

OPUNTIA 404



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.

CITIUS, ALTIUS, FORTIUS
photos by Dale Speirs

I took the cover photo on January 9 from the food court at Chinook Centre Mall in south central Calgary. The sign might be misleading, because it is not the mall that is the headquarters of Team Canada Winter Olympics but the City of Calgary.

We hosted the 1988 Winter Olympics and that summer South Korea hosted the Summer Olympics. This year South Korea hosted the Winter Olympics in February but it is unlikely that Calgary could ever host a Summer Olympics. We just don't have the facilities for them. Yachting, for example, is not a popular activity on the semi-desert flatlands of southern Alberta.

I took the photo above right of the South Korean exhibit in the trade show building at the 2017 Stampede rodeo. The photo below was taken January 13 and shows a panoramic view of Canada Olympic Park, just inside the western city limits of Calgary. The buildings are hidden behind spruce forests just outside the right of the photo. This is where the ski jump events were held in the 1988 Winter Games.



I don't follow sports but I do love a parade or party, and Calgary has always been good for such events. On January 24, Canada Post issued a set of stamps for Women In Winter Sports. In the past, they had bought rights from the Olympic Committee for Olympic stamps but the cost wasn't justified. Now they just call it Winter Sports and skip the fees. The first day of issue for the stamps was in Calgary at Canada Olympic Park. Members of the Calgary Philatelic Society, of which I have been one since 1980, were invited to attend.



Join us as we unveil the
**2018 Women in
Winter Sports** stamps

We are pleased to invite you to
Canada Post's VIP event to unveil
stamps that celebrate the achievements
of six remarkable Canadian women.

Assistez au dévoilement des
timbres de 2018 consacrés aux
Championnes des sports d'hiver

Nous avons le plaisir de vous inviter à
l'événement VIP de Postes Canada au cours
duquel seront dévoilés les timbres qui soulignent
les exploits de six remarquables Canadiennes.



Wednesday, January 24, 2018
11:15 am to 1:30 pm
(doors open at 10:45 am)

Canada's Sports Hall of Fame – Grand Hall
169 Canada Olympic Road SW
Canada Olympic Park
Calgary, Alberta

RSVP by Friday, **January 12** to
CorporateEvents@canadapost.ca

Lunch reception to follow official ceremony

Le mercredi 24 janvier 2018
De 11 h 15 à 13 h 30
(ouverture des portes à 10 h 45)

Panthéon des sports canadiens – Grand hall
169, Canada Olympic Road SO
Canada Olympic Park
Calgary (Alberta)

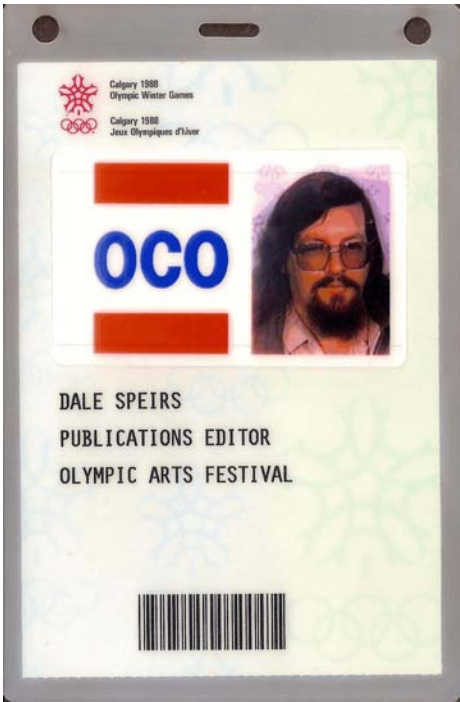
RSVP d'ici au vendredi **12 janvier** à
EvenementsCorporatifs@postescanada.ca

Le dîner sera servi après la cérémonie officielle



Bottom: The entrance to the park goes past the ski jump runout area.

At right: I was a volunteer for the 1988 Calgary Olympics and got a nifty bright red blazer and a full-length blue parka. (See OPUNTIA #18.5 for my account of the Games as I experienced them.)



I was a District Foreman with the Calgary Parks Dept. at the time, and took a month’s vacation. I stopped by the Parks office the first day of my vacation and my boss took this Polaroid of me in my Olympic finery.

I still have the clothes, and decided to wear them to the 2018 event. There was a bit of trouble buttoning them up. They seem to have shrunk. I can’t think of any other reason why they were so tight.



The ceremony was inside the Canadian Sports Hall of Fame. It wasn't too difficult to spot the location.



And afterwards, a delicious buffet.

Clara Hughes won medals in both Summer and Winter Olympics. She competed as a speed skater and road cyclist.



The first-day cover of her stamp.



Danielle Goyette was a pioneer player in women's international and Olympic hockey. She is now head coach of the University of Calgary women's hockey team.



