

# OPUNTIA 383





## Stampede Parade 2017

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

### YEEHAW AND OTHER ALLEGED COWBOY EXPRESSIONS

photos by Dale Speirs

I grew up on a cattle ranch in west central Alberta near Red Deer, but never once heard a cowboy out on the range shout Yeehaw! or Yahoo! However, it is expected in Calgary during the Stampede rodeo. The whole city dresses western, and shouts of Yeehaw! and Yahoo! are heard day and night on the streets from drunken construction workers and secretaries who are city slickers born and raised.

The rest of Canada is settling back into its routine after Canada 150, but in Cowtown that was just an interruption to the Stampede partying. The Stampede always begins the Friday after Canada Day. It runs ten days, bringing in 1.2 million paid visitors, making it the world's largest costume con. The partying starts about the third week of June.

A tradition of the Calgary Stampede is the free pancake breakfast. Businesses, shopping plazas, churches, and community associations host hundreds of the breakfasts across the city throughout the rodeo. People line up for two flapjacks, a beef sausage patty, and orange juice or coffee. There are some fanatics who plot out a route every morning and try to hit two or three per day.

I am satisfied with just one breakfast per day. A typical one I attended is illustrated herewith, hosted annually by CBC Radio Canada the day before the parade. The cover shows volunteers getting the flapjacks and sausages ready. This was one of four booths preparing food. The lineup went down the street and around the block but moved quickly. I didn't have to wait long.





# WHO'S FLIPPING MY PANCAKES

**Shawn Baldwin** Mayoral Candidate  
**Greg Clark** Leader, Alberta Party; MLA, Calgary-Elbow  
**Stacey Collyer** Executive Director, Calgary Reads  
**Warren Connell** CEO, Calgary Stampede  
**Druh Farrell** Calgary City Councillor for Ward 7  
**Rick Fraser** MLA, Calgary-Southeast  
**Kathleen Ganley** MLA, Calgary-Buffalo  
**The Honourable Kent Hehr** Member of Parliament for Calgary Centre  
**Sandra Jansen** MLA, Calgary-Northwest  
**David Khan** Leader, Alberta Liberal Party  
**David Lapp** Mayoral Candidate  
**Ron Liepert** MP, Calgary Signal Hill  
**Brian Malkinson** MLA, Calgary-Currie  
**Elizabeth May** Leader, Green Party of Canada  
**James McAra** CEO, Calgary Food Bank  
**Prasad Panda** MLA, Calgary Foothills  
**Richard Pootmans** Calgary City Councillor for Ward 6  
**Graham Sucha** MLA, Calgary-Shaw  
**Mario Trono** Eyeopener Film Reviewer  
**Kelly VanderBeek** Olympian, Canadian Alpine Skier  
**Deb Yedlin** Eyeopener Columnist  
**Anila Lee Yuen** CEO, Centre for Newcomers  
**Johann Zietsman** CEO, Arts Commons

#giddyupCBC

The morning drive-time show host interviewed the President of the Calgary Stampede organization.





The rodeo opens with a two-hour parade through the downtown core, attended by about 150,000 spectators and broadcast on the local television stations. No business is done downtown on the morning, and precious little in the afternoon. Experienced Cowtowners know enough not to schedule important meetings during the rodeo.



Above right: Calgary Mayor Naheed Nenshi photographs the crowd photographing him.



Bottom right: Trick riders stand tall in the saddle.



The aboriginal tribes of southern Alberta belong to the Treaty 7 group, who signed the treaty in 1877. They are the Blackfoot Confederacy (Siksika, Piikani, and Kainai), Stoney Nakoda (Sioux), and Tsuu T'ina (Dene). The five chiefs were this year's Honourary parade Marshals.



In Cowtown, monster tires are just so passé.





The Mounties  
founded  
Calgary in  
1875.





The last entrant in the parade was this 22-horse team. Nothing could follow it. It had four postilions to help guide the horses around corners.







Top left: A very clever float from the Royal Tyrrell Museum in Drumheller, Alberta, which is the largest dinosaur fossil museum in the world.

Above: Canada 150 wasn't over after Canada Day. The celebrations will go on all year.



H.M.C.S. Calgary is a frigate in the Royal Canadian Navy. Its crew is the only unit in the navy that has cowboy hats as part of their dress whites.



No, she wasn't lost in a time warp. She was part of the Heritage Park entry.





