

# OPUNTIA 373





**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.

ABOUT THE COVER

I took this photo in the hamlet of Dead Man’s Flats, at the entrance into the Rocky Mountains. My initial thought was to save it for the Canada Day issue of OPUNTIA because of the giant flag. When I got back home and looked at the photo on my laptop screen, only then did I notice the eagle soaring through the sky. It’s too good a photo to delay publishing.

Dead Man’s Flats got its name in 1904 after two brothers homesteading there quarreled, and one killed the other with an axe. Interestingly enough, the adjacent Kananaskis valley and mountains were previously named after a Cree man who was dallying with a woman living in the hamlet. Her husband came home unexpectedly. Words were exchanged in the heat of the moment, then the aggrieved spouse hit him in the head with an axe. Kananaskis survived the attack and lived many years thereafter as a cautionary tale for all.

WORLD WIDE PARTY ON JUNE 21

Founded by Benoit Girard (Quebec) and Franz Miklis (Austria) in 1994, the World Wide Party is held on June 21st every year. 2017 will be the 24th year of the WWP. At 21h00 local time, everyone is invited to raise a glass and toast fellow members of the Papernet around the world. It is important to have it exactly at 21h00 your time. The idea is to get a wave of fellowship circling the planet. Rescheduling it to a club meeting or more convenient time negates the idea of a wave of celebration by SF fans and zinesters circling the globe.

At 21h00, face to the east and salute those who have already celebrated. Then face north, then south, and toast those in your time zone who are celebrating as you do. Finally, face west and raise a glass to those who will celebrate WWP in the next hour. Raise a glass, publish a one-shot zine, have a party, or do a mail art project for the WWP. Let me know how you celebrated the day.

AROUND COWTOWN  
photos by Dale Speirs

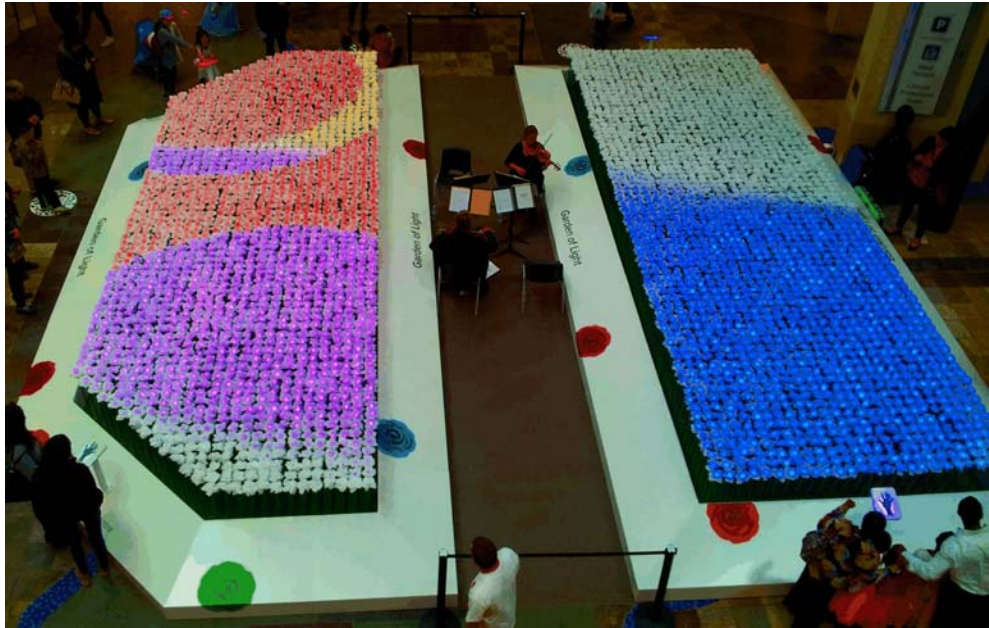
The Stephen Avenue pedestrian mall in downtown Calgary has banner art that changes every so often. The two shown here mark the seasons; blue during winter, and the green banners set out in late March as spring approached.





The Chinook Centre shopping mall in southwest Calgary had an interactive project in April called Garden Of Light. It consisted of two masses of artificial flowers with built-in LEDs that responded to music and to touch input from panels placed at the ends of the displays.

Chamber musicians sat between the displays. Their strumming provided the basic light patterns. When passersby put their palms on tactile boards, ripples of light radiated out overtop the musical patterns.



# THE PSYCHOLOGY OF COLLECTING: PART 2

by Dale Speirs

[Part 1 appeared in OPUNTIA #41.]

I discussed the psychology of collecting in OPUNTIA #41 back in 1998. In sorting through my library of books and DVDs, I've come across a few items that consider this basic human instinct.

## Them That Has Read A Book.

It may seem futility to discourse about book collecting at a time when the blue bins of the world are being filled with books unwanted by the heirs. The coming generations will only read on tablets and smartphones. The book as a physical artifact will not disappear completely, anymore than the vinyl record or antique furniture, but most will be owned as cabinet curiosities and museum pieces, not for reading pleasure.

Book collectors have been around as long as there were books, but until the early 1900s, the vast majority were rich men (few women) or intellectuals. In 1918, THE AMENITIES OF BOOK COLLECTING was published, written by A. Edward Newton (1864-1940). It was a compilation of essays previously appearing in magazines. The book went into multiple editions over the next two decades, and there was even a reprint in the 1960s. Its cheerful tone sparked off an interest in collecting among the general public, who had previously considered books to be exclusively a rich man's hobby.

Newton was a self-made businessman of Philadelphia who expanded a tiny stationery store into a large department store with 100 employees. In the late 1800s, he invested in a company that manufactured electrical switches and circuit breakers. By the first decade of the 1900s, he was a millionaire when a million dollars was real money and there was no income tax.

Contemporary accounts by friends agree that Newton was a good-humored man, ever helpful to those who needed it, and whose enthusiasm for life was infectious. He habitually wore checked suits that would embarrass a carny, and did not put on airs as most at his station in life did.

Although well off, he wasn't in the same class as Morgan or Dupont. He paid good prices for some of his books, but commonly bought many at reasonable

prices a middle-class collector could afford. He was not a snob; he enthused just as much, sometimes more, over a book he paid \$5 for as with a \$500 book. In Chapter 4 of his book, he writes: "*I have regretted only my economies, never my extravagances*". Too true for any field of collecting; I am a philatelist and find the same thing applies for stamp collecting.

