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Address for Stardust:
Articles may be submitted prior to the deadline by E-mail to: stardust@worldgate.ca
Or by mail to: 333 Southridge NW, Edmonton, Alberta, T6H 4M9.
The phone number is (780) 433 - 1516.

October submit your articles for the October issue of Stardust by the due date of September 24, 1999.
Thank you very much.

On The Cover...
A pencil sketch done by Sherrilyn Jahrig depicting the fireball over Alberta as seen from Bragg Creek. For complete details on this event (which was also seen from Edmonton), check out her article on page 5.

Vacuums are nothings. We only mention them to let them know we know they are there.
By Paul Campbell

Looking at my calendar, I see that the insufferable summer twilight has once again left, leaving us with dark skies at night. This also means that we have to start bundling up more to keep warm, I have to prepare for meetings, and I’ve got to get the president’s message out in time to meet the new Editor’s deadline.

Reading the first sentence of the previous paragraph one may think that in summer, in Edmonton, no astronomy is done. That is the farthest thing from the truth. Even I look at the Sun while yearning for the dark skies. Many of our members actually do look up at the bright skies of summer looking for noctilucent clouds, aurora, sunspots and meteors. (See the bolide article in this issue). This says two things to me. One is that there is a diverse Universe up there with many interesting things to observe and two is that there is as diverse a group of astronomers here in Edmonton with interest in many things astronomical.

I think that this is one of the biggest strengths the Edmonton Centre has. Whether it’s an observation of a 15th mag galaxy, observing a magnetic reconnection event on the Sun or the eruption of a bright spot on Saturn, someone in the Edmonton Centre is probably watching it. In short, we have the freedom to observe what interests us. I write this not so much for the older members, who already understand this, but for the new potential members attending their first meeting after a long summer. Not only do you have the right to observe whatever it is you’re interested in but you also have the right to be new to astronomy. If this is your first meeting, don’t be afraid to ask questions, or to go to the dark site with the experienced observers. It’s been my observation that the more experienced observers love to share information on their favourite topic, mostly in language that people can understand.

Finally, to old and new members alike, welcome back. I look forward to meeting most of you at the meetings and to guessing who you are in the dark at our observing sessions.

Fireball

By Klara Jahrig

The sky darkens for the night
Giving the stars a chance to show their light

Now that the sun is not in the sky
The mosquitoes are beginning to fly

The stars now twinkle
Each looks like a diminutive sprinkle

For amongst them there are the more vibrant things
Such as the moon and fireball appearing

As we kick the rocky gravel
We see the fireball begin to travel

I look up and see what looks like a ball of green
Swoosh across the starry sky scene

The fireball came out of the northwest
Out of all the things we had seen that night
It was the best

The fireball lasted for seconds — about ten
Then it vanished and we never saw it again

That we stayed up with the mosquitoes,
We were not sorry
So this is the end of the not-made-up-story.
Constitutional Changes at the General Assembly

By Franklin Loehde

Constitutional changes are usually a landmine for any group foolish enough to attempt them however under the astute guidance of National Treasurer Michael Watson (as Constitutional Chairman) they all went through remarkably smoothly. The most contentious issue was, of course, the new flexible membership year but despite delaying tactics by the Toronto Centre in the form of a tabling motion it too sailed through. We now have a constitution that very well reflects the actual activities of the Society.

The on-going plans for the Society to assume membership renewals is going well with the ‘made-for the Society’ software and demonstrated at our National headquarters with frequent nods of approval. The big test will be in August/September of course but it looks hopeful. The new database does a fantastic job in extracting information about all aspects of the entire organization.

Membership in the Society is at an all-time high but this will put great pressure on our ‘Observers’ Handbook’-dependent budget as our fees are far too low to sustain the situation for too much longer. In the mean-time we run a budget surplus and the dependency on Observers Handbook sales is fraught with danger.

Sky News, currently added to the RASC Journal subscription list will be costing $1.18 an issue in August. Our ‘unpaid’ Journal Editor, Dr. Dave Turner, is hoping to be replaced before too much time passes so is serving notice. The Society owes a great deal to people like him and Dr. Roy Bishop, the Observers’ Handbook Editor, for the huge parcel of time they devote to our publications.

Our biggest Centre by far, the Toronto Centre, is requesting a grant sum of $10,000 from Special Projects to compliment the money they have raised for their new observatory on land and building donated to them by a local member. A committee has been struck to consider the request.

Kim Hay of the Kingston Centre is assuming the post of National Secretary taking over from Raymond Auclair who requested a much-needed break.