And so another parade passes into the books.

The next issue of this zine will have photos from the Stampede grounds.





# SHERLOCKIANA: PART 25

by Dale Speirs

[Parts 1 to 24 appeared in OPUNTIA's #63.1B, 63.1C, 63.1D, 67.1D, 68.1C, 69.1E, 70.1A, 71.1B, 251, 253, 256, 261, 269, 270, 276, 288, 309, 333, 340, 348, 356, 359, 365, and 370.]

The original Sherlock Holmes stories are referred to as the canon, while stories written by other authors in the Holmesian setting are called pastiches. Short-story pastiches compiled into a book are a collection if they are all done by one author, and an anthology if done by several authors.

## The Re-Write Desk.

Terence Faherty has been doing a series of pastiches in which each story of the canon is presented as a “first draft” by Watson, usually with a considerably different plot. There are humorous asides in the pastiches as Watson leaves notes to himself on how to revise the text, change names and places, and make the story more interesting by substituting different things.

“The Engineer’s Thumb” (2017 Jan/Feb, ELLERY QUEEN) is one such story. An engineer has been hired to fix an industrial stamping press. In the canon, the story was about a gang of counterfeiters, but in Faherty’s pastiche they are replaced by a German spy wanted to test a new brewing method invented in England. Better beer will help the Reich to new glories, ya?

## Pastiches: Collections.

THE LOST CHRONICLES OF SHERLOCK HOLMES: VOLUME 2 is a 2016 collection of pastiches by Denis O. Smith. Volume 1 came out in 2014 and was reviewed in OPUNTIA #348.

This collection begins with “The Adventure Of The Black Owl”, concerning the Highgate murder, when Prof. Humphrey Arbuthnot abruptly departed this world sooner than he anticipated. A strange clue is a paperweight of a black owl found at the murder scene, not belonging to the house. The usual suspects include a colleague with whom the Professor had a falling-out, a mysterious woman in black veil who held a grudge, and a reckless nephew who was trying to sponge money. There is a twist ending as the murderer and victim had changed identities at the former’s doing. The denouement, during which Holmes unloads all his hidden knowledge, takes up a full fifth of the story.

“The Adventure Of The XYZ Club” is a tale of weekend debauchery at All Saints College and the death of an outlander in a manor house fire. The owners of the manor have decamped, one and all, because the bank they operate has gone smash. It won’t open on Monday and the depositors are out of luck. Holmes busily deduces and solves the case, enough to catch the culprits before they can make it out the country. The story is two halves welded together, tying in one plot about dissipated young men with another about the embezzlers.

“The Adventure Of The Velvet Mask” is about a series of incidents befalling actors at a theatre. Holmes’s client wants to know if the place is haunted or is there malice afoot. The incidents continue and it soon becomes obvious they are sabotage. Holmes, Watson, and Inspector Jones stake out the most likely scene and capture the would-be murderer. He was mentioned incidentally at the beginning of the story and then vanished until the epilogue, when Holmes uses several pages to explain it all.

“The Adventure Of The Old School Friend” intertwines several victims of the same confidence man. The villain likes to read old school yearbooks and then make friendly visits to houses in the guise of a classmate looking to renew acquaintances. He scouts the houses for valuables, then passes the information on to a gang who burgle them and know exactly where to look and what to get. The tangled threads take some time for Holmes to unravel and bring the old boy to justice.

“The Adventure Of The Brown Box” opens with a man dying from sudden shock at his breakfast table after opening an ornately carved wooden box received in the mail that morning. No one was present in the room when he let out a cry of terror and collapsed of an apparent heart attack. Corpse #2, his sister, dies in the same manner a few days later.

Anyone who has read “The Speckled Band” from the canon will immediately guess what happened, so the only suspense is whodunit. The denouement doesn’t come until two years later when Holmes receives a letter from the culprit’s deathbed. The attacks were revenge against his victims for their foul deeds decades earlier. A demonstration, I suppose, that Holmes wasn’t infallible; he didn’t solve every case.

“The Adventure Of The Tomb On The Hill” is about a strange case where thieves stole a painting of a tomb from a man’s house but substituted an almost identical painting. There are minor differences in the wording of the epitaphs



on the tome, and the number of ducks and rabbits in the picture. A third copy of the painting is stolen and returned.