The book begins with a couple of chapters about book collecting at home and abroad, mostly anecdotes about bargains bought and books missed just a moment too late after someone else bought it. Newton enjoyed reading dealer catalogues on his train commute. He could busily tick off which books he wanted, which ones he had, and which he would never let inside his house. All the while, he appeared to fellow passengers as someone who must be a stockbroker or a financier checking commodity prices.

Newton had two main collections: association copies and Samuel Johnson. Association copies are those inscribed by authors to friends, or which have an author's or famous person's remarks in the margins of the text. When you hold such a copy, inscribed a century or more ago by the author, you can realize that he once had it in his hands, and since then it has journeyed through time and space to you. It is a direct physical link with the past.

Samuel Johnson is said to be the second-most quoted author in English literature after Shakespeare. His sycophant James Boswell revolutionized the art of biography by fact-checking, something seldom done before his time, and by writing the book in conversational English instead of pretentious hagiography. Boswell's LIFE OF JOHNSON set a new standard that we take for granted today, and which today is often ignored, especially when writing about celebrities and politicians.

Newton collected first editions and association copies not only of Johnson and Boswell, but their circle of friends. If he had narrowed down to just the two men, he soon would have run out of books to collect, but by taking in the people who knew them, the collection was more of a challenge.

The same thing is true of philatelists who specialize only in one or two stamp issues. They become frightful bores at stamp club meetings, and dealers dislike them because there is little left for them to buy. It is futile to collect everything in the world, whether books or stamps, but neither should one cramp the fun by only looking for a single thing.



SF suffers from the same problem. The Trekkie who never read Asimov is an old story. I have met steampunks who only cosplay and are completely ignorant of the literature.

Newton passes on the advice that all true collectors learn to heed; don't collect with the idea of making money. Rare stamps and books may indeed return nice capital gains over time, but they have low liquidity, and after expenses and taxes may lose money. If it is investment opportunities you want, trade stocks and bonds, which can be sold on a phone call or, these days, a mouse click.

Newton regrets that the hobby of book collecting was declining, and younger collectors were not coming into the field. This book was published in 1918, remember, so as you can see, there is no new thing under the sun. Newton was not happy that potential collectors were playing golf instead of haunting the bookshops. Where oh where would the new collectors come from?

**Manias In Fiction.**

Some collecting hobbies have persevered over a long time, mainly because their objects of interest are natural objects (shells, fossils, crystals) or government-issued, which tends to reduce market manipulation. Philately, or stamp collecting, began as an organized hobby in the 1860s after enough stamps had been issued by postal systems to make it interesting. (The first postage stamp was issued by Britain on May 6, 1840.) Coin collecting dates back centuries.

Privately issued collectibles are subject to fads and crashes when collectors realize they are being taken advantage of by manufacturers and publishers. Comic books and sports trading cards are examples where publishers began deliberately issuing limited editions or requiring other items to be bought with them (bundling). After a while, the sharp practice crashed those markets, although more subdued collecting still goes on today.

Which brings us to an episode of 3<sup>RD</sup> ROCK FROM THE SUN, a television comedy series about four aliens masquerading as humans while studying Earth's cultures. "Collect Call For Dick" was a 1998 episode about the aliens getting caught up in the fad for Fuzzy Buddies, miniature stuffed animals given away as a premium with boxed meals at Rusty Burgers. This was obviously a parody about the Beanie Babies fad, which had peaked at the time the episode was filmed.

Two of the aliens, Dick and Sally, become obsessed with collecting the little fuzzy animals, to the extent of spending their rent and food money on them, trying to get a complete collection. As with all manias, the majority of latecomers to the fad are left holding expensive gewgaws that become unmarketable when only a few collectors are left. Sally comes to her senses and wants to unload at market, but Dick is cannot bear to part with his precious fuzzies. His family and friends finally have to stage an intervention to break his habit.

**Whatever Happened To Lapel Pins?**

When the Olympic Games were held in Calgary in 1988, a brief fad that bloomed was lapel pins. It quickly faded afterwards, although there are a few collectors still around Cowtown. I and my fellow philatelists concentrated on commemorative stamps and postmarks, but I picked up a few lapel pins along the way if they were free or only a loonie or so.



I was a volunteer for the Games and still have my uniform.



This was one of the nicest designs I saw at the Olympics. The mountains are the Three Sisters overlooking the cross-country skiing venue at Canmore, just outside the gates of Banff National Park.



1988 was also the year of the panda, as the Calgary Zoo got the loan of a pair.



There were dozens of these pins, each with the name of a different petroleum company.



The Calgary Stampede rodeo jumped on the lapel pin bandwagon that year. Like the Olympics, there were series of sponsor pins, each with a different name.



The torch relay went over big.







I attended the 1994 SF Worldcon in Winnipeg and bought these two pins.

The turquoise pin was sold by Russian fans as a fundraiser for their trip.

I was born in Eckville, in rural west-central Alberta, where my mother's family had homesteaded. When I was eight, my father bought a ranch just north of Red Deer. These pins were from my mother's estate.



Red Deer is a boring city. This was, and still is, the most exciting thing that ever happened there.



Calgary celebrated its 125<sup>th</sup> anniversary in 2000.

I put in 31 years with the City of Calgary Parks Dept. before retiring in 2010. Every five years I got a pin like these. The building is Old City Hall.





LITERA SCRIPTA MANET AND MAGAZINES OF YORE: PART 5  
by Dale Speirs

[Parts 1 to 4 appeared in OPUNTIA #365, 366, 368, and 371.]

CanLit.

THE IDLER was a Canadian literary magazine that struggled from 1985 to 1993 before dying the usual death of such efforts. It was named after Samuel Johnson's periodical, and was intended to be a place for essays, short stories, political commentary, poetry, and reviews.

The IDLER

Number One JANUARY 1985 \$2.75 the copy

IN THE SCHOOLS  
By HARLEY PRICE

The campaign is now on to improve standards in the schools, for Johnny can neither read nor write. It is a wonderful opportunity for the people who think Johnny's ideological standards are slacking a bit, too.

