OPUNTIA 406

Late February 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.

COWTOWN ART
photos by Dale Speirs

The City of Calgary has an active campaign against graffiti which forestalls the vandals by painting utility boxes and overpass pillars with murals. It works very well; graffiti taggers go elsewhere. These are photos I took during the summer of 2017 while walking about the city.

The pillar below is on Riverfront Avenue SE. It supports an overpass that takes four lanes of traffic from East Village in the downtown across the Bow River onto eastbound Memorial Drive.

Adjacent to the overpass is another river bridge that does the same for the LRT. Both these pillars are on the East Village side.

Further east on Riverfront Avenue are these three pump stations.

Switching to utility boxes, this electrical transformer is in the Beltline district, at 8 Street SW and 9 Avenue, southwest of the downtown core.

An electrical box further north on 8 Street SW at 5 Avenue.

The City has recently begun doing the same for concrete planters. This one is in the Marda Loop suburb at 20 Street SW and 33 Avenue.

Some private art on the north side of Bow River in Bridgeland. The house also has a Little Free Library plus a glassed-in miniature art gallery.

FAIR USE OR NO USE
photos by Dale Speirs

The City of Calgary subsidizes art on public structures all over the city. Some of the artworks that I've seen are too mundane to bother photographing. One of them was a series of blurred photographs pasted on the pillars of the 4 Street SW underpass from the downtown core to Beltline on the other side of the railway tracks. The project was titled "Snapshots" by Derek Besant, who retired as an art instructor in 2017 from the Alberta College of Art and Design in Calgary.

The portraits were deliberately blurred and then trivial epigrams overlain on them. Few people paid attention to them until November 27, 2017, when Bisha Ali, a British comedian, went public with the news that one of the portraits was her, and the others were of fellow British comedians. What happened was that Ali had lived for a short while in Canada and still had friends here. One of them was a Calgarian who happened to walk the 4 Street SW underpass and recognized the portrait. What were the odds?

The friend emailed Ali, and soon the connections were made. I never heard of any of the comedians and presumably neither had the majority of Calgarians. The smoking gun was that all of the portraits had appeared in a programme book edited by Besant for a 2015 Edinburgh comedy festival.

Calgary Mayor Naheed Nenshi reacted the next day and announced that the exhibit would come down asap.

Naturally I dashed over to get a few photos. The closest portrait in my photo at left, overprinted "I want love", is that of Bisha Ali. I leave it to my British readers to see if they can identify the other portraits (next page).

Besant made an apology on November 29, saying that he had found the portraits on scrap paper and thought there were no copyrights involved. He was immediately contradicted by others who pointed to an interview he had given to a local arts magazine. In it, he said that the portraits were those of pedestrians who had been using the underpass. He had interviewed them on site and used a summary of their words overtop their blurred portraits.

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I AM SORRY

Calgary artist says botched public art display — which had a price tag of $20,000 — was result of misunderstanding

metroNEWS

Protecting ticket buyers

LEGISLATION

Alberta proposes help for online sales

Alberta plans to bring in rules to ban ticket-gobbling software bots that shut out individual consumers when they try to buy concert or event tickets online.

Proposed legislation introduced Wednesday would also give the province power to take action if buyers didn't get the tickets they purchased on a resale site.

"There is a widespread feeling among Albertans that the ticketing game is rigged against them," said Service Alberta Minister Stephanie McLean. "It's unfair when they try to buy a concert ticket to only see that it's sold out in seconds and shows up on resellers' websites for inflated prices.... Fans deserve a fair shot at tickets."

Ticket-sellers doing business in the province would have to weed out large-scale block-bot purchases and cancel those tickets.

If they didn't, the province could act on complaints, investigate and levy fines up to $300,000 or seek up to two years in jail.

The proposed legislation also makes it clear that ticket-buyers could sue ticket-sellers for compensation on the grounds that tickets were sold to bots.

McLean suggested ticket-sellers also want to stop the bots and are looking for more legislative tools to do it. "It's hard to combat these bots. It takes a lot of resources," she said. "We're simply going to start off by holding them accountable for policing their industry."

Secondary ticket-sellers doing business in Alberta, such as StubHub, would have to refund the full price if a ticket sold was counterfeit or was cancelled because it was purchased by a bot.

If not, the province could investigate and level fines.

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The news media made the obvious comparison. I haven't bought a newspaper in decades but CALGARY METRO is a free paper. It wouldn't fit on my scanner, so I photographed it with my smartphone, hence the distortion.

LOOKING AHEAD FROM THE PAST
by Dale Speirs

I don't read much utopian fiction for several reasons. Firstly, such fiction invariably fails to explain the transition from our society to the wonders that will be. Humans suddenly become rational, bigotry vanishes, and everyone does their share of work, including scrubbing toilets. The handwaving required to make this change is too much.

The strangest change is that in utopias everyone wears togas or one-piece jumpsuits, two of the most impractical types of clothing invented. I've never worn a toga, but as a boy on the farm when we got our first snowmobiles we were given one-piece snowmobile suits. They're not bad until you get caught short out in the back forty and have to make a sanitary stop behind a shrub. We almost immediately had Mom cut the suits in half and re-hem them as two-piece garments.