The police tell Holmes they think the events may be related to a theft of diamonds decades ago. The paintings together form a cryptogram which Holmes solves, and, so it seems, all the suspects likewise. There is a merry chase about London for the diamonds, with several clever twists and turns in the story.

“The Adventure Of The Purple Hand” is about a retired tea plantation owner who is plagued by someone leaving purple hand prints on outbuilding walls of his estate. Not stencils, but actual palm prints made by dipping the hand into purple paint. There is some nice misdirection which turns around the initial interpretation of the facts onto a new course. The story becomes one of revenge for long-ago crimes.

“The North Walk Mystery” begins with murder most foul at the Inner Temple law offices. A barrister had his throat slit in his chambers. The case is straightforward collecting of clues and making deductions from them. The murder turns out to be related to one in the same chambers ten years previous. Suspicion is scattered over several people, including the inevitable nephew, but there is one primary suspect who turns out to be the man who did it.

“The Secret Of Shoreswood Hall” brings a client whose husband has disappeared, leaving her alone in a manor house with a group of surly servants. There is a vague family legend about which no one may speak. Lady Davenoke is in a distressed mental condition because she doesn’t know what happened and no one will tell her. Assorted mysterious doings in the night finally drive her to seek Holmes’s help.

After a few excursions and alarums, some clues emerge. The legend has to do with an unknown exotic beast said to be somewhere on the manorial estate. The missing man is in hiding somewhere on his land, and the butler is his lieutenant.

Holmes and Watson track him into his hidey-hole. They find Lord Davenoke has become obsessed with family history and pride. It all ends in tears with the deaths of both the Lord and Lady, and a conflagration that destroys the manor house. The plot depends on people behaving like idiots, but then again, our real world is full of such examples.

“The Adventure Of The Minor Canon” begins with a visit from Martin Zennor, a canon of Canterbury Cathedral who has been accused of stealing church funds, specifically a blank cheque for £100. The plot hinges on a half-dozen men taking each other’s coats by accident during the day, a rather implausible chain of events. The blank cheque was in one of the coat pockets, and all the wrong assumptions were made.

“The East Thrigby Mystery” is set during Holmes’s childhood, when he was twelve years old. He was staying for the summer with an uncle and aunt at East Thrigby when a series of burglaries occurred in the district. The villagers were all atwitter because a local squire had discovered some ancient Roman artifacts. The objects were stolen, or were they? Holmes has his suspicions about the authenticity of the relics and the veracity of their discoverer.

Having proven to himself that the whole thing was a hoax, he then takes a wise action for a boy; he says nothing. In the stories of the canon, he, as an adult, occasionally solved a crime but rather than take it to the courts he let natural justice prevail.

“The Adventure Of Juniper College” concludes this collection of pastiches. Sidney Potter has inherited a cottage and moves into it with his family. Someone else wants something in it, and tries various desperate measures, including several burglaries. Holmes is summoned and eventually uncovers a hidden floor safe.

No one knows the combination, which stymies everyone. The story comes out when they capture the burglar, but it transpires he didn’t know the combination either. After some more ratiocination by Holmes, the safe is opened and incriminating documents recovered.

Summing up the collection, the stories were a good reading, notwithstanding a bit of nitpicking here and there.

**Pastiches: Professor Moriarty.**

“Onwards And Upwards With The Fiends” by P.G. Wodehouse (1955-02-16, PUNCH) notes that Moriarty is supposed to have a vast criminal empire but doesn’t seem to enjoy the fruits of it. He should have “*a flat in Mayfair, a house in the country, a shooting box in Scotland, a yacht, a racing stable, a villa on the Riviera, some decent cigars, and a new razor blade every morning.*”



Instead, Moriarty lives in a suburban hidey-hole or is found in underground lairs.

“The Adventure Of The Conk-Singleton Papers” by John Dickson Carr (1968 October, ELLERY QUEEN’S MYSTERY MAGAZINE) is based on one of Watson’s throwaway remarks about a case never written up for the canon. This is actually a script by Carr for an after-dinner skit performed at the 1948 Edgar Allan Poe Awards banquet.

Holmes and Watson receive a visitor on New Year’s Day morning, Lord Cosmo Conk-Singleton, who is private secretary to Prime Minister Gladstone. Someone poisoned a crate of whiskey given to Gladstone by Queen Victoria. He survived, but the matter must be investigated discreetly to avoid newspaper sensationalism. Holmes refuses to take the case because he recognizes Lord Cosmo is Professor Moriarty in disguise. The case was intended to distract Holmes while Moriarty pulled off a major jewel heist. Like all plays, it is better seen performed than read as text, but even so, it is amusing.