HEARING PLACES  
By PAUL YOUNG

Reflections upon antique musical instruments, listening to buildings, jogging to Mozart, and other calamities in modality.

THREE LITTLE WORDS  
By ERIC McLUHAN

Aristotle called tragedy a 'mimesis of a praxis'. Something happens to the leading character — he has a hamartia. Much hangs on the meaning of these three Greek words. They have not been well translated.

IN THE MARGINS  
By SAMUEL JOHNSON

A Bohemian shepherd, who, through long abode in the forests, has learned to understand the languages of birds, reports on a conversation between a vulture and her young on the nature and purposes of man.

THE IDLER'S NOTEBOOK

We introduce ourselves, — and our companions. — On Jaroslav Seifert. — Why Ethiopia is starving. — An idle award for the historians of lost causes. — A bland election. — On the secular religion of 'care', — and on the terrors of the year 2000.

THE DOGS THAT  
DID NOT BARK

By MARCO CARYNNYK

Perhaps six million people died in the Ukrainian Famine of 1932-3, which was organized by Stalin to punish resistance to the Soviet collectivization. It is now clear that British, American, and Canadian authorities knew very much about it, but said and did nothing.



The editor, like all literary editors, had his problems with contributors, and vented his spleen every so often with hints to authors. From issue #6 (1985 September) are a few such testy remarks to wannabe writers:  
“It is very painful to read a display of learning.”  
“A summer in Europe does not necessarily constitute an interesting experience.”  
“Never, never send haiku.”

Like other such magazines, the commentary was topical and is now obsolete, and the poetry deservedly forgotten. The publisher of THE IDLER tried to portray himself as a Canadian version of Samuel Johnson but often came across as sadly dated, even at the time of publication. I had the run #1 to #30, bought at newsagents. I gave up on it, due to its later turn toward pretentious drivel. THE IDLER's proprietors opened a pub of the same name in Toronto, with their editorial offices upstairs.

T · H · E · I · D · L · E · R · P · U · B

Among the things you will find in the IDLER PUB.  
Home-made meat pies. A stone fireplace that says, “Hae nobis propriae sedes”. People who write for a living. Exquisite french fries. A reading alcove with everything from the East End Taxi News to Pravda. A clock by William Blake. The Tuesday Night Experiences. Placemats by William Hogarth. An immense cage-like apparatus with someone inside. Wet-naps. “Fully Licenced Under the LLBO”, if you know what we mean. You can meet anyone at the IDLER.



Back cover ad from  
1988 September issue.

255 Davenport, near Avenue Road • Toronto • Telephone 962-0195



THE IDLER was a mix of CanLit-style fiction and poems strangely intermixed with right-wing commentary about Canadian politics. I say strangely, because CanLit magazines are normally leftish. One reason why THE IDLER always struggled financially was because the Canada Council, then and now, only subsidizes small-press publications which meet its standards of leftish politically correct ideologies. THE IDLER was simply too rightist for the chattering classes who controlled the government subsidies.

An example is a lament in issue #7 (1986 May) by Harry Underwood about the 1985 Supreme Court of Canada decision that struck down the Lord's Day Act, which closed stores on Sundays. Underwood's complaint was that the decision was a blow against religious freedom, a remarkable argument the same as saying black is white and up is down. I read the article twice but still couldn't make out his logic. He seemed oblivious of the fact that not every Canadian was Christian, much less attended the United Church in southern Ontario.

(I am reminded of the joke that Presbyterians are United Churchers with inherited money, UCers are Baptists with a undergraduate degree, and Baptists are Pentecostals who go to church in suit-and-tie instead of overalls.)

The periodical itself was famous for its classified ads, particularly the personals, which were genuine. A couple of examples from issue #14 (1987 September):

*“Professional ballerina would like to meet just one good-looking single heterosexual man under 45 who can read.”*

*“British lady professor, very tall, blonde, and conservative, has six months left of sabbatical year here. Seeks dinner companion, 35 to 45, for any and all of the 150 evenings ahead.”*

THE IDLER #2 (1985 February) has an interesting article “On T.S. Eliot And Sherlock Holmes” by Frank Zingrone. He noticed some remarkable similarities between Eliot's work and that of Sir Arthur Conan Doyle. Eliot's descriptions of London fogs and the city as a depressing place followed Doyle's closely. Something that will make Sherlockians sit up is a comparison of the call-and-response sequence in “The Musgrave Ritual”, which Eliot lifted for his MURDER IN THE CATHEDRAL. It was a direct steal that had to have been a conscious theft.

In reading through all the back issues, I found little worth commenting upon, and just skimmed the political articles. There was a time when Canadian pundits could earn a good living pontificating on the Meech Lake Accord, and why the two Germanys would develop into distinctly separate nations and cultures (in 1988; I'm sure the author prefers to have that article stay dead and buried). I kept issue #5 because I had a letter to the editor published in it on an entirely trivial topic. The rest have gone into the Little Free Library boxes around Calgary.

### **Fiction.**

“The Steinway Collection” by Robert J. Randisi (1977 January, MYSTERY MONTHLY) begins with Aaron Steinway approaching private detective Miles Jacoby. His pulp magazine collection has been stolen. A report was made to the police but they obviously aren't going to investigate something they consider unimportant.

There are several possible thieves among the completist collectors in the city, but Jacoby gets nowhere. Steinway is murdered, which prompts the police to take the case seriously. Assorted suspects are trotted out and then dismissed. Finally one of them confesses without much prompting. The magazines are never recovered. The murderer didn't take them; they had already been stolen when he did his dirty deed. An implausible ending, and not a good solution. The story could have been written with a better ending.

### **WHEN WORDS COLLIDE 2017**

Calgary's annual readercon When Words Collide will be held this year on the weekend of August 11 to 13, at the Delta Calgary South Hotel on Southland Drive SE and Fairmount Drive. Details from [www.whenwordscollide.org](http://www.whenwordscollide.org)

I've been to all of the WWCs since the first one in 2011 and enjoyed all of them. The reports are in OPUNTIA's #71, 253, 266, 282, 318, and 350. The conventions are strictly literary stuff, with panels by authors, editors, publishers, and screenwriters. The dealer bourse is books only, with lots of small-press publishers hawking their wares. The Website has podcasts of some of the panels from previous years, free to download.