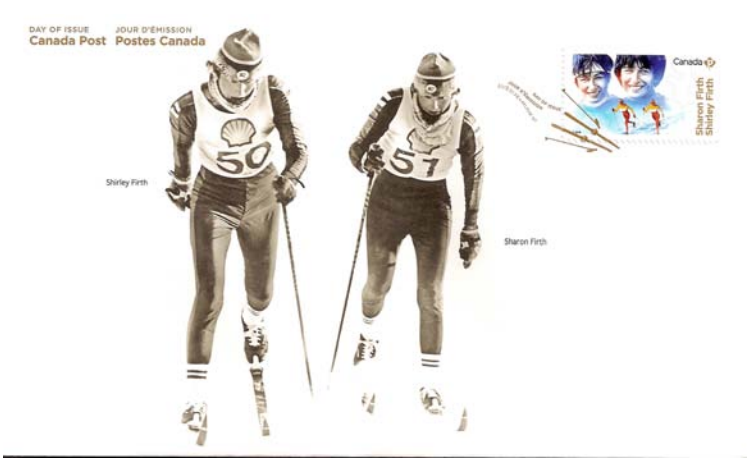
Nancy Greene was Canada's best skier in the 1960s, winning gold at the 1968 Winter Olympics in Grenoble for the giant slalom. She was appointed to the Canadian Senate in 2009.



Sonja Gaudet was paralyzed in a horse-riding accident when she was 30, but came back as a Paralympic athlete.



Shirley (died 2013) and Sharon Firth were twin sisters competing in cross-country skiing. Shirley was represented at the ceremony by her two daughters. Sharon is at right.



Below: The photo opportunity after the ceremony.
At right: The customized stamp Canada Post used to mail the ceremony invitations.



STATE OF THE ART

by Dale Speirs

Project Gutenberg has been scanning public-domain texts and putting them online at www.gutenberg.org as free books. It's a great place to find many old books that would be very difficult and certainly expensive to buy as physical copies. In recent years I've been doing thematic book reviews rather than random books. I've accumulated some old books from Project Gutenberg which make an interesting study on how knowledge has advanced. Herewith I mention some of them, not to make fun of them but to see how our great-grandparents' generation thought about things.

The Moon.

THE MOON CONSIDERED AS A PLANET, A WORLD, AND A SATELLITE (1874) by James Nasmyth and James Carpenter was a summary of the state of lunar knowledge in the 1870s, illustrated with many excellent photographs. So near and yet so far, the Moon's history had to be deduced by what information was available, even if the conclusions were wrong.

The book begins with the general question of how stellar systems are formed, one which has pretty much been agreed to be close to Pierre Laplace's nebular hypothesis, formulated in 1796, and subsequently modified by later astronomers. Clouds of dust and gas are aggregated by gravity. As they condensed, the system began rotating. The core became a star and matter in the outer portions clumped to form planets.

From there, the book eventually wends its way to the history of the Moon. It concludes the craters are volcanic. As the Moon cooled after formation, a cold crust formed on its surface while the interior remained molten. Liquid metals shrink as they solidify, which caused the surface to shrivel and crack open. Magma flowed from the cracks or erupted from spot breaks, creating a profusion of craters, ridges, and chains of mountains.

We know now that lunar craters are almost entirely the result of bolide impacts. While there may be traces of vulcanism on the Moon, they are so small and stopped so many billions of years ago as to be insignificant. The vast majority of craters are 3.5 to 4.5 gigayears old, during which Earth and the Moon soaked up all the asteroids in their orbits or likely to cross orbits, referred to as the Late Hadean Bombardment.

The next question addressed in the book is whether the Moon has an atmosphere. This was easily resolved. No one has observed clouds floating over the surface. The edge of the Moon is razor sharp, with no fuzziness that an atmosphere would produce. Stars lined up at the edge of the Moon are not refracted nor do they twinkle from a lunar atmosphere.

This photo was taken in the early 1870s and illustrates the book.



The Moon's rotation has a slight wobble called libration, which enables us to see a bit more than just half, in fact four-sevenths of its surface. The authors note: *The remaining three-sevenths must for ever remain a terra incognita to the habitants of this earth, unless, indeed, from some catastrophe which it*

would be wild fancy to anticipate, a period of rotation should be given to the moon different from that which it at present possesses.

Some highly fanciful theorists have speculated upon the possible condition of the invisible hemisphere, and have propounded the absurd notion that the opposite side of the moon is hollow, or that the moon is a mere shell; others again have urged that the hidden half is more or less covered with water, and others again that it is peopled with inhabitants. There is, however, no good reason for supposing that what we may call the back of the moon has a physical structure essentially different from the face presented towards us. So far as can be judged from the peeps that libration enables us to obtain, the same characteristic features (though of course with different details) prevail over the whole lunar surface.

The authors of this detail considerable amount of analogies between Earth volcanoes and lunar craters, drawing an obvious conclusion: *We can scarcely doubt that where a lunar crater bears general resemblance to a terrestrial crater, the process of formation has been nearly the same in the one case as in the other.*

Where variations present themselves they may reasonably be ascribed to the difference of conditions pertaining to the two spheres. The greatest dissimilarity is in the point of dimensions; the projection of materials to 20 or more miles distance from a volcanic vent appears almost incredible, until we realize the full effect of the conditions which upon the moon are so favourable to the dispersive action of an eruptive force.

