

Stampede Parade 2018

Opuntia is published by Dale Speirs, Calgary, Alberta. It is posted on www.efanzines.com and www.fanac.org. My e-mail address is: opuntia57@hotmail.com When sending me an emailed letter of comment, please include your name and town in the message.

YEEHAWING AROUND COWTOWN

photos by Dale Speirs

The Calgary Stampede rodeo always begins the Friday after Canada Day with a parade watched by 200,000 spectators, but the entire city begins celebrating a couple of weeks early.

Calgarians love a party, and the whole city is involved. Besides the 1.2 million visitors who pay their way in to the rodeo grounds over ten days, the nearby downtown core is a hotbed of yahooing. Stephen Avenue pedestrian mall, which runs the length of the core, is shoulder to shoulder with crowds from about noon to the small hours of the morning.

Out in the suburbs, every community association and church puts on some sort of event, whether a pancake breakfast or a barbecue. Calgarians dress western for a month and party hearty. The provincial Ministry of Health issue their annual denial that nine months after the Stampede the Calgary birth rate suddenly spikes.

People who have never set foot on a farm and have only seen cows in photographs will put on cowboy boots and hats, and wander about town going "Yahoo!" at random intervals. I grew up on a cattle ranch and I never heard any genuine cowboy go "Yahoo!".

Every tavern band puts on cowboy hats and plays "Ghost Riders In The Sky", even if the rest of the year they are heavy metal or jazz. Concert violinists busk on the pedestrian malls as country fiddlers, and pick up more in spare change than their regular income with the Calgary Philharmonic Orchestra. You can't walk downtown two blocks without passing a banjo duet playing "Foggy Mountain Breakdown".

Breakfasts.

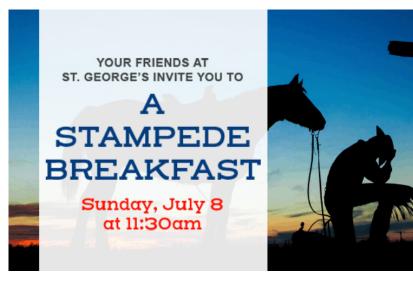
Pancake breakfasts are free, but barbecues charge admission since beef is more expensive than starch. I try to attend several Stampede breakfasts despite the fact that I must arise as early as 07h00. In the 31 years I worked for the Parks Dept., I had to be up at 05h45, but since I retired in 2010, I normally get out of bed about 09h00 to 10h00. At least I can take afternoon naps, and it's nobody's business but mine.

It's much easier to find out where breakfasts are nowadays, thanks to www.stampedebreakfast.ca I also like to browse the poster art that the breakfast sponsors use. Most are dull, cranked out by a volunteer on a Word document, but some have a bit of effort put into them.

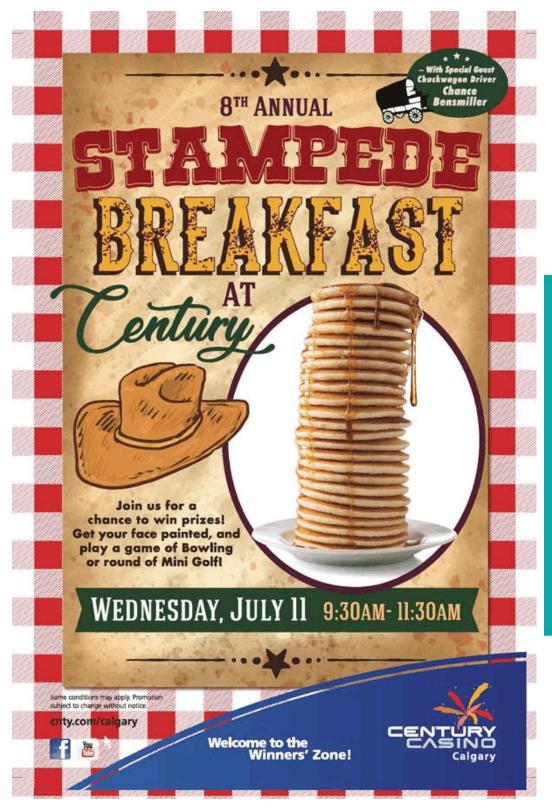


The church posters are dignified but the funeral home seems out of place.











