilometers (138 million miles) from Jupiter, and a little more than 15 months from arrival at the giant planet. The spacecraft is operating normally, spinning at about 3 rpm, transmitting at 10 bits per second.

Controllers of the **Magellan** mission at Venus started final mission activities Thursday with two orbit trim maneuvers. The maneuvers lowered the altitude of periapsis (the closest approach to the planet) from 200 kilometers to 182 kilometers (124 miles to 113 miles). That activity began the setup stages for the "windmill" experiment planned for Sept. 6-9, and the final "termination" experiment activities planned for Oct. 10-14. Magellan's final gravity data acquisition continues successfully and will conclude on Oct. 9. The "windmill" and "termination" experiments will gain additional aerodynamic and atmospheric data for future mission designs.

Controllers are also managing the spacecraft power as the solar array performance continues to degrade. The loss of power appears to result from thermal fatigue caused by the many solar occultation periods during the past year. As it went in and out of sunlight, depending on the planet's position relative to the sun, the frequent changes from high to low temperature and back again caused some of the solar cells to fail. The loss of solar cells was expected as the spacecraft neared the end of its operational lifetime. The solar cycles and effect on solar cell strings have exceeded previous lifetime estimates. In many areas the spacecraft design life was two to three years and Magellan has operated for more than five years.

Controllers are hopeful the power situation can be managed through mid-October, but it is apparent that the Magellan spacecraft is close to the end of its useful life. Beginning on Sept. 6, the "windmill" experiment will reconfigure the solar panels to see how much torque is applied by Venus' very thin upper atmosphere. Controllers will see how much control torque they have to apply to prevent the spacecraft from spinning on its axis. The 'termination' experiment will be performed at three lower altitudes to gather data similar to the "windmill" experiment. In the final phase, the spacecraft's altitude will be lowered starting on Oct. 10. The spacecraft is expected to burn up in Venus' atmosphere by Oct. 14.

A Shower of Meteoric Proportions

by Ken Noesgaard

As I leafed through my newly arrived August issue of *Sky & Telescope*, I found an article describing an upcoming meteor shower on the 12th. 'Excellent', I thought, 'An event I have the equipment to see!' The article went on to explain that this was the Perseids, and was caused by the Earth passing through the debris left behind by Comet Swift-Tuttle. Furthermore, Swift-Tuttle last passed by in 1992, so the dust trail is fresh and the meteors should be plentiful.

Armed with this tidbit, I determined to learn what I could about observing this event. The same magazine held two other articles on how to observe a meteor shower. I was to have a watch set to an accurate time signal or a short wave radio set to time signals while I call out observations to a note taker. I didn't know how to approach this request with my wife, and I don't think my son is very good at dictation. So I decided just to go out and enjoy the fireworks.

I checked the magazine, the *Observer's Handbook*, and CompuServe's Astronomy Forum for info and times. Everyone seemed to have a different idea of when the ZHR (Zenith Hourly Rate—or time of the most meteors) would be. The publications placed the ZHR between 7h and 14h UT, Aug. 14. That worked out to 1 a.m. to 8 a.m. Friday morning—no

good for us working stiffs. Some chatter on CompuServe argued for Friday night, while others claimed it was all over by Wednesday. Confused, I decided to keep my job, and go on Friday night. I booked the observatory.

As Wednesday came, the sky threatened to foil all my plans. Thick clouds moved in from the north, accompanied by autumn-like cold and lots of rain. 'Great,' I thought, 'I already got to see this during the eclipse.' Battered, but not beaten, I waited to see what Friday would bring.

Friday came with no change in the weather. I picked up the key from Stan during a break in the downpour. He appeared amazed. The sky was grey to the horizon and I must have looked like the world's most deluded optimist. He had gone out during a brief break in the clouds the night before and figured he saw up to 60 per hour. I thought I would be happy with one per minute. I went home and watched TV and waited. At 11:00 p.m. my family went to bed, my 10 year old son agreed to let me wake him should the sky clear up.