In the first place, the force of gravity upon our satellite is only one-sixth of that to which bodies are subject upon the earth. Secondly, by reason of the small magnitude of the moon and its proportionally much larger surface in ratio to its magnitude, the rate at which it parted with its cosmical heat must have been much more rapid than in the case of the earth, especially when enhanced by the absence of the heat-conserving power of an atmosphere of air or water vapour.

The disruptive and eruptive action and energy may be assumed to be greater in proportion to the more rapid rate of cooling; operating, too, as eruptive action would on matter so much reduced in weight as it is on the surface of the moon, we thus find in combination conditions most favourable to the display of volcanic action in the highest degree of violence.

Moreover, as the ejected material in its passage from the centre of discharge had not to encounter any atmospheric resistance, it was left free to continue the primary impulse of its ejection without other than gravitative diminution, and thus to deposit itself at distances from its source vastly greater than those of which we have examples on the earth.

The bulk of the book is taken up by comparisons of volcanoes on Earth with lunar craters, confirming the authors's belief that the Moon's craters are volcanic. Chapter 13 disposes of the belief of many people, even into the late 1800s, that there might be life on the Moon.

The only legitimate phase of the question we can entertain is this: can there be on the moon any kind of living things analogous to any kind of living things upon the earth? And this question, we think, admits only of a negative answer.

The lowest forms of vitality cannot exist without air, moisture, and a moderate range of temperature. It may be true, as recent experiments seem to show, that organic germs will retain their vitality without either of the first, and with exposure to intense cold and to a considerable degree of heat; and it is conceivable that the mere germs of life may be present on the moon. But this is not the case with living organisms themselves.

From there, the book considers the topography of the near side of the Moon and what it might be like to human observers. That information hasn't become dated, such as the daily temperature extremes and the absolute blackness of shadows because there is no air to diffuse the light.

An interesting read, notwithstanding our present-day knowledge. Excluding the lunar craters being volcanic, the book is not far off track.

The Air.

THE PROBLEM OF MANFLIGHT (1894) by James Means, published a decade before the Wright brothers first flew, addresses the early research in heavier-than-air flying.

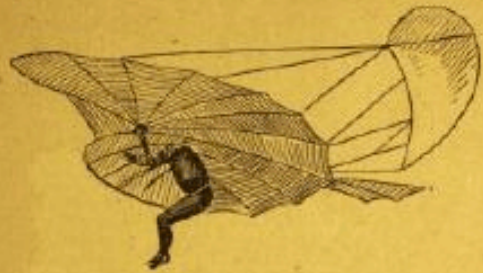
The basic thesis was that engines would not be necessary for controlled flight, taking its cue from birds. The first successful aircraft would rely on the wind. As it happens, aviation did not follow the methods of birds. Aircraft have fixed wings or rotating helicopter blades, not flapping wings moving up and down.

Winds do matter a bit but a modern aircraft relies more on being propelled through the air by engines independent of any lift from the wind.

PRICE, 10 CENTS.

THE PROBLEM OF MANFLIGHT.

BY
JAMES MEANS



THE FLIGHT OF OTTO LILIENTHAL, OF SIEGLITZ, PRUSSIA, AS ACTUALLY
ACCOMPLISHED IN 1893. ACCURATELY DRAWN FROM
AN INSTANTANEOUS PHOTOGRAPH.

BOSTON, MASS.:
W. B. CLARKE & CO.,
340 WASHINGTON STREET.
1894.

The author quotes numerous authorities in the experimental aviation field about how aircraft would glide long distances and only need their engines occasionally to lift back up if there is no wind to tack against. Engines and fuel supplies would add too much weight for sustained flight but could be useful in the same manner that sailing yachts have auxiliary engines for docking or becalming.

Means discusses how birds fly against the wind, angling their wings to lift themselves up, then gliding slowly down in exchange for distance. From there, the answer seems simple. Airplanes will soar, then glide, and repeat, with no engines. The initial lift is provided by tethered balloons as high as 1,000 feet. The aircraft is winched up to the height of the balloon, then glides from there over a long distance.

We have seen how the soaring bird tacks, first up, then down, then up again, and then down again. That conveys the idea of the perfection of rapid transit for passengers and freight. With the captive balloon we can tack up, with the soaring machine we can tack down. Short tacks up, long tacks down; there is no calm for the aeroplane; give it altitude and it can seize from the calm the wind of flight.

A series of experiments with model airplanes was carried out by Means in 1893 at Boston harbor, all of which were failures. Undaunted, he rationalized each experiment and suggested future changes. The main problem was that the gliders were too fragile to withstand a strong wind, and tended to plummet straight down instead of gliding.

He wrote: *What speed may we expect of an improved soaring machine? and upon how gentle a decline can we hope to see it maintain its initial velocity? First, note the fact that with a dirigible aeroplane or soaring machine the rate of speed is practically a matter of choice and depends at the start upon the length of the first swoop. The limit of speed will probably be decided by the strength of the machine and the breathing requirements of the aerial pilot.*

Let us consider a railroad train. Man has safely travelled at a rate of one hundred and twelve miles per hour. On May 11, 1893, the Empire State express on the N.Y.C. R.R. reached that speed in a mile run in thirty-two seconds, one mile westward from Crittenden. So we know that man can safely breathe when travelling at over one hundred miles per hour; yet for this, of course, he needs the same protection which a cab gives to the locomotive engineer.