A universal constant of utopian fiction is that the inhabitants of such worlds are seized with an uncontrollable urge to lecture the protagonist on the workings of their society. Everything must be explained in excruciating detail. In westerns, a cowboy doesn't stop to explain how to build a campfire, but in utopias, there is always a silver-haired gentleman to explain where the electricity comes from.

Having Written That ...

There is one excellent utopian story that presents a very plausible transition and future. "The Machine Stops" is a 1909 story by E.M. Forster that seemed an improbable story over much of the past century, but with the rise of the Internet is now quite relevant.

Vashti is a typical citizen of an Earth encompassed by a single machine that supplies every human with all their needs. Everyone lives in small self-contained cubicles that supply food, sanitation, fresh air, and communications. Few people leave their cubicles because Earth has been homogenized and there is nothing to see anywhere else that isn't the same as home.

The Machine does not deliberately control their lives, but humans have abandoned their free will and simply drift through their lives. It happened gradually as more and more processes became automated.

Vashti's son Kuno calls her on the videophone. It is only maternal love that compels her to leave her cubicle and take an airship to see him. Kuno tells her he is in trouble because he dared venture outside The Machine, and is threatened with homelessness. This is far more serious when there is no shelter or food outside The Machine.

The story jumps forward in time. Small defects begin to occur in the operation of The Machine. Complaints are handled by automated processes, are filed as information received, and nothing done. Things become worse. Cubicle air becomes foul, the water unclean, the artificial food is mouldy, and finally the communication system shuts down. It is the silence and isolation that panics humanity as civilization collapses.

Could it happen now? Of course not. Could it happen a century from now? I'm glad I won't be around to find out.

The Great White North That Never Was.

But I have read a few utopian novels. While browsing at www.gutenberg.org, I came across THE DOMINION IN 1983 by Ralph Centennius, published in 1883 in Ottawa. It is available as a free download in several formats. The author name is a pseudonym and, according to Google, the real author has never been identified.

That is understandable, because while the book is a utopian novel, it is also a vicious satire on Canadian politics and high society that would have created problems for the author if his real name became known. Like all topical humour, the book was funnier at the time of issue when its readers understood the background without having to be told, and could catch the allusions immediately. In 2018, one must be a good student of Canadian history to get many of the funnier points. I like to think that I'm better educated in Canadian history than the average person in the street, but there is no doubt that I missed many jokes or sarcastic remarks.

The novel begins with a lecture on Canada's glorious life in 1983. The population is 93 million people in fifteen provinces, as opposed to our real-world population in 2018 of 37 million in ten provinces and three territories. A three-year-old war was in progress across Europe, which might have been a world war except that Britain remained neutral.

The Americans were about to invade Canada in 1887 but were suddenly distracted by the assassination of their President in New York City, while the Irish had decided that it was best to be part of the British Empire and put their faith in the Queen. A federal election in Canada brought peace, light, and understanding as Canadians came together and voted for one party. The politicians were pure of heart and honest, not one of them born with a trust fund.

All of that was minor stuff compared to the glories of technology. The transcontinental railway, which in our timeline was completed in 1885, had since been updated. Gone were those fussy steam locomotives.

But when an inventor devised a machine on runners to move on lubricated rails, a great step was gained, though the invention was not a success, and when, after this, liquid carbonic acid, or carbonic acid ice expanding again to a gas was employed as a motive power, another advance was made.

Then the greatest lift of all was given. The solidification of oxygen and hydrogen by an easy process was discovered and mankind presented with a new motive power. In due time a way was found to make the solid substance re-assume the gaseous form either suddenly or by degrees, and thenceforth thousands of potential horse-power could be obtained in a form convenient for storing or carrying about. It is now as simple a matter to buy a hundred horse-power over the counter as a pound of sugar.

From Toronto to Winnipeg in thirty minutes! From Winnipeg to the Pacific in forty minutes! Such is our usual pace in 1983. By hiring a special car the whole distance from Toronto to Victoria can be accomplished in fifty minutes. A higher speed still is quite possible, but is not permitted because of the risk of collision with other cars. Collisions have never yet occurred on account of the rigid adherence to very strict regulations.

Cars that take short trips of 50 to 100 miles between stations, seldom travel more than 500 feet from the earth, but for long distances about 1,500 feet is usual. The broad metal slides for receiving the cars and for their departure, which extend for a mile on each side of all our stations, are the only portions of the rocket system which much resemble anything connected with railroads.

Evidently Canada had not converted to the metric system, as it did in 1971 in our timeline.

Private vehicles were all electric, which indeed they may well be by the time today's children are grandparents. The northern cities are well populated. Churchill, Manitoba, on the shore of Hudson Bay, is specifically cited. (Not, as many Canadians think, named after the World War Two prime minister, but founded in 1717 and named after one of Winnie's ancestors.) In the utopia of 1983, it has 200,000 citizens and has become a resort city. In real life it struggles as an occasional port for grain shipments to Europe and tourists who rough it to see polar bears.

Another fine city of which we may well be proud is Electropolis, on Lake Athabaska. Electropolis can boast of 100,000 inhabitants, and most enterprising citizens they are. Their great idea is to work everything by electricity, and to them belongs the credit of all the latest discoveries in electrical science. Their beautiful city is a great centre of attraction for scientific men, and many European electricians make a practice of coming over every Saturday to stay till Monday.

