

# Queen's

ALUMNI REVIEW

Issue 1, 2016

The magazine of  
Queen's University  
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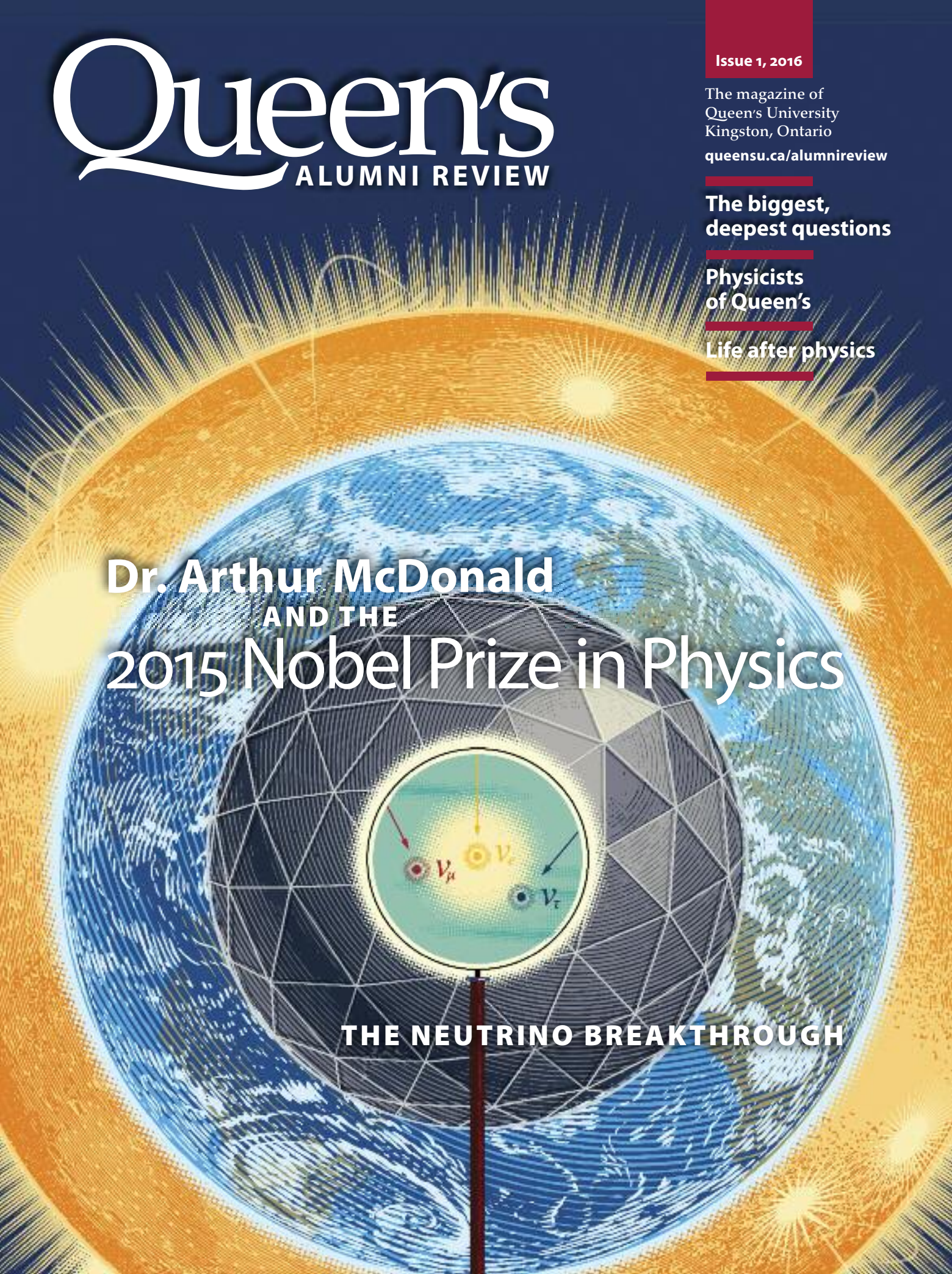
**The biggest,  
deepest questions**

**Physicists  
of Queen's**

**Life after physics**

## Dr. Arthur McDonald AND THE 2015 Nobel Prize in Physics

**THE NEUTRINO BREAKTHROUGH**





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12

COVER STORY

## The neutrino breakthrough

Dr. Art McDonald and the SNO Collaboration captured the world's attention with the October announcement of the Nobel Prize in Physics. Learn about the years of work that led to the neutrino breakthrough.

BY IVAN SEMENIUK



BERNARD CLARK

24

## The biggest, deepest questions

The questions don't get any bigger than the ones probed by faculty and students in Stirling Hall. Where do we come from? How did the universe evolve? What is it made of? And why, according to the laws of physics, does the world work the way it does?

BY WANDA PRAAMSMA



BERNARD CLARK

26

## Physicists of Queen's

PhD student Nishan Singh Mann and Professor Stephen Hughes step into the spotlight in this photo essay on physics and astronomy research at Queen's.

BY WANDA PRAAMSMA

2  
Editor's notebook

3  
Letters to the editor

5  
From the principal

6  
*Quid Novi*  
News from campus

8  
In memoriam:  
Principal Emeritus  
Ron Watts

18  
The road to Stockholm

20  
SNO men/How to clean  
a neutrino detector

36  
Advancement spotlight

40  
Keeping in touch

53  
QUAA president's  
message

54  
Your global alumni  
network

56  
The year in research and  
innovation

58  
*Ex libris*  
New books from  
faculty and alumni

60  
The last word:  
Life after physics



*On the cover:* Neutrinos flood from the core of the sun to the Earth, where they are studied in a lab deep underground. Illustrator Carl Wiens captures the breadth of the neutrino breakthrough (with a whimsical tricolour touch).

ILLUSTRATION BY CARL WIENS, IZIART.COM

## Our physics issue

What an amazing few months it has been since we first learned the news of Art McDonald's Nobel Prize in Physics. Now, you may think that being handed such a great story would have made it easy to put together a magazine issue. But I had a dilemma: how was I going to tell the story of a Nobel Prize in a new way in a magazine coming out four months after the news broke? The more I looked into it, the more there was to tell: the nature of neutrinos themselves, the early days of SNO research at Queen's and around the world, the amazing research happening right now and being planned for the future at the SNOLAB facility in Sudbury. And then there were all the other stories



BERNARD CLARK

emerging from the Queen's Department of Physics, Engineering Physics & Astronomy – those Queen's researchers and students expanding our knowledge of the universe. And I had a limited page count and a *very* limited grasp of physics.

So I called upon the experts. Ivan Semeniuk, science reporter for *The Globe and Mail*, wrote our cover story. He gives us an

international and historical perspective on the work leading up to the neutrino breakthrough. (As a bonus, he also provides an experiment you can try at home to understand the nature of neutrinos.) Then I asked Carl Wiens (who illustrated our feature "Research that can change your life...really!" in issue 1-2015) to create illustrations for both our cover and Ivan's story. The always patient Dr. McDonald corrected me on my shaky grasp of science when needed (and no, he didn't use Timbits). George Ewan further helped me to understand the history of the SNO Collaboration. Marc Dignam, Head of the Department of Physics, Engineering Physics & Astronomy, connected me and my colleagues with some of the very talented researchers in his department. And they, in turn, introduced us to some of the undergraduate and graduate students and post-doctoral fellows with whom they work. (Above, I chat with Drs. Alvina Kamaha and Gilles Gerbier.) My colleague Wanda Praamsma had the daunting task of condensing down the results of her interviews with these groups of researchers working in dark matter, light matter, microphysics, nanophysics and astronomy.

### A note on language

Emeritus or emerita? You will see that, in our Letters to the editor column, I have included one letter from a professor emerita and one from a professor emeritus, both women. Both words are quite correct. "Emerita" is the feminine form of the adjective "emeritus," which is used to modify a masculine noun, but may also be used in a gender-neutral context. Nouns, too, can be gendered or gender-neutral. So, a female graduate of this or any other university may refer to herself either as an alumna or an alumnus. And while, as a writer and editor, I strive for the perfect word for every occasion and I adore consistency, I also am a firm believer in a woman's right to choose her own nomenclature.

As always, alumni and alumnae, let me know what you think of this issue. [review@queensu.ca](mailto:review@queensu.ca) ■



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# letters

## TO THE EDITOR

### On Ronald Watts

Why was I so saddened on hearing of the death of Dr. Ronald Watts, when I scarcely knew him? He was the tutor of my first-year philosophy class in 1962-63, during which he answered our hesitant questions with a graciousness, elaboration of detail, and dignity far surpassing the quality of those questions. My husband, Fred Wien, says that one of the worst days of his life was when he showed up for a philosophy exam a day late. Dr. Watts, his tutor, (who later taught him in depth about Canadian federalism) managed to find a graceful solution. Dr. Watts hooded me when I graduated in 1965 with a general Arts degree, and I was glad it was him. But why? Over the years, I heard him speak several times, and was impressed each time with his impeccable organization, and the high quality of both content and delivery. There was something to aspire

to, but how does so little contact add up to being influenced by someone?

For me, he stood for integrity of purpose and being, for quality in the way he conducted his life as a professor, for dignified treatment of the young, for grace. He was always there in my mind, a generation ahead of me, associated with my time at Queen's, teaching me how to live without my awareness of it – honesty, ethical encounters, and a supportive professional kindness for those coming along. He stood as an example of the high quality Queen's had to offer, an example of how to live a good life, how to contribute at the highest levels to one's society. A fine mind, a good heart, the moral compass of integrity: it added up to a profound impact he never knew he had. I suspect I am not alone.

**Carol Anne Wien**, Arts'65, Professor Emerita,  
Faculty of Education, York University

**Fred Wien**, Arts'66, Professor Emeritus,  
Dalhousie University



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## On the November issue

The likelihood of Queen's University obtaining a significant donation in the next one hundred years is very high. How probable is it that a faculty member receives a Nobel Prize in the next one hundred years? Why has the *Queen's Alumni Review* highlighted the former on the cover with four supporting pages, whereas the latter is relegated to only two pages?

If Queen's University is to be known as one of the top research universities, not only in Canada, but the whole world, it needs to celebrate its best scholars.

**Agnes M. Herzberg**, Arts'61, Professor Emeritus,  
Department of Mathematics & Statistics

*Queen's had almost too much good news this fall, at least from this editor's point of view. The news of Dr.*

*McDonald's Nobel Prize win came after we had finalized our stories for the November issue, including our cover story on Mr. Smith's historic donation to Queen's. I was able to pull one story from our November issue to include a profile on Dr. McDonald, but I knew that to do justice to his work and that of his colleagues, I would need time and resources I simply did not have for the November issue. I'm very proud of both these issues and the Queen's stories they tell. Ironically, though, as I was consulting with physicists and illustrators and writers for this issue, Queen's got yet more amazing news: that of the donation of a third Rembrandt painting to Queen's by Isabel and Alfred Bader. So, guess what our next cover story is going to be? Watch for our May issue, which focuses on the Baders' gift, the story behind Rembrandt's "Portrait of a Man with Arms Akimbo," as well as the scholarship at Queen's arising from the magnificent works of art held at the Agnes.*

■ AG



## A classical milestone

In 1840, the Rev. Peter Colin Campbell accepted a post of professor of classics at the new Queen's College in Kingston. Two years later, he and the newly-appointed Principal Thomas Liddell taught Queen's first classes in a house on Colborne Street.

Queen's Classics is one of the departments celebrating a milestone in 2016-17. Learn more at [queensu.ca/175](http://queensu.ca/175).

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# On investing in research

BY PRINCIPAL DANIEL WOOLF

2015 was a remarkable year for Queen's, with a lot of good news, particularly in the last few months. In early October we received Stephen J.R. Smith's transformative gift to our business school; in November we received Alfred and Isabel Bader's remarkable donation of a well-known Rembrandt masterpiece. And, of course, we saw the excellence of Queen's research recognized through Dr. Art McDonald's Nobel and Breakthrough Prizes.

Art McDonald is the first person to give credit to others, from his many collaborators in the SNO project to all the students and staff with whom he has worked over the years. It's important to understand that recognition such as the Nobel is generated over years, even decades, of persistent and difficult work. This work is highly dependent on funding from the university, from the federal and provincial governments and the granting councils, and from philanthropy. Supporting this type of work requires vision and an appetite for intellectual and sometimes financial risk. The late Principal David Smith helped bring about a Nobel Prize he did not live to see by providing some seed funding, in the 1980s, to Queen's physicists George Ewan and Bill McLatchie at the dawn of the SNO experiment. Gordon and Patricia Gray showed similar confidence and vision when they established the Gray Chair in Particle Astrophysics in 2006. This chair allows Queen's to provide focused support for innovative researchers at SNOLAB. Dr. McDonald was the inaugural holder of the Gray Chair. He was succeeded, in 2014, by his colleague Mark Chen, who leads the SNO+ project.

In December, I had the privilege and pleasure of joining Professors McDonald and Ewan (and many of their Canadian and international collaborators) in Stockholm for Nobel Week. It was a fantastic few days in a beautiful city; events included the Nobel lectures by the various laureates, the ceremony itself, and the four-hour banquet in Stockholm City Hall. It was a great week for Canadian science, and a great moment for Queen's. Canada's new Minister of Science, the Hon. Kirsty Duncan, herself a former scientist, was in attendance at the ceremony and banquet (and was back at Queen's barely four weeks later to announce a \$4-million grant to one of our leaders in research, Gregory Jerkiewicz, of the Department of Chemistry.)

Queen's is famous for its student learning experience and strong spirit. We are also one of



MICHAEL FERGUSSON

*Dr. Arthur McDonald and Dr. Daniel Woolf at the Nobel Prize ceremony in Stockholm in December.*

Canada's leading research-intensive universities, and despite our relatively small size (among members of the U15 group of Canadian research universities) and modest faculty complement, we 'punch above our weight' on many indicators.

Research, whether in the sciences or the arts, comes at a cost, and the federal granting environment has been increasingly challenging in recent years. We have some work to do to ensure that our researchers (faculty, students and post-doctoral fellows or research associates) have the support they need. Our Initiative Campaign has included a great deal of support, overwhelmingly from alumni like you, for advanced research at Queen's across all our disciplines. As we enter our 175th year in 2016, please keep up that support. Let's aim to increase the number of major international awards for Queen's faculty. Who knows – we might get to send another Queen's professor to Stockholm before we hit 200. ■



# QUID *novi?* \*being a compendium of “What’s new” on campus



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## A third Rembrandt comes to Queen’s

Thanks to Alfred and Isabel Bader, Queen’s art centre has added another Rembrandt painting to its collection – this time a remarkable, late-career masterpiece that had been privately owned and unavailable to scholars for much of its existence.

*Portrait of a Man with Arms Akimbo*, signed and dated 1658, will become part of the Agnes Etherington Art Centre’s permanent collection. The painting is a significant example of a dated portrait by Rembrandt from the 1650s, and one of the last works from the artist’s late career to enter a public collection.

Over a period spanning nearly 50 years, the Baders – two of Queen’s most generous alumni and benefactors – have donated to the Agnes more than 200 paintings, including two other works by Rembrandt, *Head of an Old Man in a Cap* (c. 1630) and *Head of a Man in a Turban* (c. 1661).

“*Portrait of a Man with Arms Akimbo* will be a centrepiece for the many portraits by the artists in Rembrandt’s circle currently in The Bader Collection at the Agnes. I’m truly grateful to Alfred and Isabel Bader for their vision in shaping this collection, and for this amazing gift,” says Jan Allen, Director of the Agnes. “Across the university, researchers from many disciplines, from art and art history to psychology, business, theatre and medicine will take advantage of access to this painting. Most of all, we’ll treasure this piece for its extraordinary quality, and as an example of the highest aspiration of painting, which is to capture the human spirit.”

The Agnes is currently preparing *Portrait of a Man with Arms Akimbo* for installation. The painting will be unveiled to the public in May.

## Clean energy project receives funding

An international research project based at Queen’s University and focused on developing new clean energy technologies has received a \$4-million grant from Natural Sciences and Engineering Research Council of Canada (NSERC).

The Engineered Nickel Catalysts for Electrochemical Clean Energy (Ni Electro Can) research team, led by Queen’s researcher Gregory Jerkiewicz (Chemistry), will use the NSERC Discovery Frontiers grant to develop the next generation of nickel-based materials, which will give Canada’s energy sector a competitive advantage. The grant is only given to one project once every two years.

The team aims to create affordable, alkaline fuel cells for the production of energy; develop new technologies for hydrogen-based energy storage; and transform glycerol into value-added chemicals that will make biodiesel production cheaper and greener.

Currently, fuel cells employ acidic electrolytes, which are expensive because they require platinum catalysts. The Ni Electro Can team is developing nickel materials that will be used in new alkaline fuel cell technologies, making them cheaper to build. The new nickel materials will also find application in alkaline water electrolyzers, thus making this technology more energy efficient. The new fuel cells and alkaline water electrolyzers will assist Canada in transitioning to the hydrogen economy.

“Canada faces challenges associated with declining reserves of non-renewable energy sources, environmental pollution, greenhouse gas production and related

societal issues,” Dr. Jerkiewicz says. “Building on Canada’s strengths in the nickel, water electrolysis and fuel cell sectors, this project will lay the foundation for Canadian leadership in the next generation of electrochemical clean energy technologies.”

Ni Electro Can includes 14 Canadian researchers, seven universities (University of Victoria, Simon Fraser University, INRS Université de Recherche, University of Toronto, University of Ottawa and McMaster University), nine international researchers from seven countries, and a number of industry partners.



THE CANADIAN PRESS IMAGES/LARS HAGBERG

Professor Gregory Jerkiewicz tours Chernoff Hall with federal Minister of Science Kirsty Duncan. Dr. Jerkiewicz’s team has been awarded an NSERC Discovery Frontiers grant for clean energy research.



# Comprehensive International Plan

The Queen's University Comprehensive International Plan (QUCIP) has been developed to ensure that the university's international activities and initiatives, decision-making, and resource allocation reflect our standards of excellence and align with the Strategic Framework's goals and objectives. Read the plan online: [queensu.ca/strategicplanning/international](http://queensu.ca/strategicplanning/international)

## Divestment decision

In October, the Investment Committee of the Queen's Board of Trustees decided not to divest the university's pooled endowment and investment funds from fossil fuels. The committee made the decision after reviewing and adopting the report of the Principal's Advisory Committee on Divestment: Fossil Fuels, which undertook an extensive consultation period with the Queen's community. While the advisory committee's report did not dispute that climate change is a critical issue, it found that the case for divestment on the basis of "social injury," as defined in Queen's Statement on Responsible Investing, had not been made. The advisory committee also concluded that aside from the question of social injury, divestment is not an effective tool in mitigating the risks of climate change.

The full report is available online: [bit.ly/QAR11612](http://bit.ly/QAR11612).

## Breaking ground

On Dec. 5, students, alumni and community members gathered at a groundbreaking ceremony to mark the start of construction on the revitalized Richardson Stadium. The revitalization project began with a lead gift of \$10 million from Stu, Sc'74, and Kim Lang, Artsci'76. The Richardson Foundation contributed an additional \$5-million donation towards the project, with total donations exceeding \$17 million. The university will invest an additional \$3 million for infrastructure support of the stadium, bringing the total funding to \$20.27 million. The new stadium is scheduled to open in time for the 2016 Gaels football season. [queensu.ca/connect/richardsonstadium](http://queensu.ca/connect/richardsonstadium)

## Grad chat on CFRC

A new radio show hit the CFRC airwaves in January, thanks to the School of Graduate Studies. *Grad Chat* features current graduate students (and the occasional post-doctoral fellow or alumnus) discussing their research. Tune in Mondays at 4 pm. *Grad Chat* and other shows are available online at [cfrc.ca](http://cfrc.ca).