Means's thesis ends strangely with a single-sentence paragraph: *Aerial transit will be accomplished because the air is a solid if you hit it hard enough.*

Unintended Prophecy.

THE WRECK OF THE TITAN was an 1898 novel by Morgan Robertson. It was about a new unsinkable giant steamship named the Titan, which hit an iceberg on its starboard flank on a night in April 1912. There were not enough lifeboats and most passengers drowned. The novel would be forgotten today had not the Titanic replicated the main points of the story. Well worth reading.

The novel was re-issued in 1912 after the disaster and became famous as one of the greatest unintended prophecies ever. The Titanic had not even been thought of when the novel was published. Robertson was congratulated for his remarkable prescience. He stated that it was just a matter of good research into modern shipbuilding and being able to extrapolate what might and did happen.



The protagonist is a deckhand named John Rowland, an ex-U.S. Navy officer dishonourably discharged and now an alcoholic who can only get the most menial kind of work. Most of the novel is about his woes, not the wreck. He suffers the torments of Job but eventually recovers and redeems himself. That portion of the novel is tedious and melodramatic.

The novel opens with an extended description of the Titan: *She was the largest craft afloat and the greatest of the works of men. In her construction and maintenance were involved every science, profession, and trade known to civilization. On her bridge were officers, who, besides being the pick of the*

Royal Navy, had passed rigid examinations in all studies that pertained to the winds, tides, currents, and geography of the sea; they were not only seamen, but scientists. The same professional standard applied to the personnel of the engine-room, and the steward's department was equal to that of a first-class hotel.

Further on is this description: *From the bridge, engine-room, and a dozen places on her deck the ninety-two doors of nineteen water-tight compartments could be closed in half a minute by turning a lever. These doors would also close automatically in the presence of water. With nine compartments flooded the ship would still float, and as no known accident of the sea could possibly fill this many, the steamship Titan was considered practically unsinkable.*

It is astonishing how accurate the novel was. In 1912, steamships did not have to carry sufficient lifeboats to handle all the passengers. As the novel states: *Unsinkable, indestructible, she carried as few boats as would satisfy the laws. These, twenty-four in number, were securely covered and lashed down to their chocks on the upper deck, and if launched would hold five hundred people. She carried no useless, cumbersome life-rafts; but, because the law required it, each of the three thousand berths in the passengers', officers', and crew's quarters contained a cork jacket, while about twenty circular life-buoys were strewn along the rails.*

One major difference was that the ship was traveling in the opposite direction than the Titanic, having left New York City bound for England. It heads into a nor'easter but because it is unsinkable it travels full speed ahead. Rowland is still drunk from his shore leave, so he is put into the crow's nest. It turns out to be a busy night. A large sailing ship freighter blunders across the path of the Titan and is cut in half. The Titan does not slow down.

The Captain calls an enquiry and bribes all the crew members into silence save Rowland. The passengers were all asleep and knew nothing, since the Titan cut through the sailing ship like a hot knife through butter, with no damage to itself. Rowland, however, says he will howl murder when the ship makes port. The Captain, knowing Rowland to be a lush, arranges with the crew to keep him well supplied with whiskey. The word of one alcoholic against the rest of the crew will be ignored.

Rowland is suffering from delirium tremens on the next night's watch when Titan hits an iceberg at full speed. The description is uncannily like what

happened to the Titanic. A protrusion of the iceberg sliced the side of the ship open, whereas it would have survived if it had been a head-on collision and only one or two compartments flooded.

Seventy-five thousand tons dead-weight rushing through the fog at the rate of fifty feet a second, had hurled itself at an iceberg. Had the impact been received by a perpendicular wall, the elastic resistance of bending plates and frames would have overcome the momentum with no more damage to the passengers than a severe shaking up, and to the ship than the crushing in of her bows and the killing, to a man, of the watch below. She would have backed off, and, slightly down by the head, finished the voyage at reduced speed, to rebuild on insurance money, and benefit, largely, in the end, by the consequent advertising of her indestructibility.

But a low beach, possibly formed by the recent overturning of the berg, received the Titan, and with her keel cutting the ice like the steel runner of an ice-boat, and her great weight resting on the starboard bilge, she rose out of the sea, higher and higher, until the propellers in the stern were half exposed, then, meeting an easy, spiral rise in the ice under her port bow, she heeled, overbalanced, and crashed down on her side, to starboard.

The rest is predictable, although the story adds one item the Titanic survivors did not have to deal with. Rowland has to fight off a polar bear that was riding on the iceberg and which was very hungry indeed. After that, the story is one of Rowland’s continual suffering during the wreck and after rescue. The Captain is no better off, there being that incident of the ship he cut in half for which he must answer at an inquiry. It turns out there were survivors from that wreck, ready and willing to testify against him.