“The Most Dangerous Man” by R.L. Stevens (1973 February, ELLERY QUEEN) is told from the point of view of Moriarty as he plans a bank heist. Part of his nefarious plan uses the method of the Red-Headed League. It fails though, as Holmes is wise to Moriarty. An interesting twist.

**Pastiches: Movies.**

In 1991, a pair of Sherlock Holmes movies made back-to-back were released by Harmony Gold Productions as television miniseries, written by Bob Shane and H.R.F. Keating. The intention was that if they were successful, a television series would be developed about Holmes’s golden years raising bees in the Sussex Downs. They were later recast as two three-hour movies for DVD from Mill Creek Entertainment.

Production values were excellent. The scenes were filmed on location in Old Town places in Europe or Africa, for an authentic Victorian look. Costumes glittered, and outdoor scenes had horse-drawn carriages of every description.

Christopher Lee was cast as Holmes, and Patrick Macnee as Watson. (They were both the same age, were at school together, and died in the same month, June 2015.) Lee dominates the films with his commanding presence and deep voice. Macnee was basically a bit player and comic relief.

The first film of this pair was THE LEADING LADY. Holmes and Watson are in Vienna in 1910, chasing after a stolen remote-control bomb detonator device at the request of Mycroft Holmes. (Played inappropriately by an average size actor who traveled about with ease. In the canon, Mycroft was morbidly obese and avoided unnecessary exertion as a matter of principle.)

The bomb detonator is a handheld device about the size of a large television remote. It uses the newfangled radio to trigger a bomb. The Austrian engineer who invented it had it stolen, along with the plans. The thieves are Bosnian radicals who want to assassinate Emperor Franz Joseph when he is attending the opera. The remote control is needed so they can be sure he is in his box, whereas a timer might not get him if he were delayed or stepped out to visit the washroom. Trying to rush the guards to throw the bomb would be futile.

It being opera, the diva is Irene Adler, The Woman, the only one Holmes ever gave his heart to. Unfortunately the role was mis-cast with Morgan Fairchild in the part. Although she was by then a woman of a certain age, she was still much too young to be courting the elderly Holmes.

Sigmund Freud shows up, constantly annoying Holmes and others by psychoanalyzing them. He does, however, play a useful part in the investigation. There are numerous alarms and excursions, a side trip to Budapest, and a glittering ballroom affair in a Viennese castle, filmed in a real castle.

Russia, Germany, and Britain are racing to get the plans and the device, while the Bosnian terrorists are more concerned with using it to strike a blow for freedom. The Austro-Hungarian Empire was a powderkeg waiting to be touched off, as indeed it would be four years later.

Other than the casting, the miniseries qua movie is quite good. It drags a bit in a few scenes, but that is why God gave us the fast-forward button.

The sequel was INCIDENT AT VICTORIA FALLS. Holmes is preparing to retire to Sussex when he is summoned by King Edward VI. An egg-sized diamond known as the Star of Africa is being sent from Cape Province to London as a gift to the King. Holmes is asked to take charge of the transport, and thereby hangs a tale.



The diamond is also being pursued by a gang of thugs from India, the Matabele who were the original owners, and just about every underworld figure in Africa who reads newspapers. The femme fatale of the movie is Lillie Langtry, and assorted characters such as A.J. Raffles, Marconi, Lord Roberts, and Teddy Roosevelt appear.

The diamond is stolen, as you knew it would be. The Capetown police detective in charge of the case is singularly incompetent. He arrests everyone who went near the safe and then finds evidence to fit them. Holmes spends as much time doing damage control as he does in investigating the theft. Several romantic subplots are interjected, assorted murders litter the countryside, and someone sets a cheetah into Holmes's bedroom.

From Capetown, the movie shifts to Rhodesia and the Victoria Falls. The train trip is filled with alarms and murders to the point that the diamond is almost forgotten. On arrival at the hotel, there is much skulking about, and the death toll steadily climbs.

The basic rule of mysteries is followed for the most part; the more suspicious a character is, the greater the likelihood that he or she will be the next victim. There is one exception, when an entirely innocent woman is murdered for the wrong reasons and dies horribly. It is the only moment in the movie when the viewer is jolted out of complacency.