## New provost announced

Benoit-Antoine Bacon will serve as Queen's next provost and vice-principal (academic). He will begin his five-year term on Aug. 1, succeeding Alan Harrison. Dr. Harrison retires from the position at the end of his term.

Dr. Bacon has held the position of provost and vice-president, academic affairs, at Concordia University since 2013. Prior to joining Concordia, he served as the dean of the Faculty of Arts and Science and associate vice-principal of research at Bishop's University.



## Queen's expands awards for refugees from Syria

As part of its response to the Syrian refugee crisis, Queen's is creating five new student awards to provide additional opportunities for refugees from Syria to attend university in Canada.

The Syrian Refugee Opportunity Awards will include tuition and living expenses for students starting any first-year undergraduate degree program or any master's level program at Queen's beginning this fall. The awards are renewable, with full tuition, and a portion of living expenses covered for the length of the degree.

"As millions of refugees continue to be displaced due to conflict in Syria, establishing student awards is another way the Queen's community can support youth displaced by this crisis," says Principal and Vice-Chancellor Daniel Woolf. "We look forward to welcoming these students to campus."

The students will be recruited through Queen's ongoing partnership with the World University Service of Canada student refugee program, which is supported financially by the university and student activity fees from undergraduate and graduate students.



## New name for cancer group

The NCIC Clinical Trials Group has renamed itself the Canadian Cancer Trials Group. CCTG is a cooperative oncology group that carries out clinical trials in cancer therapy, supportive care and prevention across Canada and internationally. Based in the Cancer Research Institute at Queen's University, the CCTG has partnerships with researchers across Canada and around the world. A future issue of the *Review* will take a closer look at cancer research at Queen's.

### IN MEMORIAM

**Bruce Loughton**, Professor Emeritus (Art History and Art Conservation), died Jan. 18.

# Ronald L. Watts, Principal Emeritus

BY JOHN MEISEL, PROFESSOR EMERITUS (POLITICAL STUDIES)

Among Ron Watts' many stellar attributes, one stands out: he was really, really good in so many diverse areas.

It is, therefore, not surprising that his professional and administrative skills are universally admired.

Sometimes, I believe, they overshadowed other equally or even more important aspects of his personality. He was not only a top academic, a top administrator and a top policy specialist, but also a profoundly humane being, deeply sensitive to the personal and collective challenges and miseries of others.

This awareness was not worn ostentatiously on his sleeve but underlay everything he did, whether as teacher, policy maker, administrator or friend. Underneath the erudite scholar, there was an exceptional human being – immensely kind and generous. No one seeking his advice (and there were a great many of us) was ever denied nor dismissed without the most serious consideration. Ron frequently dealt with students and colleagues from other than Canadian or western cultures.

His openness to and empathy for diverse and divergent societies strengthened his ability to understand them and to identify with their problems. Furthermore, it reinforced his penchant for collaborating closely with colleagues domiciled in the countries he studied and advised. He thus easily escaped the curse of many Western scholars: their parochial and ethnocentric limitations. While Ron welcomed innovation he was a prudent and cautious man. When, as principal, he brought me back to Queen's after I served a stint in government service, I sought permission to teach until I was 70 years old, rather than the usual 65. He agreed. When I received his official letter

specifying the terms of my appointment, I read, with some amusement, that this provision would remain in force only so long as both parties agreed that I was still capable of carrying out my duties. Very sensible. Very Ron.

Ron was greatly concerned with the quality of residence life. He had served as don of one of the Queen's houses. In these activities he greatly benefited, as he did in so many of his other tasks, from the imaginative, and energetic but unobtrusive collaboration of the indefatigable Donna.

What was his style? Isaiah Berlin, a fellow Oxonian, made a famous distinction between the fox and the hedgehog. The former, the fox, knows many things, whereas the latter, the hedgehog, knows one important thing. Was Ron a fox or a hedgehog? His peerless command of everything to do with intergovernmental relations places him squarely among the hedgehogs. Nevertheless, his training in accountancy, as well as his mastery of political philosophy and political science, and his commanding knowledge of so much around him at home and abroad, also make him a fox. The conclusion is inescapable: he was a brilliant hedgefox.

This versatility, added to the tolerance, kindness and generosity he displayed so often, made him a scholar, administrator and pedagogue unequalled among his colleagues.

Sometimes even a tired cliché hits the spot. Such is the case now. Ron Watts was a scholar and a gentleman, to be sure. But he was a truly model scholar and the quintessential gentleman.


*Dr. Meisel gave this eulogy at the memorial service for Dr. Watts in October. ■*



QUEEN'S ALUMNI REVIEW, 1969

*Ronald Lampman Watts, CC, the 15th principal of Queen's University, died Oct. 9. Dr. Watts, professor from 1955 to 2015 and principal from 1974 to 1984, was also one of Canada's leading experts on federalism.*





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  - The Canadian Cancer Trials Group
  - Art of Research Photo Contest Winners

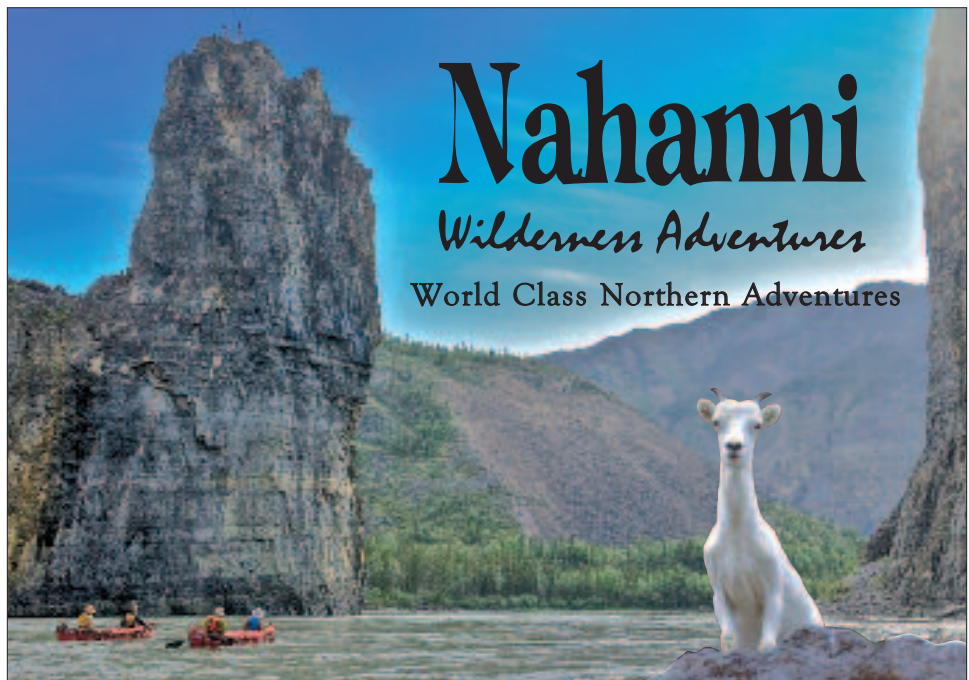
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IMAGE: PERFUSSION OF LIGHT BY RAYMOND STURGEON, 2015 RESEARCH PHOTO CONTEST WINNER

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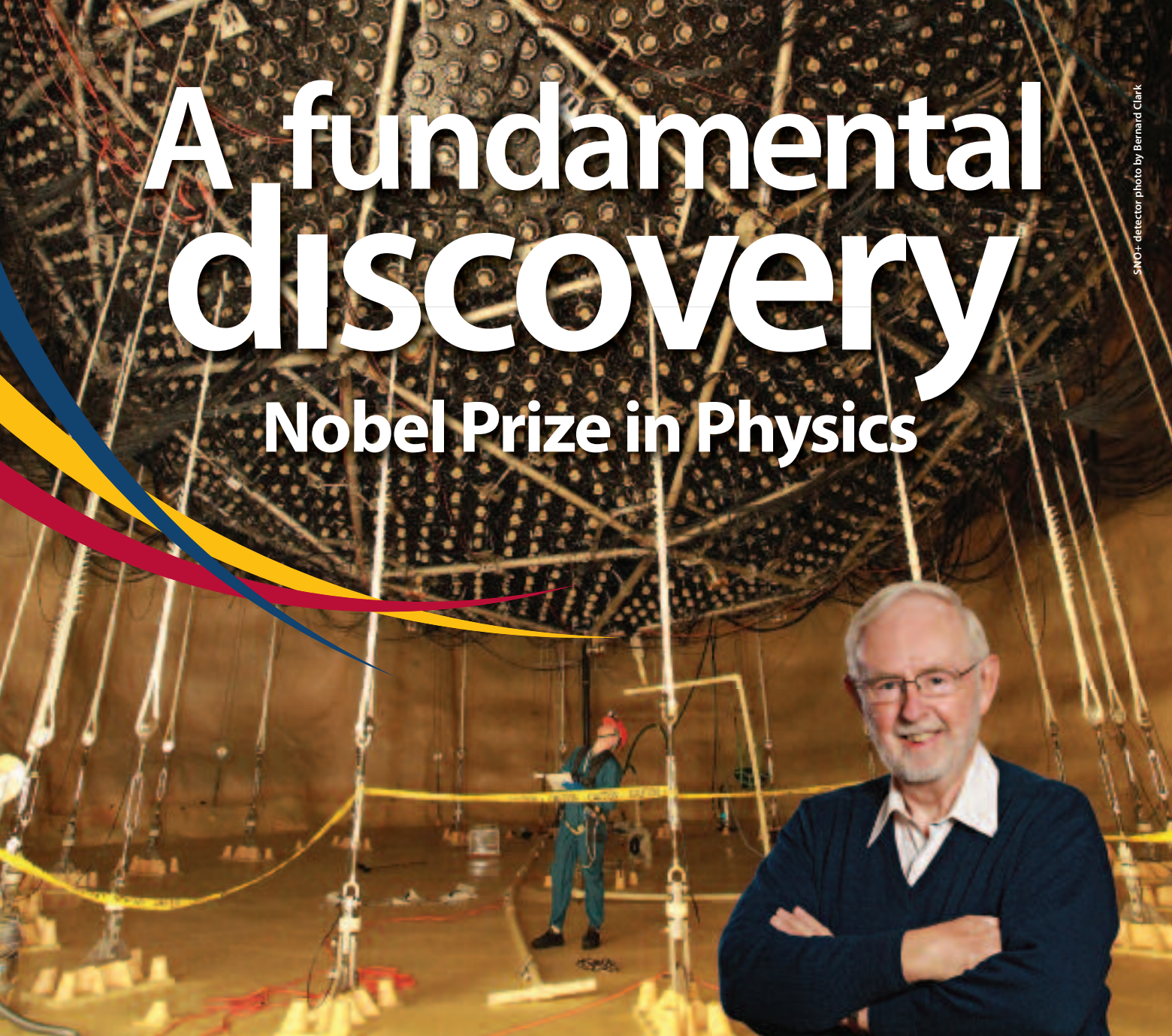
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# A fundamental discovery

## Nobel Prize in Physics

SNO+ detector photo by Bernard Clark



**The challenge:** to unlock the mystery of neutrinos, fundamental building blocks of nature essential to our understanding of the universe

**The solution:** Queen's physics professor Dr. Arthur B. McDonald, a detector buried deep underground in a mine, 273 scientific collaborators and a university dedicated to ideas and people that address the world's most pressing issues

[queensu.ca/research](http://queensu.ca/research)

### Dr. Arthur B. McDonald

Professor Emeritus, Physics,  
Engineering Physics & Astronomy

2015 Nobel Prize in Physics

2016 Breakthrough Prize in Fundamental Physics

Director, Sudbury Neutrino Observatory  
Collaboration

Inaugural Gordon and Patricia Gray Chair in  
Particle Astrophysics







# The neutrino breakthrough

*Science journalist Ivan Semeniuk retraces the history of Canada's Nobel Prize-winning physics experiment.*

**I**n the summer of 1992, Art McDonald, a Queen's University physicist and future Nobel laureate, had a rare encounter with a living legend.

The setting was the Canada Pavilion at Expo '92 in Seville, Spain. The encounter was with Bruno Pontecorvo, an Italian-born physicist who had worked under Enrico Fermi and then emigrated to Canada during the Second World War. In Canada, Dr. Pontecorvo had helped to design the Chalk River nuclear reactor. More importantly, he had done remarkably prescient work on the mysterious subatomic particle that Dr. Fermi had once dubbed "the little neutral one" – the neutrino.

Dr. McDonald was well aware of Dr. Pontecorvo's resumé. By then, the neutrino

had become the focus of his own career and lay at the heart of one of the most ambitious science projects ever attempted in Canada. The two had never met before. Dr. Pontecorvo had left Canada many years earlier and then notoriously defected to the Soviet Union. For western physicists, he had become a remote and enigmatic genius.

They were both in Spain to attend a conference. By then, Dr. Pontecorvo was 79 and suffering from advanced Parkinson's. But he was anxious to see an exhibit in Seville promoting the Sudbury Neutrino Observatory (SNO), the recently approved project





BERNARD CLARK

Dr. Art McDonald at SNOLAB, October 2015.

that Art McDonald was leading. Dr. McDonald offered to give Dr. Pontecorvo a personal tour.

Decades earlier, in Chalk River, Dr. Pontecorvo and physicist Geoff Hanna had performed an experiment that put an upper limit on the mass of the neutrino. Now SNO was setting out to discover if neutrinos had any mass at all, a key theoretical question that was linked to the nature of matter and the structure of the universe.

Dr. McDonald had also worked at Chalk River, arriving a quarter century after Dr. Pontecorvo left. He later moved to Princeton University and finally to Queen's, in 1989, to take over the reins of the SNO project from George Ewan, one of SNO's founders. As they toured the Seville exhibit, the real experiment was already under construction deep below ground in an Ontario nickel mine. Dr. Pontecorvo, who had written to the Canadian government in support of SNO, was enthusiastic about its prospects.

The meeting was a study in contrasts, and not just geopolitical. Dr. Pontecorvo had helped to lay the foundations for nuclear and particle physics. Dr. McDonald, then in his late 40s, was part of the next wave. And where Dr. Pontecorvo had spent most of his life working with one or two collaborators, Dr. McDonald was leading an international army of physicists and engineers, all bent on creating an experiment of epic scale in a subterranean warren.

### Strolling in the deep

My own first encounter with SNO came in 1998 when I travelled to Sudbury to report on the facility – then nearing completion – for a magazine story. I knew the location of the experiment was no coincidence. Nuclear reactors in Canada required the use of heavy water, an expensive resource that was also known to be a particularly effective medium for sensing passing neutrinos. Sudbury's Creighton Mine, operated by Inco, now

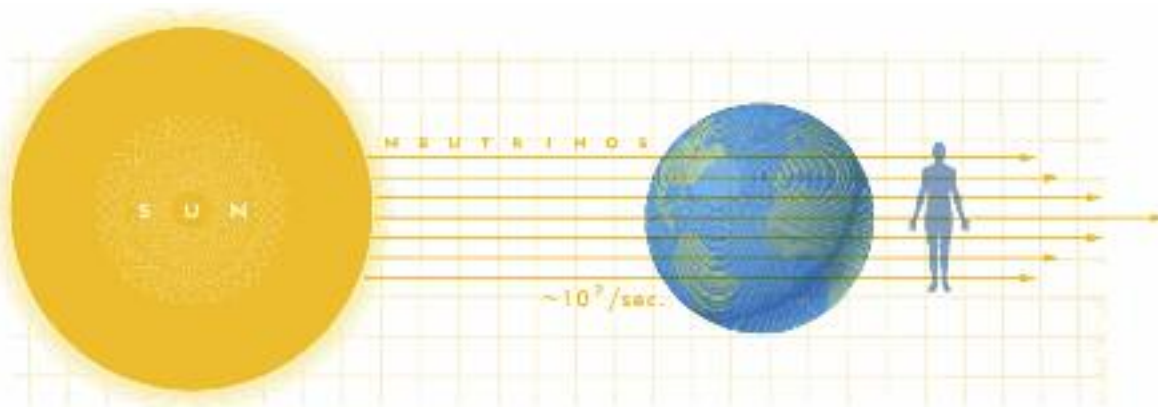


ILLUSTRATION BY CARL WIENS, I2IART.COM

Neutrinos generated in the core of the sun pass through solid objects, including the Earth, like wind through a screen door.

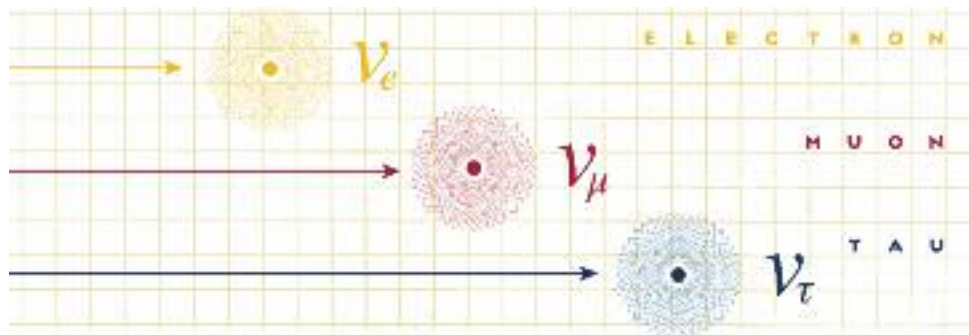


ILLUSTRATION BY CARL WIENS, IZIART.COM

*In the Standard Model of particle physics, there are three neutrinos (and three anti-neutrinos.) Initially, none was thought to have mass.*

Vale Canada, Limited, was one of the deepest in the country and the ideal place for the SNO team to build its giant, heavy water neutrino detector.

The journey to SNO felt like a mythological passage through the underworld. It began by dressing up in full miner attire: helmets with headlamps, heavy boots and overalls. My notebook and recorder were double-bagged in plastic. I would later find out why. Next, my physicist guides and I proceeded to the mine's entrance, and a large double-decker, open air lift that would plunge us down a shaft more than two kilometres deep. As the Precambrian rock raced past us in a blur, I remember marvelling at the length of the stretched out elevator cable – long enough so that it rebounded several inches each time we reached a new level and another group of miners stepped off. But we were going all the way to the bottom.

Neutrino hunting began at street level in the 1950s when researchers learned they could detect the elusive particles as they streamed out of nuclear reactors. But at SNO, the objective was to observe neutrinos streaming away from the core of the sun. Since neutrinos interact so infrequently with other types of matter, they easily pass through solid rock. The advantage of going so deep was to screen out cosmic rays – high-energy particles from space that would otherwise overwhelm a sensitive neutrino detector the way a jet

engine can overwhelm a quiet conversation.

I stuck close to my guides as we switched on our lamps and made our way through a broad, dark tunnel with occasional side passages veering off into darkness. The walk would take us about as far into the mine as the elevator had taken us down. It was surprisingly warm; without constant ventilation, Earth's natural heat can make it unbearable to work at such a depth. Finally, we rounded a bend and saw the brightly lit entrance to SNO. My first impression was that we had come across an underground car wash.