ON THE CUTTING EDGE OF TECHNOLOGY: PART 4
by Dale Speirs

[Parts 1 to 3 appeared in OPUNTIA #258, 346, and 360.]

Part of the science fictional world we live in, and which certainly separates us from all other animals, is our ability to capture sounds and play them back at a later time. In some cases, a century. The gramophone record dominated the music industry for the first three decades of the 1900s, until radio forced competition on them.

By the 1940s, it was possible to use gramophone recording devices whereby one could record a message on a disk. These devices were expensive for home use but many businesses had them for dictation. There were stores where a customer could go in and, for a reasonable fee, record a message on a disk to be sent through the mails to distant family or friends.

Affordable home-use tape recorders didn’t come into their own until the 1960s, other than experiments by techies, but they in turn fell to the CD disk in the 1980s.

Live On Wax Cylinder.

Before the disk, there was the cylinder. “The Wizard Of West Orange” by Steven Millhauser (2008, in his DANGEROUS LAUGHTER collection) is a secret history about an inventor never named but obviously Thomas Edison. As he flits about from project to project, it occurs to him that phonographs could be made to record more than sound.

He invents the haptograph, which is at first an arm-length glove, then eventually a full body suit. The haptograph used pinpricks from blunt needles to record pressures on a wax cylinder, such as a handshake or a caress. The recording is then played back through the haptograph, which is lined with pins that move according to the wax cylinder, and thus reproduces the handshake or caress.

When it gets to the body suit stage, a technician recognizes the implications. In a fit of moral outrage, he smashes it. Edison fires him but is too busy with other projects to rebuild the haptograph. What might have been, however, may well become again. A plausible story.

Live On Disk.

“Midnight Ride”, written by John Addison, was a 1951 episode of the old-time radio series THE NEW ADVENTURES OF NERO WOLFE. (This and hundreds of other OTR shows are available as free mp3s at www.archive.org) The portly Nero Wolfe and his rakish assistant Archie Goodwin were created by Rex Stout, who published a long series of novels and short stories about them from 1934 until his death in 1975. Stout licensed the characters to radio networks as a pastiche series, but did not write any scripts, confining himself to cashing the royalty cheques.

This episode has the detecting duo investigating a murder by a greedy young couple who are tired of waiting to inherit their rich aunt’s fortune. She had managed to get a call in to Goodwin for help before her heirs gave her a massive drug overdose to make it look like a natural death.

Part of the evidence involves discovering that a bad guy had forgotten to turn off his dictation machine when he answered a telephone call. While he discussed how to get things done, the machine cut a record of the conversation. In the excitement after hanging up, he rushed away without shutting off the machine. When his premises were searched afterwards, Goodwin noticed the humming sound on the machine on standby.

The recorded disk was appropriated by Goodwin for playback back at Wolfe’s brownstone. It condemned the culprits, although it proved superfluous when the heirs got into a gunfight with police, thereby saving the State the cost of a trial.

Live On Tape.

OFF THE RECORD (2010) by Dolores Gordon-Smith is a novel set in 1924 when gramophones were still cutting edge, but the first faint squawkings of commercial broadcast radio were being heard. This novel is a manor house murder mystery set in rural England.

Charles Otterbourne is a manufacturer of scientific instruments, typewriters, telephones, and recording devices. He arranged a meeting with Prof. Alan Carrington, a cranky Scottish inventor, who has something new in recording devices, one that uses tape. The deal doesn’t go through, owing to the misfortune that Otterbourne was shot to death in his study.

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One who has not heard a Columbia Graphophone or Grafonola produced within the last year and a half, does not realize what the instrument is capable of.

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We ask and urge comparison.



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“Regent,” \$200.

New, large, descriptive Catalog is yours for the asking. Be sure to say you are a Philistine.

COLUMBIA PHONOGRAPH CO. GEN’L, Dept. PH, Tribune Bldg., New York

from the 1910 July issue of THE PHILISTINE

Carrington is found kneeling over the body, holding the pistol that did the deed. He says he stepped out of the room for a moment, heard the shot, and came back to find the body, absentmindedly picking up the gun. An old cliché of manor house murder mysteries, perhaps a cliché, perhaps a parody, possibly a homage.

Otterbourne's personal secretary had discovered that the company pension fund had been looted. It may have been suicide because Otterbourne was about to be unmasked. The professor is exonerated, but only after he hanged himself in his jail cell. The death toll steadily rises through the novel, and many complications set in.

Carrington's tape recorder had been left running, and the device had recorded the gunshot. Otterbourne's son-in-law comes under suspicion. The tape machine would have been very successful if put into production, so various characters go hounding after it.

The culprit used another recorder to provide the sound of gunshots for a different murder but trips over a small detail. The denouement is the traditional manor house assembly in the drawing room. The detective explains at great length and in excruciating detail who did what to whom and when.

The ending drags due to all the tying up of loose threads, but overall the novel is a good read. An interesting novel that makes use of what was once revolutionary and is now obsolete.

Computers.