# VENUS IN HER GLIMMERING SPHERE: PART 4

by Dale Speirs

[Parts 1 to 3 appeared in OPUNTIA's #324, 329, and 368.]

## Old Venus.

Alas, for the lost Carboniferous jungles of Venus, destroyed by space probes that replaced them with poisonous gases hot enough to smelt iron. Some writers have tried to revive that lost world, with varying degrees of success.

“Cold Hands, Warm Heart” is a 1964 episode of the television series THE OUTER LIMITS. It begins with the return of astronaut Jeff Barton, the first man to land on Venus. (Played by William Shatner in his scenery-chewing style that he would make famous in his next television series.) Barton comes back to Earth as a hero.

Not long after, he begins to have dizzy spells and is always cold. Even in a steam room, he has trouble staying warm. He hallucinates, seeing an alien in flashbacks, a hairy sock puppet with glowing eyes. From there, Barton begins to grow scales and green webbed hands. Something on Venus infiltrated its substance into him and is changing him into a squamous alien. Eventually the medics reverse the process by putting him into a high-pressure compression chamber.

The plot is the standard monster of the week. The SFX are el cheapo, worse than 1950s B-movies. Not the fault of the producers; the television network gave them a budget suitable for mundane shows instead of science fiction. As an example, the spacecraft Barton flies to Venus in is shown as a Gemini/Titan launch from NASA footage, then zooming through space as a 1930s spacecraft whose rocket flames curve upward as it moves horizontally across the screen.

“Scorpion Men Of Venus” by Richard Lupoff (2013, in the anthology WORLDS OF EDGAR RICE BURROUGHS, edited by Mike Resnick and Robert T. Garcia) fails from the start. It is a parody of ERB’s Carson Napier stories set on Venus.

The prose is overly florid, the equivalent of an actor mugging and winking at the audience in a comedy movie instead of letting the humour flow from within the story. The plot is basically the trek of the hero through the Venusian jungle,

pursued by scorpion men, and eventually fleeing to safety on the back of a giant dragonfly. Whenever the story flags, another creature or a 90°-turn in the plot is introduced. At last they reach the sunny uplands, without much of a story en route.





**New Venus: Factual.**

I came across a 19-page research proposal by Colin Wilson at the University of Oxford for an international Venus probe. Rather than put it in “Seen In The Literature”, I’ll print some extracts from it here. A fascinating read.

Wilson, Colin (2013-05-23) **Venus: Key to understanding the evolution of terrestrial planets.** RESPONSE TO ESA’S CALL FOR WHITE PAPERS FOR THE DEFINITION OF SCIENCE THEMES FOR L2/L3 MISSIONS IN THE ESA SCIENCE PROGRAMME.

*Extracts: Why are the terrestrial planets so different from each other? Venus should be the most Earth-like of all our planetary neighbours. Its size, bulk composition and distance from the Sun are very similar to those of the Earth. Its original atmosphere was probably similar to that of early Earth, with large atmospheric abundances of carbon dioxide and water. Furthermore, the young sun’s fainter output may have permitted a liquid water ocean on the surface. While on Earth a moderate climate ensued, Venus experienced runaway greenhouse warming, which led to its current hostile climate. How and why did it all go wrong for Venus? What lessons can we learn about the life story of terrestrial planets/exoplanets in general, whether in our solar system or in others?*

*ESA’s Venus Express mission has proved tremendously successful, answering many questions about Earth’s sibling planet and establishing European leadership in Venus research. However, further understanding of Venus and its history requires several further lines of investigation. Entry into the atmosphere will be required in order to measure noble gas isotopic signatures of past history and to understand the role of clouds in the climate balance.*

*Radar mapping at metre-scale spatial resolution, and surface height change detection at centimetre scale, would enable detection of current volcanic and Aeolian activity, and would revolutionise comparative geology between the terrestrial planets. The tessera highlands of Venus are thought to be the oldest terrain type found on Venus but have not yet been visited by spacecraft; a lander in these regions would measure surface composition to provide clues as to the earliest geologic record available on Venus.*

*Individually, these investigations could be carried out by separate low cost missions, and there is ample scope for international collaboration as individual*

*payload or mission elements could be provided or even separately launched by different space agencies. However, there is strong synergy to be achieved by having all of these elements operating at the same time at Venus in close co-ordination. An orbiter permits much higher data return from balloons or landing probes by acting as data relay, and also provides positioning and context imaging for in situ measurements, as has been demonstrated at Mars and Titan.*

*Earth and Venus were born as twins, formed at around the same time, with apparently similar bulk composition and the same size. However, they have evolved very differently: the enormous contrast between these planets today challenge our understanding of how terrestrial planets work.*

*The atmosphere is surprising in many ways, its 400 km/h winds on a slowly rotating planet; its enormous surface temperature, even though it absorbs less sunlight than does the Earth; its extreme aridity, with sulphuric acid as its main condensable species instead of water. The solid planet, too is mysterious: its apparent lack of geodynamo and plate tectonics, the uncertainty of its current volcanic state, the apparent young age of much of its surface. How and why does a planet so similar to Earth end up so different?*

*The age of Venus’ surface is poorly known. Unlike Mercury, the Moon, and Mars, Venus has a thick atmosphere that represents a powerful filter to small impactors. As a result, its crater population is limited to a few large craters; there are very few craters with diameters <20 km, and there are fewer than 1000 craters in total.*

*One of the crucial factors determining planetary habitability is the redistribution of heat around the planet. The solid planet of Venus rotates only once every 243 days but the atmosphere above exhibits strong super-rotation, circling the planet some 40-50 times faster than the solid planet below.*

*Venus has an enormous atmosphere with many complex chemical processes at work. Processes occurring near the surface, where carbon dioxide becomes supercritical and many metals would melt, are very different from those at the mesopause where temperatures can be below -150° C, colder than any found on Earth.*

*The dominant chemical cycles at work in Venus’s clouds are those linking the sulphuric acid and sulphur dioxide: Sulphuric acid is photochemically*



*produced at cloud-tops, has a net downwards transport through the clouds, and then evaporates and then thermal dissociates below the clouds; this is then balanced by net upwards transport through the clouds of its stable chemical precursors (SO<sub>2</sub> and H<sub>2</sub>O).*