With two kilometres of rock above it, SNO was well shielded from cosmic rays, but natural radioactivity from the surrounding rock and dust presented a formidable challenge to the sensitive experiment. To have a hope of success, SNO had to be better than operating room clean in the midst of one of the world's dirtiest places: a working mine. To enter, we had to be clean, too.

We started by hosing down our boots and then shedding our mining gear. In the next room we got rid of the rest of our clothing too, then showered down – a strange sensation when one is two kilometres underground. Stepping from the shower to the next stage we received new clothing, for use only in the lab. As a final step, I passed through an air drier that was designed to blast off specks of rock dust that might still be clinging to me. I had arrived.

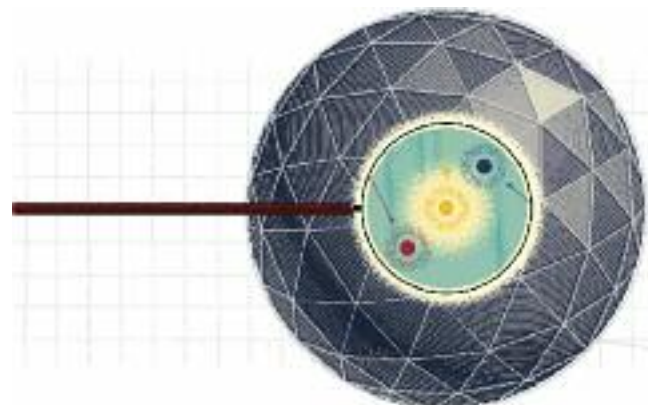


ILLUSTRATION BY CARL WIENS, IZIART.COM

*The 12-metre diameter acrylic vessel inside the geodesic dome of the SNO detector was assembled two kilometres underground and filled with 1,000 tonnes of heavy water. The vessel will next be used for the SNO+ project, filled with liquid scintillator in place of heavy water.*



## Mixing metaphors – what SNO discovered

Humans live in a macroscopic world, governed by the elegant and comfortably rational rules of Newtonian physics. Not so for neutrinos, which behave in ways that defy common sense. Neutrino mixing is a case in point. What looks like an electron neutrino at one instant is a muon or a tau neutrino the next. How can any sensible theory of nature allow for such shenanigans?

If we think of neutrinos as tiny billiard balls careening through subatomic space, the notion that a red ball might suddenly appear as a green or a blue one seems nonsensical. To get around this mental barrier, a different metaphor is needed – one that can be turned into an experiment at home.

Start with a ruler (preferably plastic with holes at either end), a pair of binder clips (the kind used to hold documents together without a staple), four coins and some thread. Measure out two lengths of thread about 50 centimetres or so. Grip the coins with the binder clips – a pair for each clip. Now use the thread to tie the clips to opposite ends of the ruler so that the clips, weighed down by the coins, dangle freely when you pick the ruler up. Finally, use more thread to suspend the ruler horizontally by its two ends from a door frame or a light fixture.

Now comes the fun. Pull one of the clips to the side and let it go so that it swings like a pendulum in the same direction as the ruler is hanging. You'll find that the second clip quickly starts to swing along, too. A few seconds later, the motion of the

first clip will die away while the second is doing all of the swinging. No sooner as this has occurred than the situation reverses. Now the first clip is picking up momentum again while the second comes to a near-complete stop, and so on, back and forth.

Physicists call this enchanting device a coupled pendulum. Mathematically, it is a single system with two possible modes or states. Sometimes, the left side is doing the swinging while at other times, it's the right side. At any given moment, the entire system is a mixture of both states, with its total energy divided between them in a way that is constantly shifting back and forth over time.

So, too, with neutrinos in the

quantum world. Because neutrinos come in three flavours, it's now understood that every neutrino can be a mixture of all three. Which flavour it looks like at any moment depends on when you look.

The time it takes a neutrino of one flavour to switch into another neutrino and back depends partly on the mass difference between the two flavours. If all neutrinos have zero mass, then there is no difference and there can be no mixing. By confirming that electron neutrinos from the sun do oscillate back and forth into other flavours, the Sudbury Neutrino Observatory thus established that neutrinos must have mass.

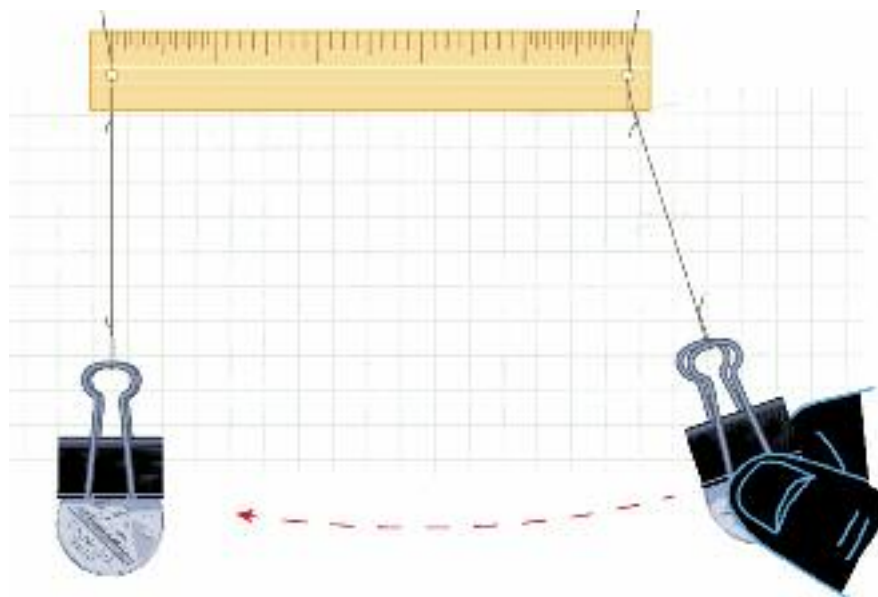


ILLUSTRATION BY CARL WIENS, IZIART.COM

*A coupled pendulum experiment illustrates a single system with two possible states. Similarly, each neutrino can be a combination of three flavours. Which flavour it looks like at any moment depends on when you look.*

## From mystery to history

For the novice, getting a grip on the ephemeral nature of neutrinos can often seem like a task better suited to Lewis Carroll's White Queen, who claimed she could believe six impossible things before breakfast. It's an especially fitting boast. In the Standard Model of particle physics – the theory that describes the fundamental building blocks of matter – there are six different types of neutrinos, which belong in three families or "flavours" of particles.

The first family includes the electron neutrino – so named because it is often produced in nuclear reactions that involve electrons. The electron neutrino comes with an anti-matter counterpart, or anti-neutrino. (In the looking-glass world of quantum physics, particles and anti-particles are regarded as mirror reflections of the same entity. If one exists, so must the other.)

The Standard Model includes two other neutrino flavours, named after the muon and the



MICHAEL FERGUSSON

*Dr. Art McDonald and some of his SNO collaborators at the Nobel Prize ceremony in Stockholm. Back row: Doug Hallman (Laurentian and Queen's universities) Davis Earle (SNO), Aksel Hallin (University of Alberta). Front row: Art McDonald (Queen's), George Ewan (Queen's), David Sinclair (Carleton University). Dr. Ewan started the SNO experiment, with Herb Chen (University of California at Irvine) in 1984. Dr. Sinclair (who was Dr. Ewan's first graduate student at Queen's) became SNOLAB's first director, when the lab became a multi-experiment facility.*

*“Either the physics of the sun was wrong or the Standard Model was.”*

tau particle. Together with their anti-matter counterparts, muon and tau neutrinos complete the set. Dr. Pontecorvo had once helped to show that neutrinos are lighter than any other form of matter. In the simplest version of the Standard Model,

neutrinos do not have mass at all. But while this makes for a tidy theory, Dr. McDonald's team at SNO would ultimately show that's not how nature rolls.

SNO was built because earlier efforts to detect neutrinos from the sun had repeatedly come up short. For John Bahcall, the American theorist who first wrestled with the problem in the 1960s, it was a disconcerting state of affairs. Dr. Bahcall used his understanding of the physics of the sun to calculate the expected rate of solar neutrinos reaching Earth. When his answer disagreed with experiments, he worried that his calculations were

wrong. But no one could see a mistake, and year after year the deficit persisted. Either the physics of the sun was wrong or the Standard Model was. Either possibility carried huge implications for scientists' understanding of the universe.

It was Bruno Pontecorvo who first proposed a solution in 1969. Like John Bahcall, he realized that the nuclear reactions that take place in the sun can only produce electron neutrinos. Dr. Pontecorvo reasoned that some of them were switching flavour en route to Earth and thereby escaping detection. It was a strange idea, but mathematically possible, according to the weird rules of quantum physics [see *Mixing metaphors – what SNO discovered*], provided that neutrinos have mass.

This idea set the stage for SNO. What the situation called for was an experiment that was sensitive to more than one flavour of neutrino.



SNO was designed to do precisely that. In theory, it would be able to count up electron neutrinos interacting with the heavy water through one kind of reaction while also monitoring a second reaction that picked up neutrinos of all three flavours. If the second result gave a higher number than the first, the neutrinos from the sun were likely switching flavours.

The idea was simple but putting it into practice was not. Again and again, Dr. McDonald and his international team would have to rise to meet the technical hurdles and deadlines, keeping construction on track and bringing the experiment to the level of sensitivity it needed to succeed.

During my first visit to SNO, the sense of mission was apparent. My timing was fortunate. At that point, Dr. McDonald and his team had just finished loading the experiment's giant acrylic vessel with 1,000 tonnes of heavy water. Before it was sealed, I was able to stand on the platform and look down the vessel's long neck to the fluid below. I immediately understood I was looking at history in the making.

Two and a half years later, in May 2001, Dr. McDonald and the SNO team announced the result that would eventually earn him the Nobel Prize: solar neutrinos do change flavour, which means that neutrinos do have mass. Before revealing what SNO had found, Dr. McDonald called John Bahcall to share the news, along with Hans Bethe, the physicist who had first worked out the nuclear process by which the sun shines.

Bruno Pontecorvo, who died the year after he met Art McDonald in Seville, would never learn the outcome of the experiment. But his contributions are woven into the history of the field, in the way that every insight and discovery in physics serves to sow the seeds for what comes next.

The SNO experiment has already done the same. Neutrino physics has moved forward into the 21st century, just as SNO has grown into SNOLAB, a much larger, multi-experiment facility developed by a consortium of universities. Like a tunnel in the dark, it's not yet clear where it will all lead. But thanks to Art McDonald and the many others who worked on SNO, it's a journey Canada will remain part of for years to come.

Ivan Semeniuk is the science reporter for *The Globe and Mail*. ■

1983

George Ewan (Queen's University) and Herb Chen (University of California at Irvine) begin to investigate, with others, the feasibility of a deep underground laboratory in Canada in which to study neutrinos.

1984

The first meeting of the SNO Collaboration takes place, with representation from Queen's University, University of California at Irvine, Princeton University, Carleton University, the University of Guelph, Laurentian University, the National Research Council Canada (NRC) and Atomic Energy of Canada Limited (AECL). Natural Sciences and Engineering Research Council of Canada (NSERC) provides funding for a feasibility study.

1985

The University of Oxford joins the SNO Collaboration. Funding from Queen's University, University of California at Irvine, Guelph University and NRC enable the team to continue its research and excavation following an initial drift study in a Sudbury area mine. The Creighton mine proves to be an ideal location for the proposed neutrino detector.

1986-1990

Five years of research and preliminary excavation follow. The team now comprises engineers, physicists and miners. In 1987, Art McDonald of Princeton University becomes the group's U.S. spokesperson. By 1989, the group has grown to more than 70 scientists from 14 institutions. Dr. McDonald, now at Queen's, becomes director of the SNO Collaboration. Funding for SNO is provided by NSERC, the U.S. Department of Energy, Particle Physics and Astronomy Research Council (U.K.), NRC, Northern Ontario Heritage Fund Corporation, Government of Ontario and Industry Canada.

1990-1998

The team excavates the underground cavern that will house the experiment, then constructs and assembles the neutrino detector. The detector's vessel is filled with heavy water, on loan from AECL, and the SNO experiment officially begins.

2001-2002

Findings from the detector explain the puzzle of "missing" solar neutrinos and reveal new neutrino properties. The SNO Collaboration publishes its findings in several papers.

2015

Art McDonald and the SNO Collaboration are jointly awarded the 2015 Nobel Prize in Physics. Their co-winners, Takaaki Kajita and the Super-Kamiokande Collaboration at the University of Tokyo, discovered in 1998 that neutrinos from the atmosphere switch between two identities on their way to the Super-Kamiokande detector in Japan. Together, the teams are honoured "for the discovery of neutrino oscillations, which shows that neutrinos have mass." At his Nobel Lecture at Stockholm University in December, Dr. McDonald emphasizes his 273 collaborators on the SNO project that ultimately led to the neutrino breakthrough and to the Nobel Prize.



# The road to Stockholm

It has been a whirlwind few months for Professor Emeritus Art McDonald. Following the Oct. 6 announcement of the Nobel Prize for Physics, the world's attention focused on Dr. McDonald and his co-winner, Dr. Takaaki Kajita of the University of Tokyo. Over the next weeks and months, Dr. McDonald's work was covered by media around the world, from *The New York Times* to *The Indian Awaaz*. Dr. McDonald also showed

his lighter side on CBC Television's *This Hour Has 22 Minutes*, in which he patiently demonstrated the notion of a neutrino changing flavours using an iconic Canadian donut, the Timbit. [Watch the video on the CBC Youtube channel online: [bit.ly/QAR11654](http://bit.ly/QAR11654).]

He also took the time to celebrate with the Queen's community before he left for Sweden to accept his award.



Dr. McDonald takes a photo with members of the Queen's Bands after a university-wide "Big Bang Send-off" with students, staff and faculty in Grant Hall.



At the Homecoming football game in October, Dr. McDonald opened the game with a ceremonial kick-off.

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In November, Dr. McDonald and the SNO Collaboration received another major award: the 2016 Breakthrough Prize in Fundamental Physics. The SNO Collaboration shared the \$3-million prize with four other international experimental collaborations studying neutrino oscillations: the Superkamiokande, Kamland, T2K/K2K and Daya Bay scientific collaborations.

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The Department of Physics, Engineering Physics and Astronomy held a celebration for Dr. McDonald. Here, he chats with students in Stirling Hall.





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Dr. McDonald formally receives his Nobel medal from King Carl XVI Gustaf of Sweden in a ceremony at the Stockholm Concert Hall. Back in Kingston, members of the Queen's campus gathered in Stirling Hall to watch the ceremony. The ceremony video is available online through the Nobel Prize Youtube channel: [bit.ly/QAR11656](http://bit.ly/QAR11656).



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At the Nobel banquet: Michiko and Takaaki Kajita, King Carl XVI Gustaf and Queen Silvia of Sweden, and Art and Janet McDonald.



QUEEN'S UNIVERSITY COMMUNICATIONS

At the Nobel lecture at Stockholm University, Dr. McDonald discusses the history of the SNO experiment before explaining the neutrino breakthrough.

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While in Stockholm, Dr. McDonald took part in Nobel Minds 2015, a BBC roundtable discussion with his fellow Nobel laureates in science, economic sciences and literature. Watch the video on the Nobel Prize Youtube channel: [bit.ly/QAR11655](http://bit.ly/QAR11655).

In January, Dr. McDonald, an Officer of the Order of Canada since 2006, was promoted within the Order, to Companion.

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# SNO men

BERNARD CLARK

Before the neutrino detector was ever put into operation, George Ewan and his colleagues from Queen's and other universities spent years on research, excavation, construction, collaboration, negotiation and trouble-shooting at the Sudbury mine site, often while juggling teaching and other duties at their home universities. In January, members of the original SNO Collaboration got together for coffee in the graduate lounge in Stirling Hall. *From left to right:* Barry Robertson, Hugh Evans, George Ewan, Hamish Leslie, Hay Boon Mak and Peter Skensved. Dr. Robertson did research in double beta decay that would prove valuable to the SNO project. Dr. Evans worked closely with the INCO engineering team. Dr. Mak, part of SNO from the start, developed the specifications for the photo multipliers used in the detector. Dr. Leslie, formerly the principal investigator for the Queen's Van de Graaff accelerator group, joined the SNO team in 1986.

Dr. Skensved worked on data analysis for SNO: he continues working at SNOLAB (see page 23), focusing on the SNO+ and DEAP projects. The others are all emeritus professors. On this day, they were back in Stirling

Hall to sit in on a SNOLAB update given by current researchers and students. A number of the group (including Art McDonald and Bill McLatchie, both of whom were out of the country at the time of the photoshoot) also have a standing weekly physicists' lunch date at a downtown Kingston restaurant.

Dr. Ewan, co-founder of SNO, was also active in data analysis and detector calibration, as well as securing funding for the lab and its research. One of his favourite stories from the early days of SNO is about colleague Bill McLatchie, who, among other things, was instrumental in public education. Dr. McLatchie once made a presentation to members of a Sudbury area city council. To allay voiced concerns about the use of heavy water in the project, he passed around a bottle of that liquid, then poured a little into a glass of scotch, toasted their good health, and drank.

(Heavy water, or deuterium oxide, is not radioactive.)

*In a 1986 interview with the Queen's Alumni Review, Dr. Ewan said, "A study of solar neutrinos is only the first step in the development of the new field of neutrino astronomy. We're not limited to looking only at neutrinos coming from our own sun. Who knows what we will find?"*

■ AG

**HBM** "It was tough. I remember being sent down to the 6000 level of the mine to explore the drift. The rock temperature was 40 C!"

**BR** "I remember being down at the bottom of the mine when we finished the excavation and looking up. It was like being in a cathedral."



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## Call for Nominations

### UNIVERSITY COUNCIL

In 1882, an amendment to Queen's Royal Charter declared the University Council duly constituted. It generally meets once a year to discuss any matters relating to the well-being and prosperity of the university and provides advice to the university. The elective members of the Council are elected by and from among the graduates of the university. Each alumnus may nominate TEN fellow alumni for election to the Council for a four-year term (September 2016 – September 2020). A candidate must be nominated in writing by at least TWO alumni.

#### GUIDELINES

The future of Queen's will be greatly influenced by the quality of those you nominate. In keeping with Queen's commitment to diversity within its governing bodies, please consider the following guidelines when nominating a candidate.

- The candidate's potential to make a positive contribution because of ability and experience.
- Gender equity, including equity in gender-identity and gender expression.
- Representation by visible minorities, Aboriginal persons, persons with disabilities, age group, occupational group, the local community, the francophone community and the LGBTQ communities.
- A broad geographical distribution to maintain Queen's role as a national and international institution.
- A strong, demonstrated interest in the well-being of Queen's University.