Computers didn't turn out the way early SF writers thought, not that SF is a predictive literature. We don't have a One World Computer controlling us with ruthless efficiency. Instead we have a rickety network troubled by hackers and failed software upgrades. It isn't a matter that we have no mouths and must scream, but rather we can't get through to Tech Support to scream at them.

"The Big Brain" is a 1950 episode of the OTR series MYSTERIOUS TRAVELER, written by Robert A. Arthur and David Kogan. This was in the days when a superscience computer filled a room with whirring tapes, glowing vacuum tubes, clicking relays, and chattering printers. Lester DeWitt is a computer programmer at a megacorporation. He decides to use the 50-ton computer (its weight is specifically mentioned) for its predictive powers, and what better events to predict the local horse races.

His father is not doing that well at the track. DeWitt's fiancée convinces him to put some money on the nags after all the racing form data have been entered. She then gets him to compound his bets on each succeeding race. The computer is always right. Since the winnings multiply exponentially, the track owners, who are Mafiosi, quickly ascertain what is going on. DeWitt is naive but soon gets an education about horse betting.

The Mafia don blackmails DeWitt into supplying more and more lists of winners. In order to get out from under, he programmes the computer to predict when the next passenger airplane will crash and gets the don to take that plane. The problem is that the don and his henchman drag DeWitt and his fiancée along on the flight, just for nice.

DeWitt confesses to the Mafiosi about the prediction. They act immediately. Going to the cockpit, they force the flight crew to land at the nearest airport. The plane makes a bad landing and crashes. Only the two gangsters are killed, and everyone else survives. The Big Brain was a very good predictor indeed.

"Whoever Shot Poor George Oblique Stroke XR40", written by Tony Williamson, is a 1968 episode of the British television series THE AVENGERS. Not to be confused with the vulgar American superheroes, this series featured urbane John Steed and his various lady companions, young women who knew judo and were not the helpless scream queens commonly found in television and movies. In this episode, Steed's companion was Tara King, as Emma Peel had reunited with her husband and moved on to a new life.

Poor George is a supercomputer with artificial intelligence capabilities. It is one of those head-height cabinets with flashing lights, whirring tape decks, and spooling paper tapes. The episode begins with an intruder letting George have two of the best from a 12-gauge shotgun at close range. In the aftermath, an engineer tells King that George could instantaneously calculate the shot load, velocity, and impact of the shotgun blast. King replies that for all its intelligence, George couldn't duck out of the way.

As Steed and King investigate, the engineers and technicians operate to salvage what they can and restore George to health so they can save its data. Backup? In 1968? What's a backup? The operation is a parody of human surgery, with the doctor rummaging about George's insides. The actors did a marvelous job keeping straight faces, although they had the advantage that they were wearing surgical masks and garb.

George was created by Sir Wilfred Pelley, who is held captive in his manor house by the baddies. They want all the info about it, as well as ensuring no one else could duplicate it. They have an insider on the surgical team who manages to sabotage the operation. The next step is an attempted transplant of George's memory banks into a lesser computer in the hopes of salvaging the data.

As that goes on, King infiltrates Pelley's household by impersonating his long-lost niece. She soon runs afoul of the opposition team, and Steed has his own problems. It all works out in the end, as one might expect. THE AVENGERS was as much a comedy show as it was action-adventure. Throughout the length of this episode, the jump cuts to the surgical operations on George keep up the humour.

SEEN IN THE LITERATURE

Corkrey, R., et al (2017) **The maximum growth rate of life on Earth.** INTERNATIONAL JOURNAL OF ASTROBIOLOGY 17:17-33

Authors' abstract: *Life on Earth spans a range of temperatures and exhibits biological growth rates that are temperature dependent. While the observation that growth rates are temperature dependent is well known, we have recently shown that the statistical distribution of specific growth rates for life on Earth is a function of temperature. The maximum rates of growth of all life have a distinct limit, even when grown under optimal conditions, and which vary predictably with temperature. We term this distribution of growth rates the biokinetic spectrum for temperature (BKST).*

The BKST possibly arises from a trade-off between catalytic activity and stability of enzymes involved in a rate-limiting Master Reaction System (MRS) within the cell. We develop a method to extrapolate quantile curves for the BKST to obtain the posterior probability of the maximum rate of growth of any form of life on Earth. The maximum rate curve conforms to the observed data except below 0°C and above 100°C where the predicted value may be positively biased. The deviation below 0°C may arise from the bulk properties of water, while the degradation of biomolecules may be important above 100°C.

The BKST has potential application in astrobiology by providing an estimate of the maximum possible growth rate attainable by terrestrial life and perhaps life

elsewhere. We suggest that the area under the maximum growth rate curve and the peak rate may be useful characteristics in considerations of habitability. The BKST can serve as a diagnostic for unusual life, such as second biogenesis or non-terrestrial life. Since the MRS must have been heavily conserved, the BKST may contain evolutionary relics. The BKST can serve as a signature summarizing the nature of life in environments beyond Earth, or to characterize species arising from a second biogenesis on Earth.