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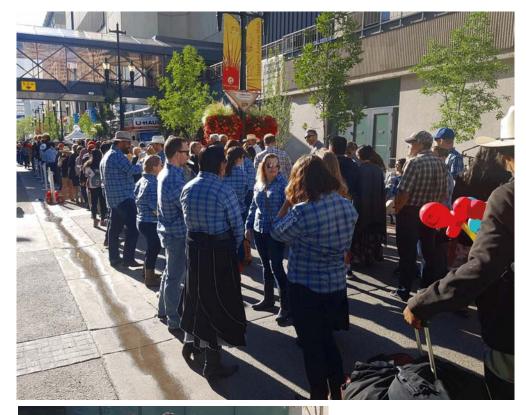
This was the first free breakfast I went to, downtown on the Stephen Avenue pedestrian mall.

The front cover shows what I got to eat, not including beverages such as coffee, milk, or fruit juice.

Upper right: The lineups were a city block long but moved very fast. I didn't wait more than five minutes. I wish science fiction conventions were as fast.

Lower right: At bigger breakfasts such as First Flip, you only get one pass through so that everyone gets food.

We were branded on our palms with a rubber stamp. At smaller community events out in the suburbs, they don't bother with this because the turnouts aren't as great.









Upper left: Very organized. First table you get the flapjacks and sausages.

Below left: Second table has the butter and maple syrup.

Upper right:
One of the many cooks that kept 'em coming. All volunteers by the way. None of the free breakfasts use paid help.

Lower right: Set a spell, stranger.







Parade Day. 2018-07-06

Friday morning is a half-day holiday in Calgary. After the parade, 50% of the city goes down to the rodeo grounds and the other 50% go to the taverns. You do NOT schedule any important business appointments on Parade Day. I have a favourite spot picked out on 9 Avenue SW where I can view the parade without trouble. It helps that I am tall and can stand at the back and still see everything well. The sun was behind me, which makes for better photographs.



The day was hot and beautiful, with temperatures in the low 30s as most of Canada goes through a heat wave. There is no humidity to speak of in Alberta, so the dry climate made the heat more bearable here than in eastern Canada where they have real humidity.









Calgary Mayor Naheed Nenshi got big cheers from the crowd riding on horseback. Further back, Alberta Premier Rachel Notley, riding in a car, got silence. Not even polite applause, just people angrily staring at her when they realized who she was.

I almost felt sorry for her, but she and the NDP (labour-socialist) have badly damaged this province with lunatic policies and

massive overspending. I wasn't able to get a photo of her because she was on the opposite side of the car.



At left: This is the shaggiest horse I've ever seen.



Scottish dancers in Calgary wear cowboy hats. Indeed, so did many of the ethnic groups marching in the parade.

















Lots of commercial and tourist bureau floats in the parade. I would be remiss if I did not include a photo of one from my old home town of Red Deer, in west central Alberta. Penticton, British Columbia, had the prettiest float, and their neighbours in Kimberley had the funniest. The mini-train was entered by the town of Camrose, in east central Alberta.





Without a doubt, the Calgary Peruvian association had the most spectacular costumes.









It's like how Americans say 'huh' and Canadians say 'eh'.



OUT WHERE THE WEST COMMENCES: PART 3

by Dale Speirs

[Parts 1 to 2 appeared in OPUNTIAs #68.1D and 356.]

Despite having grown up on a cattle ranch and being a pure-laine descendant of homesteaders on both sides of my family, I never liked most westerns, whether print, television, or movies. They were clichéd stories of gunslingers riding into town to save the villagers from the bad guys. Even in the American Old West, the reality was different, and certainly not on the Canadian prairies where the Mounties arrived ahead of the settlers. But there are some that I read.

Non-Fiction.

ENCYCLOPEDIA OF WEIRD WESTERNS (2009) by Paul Green is a listing of hundreds of books, comics, video games, television shows, and movies in the weird western genre. Capsule reviews and production details are given. Some items are very peripheral, but most are well inside the genre. The reviews are alphabetical by title. At the back is a checklist of the titles sorted by format (incorrectly referred to as genre).