**NOMINATION FORM** available  
at [queensu.ca/secretariat/  
elections/university-council](http://queensu.ca/secretariat/elections/university-council)

Nominations open 16 February  
at 9 am EST and close 7 March  
2016 at 4 pm EST



Worked for 37 years in the  
Faculty of Health Sciences

Honouring his mother and grandfather  
with funds supporting students in  
mining engineering and the arts

Part of his legacy will go to campus  
beautification to maintain Queen's park-like  
campus he played in as a child

*Bequest donor, so Queen's can  
continue to be everything he loves.*

INITIATIVE CAMPAIGN

Don Travers

planning  
makes a  
difference

[queensu.ca/alumni/giftplanning](http://queensu.ca/alumni/giftplanning)



# How to clean a. neutrino detector

*Peter Skensved is the only person ever to access the top of the acrylic vessel of the SNO+ neutrino detector. Here, he is seen polishing the surface after making a small modification to the vessel. To reach this location, he was lowered onto the back of the structure (not visible) that supports the thousands of light sensors seen behind him in the photo. Then he had to squeeze through a narrow opening to be lowered further onto the transparent 12-metre diameter acrylic sphere on which he is perched.*

A Kingston company run by mechanical engineering grad Richard Ward, Sc'83, has played a part in keeping one of the cleanest labs on Earth spotless. Pure Ingenuity's engineers and fabricators designed and built a rotating aluminum access platform for SNOLAB. Even though the laboratory is operated as a clean room, it is still necessary to periodically clean minute amounts of radioactive material from the detector vessel. The platform allows technicians access to clean the inside surface of the neutrino detector vessel.



# The biggest, deepest questions

*Queen's researchers in physics and astronomy chart new paths, exploring everything from neutrinos and dark matter to photonic crystals and laser light.*

BY WANDA PRAAMSA

*Astronomers Stéphane Courteau and Nathalie Ouellette.*

BERNARD CLARK

The questions don't get any bigger than the ones probed by faculty and students in Stirling Hall. Where do we come from? How did the universe evolve? What is it made of? And why, according to the laws of physics, does the world work the way it does?

These questions led Jennifer Mauel into that circular building on Bader Lane several years ago. Now a fourth-year undergraduate student, Ms. Mauel started her Queen's degree in Global Development Studies, but early on, she felt a

stronger pull to mathematical sciences. She ended up taking a first-year physics course with Professor James Fraser. His teaching impressed her so much that she committed to the field, and has since spent two summers working on the SNO+ experiment in Sudbury with Professor Mark Chen.

"The work is really challenging and fun – we're doing puzzles all the time," she says. "These deep, fundamental questions about existence – where we come from, the matter/anti-matter question – there's nothing more exciting."



Her thoughts echo a theme that surfaced again and again during interviews with professors, post-docs and students in the Department of Physics, Engineering Physics and Astronomy. The people there are, without a doubt, at the cutting-edge of new discoveries, new technologies, new ideas – with Art McDonald’s Nobel Prize-winning research being the most prominent example to date.

Even if not directly linked to Dr. McDonald’s SNO research, the entire department is riding high on that win – and inspired to keep going, to keep pushing the research forward.

Ms. Mauel and Dr. Chen, through SNO+, are asking the next questions about the nature of neutrinos, trying to understand their mass and why it’s so small. Gilles Gerbier, Professor and Canada Excellence Research Chair, is also continuing work at SNOLAB – not into neutrinos, but into the nature of the elusive dark matter particle. He is joined in this issue by Alvine Kamaha, post-doctoral fellow, who is building new apparatus to use in the underground lab to find the particles.

“I wanted to be part of something big,” says Dr. Kamaha, who studied in Cameroon and Italy before coming to Queen’s. “When I came here for my PhD, I was blown away – knowing that you can find something that has such a big impact. Dark matter is believed to be 80 per cent of the mass of the universe. Even though we don’t know right now what the application will be when we find it, you know you have contributed to a better understanding of the universe.”

Professor Stéphane Courteau and PhD student Nathalie Ouellette are also on the hunt for dark matter – not underground, but as astronomers, charting the distribution of mass throughout galaxies and clusters of galaxies.

“Just like planets move around the sun due to its mass, stars move within a galaxy due to its total mass – what you can’t see in brightness, is likely dark matter,” explains Ms. Ouellette, now in the final year of her PhD. “I look at how the stars are moving around the galaxy to see how the mass is distributed. I can see how the stars and dark matter play with each other to see how the galaxy is evolving.”

Moving from dark matter to light matter, we run into Professor Stephen Hughes and PhD student Nishan Singh Mann. Very much at the theoretical level, they study light matter interactions – the science of optics, and how light interacts with very small structures on the nano-scale. Their research has many applications, from next-generation quantum light sources for quantum computers to biosensors and high-efficiency solar cells.

“These are new nano-quantum technologies of the future that are going to be mainstream in

probably 50 years,” says Dr. Hughes, who believes that Mr. Singh Mann’s “killer” model – looking at disorder and non-linearities in photonic crystals – is going to have a huge impact across a number of sectors.

Professor James Fraser and master’s student Allison Sibley are also deep into light – particularly laser light and its uses in manufacturing. They are studying lasers used in 3D printing and the challenge of printing in metal, instead of plastic.

“What’s going on at the rich and beautiful world at the pinpoint of a laser beam?” says Dr. Fraser. “Energy is hotter than a volcano down there, so you can imagine the physics going on.”

And working at that high temperature (around 1600 C to cut metal), they have to figure out what’s going on very quickly. “I am imaging the actual process while it’s happening so I can detect defects in the parts,” explains Ms. Sibley. “We can change the parameters of the processing laser and correct the defects, stop the process while it’s happening.”

Their hope is that their research into additive manufacturing, building up with metal, instead of subtracting, will contribute to a number of different areas – automotive, aerospace, and transportation in general, where small improvements can yield great results.

“If you can make a car 10 per cent lighter, that directly translates into reduced CO<sub>2</sub> emissions. There’s a lot of opportunity,” says Dr. Fraser.

A lot of opportunity, indeed – across the entire department. And while Dr. Fraser says it’s easy to look at the research groups and their unique focus points, it’s also very possible to see the interconnections – particularly how optics and light hit all units – and the overlap between groups.

“Essentially, all of us use light in some way – as a probe and as a tool. And there is also the sheer physical range throughout the groups – from Steve Hughes and the nano-scale to Allison and I on the micro-scale, and off to Stéphane Courteau in the galactic and extra-galactic. And then there are the particle astrophysicists – the true experimentalists – who bridge both extremes.” ■

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“Throughout the ages intellectual progress has been due to three attributes of mankind – a deeply implanted, insatiable curiosity; a far-reaching, unrestrainable, unfetterable imagination; and an undaunted faith that there is order in the universe, an underlying harmony in nature....

You cannot solve the riddles of the stars without invoking the aid of the atom, nor can you fully comprehend the atom without the aid of the stars. On the uplifting wings of imagination the astrophysicist roams the universe from atom to atom, from star to star, from star to atom, from atom to star. Impelled by curiosity regarding the natural universe, encouraged by evidences for his faith in the reality of cosmic harmony, he presses on and on – a sweet and fitting thing it is to toil for Truth.”

*“From atoms to stars”  
Allie Vibert Douglas. 1929.*

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# The neutrino puzzle

ongoing



**WHO** **Mark Chen**, Professor,  
Gray Chair in Particle Astrophysics  
**Jennifer Mael**, fourth-year BSc student

**MC** We've developed a liquid scintillator – this gives off more light when a neutrino interacts in it than it would in water or heavy water. With the new liquid inside the detector at SNOLAB, we can study neutrinos from different sources with lower energy – this gives us the opportunity to continue to explore the new properties of neutrinos discovered by SNO.

One of the key questions is, now that we know neutrinos have mass, we want to understand that mass and why it's so small. After we put the new liquid in the detector and study neutrinos from the sun, the Earth and from nearby nuclear reactors, we're also going to do a separate thing – dissolve the element tellurium into the liquid. This element can undergo a very rare nuclear decay – if we can detect this, it tells us something very important about neutrinos, that the neutrino is its own anti-particle. Each fundamental particle in nature has its anti-matter counterpart. It's uniquely possible for neutrinos to be their own anti-particle. If we can uncover this property, it tells us many things. It points to the absolute scale of neutrino mass, how heavy neutrinos are. And it tells us that there is a different mass generation mechanism involved for neutrinos; and it could explain the matter/anti-matter asymmetry that is observed in our universe.





**JM** I was looking at the optical properties of one of the components in this liquid scintillator cocktail. In order to load tellurium, we need to add a secondary wavelength shifter – the purpose is to detect as much light as possible, to get the optimal light output from the scintillator. I was looking at the fluorescent properties of the chemical compound perylene to determine how it absorbs and emits light. This will help to improve the sensitivity of the experiment to rare events like neutrino-less double beta decay.

Earlier, during my first summer at SNOLAB, I was working on a pressure equalization system for the detector. We can't have any breaks or cracks in the fragile detector, so we need to maintain constant pressure in the acrylic vessel where the liquid scintillator is located – we need to completely isolate that system. In order to do that, we constructed this cover gas system – basically a system of connected bags filled with nitrogen gas that expand and contract when the pressure fluctuates in the mine, keeping the pressure constant in the acrylic vessel. ■

BERNARD CLARK

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THE PHYSICISTS OF QUEEN'S SERIES WAS PHOTOGRAPHED AT THE ISABEL  
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LOCATION ART DIRECTION: RADISSEN RAMOUTAR.  
ADDITIONAL LIGHTING DIRECTION (IBCPA): KEVIN TANNER.

# THE SEARCH FOR dark matter

**WHO** **Alvine Kamaha**, Post-doctoral fellow  
**Gilles Gerbier**, Professor,  
Canada Excellence Research Chair

**GG** The experiments I am working on at SNOLAB are designed to test hypotheses on the nature of dark matter particles. There is a lot of evidence that there is dark matter – not ordinary matter (protons, neutrons, electrons) – particles of a different nature. The goal of our experiments is to detect these particles. We know the impact they should have on detectors and on matter, and we know the interactions are going to be tiny and very rare. Dark matter is our little music – it is very tiny music and to listen to it, we have to take off all the noise from all the other particles.

The detectors have to be very good – we've been building detectors for 30 years now, and still we haven't seen any hint of dark matter. We have to build new and better detectors. This is what we are developing in my group – detectors that are sensitive to a mass at the lower end of the mass range (such as the proton). I proposed two experiments focusing on the quality of the instruments to address this low mass. You cannot buy these detectors off the shelf.

**AK** I am working on one of those experiments, called New Experiments With Spheres (NEWS). It's basically a spherical vessel made of a metallic material (like copper or stainless steel) that contains a tiny ball attached to a rod. The sphere is filled with gas that has certain properties – when dark matter particles interact in the detector, they could deposit energy and ionize the gas. When the tiny ball is put to high voltage, the electrons liberated in the gas will drift toward the centre. Because of the high electric field at the ball, there will be an avalanche. The drifting of the ions from the avalanche yields an electrical pulse that is recorded. You collect a bunch of these avalanche data. They can sometimes lead you to dark matter and sometimes they can lead you to other things. At the end of the day, analyzing the collected data, you remove what is not dark matter and you are left with what you think might be dark matter.

**GG** This is a field with a strong hope to find something. Sometimes you misidentify things. Only when several experiments (and there are experiments happening all around the world using different techniques) see the same signal, then there will be some guarantee that there is something (dark matter). ■







BERNARD CLARK

# Light matter

## *nanophotonics*

**WHO** **Nishan Singh Mann**, PhD student  
**Stephen Hughes**, Professor

**SH** We study light matter interactions – the science of optics, and how light interacts with very small structures. The structures are typically on the nano-scale, where at least one of the lenses is a few hundred nanometres or less. A nanometre is an extremely small size, about 1-50,000th the width of a human hair. Incredibly small, but these days, fabrication techniques have developed so much that they can reliably manufacture on that scale. And most of what we look at is manufactured – semiconductor-type nano-structures that have applications in telecom, lasers, solar cells.

Our theory is to actually come up with structures that can stop light. The more you slow down light, the more you amplify it. And that takes you into the quantum world, and at the same time it basically enhances anything you're trying to do in photonics, because you're getting more bang for your buck.

**NSM** We are a theory group so our lab is a group of powerful computers. For my PhD, I'm working on a model that combines disorder and non-linearities in photonic crystals – specifically, photonic crystal waveguides. Disorder and non-linearities – previously, the community has looked at each of them in part. But when you look at them together, there is a feedback mechanism between the two, and I'm hoping it reveals some new, rich physical phenomena and allows us to explain some previous experiments that are done in the presence of disorder.

**SH** A significant part of our research is done in direct collaboration with leading experimental groups throughout the world, including groups in Denmark, France, Germany, Canada and the U.S. This close interaction also allows us to develop and improve our models and it is extremely rewarding to be able to explain complicated data, and predict entirely new experiments and see these measured in the lab, often years later. To carry out a successful research program in academia, it is also important to attract a top quality team of outstanding graduate students and post-doctoral fellows, and so far at Queen's I have been quite fortunate in this regard. ■





BERNARD CLARK

# Laser solutions

**WHO** James Fraser, Associate Professor  
Allison Sibley, MSc student

**JF** We exploit laser light for fundamental studies of nanostructures; these might have important properties for future technologies. We also exploit laser light to create novel structures. Allison is looking at the field of laser additive manufacturing, also known as 3D printing. This is a new paradigm for manufacturing: an engineer can create a 3D CAD drawing of a part, press a button, and a system prints out a metal part. At least, that is the goal!

The challenge in 3D writing with lasers is being able to understand what you're doing when you're doing it, and that's what our research is centred on. The point of a focused laser beam is the tool that draws the part – we want to know what is going on there. Temperatures are hotter than a volcano, so you can imagine the richness and complexity of the physics going on.

**AS** I work on 3D printing – imaging the actual process while it's happening. We take substrate and place a layer of metal powder on it. We take the processing laser over it in whatever pattern we want. We can have our imaging laser on it at the same time, so we can see what's happening. And then when our first layer is done, we lay down a second layer and do the same thing, and we keep doing that until we have our finished cube, or whatever object we're building.

**JF** Because we're imaging what's happening when the laser writing process is going on, the user gets immediate information if there is a problem so they can stop the build and correct the problem. The next step would be automatic control so the system will know how to correct itself. The goal is to have a system that can create optimal structures every single time.

You can now buy commercial units – you press a button and out comes a part. Most of those are plastic. We work in metal. This is harder to do, because you can make plastic flow at much lower temperatures. We use the laser to melt the metal and make the shape we want. And again, the metal is hot – the melting temperature is around 1600 C. It's not at that temperature very long – you have to figure out what's going on very quickly. ■





BERNARD CLARK



# Extra-galactic astronomy

**WHO** **Stéphane Courteau**, Professor  
**Nathalie Ouellette**, PhD student

**SC** I am very much a classical astronomer, using ground-based telescopes. My long-term goal is to understand the evolution and structure of galaxies, particularly about how they are made and what they are made of.

**NO** The Virgo cluster is the closest rich galaxy cluster to our Local Group, where the Milky Way and Andromeda are found. Thousands of galaxies are found in the cluster and I study their structure and composition at different wavelengths with spectroscopy. Just like the planets move around the sun due to the sun's mass, stars move within a galaxy due to the galaxy's mass – what's included in the galaxy's mass, what you can't see in brightness, is likely dark matter. I look at the motion of stars within each galaxy to see how the mass is distributed. I also get the stellar information, the brightness – I can see how the stars and dark matter play with each other to see how the galaxy is evolving. I am creating this big database on the Virgo cluster – matching new data of ours with archival data. This will take us another step closer towards understanding how galaxies evolve.

**SC** Astronomy has really blossomed in recent years. Archival data are now available on the web for everyone to use. It's a very democratic system where students can actually download information and write theses without necessarily having access to the latest instrumentation. Most new modern observatories archive their data that way. The other way is to collect the data yourself – this is the classical way – but still, nowadays you don't need to travel to the actual telescopes to get your data. The data-taking methods are so computerized that you can actually control the telescope and collect the data from the comfort of your own office or home. With the data all in place, then begins the excitement of trying to figure out what they mean! For training purposes, I still try to bring students to the telescopes whenever I can. Nathalie and I have worked at observatories in Hawaii, Chile, New Mexico and Arizona.





BERNARD CLARK

# Supporting greatness through philanthropy



QUEEN'S OFFICE OF ADVANCEMENT

*Art McDonald with Gordon and Patricia Gray at a reception held for them in Toronto. When the three “talked neutrinos,” the Grays learned from Dr. McDonald that there are about “a zillion neutrinos” in a single atom.*

Gordon and Patricia Gray remember exactly where they were when they learned about Art McDonald’s Nobel Prize. “It’s one of those moments you never forget,” says Mr. Gray, Arts’50.

World travellers who have visited 130 countries thus far, the Grays were enjoying a rare quiet breakfast in their Toronto-area home when they heard the news.

It was an especially unforgettable moment for the couple, who, through the Gordon and Patricia Gray Chair in Particle Astrophysics, provided financial backing that supported Dr. McDonald’s research into the subatomic neutrino.

Catherine Purcell, Artsci’78, MEd’98, Director of Principal Gifts at Smith School of Business, first met the couple in 2002. A development officer with the Faculty of Arts & Science at the time, Ms. Purcell was exploring philanthropic opportunities with Mr. Gray.

Gordon Gray began his career with Price Waterhouse in Toronto, where he worked for, and befriended, legendary businessman E.P. Taylor. Taylor introduced him to the A.E. LePage company, which Gray would go on to run for many years. “It was a little wee company,” he says. “When I started, we only had 35 employees.”



By the time he left in 1994, it had grown to more than 12,000.

Among his accomplishments was the formation of the company's commercial division. His legacy includes some noteworthy additions to the Toronto skyline, including the Hummingbird Centre, the Toronto-Dominion Centre, and Royal Bank Plaza.

Not one to slip into idle retirement, Mr. Gray has maintained a brisk pace since stepping down from LePage. In addition to an impressive portfolio of corporate directorships, the Grays run a foundation that donates half a million dollars annually to animal welfare causes, including a hospital for injured sea turtles near their winter home in Jupiter, Fla. (Patricia Gray is also a master gardener, decorator and skilled sea plane pilot.)

The couple's foundation is equally active on land. "When the big elephant in Kenya was slaughtered a few months ago, I called my friends at the African Wildlife Foundation and suggested that we offer a reward," says Mr. Gray. The Gray Animal Welfare Foundation now funds a project that trains dogs to sniff ivory and rhino horn in air and sea ports in Kenya and Tanzania. "The name of the game is to intercept the poachers at the point of shipment."

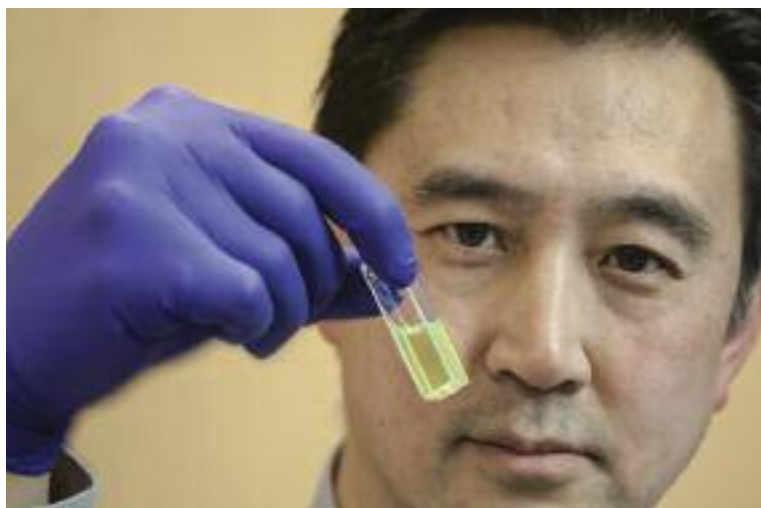
When he's not travelling the world or helping endangered wildlife, Mr. Gray likes to explore another passion that extends far beyond this planet. "When I was young, I imagined myself as an astronomer," he says. "I have always been interested in the universe."