They come by rocket car presumably. There follows a checklist of assorted Canadian cities and their glories, which I skimmed over, seeing that Calgary is nowhere mentioned in this story. Humph! There was one funny part which is extracted here, about a Vancouver suburb which today is a dull boring suburb like any other suburb in any Canadian city:

New Westminster increases its attractions every year. It contains the noted observatory with the splendid telescope through which living beings have been observed in the countries in Mars and Jupiter. In its Hall of Science is the great microscope which magnifies many million times, and shows the atomic structure of almost any substance.

Having established the wonders that will be, Centennius turns his attention to politics. The House of Commons was reduced to fifteen members in 1935, one for each province, plus the Speaker. All provincial legislatures were abolished as well, a neat trick as Canada is a confederation, not a federal system. The federal government in 1883, 1935, 1983, and 2018, has no say in how provinces do their business. But of course this is a utopia, and Canada is governed by wise men trained for the job. Not just anyone can throw their hat in the ring. Quis custodiet ipsos custodes?

The federal budget is $1 billion in 1983, which today is considered a rounding error. No taxation in this fantastic utopia, but if the feds do need capital money,

they appeal to the people: *If any great public works are being carried out, and more money is required, the municipalities are appealed to, and public meetings are held. All the great cities then vie with each other in presenting the Government with large sums.*

You can see Centennius was having fun. Too bad he didn't know about Kickstarter et al. Need a new hydroelectric dam or suspension bridge? Put it out on the Internet.

The last great war was in 1932, and now the world is at peace, except of course for that aforementioned European war of 1983. The British rule whatever the Americans don't. *The seat of the Imperial Government has hitherto been London, but British influence has made such strides in the East that there is every probability of another city being chosen for the capital, and of the seat of Government being made more central. Should one of the now restored ancient cities of the East become the metropolis of this glorious Imperial Confederation, the United States would certainly come into the Confederation, as great numbers of Americans have already migrated to the Orient.*

Beijing, no doubt. Israel was re-established, which was a good call by Centennius, but the Muslims are nowhere. What has the anglophones worried are the Slavs. Nothing new there or divergent from our timeline. A Serbian friend of mine was fond of remarking that anytime there was war in Europe, there was a Balkaner at the start of it.

Around the world, crime and sickness have been abolished, and all is sweetness and light. Centennius is here poking fun at other utopian writers, as he does some elaborate and deliberately unconvincing handwaving to show how the future arrived.

Sooner or later, a utopian writer has to at least make an effort to explain how heaven came to be realized on Earth. Centennius brings in the Society of Benefactors, a noble group of millionaires (billionaires in today's inflated currency) who did good deeds and gradually extended their influence until they were the power behind the thrones.

The final sentence is: *No man can despair who ponders on the position of the Dominion in 1983.* And on that note we depart, and return to our lives in mundane 2018.

SERIES DETECTIVES: PART 2

by Dale Speirs

[Part 1 appeared in OPUNTIA #402.]

The success of Sherlock Holmes triggered the creation of dozens of series about private detectives. Few have withstood the test of time as well as Holmes.

Nick Carter.

Nick Carter preceded Sherlock Holmes by a year, first appearing in 1886 in a weekly fiction newspaper. He then had many lives in magazines, novels, movies, and radio, before the death of old-time radio in 1955. There were some subsequent attempts to revive him but they were unworthy. Carter was older, but Holmes lived on past him.

I haven't read any of the print stories or novels, but I have been downloading episodes of the OTR series NICK CARTER, MASTER DETECTIVE. (This and hundreds of other OTR shows are available as free mp3s at www.archive.org) The episodes are noisy and fast-paced, well suited for action adventure. I've reviewed the occasional episode in my thematic reviews, but I'll do a few here chosen at random.

Carter is an aggressive know-it-all detective with an overwhelming ego and absolutely certain of everything he does. The police are almost entirely absent during his investigations. In many episodes, they never appear at all, and the entire murder case is handled by Carter. The fuss and bother of a court trial is avoided by having him get into a gunfight with the culprits and killing them.

The episodes are bang-bang-bang shows, and not just figuratively. They opened with someone frantically pounding on Carter's door. Bowen would open it and ask what's the matter. The caller would shout that it's another case for Nick Carter, Master Detective. What puzzles me though, is that there is never any mention of his fees. In many episodes it is obvious he is investigating pro bono and sometimes at great expense. Yet he pays a secretary and manages an office with an elaborate card index of criminals and a laboratory.

"Death Goes To The Post, Or, The Mystery Of The Unlucky Jockey" is a 1945 episode, written by Jock MacGregor. Carter and his assistant Patsy Bowen visit the race track, and chat with a tout, who highly recommends the favourite. She

puts $2 on it and almost wins, but the jockey falls off the horse and is trampled to death. A dark horse wins at impressive odds.

Carter is suspicious and decides to bluff the owners of both horses. He thinks the jockey may have been shot off by a rifleman. Since he was trampled by the following horses, there was no autopsy. The problem is, the bluff is too successful, and both owners respond to it instead of just the guilty one as Carter planned.