Botha-Brink, J. (2017) **Burrowing in *Lystrosaurus*: Preadaptation to a postextinction environment?** JOURNAL OF VERTEBRATE PALEONTOLOGY 37:doi.org/10.1080/02724634.2017.1365080

Author's abstract: *Lystrosaurus is iconic for surviving the Permo-Triassic Mass Extinction and becoming the most abundant terrestrial vertebrate during the Early Triassic. Previous reports of skeletal remains of the Triassic species being found in fossilized burrows hint at a possible reason for its success, but unequivocal evidence showing that Lystrosaurus individuals were the burrow makers was lacking.*

I present here the first articulated skeleton of Lystrosaurus in a fossilized burrow from the Lower Triassic of the South African Karoo Basin, along with taphonomic evidence indicating that this individual was the burrow maker. The species is identified as L. curvatus, the only Lystrosaurus species recovered from above and below the inferred Permo-Triassic extinction horizon. It provides the first evidence of burrowing in a Permian species of Lystrosaurus, suggesting that this behavior was more prevalent than previously thought.

Based on its size, the specimen is inferred to be a juvenile, showing that Lystrosaurus was capable of excavating burrows at young ontogenetic stages. The abundance of Lystrosaurus body fossils and similar-sized burrows from Lower Triassic strata suggests that burrowing played a pivotal role in the success of this genus in harsh, unpredictable postextinction conditions. Given the abundance of these burrows throughout the Lower Triassic Lystrosaurus Assemblage Zone, Lystrosaurus may have acted as an ecosystem engineer and refuge provider for other species, which may help to explain the high species diversity in the lowermost Triassic in the Karoo Basin.

Speirs: The Permian Mass Extinction about 251 megayears ago was the worst of all mass extinctions. 97% of all species died out to large-scale vulcanism

called flood basalts that overheated Earth and poisoned the air and water. *Lystrosaurus* was a stubby reptile the size and shape of a large dog.

Salomo, K., et al (2017) **The emergence of earliest angiosperms may be earlier than fossil evidence indicates.** SYSTEMATIC BOTANY 42:1-13

[Angiosperms are the flowering plants. The oldest fossils are from the Cretaceous era, 145 to 65 megayears ago, when dinosaurs roamed about.]

Authors' abstract: *Gaps between molecular ages and fossils undermine the validity of time-calibrated molecular phylogenies. An example of the time gap surrounds the age of angiosperms' origin. We calculate molecular ages of the earliest flowering plant lineages using 22 fossil calibrations (101 genera, 40 families).*

Our results reveal the origin of angiosperms at the late Permian, ~275 million years ago. Different prior probability curves of molecular age calculations on dense calibration point distributions had little effect on overall age estimates compared to the effects of altered calibration points. The same is true for reasonable root age constraints.

We conclude that our age estimates based on multiple data sets, priors, and calibration points are robust and the true ages are likely between our extremes. Our results, when integrated with the ecophysiological evolution of early angiosperms, imply that the ecology of the earliest angiosperms is critical to understand the pre-Cretaceous evolution of flowering plants.

Speirs: Molecular biologists have long tried to date the evolution of plants and animals by measuring the rate of genetic change in modern species and then counting backward. The method seldom correlates with the fossil record, another case of brilliant hypotheses being ruined by inconvenient facts. I'm suspicious of the results of this paper. It jumps the date of angiosperm origins back 130 megayears, leaving a huge gap of that amount with no fossil evidence.

Moreno-Mayar, J.V., et al (2017) **Terminal Pleistocene Alaskan genome reveals first founding population of Native Americans.** NATURE 553:203-207

Authors' abstract: *Despite broad agreement that the Americas were initially populated via Beringia, the land bridge that connected far northeast Asia with northwestern North America during the Pleistocene epoch, when and how the peopling of the Americas occurred remains unresolved. Analyses of human remains from Late Pleistocene Alaska are important to resolving the timing and dispersal of these populations.*

The remains of two infants were recovered at Upward Sun River (USR), and have been dated to around 11.5 thousand years ago (ka). Here, by sequencing the USR1 genome to an average coverage of approximately 17 times, we show that USR1 is most closely related to Native Americans, but falls basal to all previously sequenced contemporary and ancient Native Americans. As such, USR1 represents a distinct Ancient Beringian population.

Using demographic modelling, we infer that the Ancient Beringian population and ancestors of other Native Americans descended from a single founding population that initially split from East Asians around 36 ± 1.5 ka, with gene flow persisting until around 25 ± 1.1 ka. Gene flow from ancient north Eurasians into all Native Americans took place 25 to 20 ka, with Ancient Beringians branching off around 22 to 18.1 ka.