A native of Copper Cliff, Ont., on the outskirts of Sudbury, Mr. Gray was familiar with Queen's nascent partnership with Laurentian University, among others, to build the Sudbury Neutrino Observatory (SNO) at the bottom of the Creighton Mine. "All of the pieces came together and I thought he and Patricia would be a perfect fit for the chair in particle astrophysics," Ms. Purcell says.

The fit was better than she could have known. Over the years, Mr. Gray has indulged his curiosity by cultivating relationships with scientists and asking them metaphysical questions. "One of my favourites is: 'When you get to the end of the universe, what's next? It's the best question I can think of to evidence the inability of the human mind to comprehend the incomprehensible,'" he says.

Four years later, following a family tour of the subterranean SNOLAB, the Gordon and Patricia Gray Chair in Particle Astrophysics became a reality. Dr. McDonald was its inaugural recipient, serving from 2006 to 2014. During that time, he paid annual visits to the Grays' home to answer the family's questions and talk neutrinos.

"I once asked him about the size of a neutrino



QUEEN'S UNIVERSITY MARKETING

*Dr. Mark Chen handles a sample of liquid scintillator used in the SNO+ project. Dr. Chen holds the Gordon and Patricia Gray Chair in Particle Astrophysics.*

in relation to an atom," Mr. Gray says. "He said there are about a zillion neutrinos needed to make a single atom. There's no such number, of course, but it does give you an idea of how small they are."

With Dr. McDonald's retirement in 2014, Dr. Mark Chen, Sc'89, became the second recipient of the Gray Chair. The director of SNO+, Dr. Chen hopes to build on SNOLAB's work by expanding the facility's ability to detect neutrinos. "With the discovery that neutrinos have mass, we want to understand how they acquired their mass and why it is so small compared with other particles," he says.

The Grays have only met with Dr. Chen once so far. "He came to our home to tell us about his activities during the year, which is our tradition," Mr. Gray says. Not surprisingly, the conversation turned to the end of the universe. "I asked him what exists next to it," he says with a laugh, "but he didn't know either."

As SNO+ gets set to begin operation over the next few months, Dr. Chen says the time is right for his benefactors to return to the mine. "I welcome the opportunity to show them the work we're doing," he says. "My hope is to inaugurate the new detector by bringing Gordon and Patricia back underground."

After hearing the news of Dr. McDonald's Nobel Prize and fielding congratulatory calls from family and friends, the Grays took a moment to reflect on the accomplishment. Gordon Gray realized that the experience left him feeling much like he does whenever he ponders the mysteries of the universe. "To think we may have had a minute role in something like this," he says, "it's almost beyond comprehension." ■

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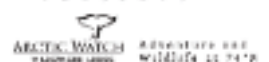
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Featuring





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# KEEPING in touch

## News from classmates and friends

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**Reaching for the stars** *Allie Vibert Douglas, OC, MBE, and LLD'75, was an astronomer and a pioneer in the teaching of astrophysics. She came to Queen's in 1939 and was the university's dean of women for the next 20 years. She taught physics until her retirement in 1964. She served as president of the Royal Astronomical Society [1943-1945], as the first Canadian president of the International Federation of University Women [1947-1950], and as the Canadian representative at the 1954 UNESCO conference in Montevideo. In 1967, she was named one of 10 "Women of the Century" by the National Council of Jewish Women. Her research interests included spectroscopic absolute magnitudes of stars and the Stark effect in stellar atmospheres. Dr. Douglas published both scholarly and popular articles on astronomy, sharing her delight in learning and in the exploration of the universe with a wide audience. After the old campus observatory was demolished, in 1946, to make way for McLaughlin Hall, Dr. Douglas led the charge to rebuild the observatory atop Ellis Hall, its current location. Following Dr. Douglas's death in 1988, Asteroid 3269 was renamed Vibert-Douglas. In 2003, a patera, or crater, on the planet Venus was also named after her.*

*Members of the public can explore the wonders of the universe at monthly open houses at the Queen's Observatory. Learn more: [observatory.phy.queensu.ca](http://observatory.phy.queensu.ca).*





Unless otherwise indicated, dates in these notes refer to 2015.

## Up to 1959

### Family News

**Joseph Eigner**, Sc'55, and his wife, Helen, have moved to Edmonton to be closer to family. Previously, they were in Fonthill, Ont. Queen's friends can get in contact with the Eigners at [jfeigner@outlook.com](mailto:jfeigner@outlook.com).

### Deaths

**Grant Lovell Armstrong**, BSc'51, died Aug. 21 in Mississauga, Ont. He is survived by his beloved wife of 63 years, Virginia, Ed'70, five children and nine grandchildren. He was a true gentleman.

**John A. Bossert**, BSc'51, died June 26 in Smiths Falls, Ont., aged 87. He is survived by Brontie Smith, his wife and best friend of 37½ years, children Jeff, Nancy and Toby, and two grandchildren. Brother of Arthur Bossert, Sc'48. John, an electrical engineering grad, was an authority in electrical installations in hazardous locations. He was a much called-upon lecturer and trainer on the subject, both in Canada and around the world. His book *Hazardous Locations: Guide for the Design, Testing, Construction, and Installation of Equipment in Explosive Atmospheres* was published by the Canadian Standards Association. John was a proud recipient, in 1986, of the St. John Ambulance Life-Saving Award. He also received the Award of Merit from the Canadian Standards Association in 1994.



**Helen "Bubs" (Benger) Coleman**, BA'51,

died Oct. 28 in Saskatoon. She is survived by her husband, Leslie Coleman, Arts'50, MA'52 (PhD,

Princeton), her children Sheila (Kerry Morgan) and Geoffrey, Artsci'84 (Cathy), three grandchildren and her sister Lois (Benger) Coe, Arts'52, PHE'53. At Queen's, Bubs was the president of Levana, 1950-51, and active in the *Queen's Journal* (as news editor, 1949-50, and as associate editor, 1950-51). Following graduation, she worked as editor/writer for the National Research Council in Ottawa.

After she and Les were married, in 1952, they moved to the U.S. for Les's graduate studies and later academic appointments (Tulane University, Lafayette College, Ohio State University). During this period, Bubs worked for Princeton University Press as book promotion editor; as news officer at Tulane University; and as editor for the Graduate College of Ohio State University. She was instrumental in establishing the Ohio State University Press, for which she then worked as editor with advertising and promotion responsibilities (1958-60). The couple moved to Saskatoon in 1960, on Les's appointment to the Department of Geology at the University of Saskatchewan. Bubs then worked for MacMillan of Canada and then McGill-Queen's University Press. Bubs worked at Saskatoon's Mendel Art Gallery, first as a volunteer and then as an employee, as its communications coordinator. She retired from this position in 1994, the year Les also retired as professor emeritus of geological sciences. Bubs was proud of the publication of her history of the gallery, *Dreaming a Gallery*, in 2015. Bubs was a lifelong community activist, dedicated volunteer and passionate Liberal. Nationally, she served as a trustee of the National Arts Centre and as a member of the National Advisory Council on Aging from 1999 until it was disbanded by the Conservative government in 2006. Provincially, she was a member of the Provincial Advisory Committee on Older Persons and the School Law Review Committee, Province of Saskatchewan and was active in the Saskatchewan Museums Association. Locally, among other contributions, she served on boards of theatre, symphony and education organizations. Bubs enjoyed a very active social life with her family and a wide circle of friends of all ages and political persuasions and, particularly after retirement, managed to travel widely.

**David Nicoll Cunningham**, BA'56, died Aug. 28 in London, Ont., in his 87th year. He was predeceased by his beloved wife, Mary (Babiuk). He is survived by his children Karen (J. Doug Rogers), Tanja and M. Danyet,

two grandchildren, his brother Hugh, and extended family.

**William Robert Feil**, BSc'57, died Sept. 22 in Sarnia, Ont., aged 80. He is survived by Mary, his wife of 56 years, three children, five grandchildren, and extended family. After getting his degree in engineering chemistry, Bill moved to Sarnia. There, he worked as a chemist for Shell for more than 35 years. Coming from a large family, Bill loved social gatherings, spending time with family and friends singing, playing music and cards.

**Norman Nelson Halpern**, Meds'48, MD'47, died July 9 in his 94th year. Beloved husband of Gloria Victor for nearly 64 years. Devoted father and father-in-law of Sheryl, MA'78 (Norman Bazar), Lynn (Harry Schragar), and Jack (Lena Levin). Cherished grandpa of four. Norman Halpern grew up during the Depression, the son of a widow struggling to raise three children. He came to Queen's to study bacteriology, and was then invited to study medicine. Part of the wartime accelerated medical program, he graduated (in 1947) with the gold medal in his class of 1948. Choosing urology as his specialty, he completed his residency at Maimonides Hospital in Brooklyn. Returning to Montreal, he was appointed to the staff of both the Jewish General and the Royal Victoria Hospitals. He was an associate professor in the Department of Urology at McGill University, later becoming professor emeritus. He retired from the JGH in 2007 after 55 years. Norman was a community leader, active in his synagogue and many other causes. He was the one to whom everyone turned in times of crisis and celebration; he is deeply missed.

**H.R. "Bob" Hammond**, BSc'42, died July 31 in his 100th year. From an early age, Bob had a passionate desire to learn new things. As a Boy Scout, he earned every badge, from knot-tying to knitting. At Queen's, while studying mining engineering, he also skied competitively and was appointed captain of the basketball team, although he recalled not being a very good player. His adventurous spirit led him to the Yukon, where he

coordinated crews of prospectors in remote locations. Many of his lively family stories were from this chapter in his life, from the riveting tale of his bush plane crashing in the woods in mid-winter to the romantic story of meeting a pretty nurse over cocoa at a Yellowknife hospital. That nurse, Elsie Anna Biensch, would become Bob's wife of 68 years. Bob worked in the B.C. mining industry, developing safer detonation and new ventilation methods for mines. In retirement, he and Elsie had many active years, gardening, camping, mountaineering and skiing. Some of Bob's fondest memories were made with his cross-country ski buddies, "The Old Guys." Together, they built a series of trails and cabins throughout the Nancy Greene Lake area near Rossland, B.C. Bob lived life to the fullest. He cherished Elsie, who predeceased him in 2014, their children Rick and Sally, grandchildren Dana, Benson and Karen, and great-grandson Dylan.

**Norman Henricks**, BA'53, died March 14 in Hamilton, Ont., in his 84th year. Best friend and beloved husband of Beth (Butt) for 57 years. Loving and encouraging father of John (Brenda), Jeff (Darcie) and Paul, Artsci'88, MBA'92 (Robin). Proud and loving grandfather of seven. A long-time employee of Manulife Financial, Norm spent his retirement years travelling with Beth, pursuing his lifelong love of music, and enjoying fun times with his family. His was a life well lived, and well loved.

**Paul Herzberg**, BA'58, died on Dec. 2 in Toronto, aged 79. He is survived by his sister, Agnes Herzberg, Arts'61, (Professor Emeritus, Mathematics & Statistics), and stepmother, Monika Herzberg. Paul was predeceased by his wife, Louise, in September. The son of two noted scientists, Luise, an astrophysicist, and Gerhard Herzberg, LLD'65, a Nobel Prize winner in chemistry, Paul was groomed to become a research scientist himself. But at the age of 40, he found his true calling, as a teacher. For 25 years, he taught statistics to undergraduate psychology majors at York University. Paul developed an intensive program of individualized instruction with the help, each year, of

undergraduate teaching assistants. In all, he taught some 3,000 students in this program and had almost 300 teaching assistants, many of whom remained in contact with him after their graduation, and even during his retirement. At 44, Paul started swimming and became an avid swimmer. The highlight of the early swimming years was reaching a goal of swimming a kilometre in 20 minutes. In his later years, Paul's swimming speed decreased but he continued to record his times in his swim diary. In his retirement, Paul wrote a biography of his mother, a woman who had faced multiple challenges, not least of which was being married to a world-famous scientist. Paul, as the son of that scientist, also faced many difficulties, but the love given to him by his wife, Louise, and the respect and friendship of his students sustained him.



**Brian Hope**, MSc'59, PhD'62 and Professor Emeritus (Civil Engineering) died June 15, aged 79. He is survived by his wife, Anita (retired staff, Department of Art), sons John, PT'90, MSc'99, and James and their families. He was predeceased by his brother, Kenneth. One of the first PhD graduates of the Department of Civil Engineering, Brian returned to the department in 1967 as a professor, retiring in 1999. He was a leader in research into various aspects of concrete, including the mitigation of corrosion in reinforced concrete. He also built an outstanding reputation as a teacher, mentor and graduate student supervisor. He was the first recipient of the Golden Apple Award from the Queen's Engineering Society, in 1971, and he received that outstanding teaching award again in 1992. He supervised 24 graduate students during his career. He was the author or co-author of a number of academic publications, conducted extensive research and was much called upon as an international expert in his field on litigation surrounding concrete and steel corrosion. He also served as a

member of University Senate, and sat on a number of faculty and research committees at Queen's. He also lent his expertise to committees of the National Research Council and the American Concrete Institute, among others.

**John Klassen**, BSc'48½, MSc'50, died Nov. 21 in Brockville, Ont. He was predeceased, two months earlier, by his beloved wife, Joan. John is survived by his children, Elizabeth (Richard), Ronald, Artsci'86, Moss, Artsci'86 (Dale Chisamore, Ed'82) and Charles, six grandchildren, and his siblings, Paul and Trudy. In 1949, John won the A.C. Neish Prize (Kingston Section) from the Chemical Institute of Canada for best student paper. He earned his PhD in chemical engineering from the University of Wisconsin in 1953. He spent most of his working life at Dupont Canada, where he served in senior management roles. His working life was bracketed by stints of teaching at Queen's in the engineering department. John was a civic-minded individual who was instrumental in the YM/YWCA building campaign, active in his church and a frequent canvassing captain for the Canadian Cancer Society. He loved the outdoors and spent many weekends on hikes with his children and friends. He was an aficionado of classical music and had an extensive music collection. He was a world traveller and raconteur. He had a collection of trademark phrases, a favourite being "So be it." He loved words, enjoyed solving puzzles and playing Scrabble. Before his death, John told his children that he had lived a long and happy life.



**Frances Laverty** died Dec. 8 in Ottawa in her 104th year. She was predeceased, in 2011, by her husband, the Rev. Dr. A. Marshall (Padre) Laverty, the well-known and beloved Queen's University chaplain for more than 40 years. Loving mother of MaryAnn de Chastelain, Arts'62 (John, LLD'07)



and Lea Rutherford, Arts'70 (David); dear grandmother of Duncan de Chastelain, Sc'86, Law'92 (Debbie, Artsci'87), Amanda de Chastelain, Artsci'91 (Corey Finnigan, Sc'86, MBA'96), James Rutherford, Ed'05 (Becky), and Christopher Rutherford; great-grandmother of six. A longtime resident of Kingston and an invaluable asset to her husband and to Queen's through countless gatherings at their home for students, she was known for her warm and welcoming nature. Growing up in Toronto, she was a graduate of Bishop Strachan School and Victoria College, U of T, the first of four generations of female university graduates in her family, the last a Rhodes Scholar. As expressions of sympathy, a donation to the Padre and Frances Laverty Bursary at Queen's University would be appreciated. Please make your gifts online: [givetoqueens.ca/padrefranceslaverty](http://givetoqueens.ca/padrefranceslaverty) or you can send a cheque payable to Queen's University with 'In memory of Padre & Mrs. Frances Laverty' in the memo field to: Queen's University, Attn: Lisa Riley, Office of Advancement, Kingston, ON K7L 3N6.



**Robert Duncan McEwen**, BSc'48, died July 16 in Markham, Ont., in his 91st year. He is greatly missed by Jessie, his loving wife of 62 years, children Robert John and daughter

Nancy Ann (Ian), and two grandsons, Gary and Eric. Bob was predeceased by his sisters Jeanie (McEwen) Craig, BA'31, and Dorothy McEwen, BA'53. Bob retired from Texaco Canada in 1984 where, after 29 years of service, he finished his career as chief cost engineer. His family enjoyed the cottage in Quebec that Bob and family members built together; they enjoyed many evenings, dinners and bonfires with friends and family at Lac Gagnon. They have beautiful memories of a wonderful gentle man and father. Bob had many happy memories growing up in Kingston and was very proud of his Queen's degree. He is now resting at Catarqui Cemetery in Kingston.

**Dennis J. Monaghan**, BSc'51, died Nov. 8 in North Carolina. Dennis was a chemical engineer and a businessman, a sailor, woodworker extraordinaire, adventurer and a theatre and music aficionado. He is survived by his children Jane, Arts'73, Law'78, and Jim, Artsci'76. Dennis was predeceased by Jane and Jim's mother, Mary Eleanor Thorburn, BA'52, and by his second wife, Angela Borrett.

**Kenneth Rutledge**, BA'41, BSc'43, died Sept. 25 in Florida at the age of 95. He is survived by his daughter Cathy and son Ross, five grandchildren and five great-grandchildren. He

was predeceased by his wife, Elinore (Ross) and daughter Lynn Barclay, BA'66 (David Barclay, Sc'66). Ken grew up in Kingston, the son of Lewis Traver Rutledge, a well-known Queen's mechanical engineering professor. Ken studied mechanical engineering and was an all-star player on the senior hockey team. After graduation, he worked as a service engineer for Trans-Canada Air Lines in Winnipeg, later working for the company in both California and Montreal. In the late 1960s, he became director of contracts of Air Canada. In this role, Ken was one of

## IN MEMORIAM

### Our inspiration: Geraldine Margaret (Roberts) Moore, BA'35

We may not have known it at the time, but our grandmother singing the *Oil Thigh* to us as babies sealed our future at Queen's. If there was one thing we knew for certain, it was never a mistake to follow in Nana's footsteps.

Geraldine Margaret Roberts was born in Sydenham, Ont., on Aug. 11, 1913. At just 16, Gerry arrived at Queen's University in nearby Kingston. It was the early 1930s and there were not many women attending Queen's. She studied history and English, and made many friends along the way. One friend, Gladys Munnings, (BA'32, LLD'76) was her "Queen's buddy," an older female student who acted as a mentor. Gladys and Gerry remained the best of friends their whole lives.

To Nana, Queen's was so much more than a university. She was a lifelong contributor to the school and she rarely missed a Homecoming. At her 60th, she walked around the track of Richardson Stadium, braving the rain, with another member of her year. At her 65th reunion, she cruised along in a convertible at Richardson with us in the back, neither of us knowing that we'd create our own memories at the stadium. Nana's Queen's was a canvas for memories.

After Queen's, in Toronto, she met and married David Moore and they had two daughters, Carolyn and Donna Lu (Arts'73). Gerry worked as a high school history and English teacher before she was married and then later, for the Ontario Ministry of Education as a curriculum coordinator. She had four grandchildren (Katrine, Natalie, David and Chris), all of whom are university grads, and two great-granddaughters. Family meant the world to her, and she meant the world to us. Gerry experienced the loss of her husband in 1975, but she was rarely lonely. She travelled extensively, took classes, played bridge, was a member of the Toronto Cricket Club, an avid reader and a Blue Jays fan. She visited her grandchildren often. She was the grandmother that every child wanted.