An introduction discusses the history of the weird western, which began in the late 1860s in the dime novels, and over the next century spread out into other formats. The earliest weirds were steam men, and cowboys versus ghosts. There is overlap with steampunk, in those days called Edisonades, after Thomas Edison. The early genre was a juvenile market. After World War One, pulps and paperback novels aimed at adults began appearing.

The combination of westerns with science fiction and fantasy is not an unnatural mix. The straight westerns were the stories of pioneers spreading out into the frontier that held strange tribes of people, harsh living conditions, and spectacular natural wonders.

That is one of the main tropes of science fiction, the spread of humanity out to the stars and alien worlds. Fantasies fit in quite well, for there is no reason that gunslinger ghosts couldn't be roaming the prairies looking for revenge in the same way as manor house ghosts.

I found this to be a useful reference. For someone just starting out with weird western fiction, it will point the way to many stories. Well recommended.

The Weird West: Anthologies.

Which brings me to weird westerns, which I do enjoy, and which are just as plausible as any Louis L'Amour book. At hand is WESTWARD WEIRD, a 2012 anthology edited by Martin H. Greenberg and Kerry Hughes. It contains thirteen stories, but I'll only review a few of them.

"The Temptation Of Eustace Prudence McAllen" by Jay Lake is set over yonder** at the Broken Bow Ranch in Wyoming. The ranch has been afflicted by grass fires, probably set by humans. McAllen, one of the cowboys, is searching the back canyons when he finds the cause of the fires.

The Devil enjoys barbecues and is roasting one of the BBR cattle on a spit, which incidently sparks the fires. A mortal human can't kill the Devil, but if he were to knock the beef off the spit into the ashes, then that might discourage Satan somethin' awful. The only difficulty is that McAllen would be sacrificing his life.

"The Last Master Of Aeronautical Winters" by Larry D. Sweazy has two gunslingers searching an abandoned aerial village in Yellowstone. It was built on a platform that trapped the steam from geysers and thus lifted into the sky. The platform is restrained by cables from tipping to one side and falling off the thermals.

Problem was, the construction of the village brought demons up from below, not to mention the sulphurous stench. The platform was abandoned to the demons, which can't leave the source of the heat. Now the men have come to capture one of the demons for Buffalo Bill's Wild West Show.

"The Flower Of Arizona" by Seaman McGuire is about Jonathan Healy, a cryptozoologist who arrives in Tempe, Arizona, in 1928 on a mission. He is tracking the Campbell Family Circus and its star, a trick rider named Fabulous Fran, the Flower of Arizona. Whenever the circus leaves a town, there is a brief spurt of gruesome deaths, and people are becoming suspicious.

^{**} I always thought the phrase "over yonder" was a cowboyism, but while reading the Sherlock Holmes story "Silver Blaze" discovered that Holmes himself used it. A check on Google revealed that 'yonder' by itself is much older, back to Shakespeare and before. It is related to 'beyond' and "hither and yon".

Healy suspects a cryptid. Eventually he and Fran catch and kill a Questing Beast, although it takes two hours to drag its carcass back to town for dissection and study. Case solved.

Digression: Innumerable monster movies and novels end with the great beasts killed, and the hero celebrating with the survivors. I've always wondered about the cleanup squad who had to go in afterwards and clean up the blood and gore. Somebody had to cut up the carcass, haul it away to a landfill, and wash down the area with disinfectant. I'm glad at least one author thought about the aftermath.

"The Clockwork Cowboy" by J. Stephen York is set in Calliope Springs, Texas. The settlement was founded by freed clockwork men emancipated by Lincoln after the war. They live as a colony in peace and harmony. Then one day, a steam man rides into town and the trouble begins.

This anthology had a higher proportion of good stories than most. Some were average, and a couple I didn't like. Overall though, the anthology was a good read.

STRAIGHT OUTTA TOMBSTONE (2017) is an anthology edited by David Boop. A few stories are reviewed here. Leading off is "Bubba Shackleford's Professional Monster Killers" by Larry Correia, a story summed up by its title. The boys have been hired by Union Pacific to deal with monsters tearing up their tracks. Shackleford is a good-ole-boy from Alabama, and is single-minded about his job. The monsters are determined to be Chenoo, from Cheyenne legends. Just as it seems a bloodbath will erupt, Shackleford makes a deal with the Chenoo that their burying ground will not be disturbed any further.