Reports by the many active committees were given and notice was given that the Winnipeg Centre will host the 2000 General Assembly and that London is bidding for the 2001 GA. All in all the RASC is in great shape to enter the next century!

4 others from Edmonton attended including Doug and Joan Hube, Krista Stefan and Janet Couch

RASC Meeting Dates for 1999
October 13
November 8
December 13

Observing Weekends for 1999
October 8-9
November 5-6
December 3-4
Fireball Jesse*
(July 21, 1999)

By Sherrilyn Jahrig

Winding high out of Crowsnest then northwest through Longview country, turrets of the Rockies flagged with background cloud find themselves elbow deep in new-green velvet hills. Purple shadowed and dotted with smooth russet cattle, this is an area of wrap-around beauty. I can only imagine the gorgeous black skies glittering above criss-cross arcs of hill on a New Moon April or late October night.

At Bragg Creek the mountain forest picks up again, and this is where we stop to stay with our friends, the Atkinsons. They live 4km SW of town in a controlled wetland with very minimal light pollution. After dinner we take the 8" loaner-scope (travels well), up to the top of the driveway to catch a waxing Moon, Mars and stars. Our eleven year old, Klara, and their daughter, Karin, take turns finding the brightest stars as they pop out in the moon-bright sky. Mars is a wobbly orange cresting the southern hill. M57 is a small wonder ringing in at 2245hr MDT. The mosquitoes are calling reinforcements in from the hills. There is talk of surrender, but Bob and I hold our hosts’ captive for M13, a glob of dull sparkles in the milky moonlight.

At 2320hr MDT, Tom, Klara and I are looking south when a commotion of expletive and exclamation turns us around to see a sapphire and white fireball burning up the NW sky toward Cassiopeia, sporting a trail of auroral colours. It progresses fairly slowly considering all the activity displayed: three breathtaking bursts with coppery flares. Its magnitude is at least equal to that of the evening’s Moon. We are transfixed, turned to human statues as it arcs playfully below Cass and seems to swing toward us.

The reptilian part of my brain tells me to duck, the cerebral to measure, so like a good amateur astronomer I get my fist and fingers up in odd salutation, further entertainment for our hosts, who by now are wondering what else Bob and I have arranged for the visit. The whole event lasts less than ten seconds, ending with a disappearance described by Pam as ‘an implosion to a black hole’.

Comparing observations later there were interesting variations in regard to interpretation of colour, point of first appearance, trajectory specifics relative to topography and stars — but all present agreed that it was an awesome, incredibly vivid event.

The following afternoon I called the Edmonton Observatory and asked if anyone had seen a fireball. I expected backs to have been turned to the northern sky due to the southern exposure of the observing deck, so was surprised when Bruce McCurdy said yes, and that it appeared in Bootes and traveled on toward Scorpius. This meant that it fell somewhere between our observing points. It was interesting to note that the northern observers saw a shower of sparks at disappearance, and the southern noted very little if any breakup at the end. The fireball seemed to be straight on and spherical at that point.

Klara and Karin decided to write their observations in poetry form, perhaps this will inspire more of our youthful observers to contribute to Stardust.

*July 21st is also our son, Jesse’s birthday — so a fireball to wish upon was a nice touch.
As I received a warning from our new editor to get on with my report, I was amazed when looking back over the past few months to see so few windows of observing opportunities. The western summer appeared to have favored more cloudy and rainy conditions than last year. My wife has a way to answer my blues by telling me "Get over it, you live in Alberta". Her wise comment means for me to take advantage of every clear night and be happy with it, life goes on!

Larry and I managed to find a couple of those days in July. In spite of the twilight in the North, the sky produced excellent images permitting power of up to 600X and sky magnitude around 6.0 on the first night, not as good on the second attempt. This past August, I took a trip to Caroline based on a Friday forecast calling for clear Saturday and Sunday skies. Carol and Rick Weis were also spending the weekend, which turned, as you guess, opposite of the optimistic forecast. The ASP site is in good shape with the grass showing major improvement from last year. By the time you read this article the ASP will be over therefore for those who attended, it is time to put pen to paper and let us know your experiences and observations while in Caroline.

Coming up in the next few months is Comet Lee bright enough for binocular observation. Leading the winter constellations are Jupiter and Saturn around Midnight. The early October new Moon will provide an opportunity to observe in acceptable overnight temperature, take advantage of it! I wish you clear skies but remember that this is Alberta so get out there on clear nights, be happy and see you at Blackfoot.