Our grandmother, Nana, passed away in Toronto on Aug. 24, 2015, at the "young" age of 102. If Queen's was a canvas for memories, she inspired us to pick up the paintbrush. Nana had many wonderful sayings; our favourite is: "Always be kind."

Our sendoff at the cemetery was an *Oil Thigh*. She would have loved it.

■ **Written by her grandchildren, Katrine Doucet, Artsci'99, and Chris Mitchell, Artsci'11.**

*Gerry Moore and classmate Les Harris lead the Homecoming parade in this 1995 photo.*



PHOTO BY MICHAEL LEA, KINGSTON WHIG-STANDARD FONDS, QUEEN'S UNIVERSITY ARCHIVES

the Air Canada executives to witness the arrival of first Boeing 747 “jumbo jet” purchased by the airline as it came out of the Boeing assembly plant at Everett, Wash.

## 1960s

### Honours

**Bruce Amos**, Sc’68, was awarded the 2015 Camsell Medal by the Royal Canadian Geographical Society for outstanding service to the society. Bruce served on the board of governors for 12 years, six as vice-president, and on the Canadian Geographic Education board for 11 years, seven as chair. As a photographer ([bruceamos.com](http://bruceamos.com)), Bruce was the driving force behind the Can Geo Photo Club in 2008. His son William was recently elected as the federal Liberal MP for the Quebec riding of Pontiac.

**Ronald Jackson**, Arts’64, MSc’67 (PhD, U of T) recently received a book award from the Organisation Internationale de la Vigne et du Vinard for the fourth edition of his work *Wine Science: Principles and Applications*. Ron is a fellow of the Cool Climate Oenology and Viticulture Institute at Brock University.

### Notes



**Jack Hunden**, Sc’69, shared this photo of him with Queen’s pal **Istvan Hernadi**, Sc’69,

at a get-together last fall on Vancouver Island. That’s Istvan on the left, Jack on the right. “Istvan was a recent immigrant to Canada from Hungary who became a very successful student in engineering physics at Queen’s,” writes Jack. “He later went on to work with Richard Feynman at Caltech and then had a career with the oil industry in Alberta. For the last decade or so, he has been an adventurer and photographer. He recently spent four years teaching and climbing in Bhutan. Here is some of his work: [flickr.com/photos/xtreme-peaks/](https://www.flickr.com/photos/xtreme-peaks/). Istvan is also on Facebook.” After completing his degree in

chemical engineering, Jack got a law degree and MBA from Harvard. Since then, he has been involved in the multi-family housing industry. He now owns 5,000 apartments in Washington State.



**Donna McNeely**, Arts’67, sent us this photo of her September reunion of Queen’s friends. For more than 25 years, this group has been gathering for a reunion at Papineau Lake, Ont. Seen here, Nancy Baldock, Bobbie Rathbun, Meds’69, Sheila Fawcett, Arts’68, MEd’93, Maureen McCay, Arts’67, Joy Johnston, Arts’66, Donna McNeely, Bonnie Zacour, Gord McCay, Law’70, Bruce McNeely, Arts’67, Bob Zacour, Arts’66, PHE’67, Roger Rathbun, Arts’68, David Baldock, Arts’67, Jamie Johnston, Arts’67, and Barry Fawcett, Arts’67, Ed’70.

### Deaths

**George J. Corn**, BA’68, died Oct. 16 in Toronto in his 70th year. He is survived by his wife, Marie, daughter Bryn Perera (Dexter), and two granddaughters. After graduating from Queen’s with an honours degree in economics, George studied law at York University (Osgoode Hall Law School). He graduated in 1972 and was called to the bar in 1973. George practised law for many years in Toronto, and later in Muskoka, Ont., where he became a valued member of Barriston’s Law. George had more than 35 years of experience in the areas of personal and corporate financial and tax planning. He was a member of the Canadian Tax Foundation, the Canadian Bar Association and the Tax Section of the Ontario Bar Association. He was a contributing editor to *Butterworths Canadian Tax Law*, for which he provided comments on judicial and statutory developments relating to Canadian income tax. In addition, he was a section instructor in the taxation section of the Law Society of Upper Canada bar admission course.

George enjoyed spending his free time engaged in sporting activities, mainly hockey and golf, and putting around at the “cottage,” his home on Echo Lake near Bala, Ont.



**Mitchell Dale Greene**, BA’62, MD’66, died April 28 in Florida, aged 73. He is survived by his partner of 18 years, Donna

Logan, children Christopher and Allison, and four granddaughters. After receiving his MD from Queen’s, Dale went into general practice in Mississauga before studying plastic surgery at the U of T. From 1975 to 1987, he served as a staff surgeon at the Mississauga Hospital (now Trillium). He quickly established a busy practice in reconstructive surgery, which led to his establishing the first office operating room in the West GTA, while also having on-call duties at five local hospitals. On a trip to Europe, he was introduced to the work of Médecins Sans Frontières (MSF). He refreshed his general surgery skills and learned the principles of war surgery. From 1987 to 2007, Dale worked as a general war and trauma surgeon. He had a peripatetic life, taking him on missions of three to six months in countries such as Afghanistan, Pakistan, Cambodia, Sri Lanka, Burundi, Kenya and Somalia, for MSF and other organizations. His most satisfying professional experience was teaching reconstructive surgery, especially for cleft lip, to local surgeons. By 2007, many of these countries had become dangerous for medical workers. Dale returned to a more tranquil lifestyle in Vancouver with Donna. There, he indulged his passion for sailing. As time passed, the need to be closer to his children and grandchildren, as well as the persuasive influence of his best friend from Queen’s, Duncan McDougall, led to a move back to Ontario. He and Donna spent summers on the St. Lawrence River in Gananoque and winters in southwest Florida. Dale was often described as “incredibly intelligent, devilishly handsome, with a wicked sense of humour.” A health and fitness buff all his life, he was more than disappointed when his



health began to fail but he faced the challenge with awesome bravery and dignity.

**Morgan Ross Robert Hull**, BSc'63 (Chemistry), died Jan. 7, aged 86. Bob was a mature student who completed his Queen's studies while helping raise his three children. He is survived by Helen, his wife of 62 years, and their children Leith, Morgan, Ed'86, and Lyndsay, Artsci'78/'90 (Chemistry), and grandchildren Morgan, Laura, Artsci'10 (Chemistry), Chris, Geoffrey, Conor, Liam and London. Prior to attending Queen's, Bob had worked for Alcan and Alulabs. After graduation, he worked for the American Cyanamid Co., and later, the federal Department of Industry. Bob was an avid skier all his life. With his father and his brother Ron, he formed the Kingston Ski Club in 1949. On land they purchased north of Sydenham, the trio cleared numerous trails and two runs that they equipped with rope tows. Bob was one of the first certified ski instructors in Canada. Later on, Bob got involved with the Ottawa Ski Club at Camp Fortune, and John Hanna's Ski School, where he taught skiing part-time until well into his 70s. Bob is remembered for his active lifestyle, often walking four km each direction to and from work (uphill both ways, he would say) and spending his lunch hour climbing 14 flights of stairs to keep in shape for the upcoming season. He always had fond memories of his time in the Department of Chemistry in Gordon Hall and Gordon Annex, as well as the Frost wing, and reminisced about his student years just a few days before his death. He remembered with particular fondness his professors Wally Breck and Ken Russell. Bob's ashes will be scattered at the top of the Schuss. Contact Lyndsay (Lyndsay@chem.queensu.ca) if you have memories of Bob you would like to share with the Hull family.



**Sharon (Bendell) Jaic**, BA'65, died suddenly in Burlington, Ont., on Nov. 19, aged 72. Predeceased by her husband, Mike, in 1978, Sharon is

survived by her daughter Michelle, Com'93 (Martin Weinberg), grandchildren Zachary and Cayli Weinberg, and her cousin Randy Chapman, Meds'74. Sharon was the first in her family to graduate from university and was a proud Queen's graduate. She went on to complete her master's degree in education at Niagara University. She began her teaching career in Sudbury and later moved to Hamilton where she met her future husband. Sharon spent 23 years working in the guidance department at Highland Secondary School in Dundas. She retired as head of guidance from Waterdown District High School in 1998. Sharon loved working with students, helping them achieve their education and future career aspirations. She had many fond memories of working with her students and was proud to see them get accepted to college and university – Queen's in particular. After retirement, she was active in the Zonta service club and volunteered at the Carpenter Hospice and for the Visiting Blind Shut-Ins. She was also an avid reader and enjoyed cooking. She was an intelligent, kind and caring person. Sharon was a young widow who never remarried, as she said she had lost the one true love of her life. She dedicated herself to her only child, her friends and her career. She especially adored being a grandmother and rejoiced in celebrating all of their special milestones and accomplishments. She is missed terribly but remembered fondly.

**A. James Malpass**, MD'60, died Nov. 14, leaving his wife of 57 years, Leys (MacTavish) Arts '56, children James, John, Artsci'84, and Ann, and seven grandchildren. After his internship in Hamilton, Ont., Jim and W.R. McMillan, MD'54, built the Parkdale Medical Centre in east Hamilton. It featured a pharmacy, laboratory, diagnostic X-ray and facilities for up to eight family physicians. While in practice, Jim received a grant from the P.S.I. Foundation to travel around the world studying primary health care delivery. Jim was also active in establishing the nurse practitioner program at McMaster University. With the Ontario Ministry of Health, Jim helped establish the capitation

system of payment to family physicians to replace the fee for service. He practised medicine for 35 years. With his colleague Dr. Norman Chan, Jim sponsored a Vietnamese family of seven to come to Canada. All members are now prosperous and productive Canadian citizens. Jim served as a replacement physician in Moose Factory (Cree First Nation), Ignace (Ojibwa Nation) and Inuvik, N.W.T. The permanent class president for Meds'60, Jim remained a lifelong supporter of Queen's. He was a member of the Principal's Circle and the Grant Hall Society, Limestone Level. He is missed by friends, family, colleagues and patients in Hamilton, Port Burwell and Ellicottville, N.Y.



Professor Emeritus **Kenneth Wilson**, PhD'65, died at home in Victoria on May 14, aged 78. He taught in the Department of Civil Engineering,

1971-99. Born and raised in Vancouver, he completed his undergrad at UBC and took his master's degree at Imperial College in London. His doctoral studies at Queen's were funded primarily through the receipt of an R. Samuel McLaughlin Fellowship. After graduation, he worked as a technical consultant for the federal government in Ottawa and then for the United Nations in Cyprus before returning to Queen's to accept a professorship. Here, he enjoyed a reputation for mild eccentricity, resulting from his whimsical selection of teaching materials – including using *Winnie the Pooh* and *Alice In Wonderland* to illustrate basic principles of engineering – and his habit of lecturing in a traditional academic gown, which earned him the nickname "Batman." His mad-scientist air was enhanced (starting in his mid-forties) by his instantly recognizable Einstein-style shock of white hair. At Christmas, he played a perfect Santa Claus, giving out presents and candy canes to both the offspring of fellow professors at the departmental children's party and also to his students. His specialty was the transportation of liquid-solid mixes, known as slurries, important in mining and dredging.

Well-known internationally within the field, he is considered one of the founding fathers for the area of study. He was the lead author of the textbook *Slurry Transport Using Centrifugal Pumps*, initially published in 1992 and currently in its third edition. As a member of the Brockington Visitorship Committee in the 1980s, he was instrumental in bringing Sir Edmund Hillary, Sir Roger Bannister, Maureen Forrester, Alex Colville and Richard Leakey to Queen's. He was active with IAESTE, a worldwide exchange program that supports Canadian students in gaining international experience. He was also a member of the Grant Hall Society, having made donations to Queen's for decades. He was particularly supportive of the Dr. Arthur L. Brebner Memorial Award. Dr. Brebner was, first, his thesis supervisor and later, his colleague as well as head of the Department of Civil Engineering for many years. After his retirement from Queen's in 1999, Dr. Wilson continued to consult, write, and attend conferences. His last technical paper was published in 2014. He is survived by his wife, Vilborg, Com'80, son Bjarni and daughter Signy, Com'91, MIR'92.

## 1970s

### Honours

**Keith Garebian**, PhD'73 (English) was shortlisted for Best Single Poem from a suite for the 2015 Gwendolyn MacEwen-Exile Poetry Awards. His poem (from a work-in-progress) was one of six selected for the list from a total submission of 140 suites. He was also shortlisted earlier for the 2014 Freefall magazine Poetry Award.

### Job News



In January, **Peter Lukasiewicz**, Law'79, became chair and CEO of Gowlings, the international law firm based in

Toronto. In his new role, Peter also serves as a representative on the global board of Gowing WLG, the

new international legal practice created by the combination of Gowlings and Wragge Lawrence Graham & Co. For the past two years, Peter has served on Gowlings' executive committee as one of the firm's two managing partners, with primary responsibility for client relationships. He previously served as managing partner of the firm's Toronto office for 15 years. In addition to his management roles at Gowlings, he practises as a senior commercial litigator, counselling and representing domestic and global clients in a wide range of complex commercial disputes. Peter takes over the CEO role from **Scott Jolliffe**, Law'76, who has led Gowlings for the past two decades. Scott, a trial and appellate court lawyer in intellectual property and technology law, continues his practice. He also takes on a new role as one of Gowlings' three representatives on the global board of Gowing WLG. Seen here, Scott (*left*) and Peter (*right*).

### Family News

After 14 years at Thomson Reuters, **Chris Morton**, Artsci'79 (MS, Stanford, MBA, Wharton) started a new job as CMO of NAVEX Global last spring. By summer, he and **Kathleen (Osterland) Morton**, Artsci'79, had pulled up stakes from the greater New York City area and moved out to Portland, Ore. They are really enjoying quirky Portlandia, with Kathleen going to the local Queen's alumni event in November. "We encourage all our Queen's friends to come and visit!" writes Chris.

### Notes

**Rev. Dr. Gordon Postill**, Arts'71, had the good fortune to return in October, one month before retiring, to the Margaree Pastoral Charge in Cape Breton as a guest speaker. Ordained by the United Church of Canada in 1980, Gordon began his ministry in Cape Breton. Gordon thanked his former parishioners for their boundless generosity of spirit that continued to shape his life positively long after he left the community in 1983. For the past 24 years, Gordon has provided spiritual support to dying patients and their

families as a hospice chaplain. He lives with his wife, Robin, in Duxbury, Mass.

### Deaths

**Ronald Arlie Hunter**, BSc'75, died Aug. 13 with his family by his side in Oakville, Ont. Beloved husband of Judith (Ivatt), Com'77, for 37 years, he is also survived by his daughters Christine and Stephanie, NSc'05 (Matt Taylor). He is lovingly remembered by his twin grandchildren Hunter and Scarlett. He is also survived by his siblings Carmen (Caroline), Dennis (Sharon), Ellen, Joyce (Colin), Carol (Clayton), Jackie (Ron), Jennette (Doug) and Ken (Linda). After getting his degree in mechanical engineering, Ron spent his entire career in the chemical industry. Employed at DuPont, BASF and Nylene Canada, his business travel took him to the U.S., South America, Germany and Asia. But he was most content with his morning coffee on the cottage dock or playing golf with friends in Florida. Ron and Judith's travels were cut short but they did manage to spend precious time at their cottage north of Kingston and at their home in Spring Hill, Fla. He was very proud of both daughters' accomplishments and their independence. He adored his grandchildren and took pleasure visiting them in Calgary or "FaceTiming" with them. His buddy Sarge will miss sitting with him to read the morning paper.

**John MacCallum**, BMus'76, died Sept. 4 in Kingston. Predeceased by his sister, Ann (MacCallum) Deane, BA'75, he is survived by his wife, Deborah (Lynde), Mus'76. John's music degree and post-graduate studies led to a remarkably diverse career as a practising musician, piano technician, master woodworker and software engineer, both in Canada and the U.K.

**David Gordon Walker**, BCom'76, died unexpectedly on Aug. 30 at the age of 62. He is survived by his wife, Sharon, daughter Allison Hartley (Lee), and brothers Alan and Peter, Com'80 (Carol Kostashuk, Ed'79). Proud grandpa of three. David was the executive director of the Rideau Waterway Land Trust, founding executive director of the Ontario Land



Trust Alliance, and founding executive director of the Canadian Land Trust Alliance. David passed away doing what he loved best...living life to the fullest enjoying friendship and the outdoors while helping make the earth a better place for all.

## 1980s

### Honours

In November, **Anne Smith Mansfield**, Artsci'86, Ed'87, received the 2015 Award of Distinction from the Ontario Association for Geographical and Environmental Education (OAGEE). Anne has been a member of OAGEE for many years and currently represents Faculty of Education geography instructors on this voluntary organization. She is a lecturer on secondary school geography methods at the Queen's Faculty of Education. This recognition follows the national recognition she received two years ago when she received the Royal Canadian Geographical Society Geographical Literacy Award.



**Nancy Phillips**, Artsci'82, is a recipient of one of the inaugural Colorado

Governor's Citizenship medals (CGCM), announced in December. The CGCM recognizes Colorado residents and organizations that have made meritorious contributions to strengthen Colorado communities and develop new opportunities for Coloradans. Nancy was recognized in the "Growth and Innovation" category: her award is given to an entrepreneur who has led with exceptional ingenuity and growth while inspiring and creating new possibilities for others. Nancy, a Queen's economics grad, is the co-founder, president and CEO of ViaWest, a hybrid IT solutions company based in Colorado with data centres in seven U.S. states as well as in Calgary.

### Job News

**Glenn Wayne Jones**, Meds '84, has relocated with his wife, Eeva Kastikainen-Jones, to the Eastern

Caribbean (Antigua and Barbuda) and The Bahamas. There, Glenn has taken up a number of roles: senior radiation oncologist in St. John's, Antigua, within The Cancer Network, providing radiation medicine to the populations of nine eastern Caribbean nations; as research consultant for The School of Clinical Medicine and Research in Nassau, The Bahamas, at The University of West Indies; as director of research for clinical trials, studies, registries and business analytics at the Partners Clinical Research Centres in both Antigua and Bahamas; and as a consulting member of the Cancer Consulting Services Division of CSB5. Their three adult children are presently in the United States: Nathan at University of Michigan (PhD Chemical Engineering); Sharaya at University of Colorado Boulder (PhD Marketing & Consumer Behavior); and Kai at UCLA (BSc Neurosciences & Biomedical Research). Glenn's research profile can be accessed at [researchgate.net](http://researchgate.net).

**Bob Masterson**, Sc'87 (MPA'02, Carleton) is now president and CEO of



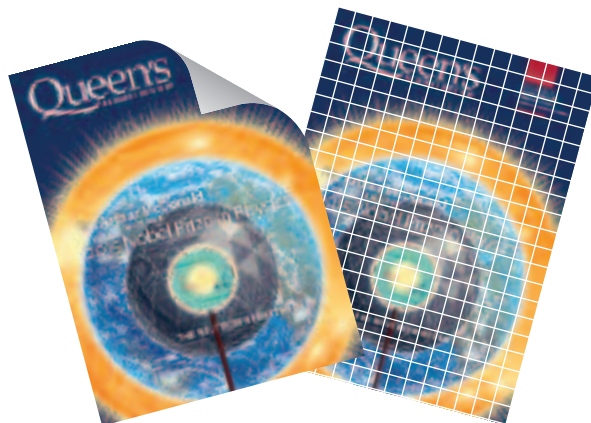
the Chemistry Industry Association of Canada. Bob lives in the Ottawa area and invites you to contact him at [bmasterson@ciac-acic.ca](mailto:bmasterson@ciac-acic.ca).