"Trouble In An Hourglass" by Jody Lynn Nye is about what happens when assorted gunslingers, Deppity Dawgs, and stagecoach robbers get their hands on a time machine. They get busy committing crimes or forestalling them. As usual in time travel stories, the plot is a plate full of spaghetti with loose ends dripping all over. The time paradoxes are not sorted out. This is why I don't like Doctor Who.

"The Sixth World" by Robert E. Vardeman is set in New Mexico Territory. Lots of cowboys, Navaho medicine men, city slickers hunting treasure, and little grey people who have spaceships. You can guess the plot.

There's trouble down the mine in "Chance Corrigan And The Lord Of The Underworld" by Michael A. Stackpole. This is a steampunk story set in Wyoming at the Dominion Brimstone Mine #1, which turned out to be one of the gates into Hell. The mine guards are automatons called Black Barts, and Corrigan himself is bionic.

An interesting idea is that the Black Barts are powered by Tesla broadcast generators. To disable one, throw a Faraday cage over it. The story looks to be a retread of HIGH NOON but becomes a neat twist when the bad guy is killed by remote control using Black Barts.

"High Midnight" by Kevin J. Anderson hybridizes the Old West with zombies and then makes it into a modern-day tourist attraction. Dick Chambeaux, a zombie detective, visits a fake pioneer village, the kind of place that serves "authentic Western barbecue; blackened bones (species unknown) covered with sizzling meat." The special sauce was good.

Assorted ghoul gunslingers are after Chambeaux. They are stymied by his lawyer using legal chicanery. It doesn't make great television to wave contracts instead of quick drawing, but whatever works.

The anthology was fairly good. A few stories didn't move me, but considered as a whole, it was worth reading.

The Weird West: Novels.

THE GOOD, THE BAD, AND THE INFERNAL (2013) by Guy Adams is a weird western with steampunk and alternative timelines mixed in. The premise of the novel is that once every century a town called Wormwood materializes in a different location somewhere in the world. It is a gateway into Heaven, and not just figuratively. Its next appearance will be the autumnal equinox of 1889, somewhere in the American West.

A variety of characters slouch towards Wormwood, all hoping to be born again. The preacher Obeisance Hicks is traveling with his partner Soldier Joe, who can produce stigmata on his hands at will. The blood therefrom is bottled by Hicks and distributed to his congregations free, in exchange for a donation to cover the costs of his ministry. There is the couple Henry and Harmonium Jones, with their freak show. The Brothers of the Order of Ruth are monks seeking real salvation.

Another traveler is Lord Forset, a steampunk inventor whose devices are not entirely reliable. Also en route is a lone gunslinger, getting on in years. The point-of-view narration changes from one section of the book to the next. The characters have their motivations filled in as they head across a landscape of mirages and phantasms, where towns materialize from thin air and then vanish whence they came.

Upon arrival at the predicted site of Wormwood, the characters find a massive tent town, as thousands of pilgrims await Wormwood. The populace are all waiting for their chance to walk through Heaven's gate. At that point, the novel abruptly ends, to be continued in the next volume.

Which is ONCE UPON A TIME IN HELL (2013) wherein the story continues. The town of Wormwood appears, first as a mirage, then gradually solidifying into reality for one day. The crowd gathered around its materialization have high expectations.

A spokesman named Alonzo walks out to the pilgrims and tells them that they will be admitted only in small groups but all who want to enter will do so eventually. His choice of words suggests that the gateway to Heaven is not a simple door. Says one of the pilgrims: "Who knew the afterlife would be like visiting the dentist?"

Instead of shuffling into Wormwood in small groups as they expected, members of the crowd vanish into thin air, a la The Rapture. The rest fear they are the Left Behind mortals.

The novel's narrator Patrick Irish, a penny dreadful novelist, teams up with an old gunslinger who figures out a way into Wormwood through a back door. It takes them into a valley of death and further adventures in the fantastical, for it is not the direct route to Heaven. They move from one venue to another, traveling through a version of Dante's Inferno but with the chance of eventually reaching Heaven.