The diamond is almost forgotten. It was known to be part of a greater treasure hidden by the Matabele somewhere near Victoria Falls. Everyone hares back and forth across the landscape searching for the trove. It is found and then lost, and the diamond is recovered as an afterthought. Holmes and Watson don't get a chance to celebrate though, for just as the diamond is recovered in Africa, the King dies. The return to England is abrupt, a few loose ends are tied up at the funeral, and the epilogue fades away.

It is a shame that these two movies were all that was produced. The quality was good, and it would have made a good series. The DVD is well recommended.

## 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](mailto:opuntia57@hotmail.com)]

FROM: Murray Moore  
Mississauga, Ontario

2017-07-06

Re: OPUNTIA #381 about homesteaders. I would be American but for my ancestor Jeremiah being encouraged to leave the new United States, in 1786. My Moores had emigrated from an unknown community near Glasgow, to Ireland, to the United States. In Scotland they were NonConformist. In Ireland and the U.S. they were Quaker.

[They probably lived near my paternal ancestors, who lived west of Glasgow and were originally Methodists, then became Baptists in Canada.]

Nevertheless my ancestor Jeremiah was decided to be un-American. He and his family's animals and possessions were taken by 'patriots'. Jeremiah and his pregnant wife and their children trekked for two months northward, from southern Pennsylvania (now Pennsylvania Dutch country), stopping in early November near present-day Welland, Ontario. A brother, Solomon, joined them subsequently. Their status as Quakers was questionable when they both were members of a militia during the War of 1812-14. My mother's side of the family came to Canada from England in the early 1800s.

So I am, as your former Calgary neighbour/prime minister put it, old stock Canadian. Thanks to my sister's research I and our two sons each have a certificate stating that we are descendants of United Empire Loyalists. As such, I can append to my name the letters U.E.



Bought *Opuntia ellisiana* last year at the local garden club plant sale. Flowers a surprise this year; wow.



SEEN IN THE LITERATURE

Sahu, K.C., et al (2017) **Relativistic deflection of background starlight measures the mass of a nearby white dwarf star.** SCIENCE 356:1046-1050

Authors’ abstract: *Light from a background star is deflected by the gravitational field of the Sun. This effect was used in 1919 to provide some of the first evidence for general relativity. We applied the concept to another star: a nearby white dwarf called Stein 2051 B, which passed close in front of a more distant normal star. The authors measured the tiny shifts in the apparent position of the background star, an effect called astrometric microlensing. The apparent motion matched the predictions of general relativity, which allowed the authors to determine the mass of the white dwarf.*

*Gravitational deflection of starlight around the Sun during the 1919 total solar eclipse provided measurements that confirmed Einstein’s general theory of relativity. We have used the Hubble Space Telescope to measure the analogous process of astrometric microlensing caused by a nearby star, the white dwarf Stein 2051 B. As Stein 2051 B passed closely in front of a background star, the background star’s position was deflected. Measurement of this deflection at multiple epochs allowed us to determine the mass of Stein 2051 B, the sixth-nearest white dwarf to the Sun, as  $0.675 \pm 0.051$  solar masses. This mass determination provides confirmation of the physics of degenerate matter and lends support to white dwarf evolutionary theory.*

Raymond, S.N., and A. Izidoro (2017) **Origin of water in the inner Solar System: planetesimals scattered inward during Jupiter and Saturn’s rapid gas accretion.** ICARUS doi:10.1016/j.icarus.2017.06.030

Authors’ abstract: *The water-rich bodies interior to Jupiter’s orbit, both the C-type asteroids and the progenitors of water on Earth, are simple byproducts of giant planet growth. The giant planets’ growth scatters nearby planetesimals and injects a significant fraction into the inner Solar System*

*Scattered planetesimals are captured into the outer main belt and can explain the C-type asteroids. Planetesimals scattered past the asteroid belt onto high-eccentricity orbits may have delivered Earth’s water. This happened preferentially late in the disk lifetime when gas drag was weaker. The*

*mechanism of planetesimal scattering and implantation is generic, robust to a wide range of migration histories for the giant planets, and takes place every time a giant planet forms.*