The tout goes missing, except for one of his ears, and Carter gets the murderer for that death instead. What you lose on the swing, you gain on the roundabout. Once the culprit is arrested for what will eventually be a trip up the river to the electric chair, the epilogue takes care of all the loose threads and details.

from the 1934 August issue of ASTOUNDING

"Case Of The Sunken Dollar" is a 1947 episode, writer uncredited, about the murder of a coin dealer and theft of an 1804 American silver dollar, today worth millions and back then tens of thousands. Carter investigates.

The episode says that the coins were being sent in one shipment when it was lost at sea, with only three surviving at the Mint. In reality, the coin was never minted in 1804. It was produced in the 1830s as part of coin sets which the U.S. government intended to present to foreign kings as diplomatic gifts. Fifteen are known to have survived. It is one of the most counterfeited American coins.

The murder of the dealer was done in cold blood so as to stir up publicity about the theft. The thieves then prepared dies duplicating the coin, with the idea of selling counterfeits on the black market to collectors who thought they were buying the authentic stolen coin.

The collectors would keep quiet about their possession of what they thought was the stolen coin. It was enough that they had it and could be smug about their superiority over other collectors. This procedure has actually been done in real life with various art works, where the original is stolen and then copies sold. The beauty of it is that the collectors could never complain to the police if they discovered it was a fake.

The intent of the coin thieves was to sell counterfeits to a select list of dozens of collectors across the country who were known to be fanatical numismatists. At $10,000 a pop, huge money back then, and selling to thirty collectors, the thieves could retire in style.

The engraver who prepared the fake dies gets what's coming to him, and eventually so do the thieves. Lots of action as the characters crash about with all the subtlety of a rogue elephant. Bowen, as she often was, is the damsel in distress. Carter rescues her at the last moment when the thieves try to kill her for knowing what she did.

As I Was Going.

James P. Blaylock has a series of books and short stories about Prof. Langdon St. Ives, his assistant Jack Owlesby, who usually narrates the stories, and their friend Tubby Frobisher. They are explorers and scientists in Victorian-era England. If St. Ives is Holmes and Owlesby is Watson, then their Moriarty is Ingacio Narbondo, alias Dr Frosticos.

THE EBB TIDE (2009) begins with an antique map of Morecambe Bay. It marks the location of a mysterious extraterrestrial device that fell to Earth many years ago. The device was recovered after impact, but later lost in the quicksands of the bay while being carried elsewhere.

St Ives would like the map, and so would Frosticos. The search and adventures are on. St Ives and his men find a secret subterranean shipyard, wherein are strange submersiles under construction. The bad guys ambush them in the cavern, so they steal a submersile and escape into the River Thames.

From there, it's off to Morecambe Bay, hauling the submersile overland by wagon instead of taking the long way around Britain by sea. Frosticos is in the chase in his own submarine, although he took the scenic route via the English Channel and then north past Liverpool to Morecombe Bay.

On arrival. St Ives et al use their submersile to locate the quicksand pool and then sink down into it safely. They penetrate the false bottom of the bay and into a giant water bubble beneath. Just as they recover the artifact, Frosticus arrives in his submarine. More alarums and excursions follow.

The artifact is a breadbox-sized egg-shaped crystal. When held by a human, it warms up, emits light, and has anti-gravity abilities. St Ives and his friends defeat Frosticos and his henchmen (evil overlords don't have friends, they have flunkies and henchmen).

At that point, the novel ends abruptly, like a skydiver does if his parachute doesn't open. One presumes that St Ives put the device on his knickknack shelf. The novel reads well, and I finished it in one sitting. The narrative is clear, with no massive infodumps or verbal pyrotechnics. Recommended.

THE AFFAIR OF THE CHALK CLIFFS (2011) begins with a disturbance at the Explorers Club, when the attending members suddenly go berserk. One of them was Frobisher, who describes the insanity to St Ives. A learned professor began smoking three pipes at once, and a retired Admiral threw all the furniture out into the street while shouting for everyone to clear the decks and make ready for battle. Frobisher grabbed a sword off the wall and decapitated a stuffed boar, under the impression it was attacking him.

After everyone suddenly recovers, the speculation begins. At first thought, the punch might have been spiked, but since everyone went insane simultaneously and recovered their wits in synchronization, the cause must have been something else.

St Ives's wife Alice was visiting a niece in the village of Heathfield. The same sort of sudden insanity had broken out there, as a result of which the authorities sealed off the village with a quarantine. Then it happens again to a ship in the English Channel, yet the rest of England is normal.

After some investigation, St Ives and his men learn that Lord Busby, Earl of Hampstead, had been experimenting with an energy ray that drove humans mad. The catch was that it was powered by precious gems and consumed them in the process, making it a very expensive device. The evil Narbondo, who seems to have dropped the Frosticos alias, is looking for an artificial emerald that can be re-used and won't bankrupt him. St Ives has possession of the only such gem, and so the chase is on.

Narbondo habitually travels by submarine, so the white cliffs near Brighton make a good hideout. After much to-ing and fro-ing by St Ives and company, it all comes to a climax in Narbondo's secret laboratory deep inside the chalk cliffs. If you've ever watched a 1960s James Bond movie, you can guess what happens next. A steady read and a good action-adventure novel.