At 1 a.m. I could see stars to the south, nothing to the north, I would wait 1 more hour to see if it stayed clear. At 2am the sky was clear. I woke Peter and asked if he wanted to come, he did. We quickly bundled deck chairs, sleeping bags, mosquito repellent, binoculars and the ghetto blaster into the car. One stop at 7-11 for hot

(see 'Perseids' on page 9)

**RASC/Winnipeg Centre
Executive Council 1993-94**

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261-9984

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775-6392

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883-2411

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255-5134

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269-7553

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255-4016

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453-2221

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Chris Rutkowski
269-7553

Observatory Director
Paul Paradis
883-2411

Observatory Bookings
Gil Raineault
253-4989

Winnicentrics Editor
Andora Jackson
775-7675

September

Members' Summer Roundup

Friday, September 9th

Jensen Theatre, St. Paul's College, University of Manitoba



September's meeting is a rich mix of information, opinion and discussion to close the door on the summer's events and look ahead to the future of the Centre.

Chris Brown will present his Polaris Study results, Scott Young will give us a multimedia review of the Great Comet Crash, Ken Nosegaard will discuss the Perseid Meteor Shower, Stan Runge and Guy Westcott will document the recent New Mexico Eclipse Expedition (complete with vacation slides), and Jay Anderson and Chris Brown will review the Centre's proposed Automated Telescope.

All this, plus a review of the Riding Mountain National Park Observing weekend, at the same affordable cost as before: free.

October

Annual Business Meeting & Swap Meet

Friday, October 14th

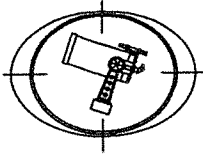
Jensen Theatre, St. Paul's College, University of Manitoba



The Annual Business Meeting is every member's chance to come out and talk back to the Centre's Executive and Council members. There will be a reading of reports plus a full Elections table (see elsewhere in this issue for more on the Elections.)

This year's meeting will also feature a swap meet. Bring your used, unused, or unloved astronomical goodies, in the hope that someone else will want them more than you do.

Guy Westcott will also show his tour video of Jim's Mobile telescope manufacturing plant. In this tour, given by Jim himself, you can see the construction of a one-meter telescope.



Winnicentrics

The Journal of the Winnipeg Centre of the Royal Astronomical Society of Canada

Jupiter Goes BOOM!

by Scott Young

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Deadline for the next issue:
October 24th, 1994



Back in March of 1993, an unusual comet was discovered by the team of Gene and Caroline Shoemaker and amateur astronomer David Levy. Dubbed Periodic Comet Shoemaker-Levy 9, this comet appeared to have broken up into about 20 pieces strung out though space 'like pearls on a string'. The cause of this breakup was a close approach to the giant planet Jupiter, whose immense gravitational force tore the comet apart and changed its orbit. After more observations were made, astronomers released the verdict: the fragments of Comet Shoemaker-Levy 9 were going to hit Jupiter between July 16 and 22, 1994.

The news sparked a flurry of activity. The newly-repaired Hubble Space Telescope cleared its schedule to observe the impacts. Ground-based observatories around the globe prepared a variety of observations to tell us more about the composition and dynamics of both the comet and Jupiter. Even amateur astronomers got into the act, watching Jupiter's multicoloured clouds

for signs of change.

As impact week neared, astronomers worked to predict what we might see. Most of the forecasts suggested that the Hubble Space Telescope might detect some white clouds left behind by the impacts, but nothing would be seen from Earth. The public was told that there was nothing to see, except by astronomers with very large telescopes.

I was in Florida, attending the International Planetarium Society conference, when the first two impacts occurred. The featured speaker at the conference was Rob Landis, head of the Moving Targets Group at the Space Telescope Science Institute (STScI) in Baltimore. One of Rob's presentations was on (what else?) the comet, and it provided updated impact times and data. When asked what would be the minimum-sized telescope needed to observe anything at all of the collisions, Rob replied, '2 meters.' But, he said, go and look anyways. 'We just don't know what's going to happen.'

(see 'BOOM!' on page 9)