### Notes

**Mensah Adinkrah**, MA'81 (Sociology), is professor of sociology at Central Michigan University in Mount Pleasant, Mich. He recently published his third book, *Witchcraft, Witches and Violence in Ghana*.

**Ferg Devins** Artsci'84, is a survivor of bladder cancer and a director on the board of Bladder Cancer Canada. Ferg has assumed responsibilities as "national walk lead" for 2016. Learn more at [bladdercancercanada.org](http://bladdercancercanada.org) or contact him directly at [ferg@thedevisnetwork.com](mailto:ferg@thedevisnetwork.com).

**Margy (Giles) Fairbairn**, OT'83, was the first candidate for the Seniors Party of Canada (SPC) in the recent federal election. Margy writes, "The SPC's mandate is to create a better



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voice for seniors in government, promote greater participation by Canadian seniors in their government and fight for a society that promotes continuous quality of life through all phases of a person's life. We believe that the health of our nation's economy is intricately linked to the health of the individuals within it. I continue to work as a pediatric occupational therapist, since graduating from Queen's School of Rehabilitation Therapy, in 1983. My M.A. in special education (U of T, 1989) has served me well throughout my career as an occupational therapist. My husband and I have raised four children in Thornhill, Ont., with the youngest just off to university this fall. Peter Kent (Conservative) was elected in our riding. We have already had preliminary discussions and I plan to continue to work through Peter for this term to ensure that seniors' issues continue to be addressed at the federal level."



**Jeffrey Giacomini**, Sc'81, MSc'83, (PhD, McGill), is the new editor-in-chief of *Physics of Fluids*. "My vision for this well-established and robust community journal is to solidify its position as the dedicated home for publication of the highest quality international research across the entire spectrum of fluid mechanics," says Dr. Giacomini. "It is time to broaden the journal's appeal, embrace emerging sub-disciplines, and recapture soft matter." A professor of chemical engineering at Queen's, cross-appointed to mechanical and materials engineering, he also holds the NSERC Tier 1 Canada Research Chair in Rheology.

**Harry McMurtry**, Artsci'85, Law'89, and **Sue Thompson**, PHE'87, MA'89, have teamed up to tackle a disease that affects them both: young-onset Parkinson's disease. The former Queen's varsity athletes (Harry was on the basketball team, Sue, the rowing team) are planning this spring to

walk from New York City to Toronto, with a stop in Kingston, to raise funds for Parkinson's research. Harry was diagnosed with the illness at age 42. Now 53, his legal career was cut short by his illness. Sue, a high school guidance counsellor, was diagnosed two years ago at the age of 47. Learn more at [fivehundredmiles.org](http://fivehundredmiles.org).



This summer, former housemates of 183 University Ave. gathered from various points across Canada and the U.S. for a fifth annual reunion at the Muskoka cottage of **Doug**, Sc'82, and **Louise (Gariepy) Pegg**, Artsci/PHE'81, MBA'83.

## Deaths

**Sudhindra Sant**, MSc'84, PhD'89 (Metallurgical Engineering), died Aug. 2. He was an associate professor of mechanical engineering at the Indian Institute of Technology in Kharagpur, India.

## 1990s

### Births

**Jamie Kingston**, Artsci'92, and his wife, Lara Kelly, welcomed Gemma Skye Kingston into the world on Jan. 22. Jamie, Lara and Gemma live in Toronto, where Jamie is senior VP of product management and development at Invesco Canada. Jamie and Lara also run Holly Ray Farms, an organic farm business near Stirling, Ont. [hollyrayfarms.com](http://hollyrayfarms.com)

### Job News



**Frank Provenzano**, PHE'91, is the founder and CEO of FANSeey Sports Inc. Its mission is to be the global pioneer in crowd-sourced player

evaluation. The company launched its NFL platform in September. Prior to starting his own company, Frank was in NHL management for 17 years, in Vancouver, Washington and Dallas. Frank was profiled in *Sports Illustrated* recently. Read the story online at [bit.ly/QAR11623](http://bit.ly/QAR11623).

**Michelle Mackenzie** and **Miriam McTiernan**, both MBA'99, and friends since their Queen's days, formed Back Staff Strategic Solutions in 2014. The Toronto-based company offers expert counsel in business leadership functions ranging from electronic document management and security to public policy planning, delivery and integrated communications. [backstaffsolutions.com](http://backstaffsolutions.com)



**TJ Rule**, Sc'98, and **Matthew MacKay**, Artsci'00, both varsity golf team alumni, left their corporate jobs in 2013 to take over the golf travel company Golf Away Tours based in Toronto. Combining their love of golf and travel with their entrepreneurial spirit, they coordinate custom golf trips to all corners of the globe for discerning travellers. [golfawaytours.com](http://golfawaytours.com)

### Notes

Maj. **Robert D. Bradford**, Artsci'91, has concluded 21 years of service with Maritime Command and the Royal Canadian Navy, and has been transferred to the Canadian Army. He joined the Canadian Armed Forces in 1974 and in 1994 was attached to Maritime Command, transferring in 1998. Maj. Bradford initiated work in amphibious warfare, serving with various naval and joint establishments. He is now posted to the Canadian Army Advanced Warfare Centre at Canadian Forces Base Trenton, continuing work in Canadian amphibious warfare development.

**Natasha Milijasevic**, Artsci'94, and her best friend, **Alex Cole-Hamilton**, Artsci'94, celebrated 25 years of friendship with a family reunion in





Europe last summer. Here are their kids, strolling in the English countryside. Natasha and Alex were in the same Gaels group during Frosh Week of 1990. Natasha and family (including husband Paul Pellizzari, Com'91) live in Toronto; Alex and family live in the U.K.



Many Queen's alumni will remember "Gerry nights" at Kingston pub the Wellington throughout the 1990s. Last summer, musician **Gerry O'Kane**,

BFA'91, returned to Canada to play gigs in Toronto, Kingston and the Ottawa valley. He planned to return to Ireland in September but was persuaded to stay an extra month and play a special Queen's Homecoming show. Although the venues on campus were booked, Gerry managed to find a club downtown where he could play on Oct 24. Memories of "Gerry nights" came back to life at the packed venue, with several faculties and graduating years at the show, old friends reunited in conversation and song. Gerry hopes that following this success he will be able to find a venue on campus for next year's celebrations.

## Deaths



**Mark Ernsting**, BSc'99, died tragically Dec. 15 in Toronto. He leaves behind his husband, Rob Iseman; his parents, Reina

and John Ernsting, Artsci'76, Ed'78; his siblings Paul (Leslie), Peter, Sc'03 (Jessie Liu, Sc'03) and Miriam (Anthony); his nieces and nephews Audrey, Annabelle, Paige, Grant, Arjen and Joshua; as well as the entire Iseman family, (including David

Iseman, Sc'89, and Jessica Iseman, Sc'18). After completing his BSc in chemical engineering at Queen's, Mark went on to U of T to complete his PhD in biomedical engineering. He invented breakthrough technology to fight cancer during his tenure at the Ontario Institute for Cancer Research. He was also an adjunct professor at Ryerson University. His musical talent was expressed through the beautiful choir at Church of the Redeemer. His gardens sprinkled colour and brought life to his beloved Toronto – the city that he loved to ride and walk through. Mark was a brilliant, funny and compassionate guy who will be greatly missed by everyone he touched.

## 2000S

### Births



**Katie (Halloran) and Mark Fenn**, both Artsci/PHE'04, welcomed Liam Michael on April 20 in North Vancouver, a brother for proud big sister Clara. Mark is a PE and hockey academy teacher in West Vancouver, and Katie is on leave from her operations manager position at the B.C. Centre for Disease Control. Katie writes, "Liam (kind of) visited Queen's at his parents' 10-year reunion last year (so fun), and is already showing promise of joining the Gaels. From the looks of it, there were a number of second generation phys-eddies looking forward to the same thing!"

**Anne Gleeson**, Sc'04, Artsci'05, MSc'07, and **Travis Lusney**, Sc'04, MSc'07, welcomed Grace Evelyn Lusney on Oct. 20, much to the delight of big brother Jack. Travis, Anne and family live in Toronto where Anne is enjoying maternity leave from her role as program lead, conservation demand management, at Toronto Hydro. Travis is working from home as often as he can as a director with the energy management consulting firm Power Advisory LLC.

**Lisa (Woodcock) Hood**, Artsci'04, and her husband, Jeff, are pleased to announce the birth of their first child, Patrick Ross Hood. He was born on



Oct. 9, just in time to make for a very happy and grateful Thanksgiving

weekend. Patrick has already accompanied his parents on a visit to Queen's for the annual University Council meeting, to which Lisa was recently elected. Lisa will be taking some time off from her role as associate director of the annual fund at the University of Guelph to enjoy the early months with Patrick.



**Ryan Kobrick**, Sc'02 (and Queen's sailing team), and his wife, Jen, welcomed their first

space-baby, Rafael Neil, arriving July 16 in Florida on the launch anniversary of Apollo 11. Ryan, who earned his PhD in aerospace engineering sciences at the University of Colorado at Boulder, is project manager for R&D at Space Florida.

**Gillian (Glen-Worrall)**, Artsci'01, and **Rob Laird**, Artsci'00, MSc'03, along with big sisters Nora, six, and Esme, three, welcomed Adrian Colin on Dec. 23, 2014, just in time for Christmas all together. The Laird family lives in Lethbridge, Alta., where Rob is an associate professor and Gillian is a grants facilitator at the University of Lethbridge.

**Kirsti Mathers McHenry**, Law'03, and her wife, Jennifer, welcomed their second child, Cy Jerome Mathers McHenry to their family in June 2014 and are working on legislation to provide same-sex families with equal access to birth registration in Ontario.



**Stephanie (Lang)**, Artsci'05, and **Andrew Young**, Artsci/PHE'03, welcomed their first child, Bailey William Ross, on July 28 on Vancouver Island, B.C. They recently moved to Ottawa

where Andy is assistant head, junior school, at Ashbury College.

## Commitments



**Alana Hodge**, Mus'09, and **Troy Beharry**, Com'11, were married June 13 in the Wolfe Island parish of Fr. Raymond de Souza

(Artsci'93, MPA'94, and Queen's economics professor). Alana and Troy met at the Newman House Catholic Chaplaincy at Queen's during their student days.



**Victoria Schwarzl**, Artsci'08, and **Emily Herczeg**, Artsci'11, were married Sept. 12 in Muskoka, Ont., Victoria's hometown. Many Queen's friends

joined the happy couple, and they all joined in a lively *Oil Thigh*. The couple lives in Toronto, where Emily is a communications planning manager at Rogers and Victoria is a communications manager at Pride Toronto. They can be reached on LinkedIn.



**Devon Trahan**, Artsci'09, Artsci'10, and **Kate Sedivy-Haley**, Artsci'12, were married at Fort Henry on Aug. 8, surrounded

by friends and family. Devon's grandmother, Cynthia Hurst, Arts'49, proposed a Queen's cheer at the reception. Most of the guests broke into an *Oil Thigh*, including Graham Hurst, Sc'82, Briar Hurst, Artsci'12, and Derek Hurst, Com'13. Devon and Kate live in Vancouver where Kate is currently completing her PhD in immunology at UBC.

## Job News

**Kirsti Mathers McHenry**, Law'03, has joined the Law Foundation of Ontario (LFO) as its director of policy and programs. In this role, she will develop and implement a granting

program focused on improving access to justice, support grantees, justice sector organizations and other funders, and provide leadership to staff. Prior to joining the LFO, Kirsti held management and policy positions at Legal Aid Ontario where, most recently, she was director, strategic initiatives and planning, corporate services. In that role, she worked to develop family law services, increase the use of paralegals, and support business planning. Kirsti is a former member of the Law Society of Upper Canada's Equity Advisory Group.

**Al Pritchard**, Sc'05, is now operations manager at Sander Geophysics Ltd. The Ottawa-based company is a contractor to oil and gas and mining companies worldwide. Al studied math and engineering (structures option) at Queen's, but after a year of structural design, he switched to airborne geophysics.

**Fabian Raso**, Cmp'09, MBA'12, Law'13, recently stepped into the *Dragons' Den* with an appearance on CBC Television's hit series. Fabian was representing Hangry, an app he began developing at Queen's. Hangry allows students to find, order and pay for food on campus using their mobile phones, so they can save time by skipping the line. Hangry left the den with a deal from three of the dragons, including Michele Romanow, Sc'07, MBA'08. Hangry went live at the U of T in October and rolled out to five other Canadian campuses in January. Learn more at [imhangry.ca](http://imhangry.ca)

## 2010s

### Commitments



**Alaya Yassein**, Artsci'12, and **Matthew Barker**, Artsci'13, were married on June 20 in Bowmanville, Ont. There were many other Queen's alumni and students in attendance including Hossam Yassein, Leanne (McKelvie) Yassein, Khalid Yassein, Senaya Yassein, Dominique Barker,

Alexis (Barker) Rawson, Jaime (Barker) Dennehy, Melissa Barker, Zane Yassein, Nicole Kucherenko, Bliss Man, Emily Ready, Samantha Boggs, Stephanie Reiter, Nick Chauvin, Jacqueline van Warmerdam, Ian Wight, Michael Mooney, James Asefa, David Hadwen, Adriana Mejia-French, John Bolton, Nicole Schmidinger, Devan Glover, Alison Holmes, George Holmes, David Chaloner, Gaddah Yassein, Erika Preece, Timothy Davies and Harkumel Randhawa.



**Shannon Timpson**, NSc'14, and **Brandon Pasternak**, Artsci'14, were married July 25. Shannon is the daughter of Marilou (Coburn), OT'87, and Steven Timpson, Sc'84. Steven, now an Anglican minister, performed the ceremony. In the wedding party were Shannon's brother Chris, Sc'16, and Jacob Bryce, a former Queen's student, as groomsmen; Elysha Roeper, Artsci'16, and Larissa Owendon, NSc'15, were bridesmaids. The couple held their reception at the University Club. Shannon and Brandon met during fourth year while volunteering for the worship team at their local church. Shannon is now a nurse at KGH and Brandon is in his second year of law school at U of T.

## Honours

In October, **Katie Hunter**, Law'15, received the Nicholas Bala Award for Excellence in Children & Family Law from the Association of Family and Conciliation Courts, Ontario (AFCCO), recognizing her interdisciplinary achievements in law and social work. Read more about Katie's work on the Faculty of Law website: [bit.ly/1O2BM2v](http://bit.ly/1O2BM2v).



**Jennifer Langill**, Artsci'15 (Global Development Studies) has been awarded an Ocean-Path fellowship for her individualized, interest-free micro-finance program she developed in Laos, Southeast Asia. Her goal is to expand the



program in the original village and then introduce it in three others. The OceanPath fellowship program provides community-focused experiential learning opportunities for graduating students to become active and effective change-makers. Read more about Jennifer's work online at [bit.ly/1JIQFXI](http://bit.ly/1JIQFXI).

**Vincent Matak**, Artsci'15 (and *Queen's Journal* editor-in-chief, 2014-15), received a Jack Webster

Foundation student journalism award in November. The Jack Webster Foundation honours outstanding journalism in British Columbia. Vincent is a journalism student at Langara College in Vancouver.

### Job News

**Derek Hurst**, Com'13, is a senior accountant at Ernst and Young in Toronto.

**Ava McDonald**, Com'10, is one of three founders and co-owners of the



production company, Grab It Productions. Grab It produces a variety of comedic videos (including music video parodies, celebrity impersonations and short sketches) and short films posted monthly to its YouTube channel. Check out [grabitproductions.com](http://grabitproductions.com).

## NEWSMAKERS

# Queen's alumni on Parliament Hill

*15 Queen's alumni were elected as members of parliament in the Oct. 19 federal election, 10 for the first time. New MP Marilyn Gladu is also the first female engineer to become an MP in Canada.*

**Nicholas Whalen**, Sc'96, MSc'98 (new)

**Steven MacKinnon**, MBA'98 (new)

**Nathaniel Erskine-Smith**, Artsci'07, Law'10 (new)

**David Tilson**, Law'68 (re-elected)

**Mark Gerretsen**, Artsci'06 (new)

**Peter Fragiskatos**, MA'05 (new)

**Rob Nicholson**, Artsci'75 (re-elected)

**John Nater**, MPA'08 (new)

**Chris Bittle**, Artsci'02 (new)

**Marilyn Gladu**, Sc'84 (new)

**John McKay**, Law'73 (re-elected)

**Erin Weir**, MPA'05 (new)

**Randeep Sarai**, Law'01 (new)

**Murray Rankin**, Arts'72 (re-elected)

**Kellie Leitch**, Artsci'91 (re-elected)

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Beaches-East York

Dufferin-Caledon

Kingston and the Islands

London North Centre

Niagara Falls

Perth-Wellington

St. Catharines

Sarnia-Lambton

Scarborough-Guildwood

Regina-Lewvan

Surrey Centre

Victoria

Simcoe-Gray

Liberal

Liberal

Liberal

Conservative

Liberal

Liberal

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Conservative

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NDP

Liberal

NDP

Conservative

# New appointees to the Order of Canada

*As well as Dr. Art McDonald, CC, who was promoted from Officer to Companion in recognition of his international achievements, the following alumni were named to the Order of Canada in the Jan. 1 honours.*

*Officer of the Order of Canada*

**Julie Dickson**, OC, MA'81: for her leadership in the development of financial regulation in Canada and around the world.

*Members of the Order of Canada*

**Laura Brandon**, CM, MA'92: for her contributions to uncovering and preserving Canadian war art, and for bringing it to the attention of national and international audiences.

**Fiona Sampson**, CM, Artsci'85, Law'93: for her commitment to human rights, particularly those of women and girls in Africa.

**Kim Sturgess**, CM, Sc'77: for her contributions to water stewardship and the advancement of women in engineering.

**Frederic Wien**, CM, Arts'66: for his contributions in support of Indigenous populations in Atlantic Canada as a professor and as a promoter of economic and social autonomies.

*Queen's University Alumni Association presents*  
**ALUMNI AWARDS GALA**

*April 2, 2016 – Ban Righ Hall*



**Alumni Achievement Award**  
Shirley Tilghman, Artsci'68, DSc'02



**One to Watch Award**  
Michele Romanow, Sc'07, MBA'08



**Alumni Humanitarian Award**  
Fiona Sampson, Artsci'85, Law'93

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# Reflecting on the power of our alumni network

Looking back at my time spent as president of your Queen's University Alumni Association (QUAA) Board of Directors, I am astounded by the power of the Queen's alumni network and the commitment of its members to helping each other and the university.

During my time with the board, I've had the opportunity to travel to various alumni branches and to learn more about the Queen's global alumni network and how alumni help strengthen Queen's presence around the world. This helps ensure that the best and brightest students are aware of our university, and supports our aspirations for greater international prominence.

Queen's alumni live in more than 150 countries, with some 4,500 new graduates becoming members of the alumni association every year. However, it's not the size of the alumni network, but rather the achievements of its members that set our alumni apart. Through the peer-driven Alumni Awards program, alumni everywhere have the opportunity to bring to the attention of the university the accomplishments of graduates who embody the best of what the university imparts.