WHEN WORDS COLLIDE 2018

Calgary's annual readercon When Words Collide will be held the weekend of August 10 to 12, 2018, at the Delta Calgary South Hotel on Southland Drive and Bonaventure Drive SE. This is a multi-genre convention covering science fiction, mysteries, fantasy, romance, westerns, and historical fiction, held for the eighth time. Information from: www.whenwordscollide.org

Lots of writer workshops and panels on publishing, editing, writing, social media, and reading. The dealer bourse is strictly limited to books, with many small-press publishers attending. I've attended every WWC and enjoyed them all. My reports of previous conventions appeared in OPUNTIAs #71, 253, 266, 282, 318, 350, and 387.

Membership is capped at 750. Each year this convention, and the hotel, are booked up solid by June, so don't delay.

ZINE LISTINGS

[I only list zines I receive from the Papernet. If the zine is posted on www.efanzines.com or www.fanac.org, then I don't mention it since you can read it directly.]

THE FOSSIL #374 (US$15 annually from The Fossils Inc, c/o Tom Parson, 157 South Logan Street, Denver, Colorado 80209) Devoted to the history of apazines, this issue has a few obituaries, illustrated by essays of the deceased. Ken Faig Jr shows how to use genealogical resources and Google Maps to track down the history of an area. The Internet has made it easier than ever before to do historical research.

SEEN IN THE LITERATURE

Yong-Zhong, Q. (2018-01-25) **Neutrinos, supernovae, and the origin of the heavy elements.** arXiv:1801.09554v1 [astro-ph.HE] Preprint at www.arxiv.org

Author's abstract and extracts: *Stars of 8 to 100 M* [solar masses] *end their lives as core-collapse supernovae (SNe). In the process they emit a powerful burst of neutrinos, produce a variety of elements, and leave behind either a neutron star or a black hole. The wide mass range for SN progenitors results in diverse neutrino signals, explosion energies, and nucleosynthesis products. A major mechanism to produce nuclei heavier than iron is rapid neutron capture, or the r process. This process may be connected to SNe in several ways.*

After baryogenesis in the early universe and when the temperature drops to T 100 MeV, the only baryons present are neutrons and protons. ... As the universe cools further, big bang nucleosynthesis fuses neutrons and protons into light nuclei such as ^{2}H, ^{3}H, ^{3}He, ^{4}He, ^{7}Li, *and* ^{7}Be.

Under the influence of gravity, Big Bang debris containing mostly protons condenses into stars, which shine by burning protons into heavier nuclei and provide the newly synthesized products to the interstellar medium when they die. Therefore, the next generation of stars formed from this medium are enriched beyond the Big Bang composition. This cycle repeats as generation after generation of stars are born, lead luminous lives, die glorious deaths, and in the process convert primordial baryons into nuclei of the entire periodic table.

Ossa Ossa, F., et al (2018) **Two-step deoxygenation at the end of the Paleoproterozoic Lomagundi Event.** EARTH AND PLANETARY SCIENCE LETTERS 486:70-83

Authors' abstract: *The circa 2.1 Ga* [gigayears ago] *Francevillian Group of Gabon was deposited in the aftermath of the Great Oxidation Event (GOE) and records the Lomagundi Event (LE), which is the most pronounced and long-lived carbon isotope excursion in the geologic record. Moreover, the sedimentary succession contains putative evidence for the earliest appearance of macro-eukaryotes* [multicellular organisms].

An emerging paradigm is that the end of the LE was accompanied by a deoxygenation event that preceded the apparent stability of environmental and redox conditions as well as the carbon cycle characteristic of the Mesoproterozoic. However, the processes that led to deoxygenation some 300 to 200 Ma after the beginning of the GOE are not well understood.

Here we present a multi-proxy stable isotope study of the Francevillian Group. We suggest that sedimentation of the lower part of the Francevillian Group took place during the LE in oxygenated shallow waters with elevated sulfate concentrations.

Two episodes of anoxic [no oxygen] *water shoaling during deposition of the upper Francevillian Group correspond with broader marine deoxygenation and a contraction of the seawater sulfate reservoir. This shoaling of anoxic conditions may be linked to intense submarine hydrothermal and volcanic activity that led to sedimentary manganese deposits.*

We propose that increased concentrations of aqueous, hydrothermally sourced reductants drove oxygen consumption during the first deoxygenation event and

established a sulfidic oxygen minimum zone at the margin of the shallow shelf. Carbonates with positive values characteristic of the LE precipitated during this first stage of deoxygenation.

The second deoxygenation, separated from the previous event by a period of well oxygenated conditions, was marked by a stronger contraction of the seawater sulfate reservoir and coincided with the end of the LE. During this time, widespread euxinic conditions were established in shallow (above storm wave base) marine environments. The presence of a shallow-water redox cline points to a generally low-oxygen atmosphere-ocean system.

Further, the negative co-variation between and values in sediments of the Francevillian Group and other sedimentary successions of similar age worldwide suggests that the inferred two-step deoxygenation corresponding to the end of the LE reflects global rather than local events that likely occurred between about 2.1 and 2.05 Ga ago.

Speirs: Underwater volcanic activity almost cut off multicellular life before it got fairly started in the oceans. The activity poisoned the global ocean and depleted it of oxygen.

Nanglu, K., and J.B. Caron (2018) **A new Burgess Shale polychaete and the origin of the annelid head revisited.** CURRENT BIOLOGY 28:319-326

[Annelids are the worms, polychaetes are marine bristle worms. The Burgess Shale formation, in Yoho National Park, British Columbia, is 542 megayears old, at the dawn of multicellular life.]