When they broke open molecules, they found they were only stuffed with atoms.
When they broke open atoms, they found them stuffed with explosions.
Radio Astronomy Being Considered for Renovated Space and Science Centre Exhibit

By Dave Cleary

An informal group of radio astronomy enthusiasts with the support of the Edmonton RASC has successfully gotten a radio astronomy exhibit on the list of options for a renovated space exhibit at the Edmonton Space and Science Centre (ESSC). Last March the Council of the Edmonton RASC passed a resolution supporting a radio astronomy exhibit in the ESSC’s expansion plans. After a presentation on radio astronomy at the May meeting of the RASC, Howard Gibbins, Robert Rolf, Paul Campbell and Dave Cleary met to review ideas. They are now calling themselves the Edmonton Amateur Radio Astronomy Group (EARAG). Several other people have since expressed interest in being involved.

In July Dave Cleary met with George Smith, ESSC’s executive director, to discuss the submission process. The radio astronomy group then collaborated on a proposal for two exhibits. This was submitted to Alan Dyer of Calgary who is consulting on the renovations. Alan has said the exhibits will be included in the proposal expected to be presented to the ESSC this October.

EARAG is looking for a location to set up an experimental radio telescope. The ESSC has been ruled out as a location for the moment due to expansion plans. Doug Hube at the U of A has been approached about the possibility of using the roof of the Physics building. This site has the advantage of involving physics students from the U of A and possibly allowing access to equipment not otherwise available.

The group is also looking for good quality satellite TV dishes. Once a single dish system is operating successfully, the intention is to build a city-wide interferometer using dishes at different sites.

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We are currently looking for used TVRO satellite dishes, in particular 2.5 metres or greater in diameter.

If you know of anybody who has one of these old style units, we offer:

- Disassembly of the dish and removal and cleaning of former site (including removal of moderately sized concrete footings).

- We are investigating if we can offer a registered tax receipt in return for donating the dish to our organization (usually $200 to $400 depending on size, type and condition).

These antennas will be refurbished and used by the Radio Astronomy & Interferometry Division of the Royal Astronomical Society of Canada for Education and Research.

If you can help, please call Howard Gibbins at 431-5600 (Office) or 469-9765 (Residence).
SSSP '99
(Saskatchewan Summer Star Party 1999)

By Alister Ling

The night before Murphy, and the field was awake, doubts slept while some observed 'til daybreak. Score another success for the SSSP! The variety of activities and talks amidst the splendour of the hilltop's natural scenery makes this event a highlight of summer.

The Cypress Hills are located in the southwestern corner of Saskatchewan, and are large enough to protrude into Alberta, making this one of the few inter-Provincial parks in the country. The rolling terrain is a perplexing blend of fairly dense lodgepole pine and birch stands, broken up by a few small lakes and grassy fields. The only lights at night come from a number of streetlights in the park, well hidden by the trees; there's NOTHING to the south into Montana except isolated rural ranches and farms. You can't find a darker family-friendly site than this!

If you are like me and have a limited amount of holiday time and want to share it with your family, the Saskatchewan Cypress Hills is ideal. Plan to spend more than a weekend there. Apart from horseback riding, golf, mini-golf, hiking, fishing, paddle boating, bird/deer and other animal watching, you can splash in a modest sized pool that has depths that range from 1.6 metres to a baby friendly 0.1m, then follow up in a large indoor hot tub. The park itself hosts public programs as well.

Sandy Ferguson of the Saskatoon Centre organized a delightful series of astronomy related activities for kids, from constellation painting to planetary participatory theatre. This late Saturday morning session was a big hit for families!

While many folk camped on “The Meadows” next to their scopes, others stayed in the reasonably priced small condos and chalets near the resort (a Four Seasons hotel) and drove the 4 minutes uphill to the telescope field. If you have the sidewalk urge, you can join in the public viewing at a completely separate location; no gate crashing white light pleebs at the observing site!

Once skies cleared Saturday night after midnight, the field was bubbling with conversation about deep-sky objects, planets, and the continuous supply of meteors and satellites criss-crossing the sky. I was able to spot the globular cluster M92 naked eye, attesting to the high quality of the site. A magnitude -7 flare from an Iridium satellite punctuated the darkness at 3:11 am. I'm still waiting to see a real fireball that bright, so I'll take my kicks from a surrogate source. At times we had Jupiter, Saturn, and M13 up past 400x! Maybe next year we'll get even better seeing if the atmospheric flow weakens as is its wont on occasion. There were still a handful of us observing as dawn broke.