*Infrared remote sensing observations of Venus can be matched by assuming a cloud composition entirely of sulphuric acid mixed with water, but Vega descent probe XRF measurements found also tantalising evidence of P, Cl and even Fe in the cloud particles.*

*If confirmed these measurements would provide important clues as to exchanges with the surface: are these elements associated with volcanic, Aeolian or other processes? An in situ chemical laboratory floating in the clouds, or multiple descent probes, would be needed to address these measurement goals.*

*The cloud layer of Venus is highly reflective so Venus presently absorbs less power from the sun than does the Earth. Its high surface temperature is instead caused by its enormous greenhouse warming effect, caused by carbon dioxide, water vapour and other gases. Its clouds, too, have a net warming effect because they prevent thermal fluxes from escaping the deep atmosphere.*

*Balloons are ideally suited for exploring Venus because they can operate at altitudes where pressures and temperatures are far more benign than at the surface. Deployment of two small balloons at 55 km altitude, in the heart of the main convective cloud layer, was successfully demonstrated by the Soviet VeGa mission in 1984. At this altitude, the ambient temperature is a comfortable 20° C and the pressure is 0.5 atm. The main environmental hazard is the concentrated sulphuric acid which makes up the cloud particles; however, effects can be mitigated by choosing appropriate materials for external surfaces.*

*Balloons at this altitude can take advantage of the fast super-rotating winds which will carry the balloon all the way around the planet in a week or less (depending on latitude and altitude). Horizontal propulsion (with motors) is not advised because of power requirements and the difficulty of countering the fast (250 km/h) zonal wind speed. A cloud-level balloon is an ideal platform for studying interlinked dynamical chemical and radiative cloud-level processes. It also offers a thermally stable long-lived platform from which measurements of noble gas abundances and isotopic ratios can be carefully carried out and repeated if necessary (in contrast to a descent probe, which offers one chance for making this measurement, in a rapidly changing thermal environment).*

A more recent paper (a preprint actually) uses data from the Kepler space telescope to look for Venus-type planets elsewhere.

Angelo, I., et al (2017-04-11) **Kepler-1649b: an exo-Venus in the solar neighborhood.** Preprint at [pearXiv:1704.03136v1](https://arxiv.org/abs/1704.03136v1) [astro-ph.EP], [www.arXiv.org](https://www.arXiv.org)

Authors' abstract: *"The Kepler mission has revealed that Earth-sized planets are common, and dozens have been discovered to orbit in or near their host star's habitable zone. A major focus in astronomy is to determine which of these exoplanets are likely to have Earth-like properties that are amenable to follow-up with both ground- and future space-based surveys, with an ultimate goal of probing their atmospheres to look for signs of life. Venus-like atmospheres will be of particular interest in these surveys. While Earth and Venus evolved to have similar sizes and densities, it remains unclear what factors led to the dramatic divergence of their atmospheres. Studying analogs to both Earth and Venus can thus shed light on the limits of habitability and the potential for life on known exoplanets."*

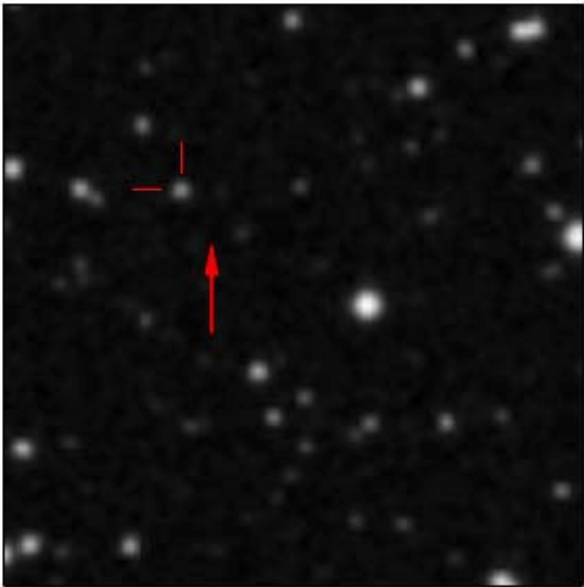
*"Here we present the discovery and confirmation of Kepler-1649b, an Earth-sized planet orbiting a nearby M5V star that receives incident flux at a level similar to that of Venus. We present our methods for characterizing the star, using a combination of PSF photometry, ground-based spectroscopy and imaging, to confirm the planetary nature of Kepler-1649b. Planets like Kepler-1649b will be prime candidates for atmospheric and habitability studies in the next generation of space missions."*

*"The Kepler mission was designed to measure the frequency and sizes of extrasolar planets, with a primary goal of detecting other Earth-sized planets that could potentially be habitable. In our Solar System, both Earth and Venus evolved to have comparable sizes and bulk densities, yet the evolution of their atmospheres diverged dramatically such that only Earth developed conditions conducive to the emergence of life. It remains unclear which aspects of the Earth's development were key in acquiring and maintaining a hospitable atmosphere."*

*"Finding and characterizing both Earth and Venus analogs around other stars could shed light on these differences. Kepler has been successful in finding Earth-size planets in the habitable zones of their host stars. A super-Earth in a Venus-like orbit and dozens of small planet candidates that could potentially*



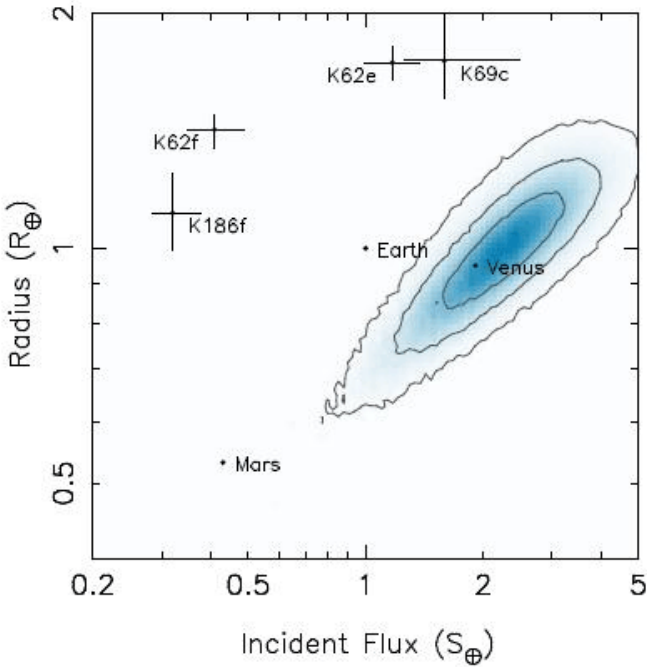
have Venus-like atmospheres have also been discovered. In this paper we confirm the planetary nature of Kepler-1649b, an Earth-sized planet that receives flux from its host star that is comparable to that received by Venus.”