Authors' abstract: *Annelida is one of the most speciose (about 17,000 species) and ecologically successful phyla. Key to this success is their flexible body plan with metameric trunk segments and bipartite heads consisting of a prostomium bearing sensory structures and a peristomium containing the mouth.*

The flexibility of this body plan has traditionally proven problematic for reconstructing the evolutionary relationships within the Annelida. Although recent phylogenies have focused on resolving the interrelationships of the crown group, many questions remain regarding the early evolution of the annelid body plan itself, including the origin of the head.

Here we describe an abundant and exceptionally well-preserved polychaete with traces of putative neural and vascular tissues for the first time in a fossilized annelid. Up to three centimeters in length, Kootenayscolex barbarensis gen. et sp. nov. is described based on more than 500 specimens from Marble Canyon and several specimens from the original Burgess Shale site (both in British Columbia, Canada).

K. barbarensis possesses biramous parapodia along the trunk, bearing similar elongate and thin notochaetae and neurochaetae. A pair of large palps and one median antenna project from the anteriormost dorsal margin of the prostomium. The mouth-bearing peristomium bears neuropodial chaetae, a condition that is also inferred in Canadia and Burgessochaeta from the Burgess Shale, suggesting a chaetigorous origin for the peristomial portion of the head and a secondary loss of peristomial parapodia and chaetae in modern polychaetes.

Tsuihiji, T., et al (2017) **Gigantic pterosaurian remains from the Upper Cretaceous of Mongolia.** JOURNAL OF VERTEBRATE PALEONTOLOGY 37:doi.org/10.1080/02724634.2017.1361431

Authors' abstract: *Fragmentary cervical vertebral elements of a gigantic pterosaur are described from the upper Campanian-Maastrichtian Nemegt Formation in the Gobi Desert. With an estimated width of a posterior centrum across the postexapophyses of 198 mm, this taxon represents one of the largest pterosaurs currently known. This is the first discovery of a pterosaur from the Nemegt Formation, adding further evidence that gigantic pterosaurs were widely distributed in Eurasia and North America during the latest Cretaceous.*

Speirs: A centrum is the central part of vertebrae that surrounds and protects the spinal cord. This pterosaur had a centrum nearly 20 cm in diameter, the size of a large dinner plate. Any critter with vertebrae the size of dinner plates had to be a big one indeed.

Lu, L.M., et al (2018) **Evolutionary history of the angiosperm flora of China.** NATURE 554:234-238

[Angiosperms are the flowering plants. They first began to evolve in the Cretaceous era when dinosaurs roamed the Earth. Eastern China and western

North America had the same flora until the Ice Ages wiped out the North American side while leaving the Chinese side as the last refuge of the flora.]

Authors' abstract: *High species diversity may result from recent rapid speciation in a 'cradle' and/or the gradual accumulation and preservation of species over time in a 'museum'. China harbours nearly 10% of angiosperm species worldwide and has long been considered as both a museum, owing to the presence of many species with hypothesized ancient origins , and a cradle, as many lineages have originated as recent topographic changes and climatic shifts, such as the formation of the Qinghai-Tibetan Plateau and the development of the monsoon, provided new habitats that promoted remarkable radiation.*

However, no detailed phylogenetic study has addressed when and how the major components of the Chinese angiosperm flora assembled to form the present-day vegetation. Here we investigate the spatio-temporal divergence patterns of the Chinese flora using a dated phylogeny of 92% of the angiosperm genera for the region, a nearly complete species-level tree comprising 26,978 species and detailed spatial distribution data.

We found that 66% of the angiosperm genera in China did not originate until early in the Miocene epoch (23 million years ago (Mya)). The flora of eastern China bears a signature of older divergence (mean divergence times of 22.04-25.39 Mya), phylogenetic overdispersion (spatial co-occurrence of distant relatives) and higher phylogenetic diversity.

In western China, the flora shows more recent divergence (mean divergence times of 15.29-18.86 Mya), pronounced phylogenetic clustering (co-occurrence of close relatives) and lower phylogenetic diversity.

Analyses of species level phylogenetic diversity using simulated branch lengths yielded results similar to genus-level patterns. Our analyses indicate that eastern China represents a floristic museum, and western China an evolutionary cradle, for herbaceous genera; eastern China has served as both a museum and a cradle for woody genera.

Bai, M., et al (2018) **A new Cretaceous insect with a unique cephalo-thoracic scissor device.** CURRENT BIOLOGY 28:438-443

Authors' abstract: *Insects use different parts of their body to cling to mating partners, to catch prey, or to defend themselves, in most cases the mouthparts or the legs. However, in 400 million years of evolution, specialized devices were independently acquired in several groups to adopt these tasks, as for instance modified legs in mantids, assassin bugs or stick insects, or clasping antennae of the globular springtails. So far, no known species used the neck region between the head and thorax in one of these functional contexts.*

Here we describe females of Caputoraptor elegans, a very unusual, presumably predacious insect discovered in approximately 100-million-year-old Burmese amber. Based on several morphological features, we conclude that this species lived in the foliage of trees or bushes. A unique feature of the new taxon is a scissor-like mechanism formed by wing-like extensions on the posterior head and corresponding serrated edges of the dorsal sclerite of the first thoracic segment. Based on the specific structure of the apparatus, we conclude that it was probably used by females to hold on to males during copulation. A defensive or prey-catching function appears less likely. A similar mechanism did not evolve in any other known group of extant or extinct insects.