They meet Lucifer, who wants Irish to write a sequel to the Bible, a third testament. Eventually they congregate with other pilgrims at a meeting that seems to be the tipping point. There is silence in Heaven. One of the pilgrims deduces that God is among them in mortal form. He decides to force the issue, or at least provide a hook as the third volume in the trilogy. The final line of Volume 2 is: *And Henry Jones shot God right in the head*.

Every Cowhand's Nightmare.

APOCALYPSE COW (2012) by Michael Logan is not a Western novel per se since it is set in Britain, but there are lots of farm animals, so I'll squeeze it in here. Nevermind BSE (bovine spongiform encephalopathy, aka mad cow disease), this novel presumes an epidemic that turns cattle into flesh-eating zombies. I never cared for zombie stories and avoid them, but as an old cowhand from the Red Deer River, I thought I'd take a look. The novel is humourous and a good read.

It begins with an experimental project in Scotland going terribly wrong. The animals are shipped to an abattoir whose workers catch the virus. The Men in Black torch the place, both cattle and humans, but an infected cow escapes. The incident is passed off as an industrial accident but some people aren't buying that. The three protagonists are the sole abattoir worker who escaped the fire, an incompetent journalist, and a spotty-faced teenaged vegan.

The security men search for the missing cow before it infects the nation's herds but it isn't easy. They can't find it. That part I believe. In my boyhood days we had the occasional cow who avoided the herd at roundup time and would hide in a poplar bluff or down in the scrub willow swamp. Horse-mounted cowboys are useless in the bush, so my brother and I would be delegated to search on foot for the cow and chase her out into the pasture. Not a simple job since cows are surprisingly stealthy when they want to be.

But I digress. Getting back to the novel, the spread of mad cows begins. Real mad cows, ones with an attitude problem and a desire to drink blood. The zombies have arrived, only not the way that media fans imagined it. The virus spreads to other farm animals such as sheep, and from there to cats, dogs, and assorted four-legged species. The rest of the novel is a bloodier and darker version of ANIMAL FARM.

Eventually the British Isles are quarantined by NATO, who use lethal force against ships and aircraft seeking to escape. The race to perfect a vaccine is still underway as the novel ends. A funny read and, truth be told, not entirely implausible.

DARK FANTASY was an OTR series produced out of Oklahoma. "The Edge Of The Shadow" was a 1942 episode written and produced by Scott Bishop. It begins with a farmer discovering that a prize cow he was intending to exhibit

at the local fair had a cut on her leg. The hired hand says he doesn't know how it happened.

As they discuss the matter, the farmer accidently kicks out a piece of barbed wire from the straw on the floor. He gets some disinfectant to treat the cow's leg. A moment later, the hired hand digs a handgun out of the straw and tells the farmer that yes, he did it. He and the farmer's wife are having an affair, not an uncommon event in rural areas. He will make the farmer's death look like suicide. The farmer thinks fast and tosses the disinfectant into the hired hand's eyes, temporarily blinding him and grabbing the gun.

The action moves outside into the barnyard but is interrupted by the redeye flight to New York City, which flies over the farm every midnight. This time the plane bursts into flames just as it passes over, and crashes into the fields. The farmer wakes up screaming. His wife assures him that it was a dream triggered by the passage of the plane in its normal flight. He didn't tell her about the part with the hired hand.

The next day, the hired hand comes in and says the cow has cut her leg. The farmer goes out for a look, but before doing anything else, searches the straw and finds the barbed wire and gun. This time he forestalls the dream, shooting both the hired hand and the wife. He makes a run for it into town and decides to take the redeye flight to New York City. As the airplane flies over his farm, the engines burst into flames. A weird bit of looped dreams and events.

The Alternative West.