These two images are from this paper.

At left, the cross lines indicate the position of Kepler-1649b at the time this photo was taken on 1991-09-06. The red arrow points to where the planet was in 2017 April.

Chart below left: The three rings where Venus is centred are the measurements of radiation flux of Kepler-1649b. For comparison, Earth is set at radius = 1 and flux = 1, using a logarithmic scale.



The blue centre is the most probable data for Kepler-1649b, and the two outer rings represent increasing experimental error.

The K numbers are other exoplanets.

### SEEN IN THE LITERATURE

Bromley, B.C., and S.J. Kenyon (2017-03-30) **Terrestrial planet formation: Dynamical shake-up and the low mass of Mars.** Preprint at arXiv:1703.10618v1 [astro-ph.EP], www.arXiv.org

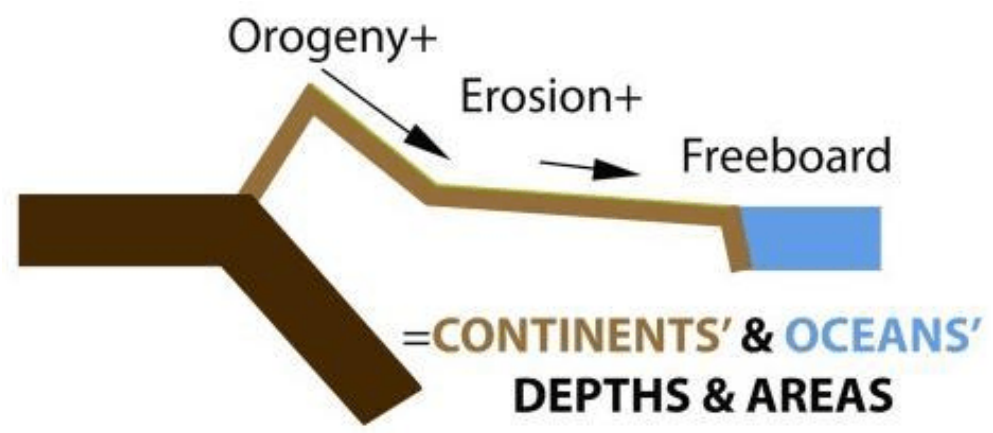
Authors’ abstract: “We consider a dynamical shake-up model to explain the low mass of Mars and the lack of planets in the asteroid belt. In our scenario, a secular resonance with Jupiter sweeps through the inner solar system as the solar nebula depletes, pitting resonant excitation against collisional damping in the Sun’s protoplanetary disk. We report the outcome of extensive numerical calculations of planet formation from planetesimals in the terrestrial zone, with and without dynamical shake-up. If the Sun’s gas disk within the terrestrial zone depletes in roughly a million years, then the sweeping resonance inhibits planet formation in the asteroid belt and substantially limits the size of Mars. This phenomenon likely occurs around other stars with long-period massive planets, suggesting that asteroid belt analogs are common.”

Whitehead, J.A. (2017) **Dimensions of continents and oceans: water has carved a perfect cistern.** EARTH AND PLANETARY SCIENCE LETTERS 467:18-29

Author’s abstract: “The ocean basins have almost exactly the correct surface area and average depth to hold Earth’s water. This study asserts that three processes are responsible for this. First, the crust is thickened by lateral compression from mountain formation. Second, Earth’s continental crust is leveled by erosion. Third, due to the efficiency of erosion, the average elevation is a few hundred meters above sea level. A theoretical fluid model, suggested partly by laboratory experiments, includes an ocean of specified depth. The resulting continents are tabular (that is, their elevation view is rectangular). The surface lies above sea level, contributing to a well-known double maximum in Earth’s elevation corresponding to continents and ocean basins. Next, a simple hydrostatic balance between continent and ocean gives average depth and area of present oceans and continents within 33%.”

“Further calculations with a suitable correction to fit present Earth cover a wide range of possible crust volumes for earlier Earth. With the present water volume, ocean area always exceeds 25% of the globe. For all possible water volumes, average continental crust thickness always exceeds 23.4 km. This may

explain why cratons have thicknesses comparable to younger crust so that they are found on Earth's surface today. Therefore, mountain building and erosion have enabled water to carve its own cistern in the form of the accumulated ocean basins. The wide range of areas and depths of oceans and continents found here can constrain models of early earth. Similar calculations can be done for earthlike planets as well.” [image is from this paper]



Hardy, K., et al (2017) **Diet and environment 1.2 million years ago revealed through analysis of dental calculus from Europe’s oldest hominin at Sima del Elefante, Spain.** SCIENCE OF NATURE 104:2

Authors’ abstract: “Sima del Elefante, Atapuerca, Spain contains one of the earliest hominin fragments yet known in Europe, dating to 1.2 megayears ago. Dental calculus from a hominin molar was removed, degraded and analysed to recover entrapped remains. Evidence for plant use at this time is very limited and this study has revealed the earliest direct evidence for foods consumed in the genus Homo.”

“This comprises starchy carbohydrates from two plants, including a species of grass from the Triticeae or Bromideae tribe, meat and plant fibres. All food was eaten raw, and there is no evidence for processing of the starch granules which are intact and undamaged. Additional biographical detail includes fragments of non-edible wood found adjacent to an interproximal groove suggesting oral hygiene activities, while plant fibres may be linked to raw material processing.

Environmental evidence comprises spores, insect fragments and conifer pollen grains which are consistent with a forested environment.”

Speirs: Notice that bit about oral hygiene. The apemen of that era brushed their teeth with twigs. Triticeae is the wheat tribe. Bromideae are brome grasses, today only used for pastures, but if you are a very hungry apeman, the seeds are edible, although a lot of work to collect.