Wills, B.D., and D.A. Landis (2018) **The role of ants in north temperate grasslands: a review.** OECOLOGIA 186:323-338

Authors' extracts: *Grassland ecosystems support high levels of plant and animal biodiversity, but are increasingly threatened by global change drivers including land-use change, climate change and invasive species. Temperate grasslands and savannas have been particularly impacted and currently represent the single most highly converted and least protected biome globally.*

For example, in North America past conversion of grasslands to agriculture and other uses has resulted in the loss of more than 90% of the former total area of mixed grass prairies and conversion continues to occur. Recent interest in corn ethanol production in North America has contributed to the continued loss and fragmentation of North American grasslands. Similar rates of grassland loss have also occurred throughout Europe and over vast portions of East Asia.

Overall ants appear to play a positive role in grasslands. Previously published meta-analyses suggest the roles of ants as consumers is generally positive for plants, serving to protect plants from herbivory. Moreover, this and prior reviews of their role ants play as ecosystem engineers in a variety of systems have found that ants generally improve soil conditions supporting greater plant diversity.

Lombardo, M.P., and R.O. Deaner (2018) **Born to throw: The ecological causes that shaped evolution of throwing in humans.** QUARTERLY REVIEW OF BIOLOGY 93:

Authors' abstract: *Humans are the only species capable of powerful and accurate overhand throwing. However, the evolution of this ability remains underexplored. Here we draw on several lines of evidence; anatomical, archeological, cross-species comparisons, ethnographic; to develop a scenario for the evolution of throwing. Throwing has deep roots in the primate lineage. Nonhuman primates throw projectiles during agonistic interactions but rarely to subdue prey.*

Thus, we argue that throwing arose during agonistic interactions and was later incorporated into hunting by ancestors. The fossil record indicates that anatomical adaptations for high-speed throwing in Homo first appeared about two million years ago. Once the effectiveness of projectile weapons became critical to success in combat and hunting, the importance of the ability to throw, intercept, and dodge projectiles would have resulted in stronger selection on males than females to become proficient at these skills because males throw projectiles more often than females in both combat and hunting.

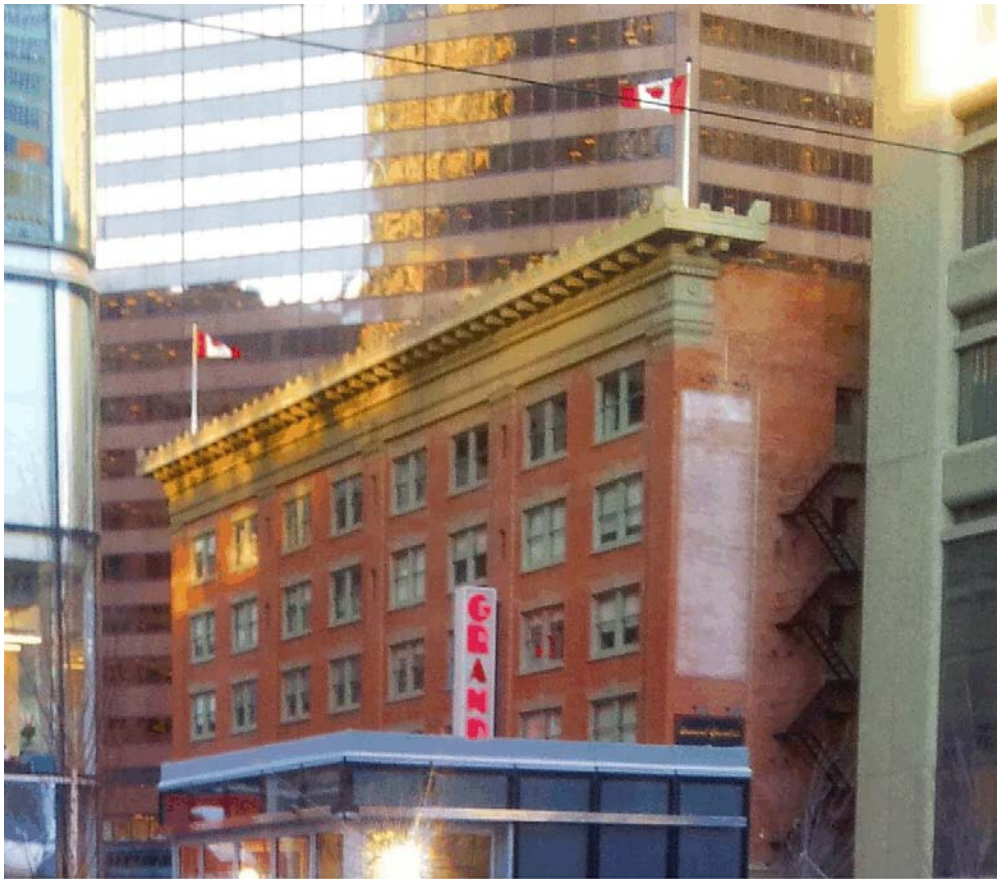
COWTOWN VEXILLOLOGY: PART 2

photos by Dale Speirs

[Part 1 appeared in OPUNTIA #367.]