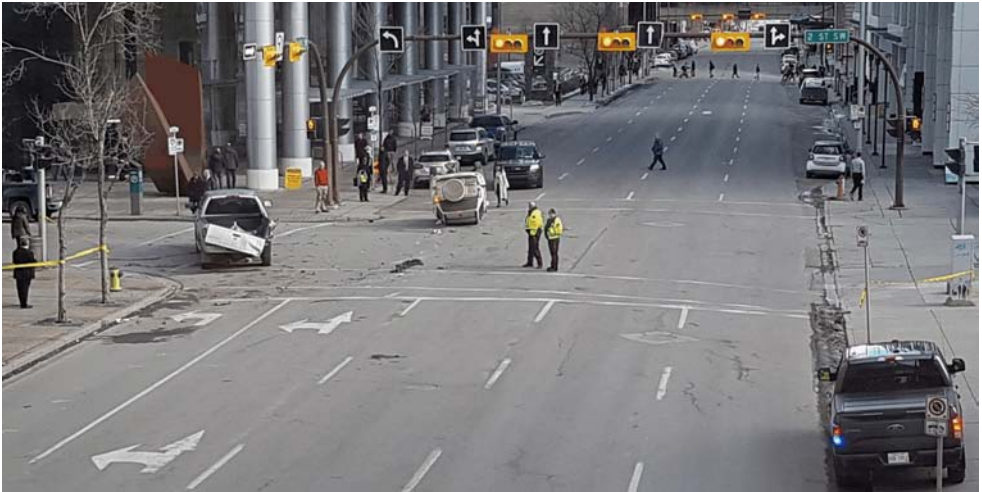
Our findings support a long-term genetic structure in ancestral Native Americans, consistent with the Beringian 'standstill model'. We show that the basal northern and southern Native American branches, to which all other Native Americans belong, diverged around 17.5 to 14.6 ka, and that this probably occurred south of the North American ice sheets.

We also show that after 11.5 ka, some of the northern Native American populations received gene flow from a Siberian population most closely related to Koryaks, but not Palaeo-Eskimos, Inuits or Kets, and that Native American gene flow into Inuits was through northern and not southern Native American groups. Our findings further suggest that the far northern North American presence of northern Native Americans is from a back migration that replaced or absorbed the initial founding population of Ancient Beringians.

AROUND COWTOWN
photos by Dale Speirs

Seen on January 17 in the downtown core as I was strolling along 9 Avenue SW at 2 Street. An SUV traveling at high speed clipped the back end of a pickup and landed upside-down. As is standard for serious injury accidents, the police closed the avenue and did a full-scale investigation. Notice the chalk marks around the upended SUV.

In the background you can see a pedestrian overpass, part of the Plus 15 network that links downtown skyscrapers. The photo at right was taken from the overpass.



AROUND THE FLATLANDS

by Dale Speirs

The current fuss about renegotiating North American and Asian free trade pacts is hypocritical for Canadians, since we don't even have free trade within our own borders between the provinces. The latest example erupted earlier this year between Alberta and Saskatchewan.

It was apparently started by an Alberta contractor who forbid tradesmen from parking their vehicles on the job site if they had Saskatchewan licence plates. The Premier of Saskatchewan ordered retaliation by prohibiting Alberta contractors. After a few weeks of slagging each other in the news media, cooler heads have prevailed, and the whole thing fell off the front page.

But not before columnist Tristin Hopper had some fun with what might happen if war broke out between the two provinces, using a reasonable extrapolation. (<http://calgaryherald.com/news/canada/how-a-literal-war-would-play-out-between-alberta-and-saskatchewan/wcm/58f99446-4319-4d05-8e1c-8eab33ea2ce8>)

His first assumption was that the provinces would co-opt the Canadian Forces units stationed within their provinces and use them as their military forces. Not entirely unreasonable, for if Canada ever had a full-scale civil war, that is exactly what would happen. Canada is a confederation of provinces who have equal status with the federal government, not a unitary federal nation. There is federal law stating what procedure a province must follow to separate, although as far as I know, it is silent on the subject of interprovincial warfare. The last such war was in the 1800s between Manitoba and Ontario.

Alberta would immediately establish air superiority. It has CFB Cold Lake, the largest air base in Canada, with three fighter squadrons and a new attack drone squadron. Saskatchewan only has CFB Moose Jaw, used for basic training of pilots and equipped only with unarmed trainer aircraft. Alberta has 2.5 times the number of firearms in civilian hands.

There is a wild card to consider. The largest British Army base outside Britain is in southeastern Alberta, where their tank and artillery forces can bang away with live fire and not worry about hitting anything. CFB Suffield is leased to the Brits, and is about 100 km by 100 km in size. The poms have spent years training how to invade flatlands, so if Alberta could convince them to come on

side, Saskatchewan would also be facing 22 battle tanks and 350 armoured vehicles, not to mention gunships and support helicopters. (Prince Harry trained there, and when on leave would come into Calgary with his fellow squaddies for R&R.)

Saskatchewan is flat. The southern half of the province is semi-desert and thinly populated. It's like North Dakota, only not as exciting. The northern half of the province is boreal forest and muskeg, not much better. Alberta has four times the adult population of Saskatchewan. We also have real mountains to hide our military and guerilla bases. There is no place to hide in Saskatchewan.

On the other hand, Albertans have very polarized politics, with a strong division between the Tories and the socialists. The joke is that an Albertan will never attack anyone else if he sees another Albertan standing nearby with his back to him. There would be instant feuding within the parties and against each other.

Alberta has 40% of the world's oil, which means the American government would pay instant attention to the war. On the other hand, Saskatchewan could plead innocence and ask the United Nations for a peacekeeping force.