Friday night was unfortunately clouded out. Still, it was a chance to get reacquainted with friends from the other Centres and clubs. A warm welcome came with an introductory level talk on variable stars and the night’s plan for a binocular star-walk. Next year bring along a short (5-10 min) slide presentation of your photos, or show off some home-made equipment, like Dan Kulak did with his binocular mount. Share your side interest, like the Dicksons did with the Seti@home project.

After the late morning kids activities and gadget swap table (and feeding of the tame bird Astro, posing for an “Astro” photo), we gathered post lunch in a light-controlled basement room of the hotel. Here we listened to a few invited talks, and participated in the heartfelt celebration of Lucian Kemble’s life. A delicious supper meal catered by the hotel followed. It was fun to sing a song in order to reach the buffet before those who felt more vocally restrained.

Murphy’s Refund: This is the clear night that obligingly shows up after astronomers drive home from a star party. About a dozen of us were left to enjoy a more transparent, but windy night. Although I did use my small telescope, binocular observing with Dan behind his sheltering pick-up turned out to be the best idea. If you’re serious about getting the most from Cypress Hills, bring a portable wind break.

Dan had once again set up his new Nikon 18x70mm binoculars on that useful contraption that keeps the binocs pointed at the same place no matter how you adjust the height. WOW! The size of the field and sharpness is remarkable, with 19mm eye relief and a Nagler like 72 degree apparent field to boot. It's quite the visual experience. The next morning Dan bowled us over with a binocular view of the spotted Sun complete with faculae, and at times, granulation!

If you are driving back to Edmonton, consider breaking up the journey by spending a night at Sky T-Rex, a B&B just north of Drumheller that features a computerized 16-inch SCT (403-364-2297 or www.skyt rex.ab.ca). I’ll share more about this place in another article. A hearty congratulations to the Regina and Saskatoon Centres for their effort!
The summer star parties were a bit of a wash, but as the summer drew on, you could watch as the delicate crescent of Venus sailed just south of the sun. It was a beautiful sight, and now Venus moves into the morning sky. It will be quite prominent in the morning twilight of September and you can watch it as it shrinks in size and its crescent waxes. On one of the few clear days at the Mount Kobau Star party, I managed to find both the crescents of Venus and Mercury during the noonday heat. Venus is relatively easy, just crank the coordinates after you get your bearings on the sun and presto, there it is. Mercury on the other hand is really difficult. When I finally found it in my eyepiece field, after much time spent searching, it was a pale white crescent on a blue white sky. Low contrast! Everyone that tried to see it in my scope did eventually see it. As our September meeting comes up, Mercury will have just passed the sun on the far side - superior conjunction, and it will move into the evening sky. It will be lost in the evening twilight and doesn't get much better as it heads to its October greatest eastern elongation because of the low angle of the ecliptic.

Another wonderful sight from the summer months was that of Jupiter and Saturn as they rose in the late night sky. Bright Jupiter and pale Saturn closing in on each other and now both in the constellation of Aries. They will be in conjunction at the end of May next year. My first views of them at the Mount Kobau star party were spectacular. I had lucked out on not only the few days of clear skies, but also on nights of superb seeing! The Great Red Spot is still low in contrast but quite visible and there was plenty of festoon activity and little white ovals in the Equatorial bands. Jupiter rises at 8:30 p.m. At the beginning of the month and is at Magnitude -2.8 showing a disk of 47.2". The disk will expand to 49.7" by opposition in late October when it will be 3.98 au away. Jupiter is a very rewarding planet to observe. There is constant change in the clouds and bands on the planet as well as the dance of the moons and their shadows. The RASC Handbook lists satellite events, but do remember that it is in universal time and we are 6 hours behind UT. (As long as DST lasts) For example, 1:30 UT on the 14th happens at 6:30 p.m. day light savings time on the 13th. One particular set of transits are that of Ganymede early on the evening of the 22nd and late on the 29th. These are the only visible Ganymede transits until November. When you are looking at Jupiter's moons, see if you can make out their disks. This feat takes moderate to high power, 150 to 300 x, but once you recognize their disks, you will be able to tell Ganymede from the others. Callisto is almost as large as Ganymede, but has a darker disk and looks smaller. I see it as being slightly bluish. Io is slightly bigger than Europa. The size of Jupiter's moons near opposition are - Io - 1.2", Europa - 1.0", Ganymede - 1.7" and Callisto - 1.6".