*There is a long-standing debate regarding the origin of the terrestrial planets’ water as well as the hydrated C-type asteroids. Here we show that the inner Solar System’s water is a simple byproduct of the giant planets’ formation. Giant planet cores accrete gas slowly until the conditions are met for a rapid phase of runaway growth. As a gas giant’s mass rapidly increases, the orbits of nearby planetesimals are destabilized and gravitationally scattered in all directions. Under the action of aerodynamic gas drag, a fraction of scattered planetesimals are deposited onto stable orbits interior to Jupiter’s.*

*This process is effective in populating the outer main belt with C-type asteroids that originated from a broad (5-20 AU-wide) region of the disk. As the disk starts to dissipate, scattered planetesimals reach sufficiently eccentric orbits to cross the terrestrial planet region and deliver water to the growing Earth. This mechanism does not depend strongly on the giant planets’ orbital migration history and is generic: whenever a giant planet forms it invariably pollutes its inner planetary system with water-rich bodies.*

Moore, W.B., et al (2017) **Heat-pipe planets.** EARTH AND PLANETARY SCIENCE LETTERS 474:13-19

Authors’ abstract: *Heat-pipe cooling explains the geologic features common to rocky bodies other than Earth. Heat pipes are a universal stage of the thermal evolution of terrestrial bodies and are the precursor to plate tectonics on Earth. Terrestrial exoplanets appreciably larger than Earth may remain in heat-pipe mode for much of the lifespan of a Sun-like star.*

*Observations of the surfaces of all terrestrial bodies other than Earth reveal remarkable but unexplained similarities: endogenic resurfacing is dominated by plains-forming volcanism with few identifiable centers, magma compositions are highly magnesian (mafic to ultra-mafic), tectonic structures are dominantly contractional, and ancient topographic and gravity anomalies are preserved to the present.*

*Here we show that cooling via volcanic heat pipes may explain these observations and provide a universal model of the way terrestrial bodies*



*transition from a magma-ocean state into subsequent single-plate, stagnant-lid convection or plate tectonic phases.*

*In the heat-pipe cooling mode, magma moves from a high melt-fraction asthenosphere through the lithosphere to erupt and cool at the surface via narrow channels. Despite high surface heat flow, the rapid volcanic resurfacing produces a thick, cold, and strong lithosphere which undergoes contractional strain forced by downward advection of the surface toward smaller radii.*

*We hypothesize that heat-pipe cooling is the last significant endogenic resurfacing process experienced by most terrestrial bodies in the solar system, because subsequent stagnant-lid convection produces only weak tectonic deformation. Terrestrial exoplanets appreciably larger than Earth may remain in heat-pipe mode for much of the lifespan of a Sun-like star.*

Hayward, A. (2017) **Origin of the retroviruses: when, where, and how?** CURRENT OPINION IN VIROLOGY 25:23-27

*Author's abstract: Retroviruses are a virus family of considerable medical and veterinary importance. Until recently, very little was known about deep retroviral origins. New research supports a marine origin of retroviruses, about 460 to 550 million years ago. The evolutionary events leading to the origin of retroviruses remain obscure.*

*Recent research employing a wide variety of bioinformatic approaches has demonstrated that retroviruses evolved during the early Palaeozoic Era, between 460 and 550 million years ago, providing the oldest inferred date estimate for any virus group.*

*A retroviral origin during the Ordovician period or earlier means that retroviruses must have evolved within the marine environment. Vertebrates were wholly restricted to the sea during the Ordovician, and the first tetrapods did not evolve until the late Devonian.*

*Even considering the possibility that retroviruses evolved outside of the Vertebrata, life on land during the Ordovician was extremely limited, making it unlikely that retroviral origins lie anywhere other than the World's ancient oceans.*

Zhang, J., et al (2017) **Human-in-the-loop optimization of exoskeleton assistance during walking.** SCIENCE 356:1280-1284

*Authors' abstract: Exoskeletons and active prostheses promise to enhance human mobility, but few have succeeded. Optimizing device characteristics on the basis of measured human performance could lead to improved designs. We have developed a method for identifying the exoskeleton assistance that minimizes human energy cost during walking. Optimized torque patterns from an exoskeleton worn on one ankle reduced metabolic energy consumption by  $24.2 \pm 7.4\%$  compared to no torque.*

*The approach was effective with exoskeletons worn on one or both ankles, during a variety of walking conditions, during running, and when optimizing muscle activity. Finding a good generic assistance pattern, customizing it to individual needs, and helping users learn to take advantage of the device all contributed to improved economy.*