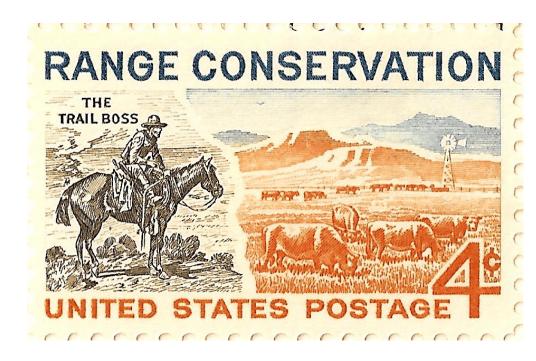
"The Great Bridge Plan" by Geoffrey Ursell is a humourous short story from his 1989 collection WAY OUT WEST!. It is about a CBC Radio One show host whose programme is hijacked by a hacker calling himself Dr Wisdom. There is a plan, Wisdom tells listeners, to deal with the problem of central North America reverting to its norm and becoming desert.

All the inhabitants of Saskatchewan and the two Dakotas will be evicted. Those areas will then be stripped of their topsoil, which will be exported to moister places that can do something with it. The next step will be to strip mine all the potash, coal, and other minerals, turning the flatlands into a giant basin. It will then be flooded by diverting western Canadian rivers to flow into it instead of the Arctic Ocean.

The fresh water will then be sent south via a Grand Canal. To keep Canada connected, a 600-km-long bridge will be constructed between Manitoba and Alberta. The American news media take up the story, although the anchormen have trouble pronouncing the names.

Saskatchewan is mispronounced 'sa-ska-chay-wan' and its capital city Regina comes out as 'rah-gee-nah' instead of 'ree-gyn-ah'. One anchorman refuses to believe there is such a place as Moose Jaw and complains on-air to the producer. It's a good thing Regina didn't keep its original name, which was Pile Of Bones. (I am not making that up.)

The flatlanders object to what is to be done. Radio Free Saskatchewan hijacks the CBC frequency. The farmers and Saskatchewan First nationalists come out swinging. CBC technicians have no end of trouble trying to get back their frequency, but the other combatants will not be denied. A funny story.



LETTERS TO THE EDITOR

[Editor's remarks in square brackets. Please include your name and town when sending a comment. Email to opuntia57@hotmail.com]

FROM: Lloyd Penney Etobicoke, Ontario 2018-07-05

OPUNTIA #414: I guess the local anime convention must have hit Calgary, the same way ours hit Toronto recently. The young ladies have features of steampunk and tea maid in their costumes, with perhaps a hint of Ukrainian design here and there. A look onto page 2, and I see I was right.

I have certainly learned over the years from Yvonne, our costuming friends, and definitely the folks at CAFTCAD (Canadian Alliance of Film & Television Costume Arts & Design, Yvonne is a new member), that making costumes is one thing, but making an exact reproduction of a costume from elsewhere is a true skill, and some of the anime fans making those reproductions may have a future in costume design and resource sourcing.

Anime North announced they had about 32,000 warm bodies this year, which makes them the fourth largest anime convention on the continent.

OPUNTIA #415: I think you'd enjoy the armoury at Fort York here, plus the Hamilton-based Canadian Heritage Warplane Museum. Hamilton has a working and flying Lancaster bomber.

[The Lancaster bomber at Nanton, Alberta, is occasionally taxied about on the ground but it is considered too valuable to fly. Insurance money can't replace it if it crashed, as it took tens of thousands of volunteer hours to restore it.]

Yvonne and I run an incredibly specialized business, steampunk jewelry and Hawaiian shirts, and while we sometimes do well (we did extremely well at Anime North in Toronto in May), we are under no illusions about making money or a living from it. It is a fun activity, and it is self-supporting. Any cash spent for getting a table at an event is paid out of our business's bank account, and any profits go back into that account.

We have learned what to do to promote our business and put out an eye-catching spread once we are at our show, and we have picked up more tables and a gazebo tent, plus special extension tables we can use, but the account has paid for it all. Best of all, we have plenty of new friends who are also vendors, and sometimes we pick up valuable tips from them. This kind of networking has been helpful. We know this won't last forever, and I suspect we will be shutting everything down over the next few years, but in the meantime, let's continue to enjoy this different direction in our fannish careers.

My previous letter: The physical attacks on people in costume happen on occasion, and it has happened to me and Yvonne many years ago.