Saturn rises about half an hour after Jupiter and shines at magnitude 1.9, almost a hundred times fainter than Jupiter. The planet shows a disk 19.2" in diameter and is at 8.6 au from Earth. It is interesting to watch the placement of the planet's shadow on the rings as the planet moves toward opposition which occurs in early November. The rings are a treat to observe and depending on seeing and your optics; you may see Casini's division and the elusive Enkie's division further out. The ghostly Crepe is visible just inbound from the B ring. Clean optics are a requisite for it. High power might reveal the subtle spokes in the inside border of the B ring. They occur radially from Saturn. Saturn's moons are interesting to watch as well. There is a piece of software on our website that will help you find them and plan your observing sessions.

Uranus is visible early in the evening as a 5.6 magnitude greenish star just to the west and below Theta Capricornus. It is within a lunar diameter of the star, and this makes it a great binocular object and extremely easy to find over the month of September. At medium to high powers, you may see its 3.6" disk shining from its 19 au distance. It transits at 11:30 p.m. local time, which places it 19 degrees above the southern horizon. This fall is really a season of the Giant outer planets, let me know what you are observing and show me your drawings. Till next month, clear skies!
Since my presentation on radio astronomy at the May meeting of the RASC I have begun modifying my 1.2 meter satellite dish system to track the sun. I'm hoping to observe variations in the sun's overall radio output, and solar flare activity.

This involves two things - making the dish move and making it track. Thanks to considerable discussion and advice from Robert Rolf, I've built a "dog's breakfast"; gearing system to rotate the dish on the polar axis. The dish is moved by a power window motor from a 1985 Chevy truck acquired from an auto recycler. It is powered by a 12 volt car battery and controlled by a double pole double throw switch that allows the motor to turn in both directions.

The motor has a one-inch sprocket gear that turns a V-belt attached to an 8-inch pulley. The pulley is on a modified car jack. The jack has a 21-inch threaded rod that travels a quarter of an inch per rotation. Gearing from the jack screw to the dish consists of bicycle parts and a clothesline pulley. The jack screw is connected to clothesline wire wrapped around a clothesline pulley and the rear wheel of a mountain bike. Bicycle chain connects the smallest gear on the wheel to the largest sprocket from the bicycle pedals. The pedal gear is fastened to a collar around the mount of the dish. (See the photo and diagram below.)

With this concoction I’ve basically solved how to move the dish. Despite the level of downgearing achieved in this arrangement, the dc motor still moves the dish about 25 times faster than the transit of the sun. I did one observation in July where I moved the dish by flipping the switch manually. You can see the results of this below.

The signal increases as the sun moves into the centre of the antenna beam, then declines as it moves out of the beam. As the signal declined, I moved the dish approximately every four minutes so the sun was centred once again. To achieve a smoother signal would require the motor to run every 30 seconds or less. This would keep the sun close to the centre of the beam. However, moving a toggle switch manually this often is not my idea of time well spent.

So this leads to the second challenge not yet solved - an automatic control mechanism. Satellite TV systems use an electronic controller called a "comparator". After some feeble attempts on my part to design such a circuit, I am once again at the "cry for help" stage. Stay tuned.
By Karin Atkinson

I was out one July night
My heart full of flight
For my mother’s friend was in astronomy
And was showing the moon
Which shone as pale as bone

With her telescope I saw the craters and seas of the moon
Within the background sang the loon
Soon all the family was out with me
Looking up to see what they can see

We looked at the moon, we looked at the stars
I never imagined them to be that far
We gazed and gazed at the stars so high
The next thing you know, time was flying by

It was getting late as I turned to the north sky
“HOLY COW,” said I
A meteor with a greenish blaze appeared so bright
Lighting up the July night

It sank into the north sky as it started in the northwest
Out of all I’ve seen, this was the best
“A FIREBALL”, my mother’s friend yelled
We owed and awed, we were all overwhelmed

It had a greenish glow in its light
Brighter than the moon, brighter than bright
It had a rainbow light trail that wasn’t far behind
What a discovery, what a find!

We stared in amazement as it fell
Where it would have landed, I couldn’t tell
Before it hit, turned into a reddish flare
Then it dimmed and disappeared
That was beautiful, thought I
It was wonderful, seeing fire in the sky
To:

Edmonton RASC Council 1999

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R.A.S.C. EDMONTON CENTRE

Next Meeting:
Monday, October 11th, 7:30 p.m.
Edmonton Space and Science Centre
Topic: Eclipse Chasing

Next Observing Sessions:
October 8th - 9th
Blackfoot Staging Area

Next Council Meeting:
Monday, September 20, 1999
Edmonton Space and Science Centre

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