Of course, alumni do much more than give us a reason to be proud of them and Queen's. They make a significant impact through their volunteerism, offers of expertise and philanthropic support. Last fall, when I attended our Vancouver Branch Award reception, I was approached by a former football Gael who asked me to introduce him to this year's award recipient, Karen Flavelle, Com'79. I was more than happy to make the introduction, and I remember

the sense of pride I felt as two alumni who had never met began learning from each other thanks to their shared connection as Queen's alumni. Whether it's at a QUAA board retreat, the Alumni Awards Gala evening, or the Alumni Volunteer Summit, I've seen Queen's graduates connect with each other, sharing their unique perspectives, but bound together by a shared love of all things tricolour.

After connecting with many of you during my term, I am confident that alumni loyalty will continue to make our university an exceptional institution in the years to come.

As my term comes to an end as your volunteer QUAA president, it gives me great pleasure to introduce you to your next President, Sue Bates, Artsci'91. Sue is currently the vice-chair of our board of directors and she will start her two-year term at the upcoming Alumni Volunteer Summit on April 1-2.

Sue comes from a family devoted to tricolour; she is an experienced and enthusiastic leader and is part of a board of equally passionate volunteers.

I'm thankful for the countless Queen's alumni and friends with whom I've had the pleasure of volunteering. It's been an honour and privilege to serve my Queen's family. There are many people I'd like to thank, including both former and current members of the QUAA board of directors, and the ever-resourceful Nikki Remillard from the Department of Alumni Relations and Annual Giving. I look forward to more opportunities in the future to give back to Queen's and meet more alumni. Until then, Cha Gheil!

■ **George M. Jackson**



Sue Bates, Artsci'91  
2016-18 QUAA president

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George M. Jackson, Artsci'85,  
2014-16 QUAA president

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**Connecting in Hong Kong**

**Kellogg Ngai**, Artsci'97, sent us this photo from an Ontario University alumni luncheon in Hong Kong in November. Seen here, **Conrad Chan**, Artsci'92, Ontario Premier **Kathleen Wynne**, Artsci'77, **Edith Law**, Sc'96, and **Ian Burchett**, Artsci'82, and Canada's consul general to Hong Kong. Premier Wynne was in Hong Kong for a trade mission.

## New branch presidents

**Jenn Pelley**, MPA'09, is taking on the role of president of the Ottawa Branch of the QUAA. Jenn is taking over from **Jeff Bird**, Sc'01, who served as both branch contact and president for the last two years. Thanks to Jeff for his contributions to the Ottawa Branch and our global alumni network, and welcome to Jenn! To volunteer or connect with the Ottawa Branch, contact [ottawa\\_branch@tricolour.queensu.ca](mailto:ottawa_branch@tricolour.queensu.ca)

**Nicholas Godwin**, Artsci'11, is the president-elect for the Calgary Branch. Nick has a long track record of great initiatives within the branch and has revolutionized the way it engages its volunteers. Nick takes over from **Adam Shetler**, Sc'08, in April. To volunteer with the Calgary Branch, email [nicholas.m.godwin@gmail.com](mailto:nicholas.m.godwin@gmail.com). The Calgary Branch looks forward to an exciting and successful 2016!

## Branch Awards

**Kingston Branch**

The Kingston Branch is pleased to announce the recipients of the 2016 Padre Laverty and Jim Bennett Awards. **John Meisel**, CC, LLD'96, and **Leslee Thompson**, NSc'84, are being honoured on May 26 at Queen's University.

Dr. Meisel will receive the Padre Laverty Award for his iconic spirit and inspiring contributions to Queen's and Canada. Dr. Meisel, Professor Emeritus (Political Studies), is a well-known member of the Queen's family. He is recognized nationally as a former chair of the CRTC, fellow and former chair of the Royal Society of Canada and a companion of the Order of Canada.

Ms. Thompson will receive the Jim Bennett Achievement Award for her innovative and transformative leadership in the delivery of health care in Kingston and beyond. As president and CEO of the Kingston General Hospital, she has led critically important changes to further modernize the hospital.

Registration will be available online at [events.queensu.ca](http://events.queensu.ca)

**Ottawa Branch**

The Ottawa Branch is pleased to announce **Hugh Winsor**, Arts'64, as the recipient of the 2016 Agnes Benidickson Award. The award, the branch's highest honour, is being presented to Mr. Winsor for his contributions to Canada's political landscape as a national journalist, his commitment to the protection of the freedom of the press, and his ongoing dedication to, and mentorship of, Queen's students. Join us for a reception in Mr. Winsor's honour on April 20 at the Rideau Club. Register online at [events.queensu.ca](http://events.queensu.ca).



# Upcoming events

events.queensu.ca  
www.facebook.com/queensualumni

## Canada

### Brockville

#### April 18 – Semi-annual luncheon

The Brockville Branch and the Rotary Clubs of Brockville are pleased to welcome **David Walker**, Meds'71, to speak at their luncheon at the Brockville Country Club. Tickets are \$20. Contact Cheryl Johnston at 613-342-8688 or email brockville\_branch@tricolour.queensu.ca for more details. Register by April 15.

### Hamilton-Halton

#### March to the Pole with Chancellor Leech

Join us April 13 at 7 pm at Hillfield Strathallan College in Hamilton, Ont. Queen's University Chancellor **Jim Leech**, MBA'73, will give a presentation to local alumni about his trip with the True Patriot Love Foundation to the North Pole. Get ready to be inspired!

### Kingston

#### March 22-24 and 30 – Three-minute thesis

3MT® is a university-wide competition for Queen's graduate students in which participants discuss their research and its wider impact in 3 minutes or less to a panel of non-specialist judges. This is a unique opportunity to communicate the innovative and significant research undertaken by our graduate students. Heats will take place March 22-24 in B176 Mackintosh Corry Hall (lecture theatre). The final will take place March 30, starting at 4.30 pm, venue TBD. Updates: www.queensu.ca/3mt.

#### April 11 – Cha Gheill luncheon

Join us for a talk by **John Smol**, PhD'82 (School of Environmental Studies). Dr. Smol will speak on *Arctic environments, lake mud and climate change: a window on the past and a view to the future*.

### Ottawa

#### May 11 – Over 50s luncheon

**Tricia Baldwin**, Director, Isabel Bader Centre for the Performing Arts, will speak to the semi-annual luncheon of the Over 50s group of the Ottawa Branch. Her topic will be *Queen's House of Dreams: the Isabel Bader Centre of the Performing Arts*. Come join us in a most pleasant locale for an authoritative and lively presentation about the latest major addition to the Queen's campus.

## U.S.

### Boston

#### March 19 – Alumni funspiel

Try your hand at curling! Join us at the Cape Cod Curling Club from 12:30 to 3 pm. No matter your skill level, you'll enjoy this opportunity to play the game, and the hospitality of the Cape Cod Curling Club in beautiful Falmouth, Mass. Family and friends are welcome. Registration fees will include instruction, equipment and time for some games.

### Las Vegas

#### March 4-6 – Cornell-Queen's Executive MBA reunion

Celebrate 10 years of the Cornell-Queen's Executive MBA program in Las Vegas with a mix of networking, learning and reconnecting. Reminisce on the MBA experience and take advantage of keynote presentations from Cornell and Queen's professors.

## International

### China

#### March 15 and 17 – Principal's receptions

Join **Principal Daniel Woolf** for a reception in Hong Kong (March 15) and Beijing (March 17). In true Queen's fashion, we will gather for cocktails and hors d'oeuvres to reconnect, reminisce and discover what is happening at Queen's.

### London, U.K.

#### Tricolour reception

Watch the alumni events calendar to be in the know about an early March visit by Provost and Vice-Principal (Academic) **Alan Harrison** to the U.K., including a special reception in London.



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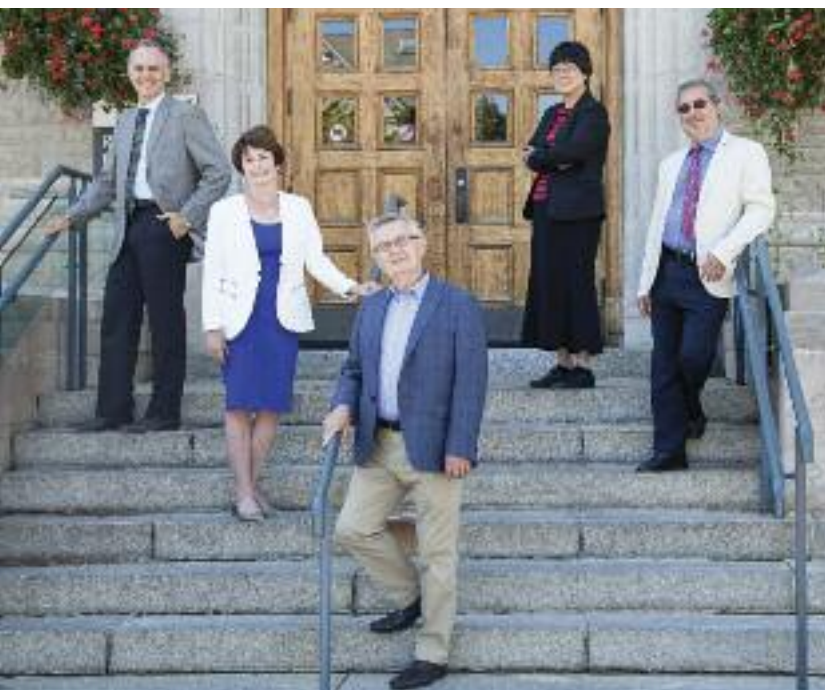
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# A year of honours

2015 wasn't just a banner year for physicists at Queen's.



## The royal round-up

New fellows of the Royal Society of Canada are (l-r): Keith Poole (Biomedical and Molecular Sciences), Elizabeth Eisenhauer (Oncology), Marjan Mozetich (School of Drama and Music), Suning Wang (Chemistry) and Ugo Piomelli (Mechanical and Materials Engineering.)

R. Kerry Rowe (Civil Engineering) won the RSC's Miroslaw Romanowski Medal and John Smol (Biology) its McNeil Medal. Alice Aiken (School of Rehabilitation Therapy) was named to the RSC's College of New Scholars, Artists and Scientists.

## Law honours

Alumnus Owen Rees and Professor Grégoire Webber of Queen's Faculty of Law have each received one of Canada's most prestigious civilian honours, the Meritorious Service Medal. Mr. Rees, Law'02, a partner at Toronto boutique litigation firm Stockwoods, and Dr. Webber, the Canada Research Chair in Public Law and Philosophy of Law, are the co-founders of the Supreme Court Advocacy Institute, which assists counsel appearing before the Supreme Court of Canada. Read more on the Queen's Law website: <http://bit.ly/QAR11652>.

### American Physical Society – Fellow

Andrew Pollard (Mechanical and Materials Engineering)

### Canadian Academy of Health Sciences – Fellow

Chris Simpson (Medicine)

### Canadian Association of Computer Science – Outstanding Young Computer Science Researcher Prize

Ahmed Hassan (School of Computing)

### College of Family Physicians of Canada – Top 20 Pioneers of Family Medicine Research

Richard Birtwhistle (Family Medicine)

Walter Rosser (Family Medicine)

### Financial Management Institute of Canada – Alan G. Ross Award for Writing Excellence

Andrew Graham (School of Policy Studies)

### Institute of Electrical and Electronics Engineers – Fellow

Randy Ellis (School of Computing)

### International Ecology Institute – ECI Prize

John Smol (Biology)

### Minister of Veterans Affairs Commendation

Alice Aiken (School of Rehabilitation Therapy)

### Minister's Medal Honouring Excellence in Health Quality and Safety – Individual Champion

Karen Hall Barber (Family Medicine)

### Ontario Arts Council – Aboriginal Arts Award

Daniel David Moses (School of Drama and Music)

### Order of Canada – Member

Ruth Wilson (Family Medicine)

### Queen's National Scholars

Qingling Duan (Biomedical and Molecular Sciences; School of Computing) – QNS in Bioinformatics

Keren Zaiontz (Film and Media) – QNS in Creative Industries in the Global City

### Queen's University Prizes for Excellence in Research

Jacalyn Duffin (History of Medicine)

Myra Hird (School of Environmental Studies)

Guojun Liu (Chemistry)

Mark Diederichs (Geological Sciences and Geological Engineering)

Anne Croy (Biomedical and Molecular Sciences)

### Royal Canadian Geographical Society – Massey Medal

Brian Osborne (Geography and Planning)

### Social Sciences and Humanities Research Council – Insight Award

David Lyon (Sociology)

### Society for Music Perception and Cognition – Lifetime Achievement Award

Lola Cuddy (Psychology)





**Hugh Winsor**, Arts'64  
**2015 recipient**  
**Agnes Benidickson Award**  
OTTAWA



**Leslee Thompson**, NSc'84  
**2015 recipient**  
**Jim Bennett Achievement Award**  
KINGSTON



**John Meisel**, LLD'96  
**2015 recipient**  
**Padre Laverty Award**  
KINGSTON

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# EX *libris* New books by faculty and alumni

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An introduction to some difficult workplace truths

“Team building activities” are just another word for “being embarrassed in a polo shirt.”

Your entire employment period is basically a countdown to accidentally calling your supervisor “Mom” in front of everyone.



These bon mots are from *I Can't Believe It's Not Better: a Woman's Guide to Coping with Life* by **Monica Heisey**, Artsci'10. Created to help you live your Best Life™, the book offers tips on everything from workplace politics to sexting, how to make your apartment look like you read design blogs and to where to cry in public. Monica is a Toronto-based writer and comedian. Her work has appeared in *VICE*, *Playboy*, *New York Magazine*, and *The Hairpin*, among others.



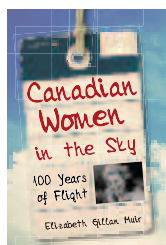
**Gordon Allan**, Artsci'82, Ed'83, released his first children's fantasy novel, *Edwin and the Quest for Drow* 埃德温历险记 介绍, last summer in Shenzhen and Beijing, China before introducing it to the North American market in the fall. The bilingual English and Chinese novel tells the story of a young boy who has the power to enter the books he reads and affect the outcome of the story. The book is already being embraced by Chinese second-language learners and English students in Mandarin-immersion programs. Published by Xinhua Publishing House, it is available through amazon.ca.



**James Carson**, Professor (History), is the author of *The Columbian Covenant: Race and the Writing of American History*. This provocative analysis of American historiography argues that when scholars use modern racial language to articulate past histories of race and society, they collapse different historical signs of skin colour into a transhistorical and essentialist notion of race that implicates their work in the very racial categories they seek to transcend.



**Suzanne Hocking**, Artsci'04, is the author of *The Matchstick Girl*. The novel brings LGBT undercurrents to 19th-century Russia, as the young protagonist struggles with class differences, schoolgirl relationships and her search for self-empowerment. For a brief moment fortune shines on her and she catches a glimpse of hopes and joys that she never imagined could have been within her reach. But as soon as it appears, it is taken from her. Growing up in poverty, Yelena strives for a better life. Through luck and deceit, she lands a place at the esteemed Smolny Institute for Noble Girls where the young women of the Russian court are taught mathematics, literature and science and where Yelena hopes to light a fire under Russian society. *The Matchstick Girl* was shortlisted for the 2012 Dundee International Book Prize for debut novels.



**Elizabeth Gillian Muir**, Arts'56, has a new book out: *Canadian Women in the Sky: 100 Years of Flight*. “I wrote the book because I discovered that only six per cent of all pilots, flight engineers and instructors in Canada are women,” says the author. This is the story of how women in Canada, from Newfoundland to British Columbia, have struggled to win a place in the world of air travel, first as passengers, then as flight attendants and pilots, and, finally, as astronauts. Anecdotes trace these women's challenges and successes, their slow march over 100 years from scandal to acceptance, whether in Second World War skies, in hostile northern bush country, and even beyond Earth's atmosphere. From the time the first woman climbed on board a flying machine as a passenger to the moment a Canadian woman astronaut visited the International Space Station, this is an account of how the sky-blue glass ceiling eventually cracked, allowing passionate and determined “air-crazy” women the opportunity to fly.



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**ANTARCTICA**  
*Nov 10 – 26*  
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# Life after physics

*Not all physics grads “do physics” professionally. We put out the call on Twitter and LinkedIn, asking Queen’s physics graduates to tell us what they are up to these days.*



CLAIRE BOUVIER PHOTOGRAPHY

*Seen here demonstrating Newtonian laws of motion is Justin Babin, Sc’14. When he’s not skateboarding, Justin works in management consulting in Southbank, Australia.*

## Thinking outside the box

I graduated from engineering physics in 2014. I’m currently working in management consulting for the top consulting firm in Australia. Physics has taught me to solve challenging problems and to think outside the box (especially with quantum mechanics). These skills have helped me a lot in this new field. I may not be doing anything physics-related, but I keep up to date with physics news every day.

**Justin Babin**, Sc’14, GDB’14 (Graduate diploma in business), Consultant, PwC Australia, Southbank, Australia

## “It’s not you, physics. It’s me.”

I’m a Queen’s physics fail – but I still consider that a big success. I entered Queen’s in 1998 as a physics major but within the first week I knew it wasn’t the right path for me. No offense to physics – it was a “It’s not you, it’s me” kind of breakup and I’d like to think we’re still on friendly terms. I switched into political science and am now self-employed as a content creator, focusing on social media and online writing.

**Vanessa Chiasson**, Artsci’02, Founder and senior social media strategist, Sculpt Social, Ottawa  
Travel writer and blogger (TurnipseedTravel.com)

## Knowing how to promote a solution

I was an international student in physics. Currently, I work as a technical sales engineer at a top company in photonics in Beijing. I appreciate the problem-solving and detail-oriented skills accumulated during my master’s research and studying periods. Especially when I am involved with varieties of technical issues from customers, I know how to promote a solution, and not just to give an answer. With my supervisor and my colleagues, I did enjoy the atmosphere of academic and spiritual freedom at Queen’s.

**Yue Tao**, MSc’13, Technical sales engineer, Hamamatsu, Beijing, China

## A new kind of science

My MSc (Eng) in physics (1985) helped lay a foundation that enabled my career in an innovative science that is only now becoming mainstream. I completed my DSc in information assurance – a.k.a. information security – in 2014. How I got there is a tale that demonstrates the problem-solving and critical-thinking skills that my engineering physics studies at Queen’s helped establish.

When I graduated from Queen’s, I led a small engineering research team looking into tropospheric ducting of radar. It was a fun position that lasted 2½ years, until I was recruited to work for Communications Security Establishment [Canada’s national cryptologic agency] – working on innovative methods of securing communications systems. I spent 10 years at CSE working in different areas of communications and computing security. After leaving CSE, I landed at Nortel, where I worked on driving security into Nortel’s telecommunications products. I returned to school to do my DSc in 2009 as the future of Nortel was not at all promising.

My education and experience brought me to the University of Saskatchewan, where I serve as the director of information and communications technology security, access & compliance. Ironically, my office at U of S is in the basement of the physics building so, in some sense, I have come full circle. Although I no longer “do physics,” I am doing applied research with one grad student in ICT security and, in my position, I support teaching, learning and research at one of Canadian’s top 15 research universities. I speak and write on information security in a variety of venues.

**Dr. Lawrence Dobranski**, DSc, MBA, MSc (Eng), P.Eng., Director, ICT Security, Access & Compliance, Professional Affiliate, Department of Computer Science, University of Saskatchewan



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