Janz, L., et al (2017) **Transitions in palaeoecology and technology: Hunter-gatherers and early herders in the Gobi Desert.** JOURNAL OF WORLD PREHISTORY 30:1-80

Authors’ abstract: “The desert and arid steppes of Mongolia and northern China were geographically central to the spread of pastoralism and the rise of pastoralist states, but research on the organizational strategies of pre-pastoralist hunter-gatherers and the spread of herding has been extremely limited. Until recently, catalogues of sites collected by Westerners in the 1920s and 1930s comprised the body of English-language publications on Gobi Desert prehistory.”

“This article introduces a wealth of new site-specific and interpretive data, drawing on English-language sources as well as Russian- and Mongolian-language publications to create a synthesis for the prehistory of the Gobi Desert from the end of the Last Glacial Maximum to the adoption of herding. Special emphasis is placed on the relationship between a major shift in desert ecosystems, comparable to the ‘greening of the Sahara’, the establishment of an oasis-based broad-spectrum foraging strategy, and progressive desertification and deforestation after 2000 BC.”

“We conclude that an oasis-based adaptation was contemporaneous with the expansion of forests and wetlands and persisted throughout the early stages of herding. A major decline in these economies occurs after 1000 BC, in conjunction with continuing trends towards heightened aridity and major societal changes across Northeast Asia. The persistent co-existence of Bronze Age burials and microblade-based habitation sites around oases, as well as similarities in material culture, suggest that these groups overlapped geographically or were the same entity.”



Velasco-Villa, A., et al (2017) **The history of rabies in the Western Hemisphere.** ANTIVIRAL RESEARCH Preprint at Elsevier Science Direct, doi:10.1016/j.antiviral.2017.03.013

Authors’ abstract: “Before the introduction of control programs in the 20th century, rabies in domestic dogs occurred throughout the Western Hemisphere. However, historical records and phylogenetic analysis of multiple virus isolates indicate that, before the arrival of the first European colonizers, rabies virus was likely present only in bats and skunks. Canine rabies was either rare or absent among domestic dogs of Native Americans, and first arrived when many new dog breeds were imported during the period of European colonization. The introduction of the cosmopolitan dog rabies lyssavirus variant and the marked expansion of the dog population provided ideal conditions for the flourishing of enzootic canine rabies. The shift of dog-maintained viruses into gray foxes, coyotes, skunks and other wild mesocarnivores throughout the Americas and to mongooses in the Caribbean has augmented the risk of human rabies exposures and has complicated control efforts.”

“Rabies is an acute, highly lethal encephalomyelitis caused by viruses in the genus *Lyssavirus*. Current theories agree that the lyssaviruses probably originated in Old World bats, which are confirmed reservoir hosts for 14 of the 16 known viral species. Dog-maintained rabies lyssavirus (RABLV) occurs globally, but RABLV associated with bats is only found in the New World. The non-rabies lyssaviruses have been implicated in only a handful of infections of humans, domestic animals, and wildlife. In contrast, RABLV lineages maintained and transmitted by domestic dogs cause more than 60,000 deaths annually across the globe, with the majority of cases occurring in Asia and Africa.”

Speirs: Man’s best friend indeed.

Kravchenko, A.N., et al (2017) **Field-scale experiments reveal persistent yield gaps in low-input and organic cropping systems.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 114:926-931

Authors’ abstract: “Meeting future food needs requires a substantial increase in the yields obtained from existing cropland. Prior global analyses have suggested that these gains could come from closing yield gaps, differences between yields from small-plot research versus those in farmer fields. However,

closing this gap requires knowledge of causal factors not yet identified experimentally. Results here suggest that yield gaps can be closed using farming practices that use conventional synthetic chemicals, but practices that rely more on biological management, as is the case throughout much of the developing world and in organic agriculture, require renewed attention to field-scale resource demands and place greater emphasis on the importance of field-scale experimental research.”

“At a site in southwest Michigan, we conducted a 6-year experiment to test the accuracy with which plot-scale crop-yield results can inform field-scale conclusions. We compared conventional versus alternative, that is, reduced-input and biologically based—organic, management practices for a corn–soybean–wheat rotation in a randomized complete block-design experiment, using 27 commercial-size agricultural fields. Nearby plot-scale experiments (0.02-ha to 1.0-ha plots) provided a comparison of plot versus field performance.”

“We found that plot-scale yields well matched field-scale yields for conventional management but not for alternative systems. For all three crops, at the plot scale, reduced-input and conventional managements produced similar yields; at the field scale, reduced-input yields were lower than conventional. For soybeans at the plot scale, biological and conventional managements produced similar yields; at the field scale, biological yielded less than conventional. For corn, biological management produced lower yields than conventional in both plot- and field-scale experiments. Wheat yields appeared to be less affected by the experimental scale than corn and soybean. Conventional management was more resilient to field-scale challenges than alternative practices, which were more dependent on timely management interventions; in particular, mechanical weed control.”

Thutupalli, S., et al (2017) **Farming and public goods production in *Caenorhabditis elegans* populations.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 114:2289-2294

Authors’ abstract: “Here, we study the population dynamics of a predator-prey system comprising the nematode worm *Caenorhabditis elegans* and bacteria *Escherichia coli*. We find that the worms engage in a form of primitive agriculture, driven by their foraging behavior, by redistributing their bacterial food source, which subsequently grows.”

*“Here, we report on a *Caenorhabditis elegans*-*Escherichia coli* (worm-bacteria) experimental system in which the worm-foraging behavior leads to a redistribution of the bacterial food source, resulting in a growth advantage for both organisms, similar to that achieved via farming. We show experimentally and theoretically that the increased resource growth represents a public good that can benefit all other consumers, regardless of whether or not they are producers. Mutant worms that cannot farm bacteria benefit from farming by other worms in direct proportion to the fraction of farmers in the worm population. The farming behavior can therefore be exploited if it is associated with either energetic or survival costs. However, when the individuals compete for resources with their own type, these costs can result in an increased population density. Altogether, our findings reveal a previously unrecognized mechanism of public good production resulting from the foraging behavior of *C. elegans*, which has important population-level consequences.”*

Nyffeler, M., and K. Birkhofer (2017) **An estimated 400 to 800 million tons of prey are annually killed by the global spider community.** SCIENCE OF NATURE 104:30 doi:10.1007/s00114-017-1440-1