OPUNTIA #416: Stories about trains seem to be a staple of steampunk fiction, but why read about them when you can actually see them and deal with them? The South Simcoe Railway is in Tottenham, northwest of Toronto, and their steam locomotive has appeared in four or five episodes of Murdoch Mysteries, not to mention other TV shows and movies. There is also a major train museum in downtown Toronto, beside the Rogers Centre and the convention centre.

OPUNTIA #417: The stamps unveiled by Canada Post at the Royal Astronomical Society of Canada Calgary Centre convention are also looking forward to the special full-colour coins produced by the Canadian Mint. I think Toronto Centre got the chance to unveil that amazing-looking coin.

[I didn't mention it because it was off-topic, but at the RASC convention, the Royal Canadian Mint had a 60-second video of the new astronomy coin. I took a screenshot with my smartphone, shown here.]



Canada Day for us was low-key, partially because of the heat. Our hearts were there, if not our in person. Too often, such celebrations are invitations to lighten your wallet.

[All the public events in downtown Calgary were free. I never did get to all of them.]

World Wide Party: June 21 was the first day of the 2018 Rotary International annual convention, held at the Metro Toronto Convention Centre, and I was working that convention as a registration agent and registration bag stuffer. That first day was 11 hours long for me, 7am to 7pm.

I got home for 8:30, got out of my suit and into something much more comfortable, we toasted our fellow fans around the world, and went to bed! The next day was as early to rise and as long a working day. Nothing exciting, but the day was observed.

SEEN IN THE LITERATURE

Hellström, L., et al (2018) **Branch thinning and the large-scale, self-similar structure of trees.** AMERICAN NATURALIST 192:E37-E47

Authors' abstract: Branch formation in trees has an inherent tendency toward exponential growth, but exponential growth in the number of branches cannot continue indefinitely. It has been suggested that trees balance this tendency toward expansion by also losing branches grown in previous growth cycles.

Here, we present a model for branch formation and branch loss during ontogeny that builds on the phenomenological assumption of a branch carrying capacity. The model allows us to derive approximate analytical expressions for the number of tips on a branch, the distribution of growth modules within a branch, and the rate and size distribution of tree wood litter produced. Although limited availability of data makes empirical corroboration challenging, we show that our model can fit field observations of red maple (Acer rubrum) and note that the age distribution of discarded branches predicted by our model is qualitatively similar to an empirically observed distribution of dead and abscised branches of balsam poplar (Populus balsamifera).

By showing how a simple phenomenological assumption, that the number of branches a tree can maintain is limited, leads directly to predictions on branching structure and the rate and size distribution of branch loss, these results potentially enable more explicit modeling of woody tissues in ecosystems worldwide, with implications for the buildup of flammable fuel, nutrient cycling, and understanding of plant growth.

Speirs: Just before I retired from the City of Calgary Parks Dept in 2010 after three decades of service, I skimmed through my logbooks and estimated that during my time there I had pruned about 31,000 trees. For big trees such as balsam poplars, part of the job was thinning out dead branches, crossers that were rubbing against other branches, broken stubs, and low hangers interfering with sidewalks or roads. So you see why I was interested in this paper.

As the authors note, theoretically a tree could branch infinitely but is limited by food supply. I would add another reason why trees don't grow to infinity, and that is structural strength. The tallest trees such as redwoods don't branch out as wide as they are tall, because they would topple over in a wind storm. We see that in regular sized trees, which can only grow to a certain width or height before snapping off big branches or trunks from wind or snow loading. Leaves increase wind resistance dramatically. We never had windfall trees in winter, but August thunderstorms kept us busy on broken branches.

Howard, S.R., et al (2018) **Numerical ordering of zero in honey bees.** SCIENCE 360:1124-1126

Authors' abstract: Some vertebrates demonstrate complex numerosity concepts, including addition, sequential ordering of numbers, or even the concept of zero, but whether an insect can develop an understanding for such concepts remains unknown. We trained individual honey bees to the numerical concepts of "greater than" or "less than" using stimuli containing one to six elemental features.

Bees could subsequently extrapolate the concept of less than to order zero numerosity at the lower end of the numerical continuum. Bees demonstrated an understanding that parallels animals such as the African grey parrot, nonhuman primates, and even preschool children.