I was waiting for a bus downtown at 7 Avenue SW and 1 Street when I noticed these flags flying in opposite directions and took this smartphone photo. They are on the Lougheed Building, which was one of the taller buildings when it was built in 1912. It is today on the historic buildings registry, one of the oldest remaining buildings in Calgary. All of its neighbours were replaced by skyscrapers, which explains the behaviour of the flags.

The building is completely surrounded by skyscrapers. It is on the corner of 6 Avenue SW and 1 Street. Winds are deflected by the surrounding towers into a cyclone that circulates clockwise over the roof of the Lougheed, as a result of which the flags fly in opposite directions.



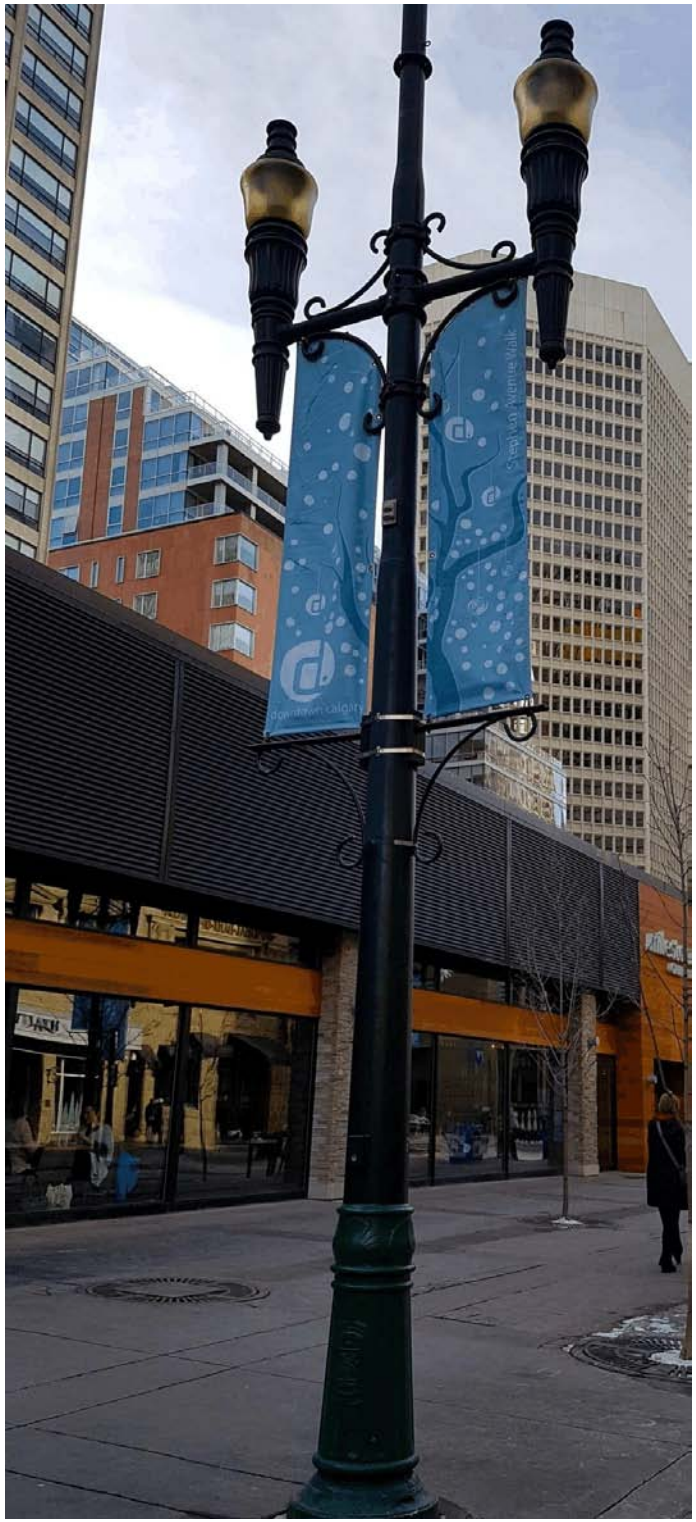
The fourth annual Calgary Kilt Skate was held at Olympic Plaza on February 11. Traditionally nothing is worn under the kilt but since the temperature was -25°C when I walked by, one can forgive the lads for wearing trews under their kilts. There were saltires everywhere. Wha's lak us?

The Speirs family are descended from lowlanders. No illiterate oatmeal savages in our bloodlines. My father's ancestors came from the village of Houston, just west of Paisley. They arrived in Canada in the early 1830s. No tartan tamfoolery here. The surname translates into English as "the watchman's son".

On the next page: Olympic Plaza is the eastern terminus of the Stephen Avenue pedestrian mall, which is 8 Avenue South from City Hall to 4 Street SW. The City of Calgary has a budget for banners on streetlights. They are changed at regular intervals. The photos on the next page were taken in 2017 along Stephen Avenue mall, and show the summer, autumn, and winter banners.


Stephen Avenue Walk
downtown calgary
TAXI ONLY


Stephen Avenue Walk
downtown calgary


Stephen Avenue Walk
downtown calgary