Authors’ abstract: *“To document the impact of the global spider community as insect predators, we present estimates of the biomass of annually killed insect prey. Our estimates assessed with two different methods suggest that the annual prey kill of the global spider community is in the range of 400 to 800 million metric tons (fresh weight), with insects and collembolans composing >90% of the captured prey. This equals approximately 1% of the global terrestrial net primary production.”*

*“Spiders associated with forests and grasslands account for >95% of the annual prey kill of the global spider community, whereas spiders in other habitats are rather insignificant contributors over a full year. The spider communities associated with annual crops contribute less than 2% to the global annual prey kill. This, however, can be partly explained by the fact that annual crop fields are disturbed habitats with a low buildup of spider biomass and that agrobiont spiders often only kill prey over short time periods in a year. Our estimates are supported by the published results of exclusion experiments, showing that the number of herbivorous/detritivorous insects and collembolans increased significantly after spider removal from experimental plots.”*

Kaufmann, F., et al (2017) **Global socioeconomic material stocks rise 23-fold over the 20th century and require half of annual resource use.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 114:1880-1885

Authors’ abstract: *“A large part of all primary materials extracted globally accumulates in stocks of manufactured capital, including in buildings, infrastructure, machinery, and equipment. These in-use stocks of materials provide important services for society and the economy and drive long-term demand for materials and energy. Configuration and quantity of stocks determine future waste flows and recycling potential and are key to closing material loops and reducing waste and emissions in a circular economy. A better understanding of in-use material stocks and their dynamics is essential for sustainable development.”*

*“Human-made material stocks accumulating in buildings, infrastructure, and machinery play a crucial but underappreciated role in shaping the use of material and energy resources. Building, maintaining, and in particular operating in-use stocks of materials require raw materials and energy. Material stocks create long-term path-dependencies because of their longevity. Fostering a transition toward environmentally sustainable patterns of resource use requires a more complete understanding of stock-flow relations. Here we show that about half of all materials extracted globally by humans each year are used to build up or renew in-use stocks of materials.”*

*“Based on a dynamic stock-flow model, we analyze stocks, inflows, and outflows of all materials and their relation to economic growth, energy use, and CO<sub>2</sub> emissions from 1900 to 2010. Over this period, global material stocks increased 23-fold, reaching 792 Pg (±5%) in 2010. Despite efforts to improve recycling rates, continuous stock growth precludes closing material loops; recycling still only contributes 12% of inflows to stocks. Stocks are likely to continue to grow, driven by large infrastructure and building requirements in emerging economies. A convergence of material stocks at the level of industrial countries would lead to a fourfold increase in global stocks, and CO<sub>2</sub> emissions exceeding climate change goals. Reducing expected future increases of material and energy demand and greenhouse gas emissions will require decoupling of services from the stocks and flows of materials through, for example, more intensive utilization of existing stocks, longer service lifetimes, and more efficient design.”*



Diego-Rasilla, F.J., et al (2017) **Spontaneous magnetic alignment behaviour in free-living lizards.** SCIENCE OF NATURE 104:13. doi:10.1007/s00114-017-1439-7

Authors’ abstract: “Several species of vertebrates exhibit spontaneous longitudinal body axis alignment relative to the Earth’s magnetic field (i.e., magnetic alignment) while they are performing different behavioural tasks. Since magnetoreception is still not fully understood, studying magnetic alignment provides evidence for magnetoreception and broadens current knowledge of magnetic sense in animals. Furthermore, magnetic alignment widens the roles of magnetic sensitivity in animals and may contribute to shed new light on magnetoreception.”

“In this context, spontaneous alignment in two species of lacertid lizards (*Podarcis muralis* and *Podarcis lilfordi*) during basking periods was monitored. Alignments in 255 *P. muralis* and 456 *P. lilfordi* were measured over a 5-year period. The possible influence of the sun’s position (i.e., altitude and azimuth) and geomagnetic field values corresponding to the moment in which a particular lizard was observed on lizards’ body axis orientation was evaluated.”

“Both species exhibited a highly significant bimodal orientation along the north-northeast and south-southwest magnetic axis. The evidence from this study suggests that free-living lacertid lizards exhibit magnetic alignment behaviour, since their body alignments cannot be explained by an effect of the sun’s position. On the contrary, lizard orientations were significantly correlated with geomagnetic field values at the time of each observation.”

“We suggest that this behaviour might provide lizards with a constant directional reference while they are sun basking. This directional reference might improve their mental map of space to accomplish efficient escape behaviour. This study is the first to provide spontaneous magnetic alignment behaviour in free-living reptiles.”

LETTERS TO THE EDITOR

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

FROM: Ray Palm 2017-04-11  
Plattsburgh, New York

Impressive landscape photos in OPUNTIA #372. It amazes me the detail you can get with a smartphone. I see your zine is coming out like clockwork. Besides having a lot of things to share, does the lack of putting out a hardcopy make it easier to publish? I know I don’t miss the print hassle but at the same time it did generate some snail mail. My PO box is usually empty. I don't know why I bother to check it every day.

[Smartphone cameras are getting better and better resolution. The only problem is that they don’t have real telephoto lenses. That is why I still use my digital Nikon SLR. Zooming on a cellphone camera only enlarges the pixels, not the amount of light gathered by the lens, which is why long-distance photos still look better if taken with an SLR camera. The vast majority of cellphone photographers only take portrait photos, selfies, or general landscape views, so they don’t notice this nor need it.]

[When I was producing OPUNTIA as a hardcopy zine, I had to leave out a lot of material for reasons of economy, and pruned letters of comment severely. Now I find that I can maintain a steady pace of two or three issues per month as pdfs, and don’t have to cut copy just for the sake of keeping the issue within the first increment of postage.]

Your article about Lord Dunsany and his story about a man traveling to Mars reminds me of a story that appeared in AMAZING STORIES during its early years. The hero flies to another planet without rockets, just propellers. Apparently the writer believed that space was filled with “ether”. If my memory serves me the hero encounters a socialist utopia at his travel's end. So some of those early SF fans and writers were “commies,” eh?

[I have a series on Lord Dunsany coming up soon. He was the greatest modern writer of fantasy. To answer your question, many SF fans of the 1930s and 1940s were Communists because of the failure of the capitalist system during the Great Depression. It came back to haunt some of them in the 1950s.]

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