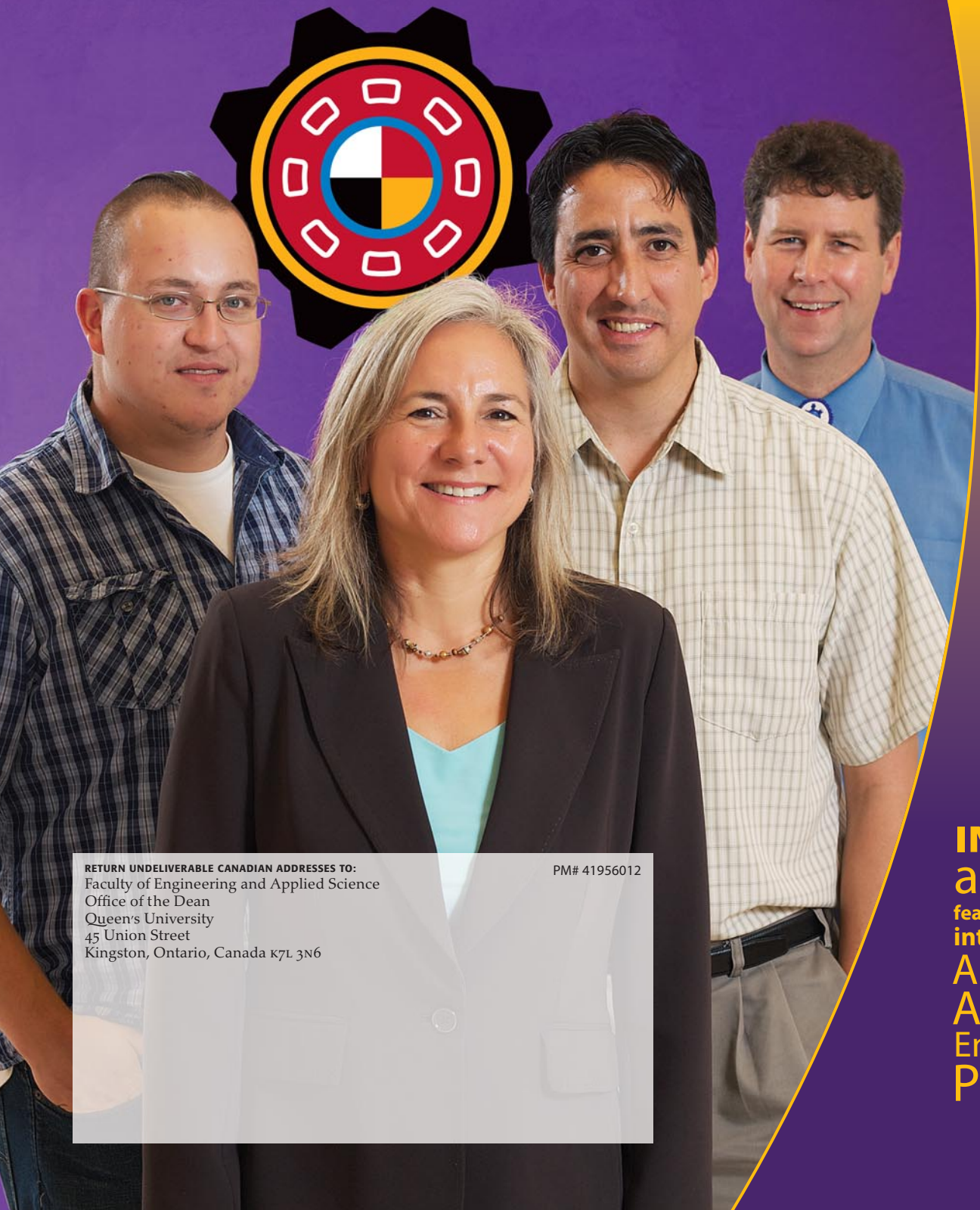
FALL/WINTER 2011

THE COMPLETE ENGINEER

THE MAGAZINE OF THE FACULTY OF ENGINEERING AND APPLIED SCIENCE AT QUEEN'S UNIVERSITY

Queen's UNIVERSITY



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INSIDE...
a special
feature-length issue
introducing our
Aboriginal
Access to
Engineering
Program

THE COMPLETE ENGINEER

FALL/WINTER 2011

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ON THE COVER
1. Oke Maracle
2. Carol Ann Budd
3. Duncan Cree
4. Mark Green

CONTENTS

THE AAEP:
A program whose time has come

Welcome to the Fall/Winter 2011 issue of *The Complete Engineer*. It's the beginning of another school year, and we are pleased to have welcomed 653 new undergraduates to our program this fall.

In this issue, we're profiling our Aboriginal Access to Engineering Program (AAEP). As Aboriginal groups in Canada increasingly manage their natural resources and build foundations for future economic development, they will need more skilled professionals in many critical sectors – and yet, currently there are approximately only 200 people of Aboriginal descent among Canada's 234,000 practicing professional engineers. Studies show that Aboriginal youth are behind in math and sciences, making it difficult for them to take on the many roles that will be required of them in the future.

We're working to change those statistics. The Aboriginal Access to Engineering Program takes a multi-faceted approach to increasing the participation of the Aboriginal community in engineering programs through specific educational programs and an interactive website, as well as outreach activities and materials created specifically for Aboriginal students by members of the Aboriginal, educational, engineering, science and business communities. The program also includes resources such as tutoring, counseling and financial aid, along with opportunities for mentorship and peer support.

We introduced the program in 2010 – and since that time, we've appointed Dr. Duncan Cree as the interim director *(see story, page 12)* and expanded our activities based on best practices developed in collaboration with other educational institutions, particularly the University of Manitoba. We've created a community space in the Integrated Learning Centre for Aboriginal students who want to access resources and share experiences, and we're also exploring new opportunities for hands-on learning, including a summer job program to place Aboriginal students with mining companies.

I hope that you enjoy reading about the AAEP. As always, I welcome your feedback, and wish you all the best for 2012.

SCOT ADAMSON

Kimberly A. Woodhouse
PhD, PEng, FCAE, FBSE
Dean, Faculty of Engineering
and Applied Science

THE Aboriginal Access TO ENGINEERING Program

Queen's new Aboriginal Access to Engineering Program is unique in eastern Canada and has the potential to set the University apart as a contributor to Aboriginal education.

"The program came about as a recognized need to enhance and strengthen access to engineering for the Aboriginal community," says Kimberly Woodhouse, Dean of the Faculty of Engineering and Applied Science. "It will involve an education program and outreach to communities and students, and will build on what we currently do. We want to strengthen the science and engineering education opportunities for Aboriginal youth from kindergarten to Grade 12."

Dr. Duncan Cree, P.Eng., a faculty member and member of the Mohawks of Kanesatake, assumed leadership of the new program in September. Cree says the university has a social responsibility to offer educational opportunities to Aboriginal students – but there are economic and moral reasons as well.

Aboriginal communities are increasingly involved in the management of Canada's natural resources, particularly in the oil and gas, mining, forestry, and water sectors. Still, Aboriginal engineers account for only about 200 of Canada's 234,000 practising professional engineers. Aboriginal engineers have a real opportunity to improve living conditions in their territories and on reserves by addressing poor water quality and the acute shortage of adequate housing, widespread problems which Sheila Fraser, Canada's outgoing Auditor General, noted in her June 2011 report.

Fraser also stressed the urgent need to close the educational achievement gap between Aboriginal and non-Aboriginal people.

Others have made similar observations. "Improving the social and economic well-being of the Aboriginal population is not only a moral imperative; it is a sound investment which will pay substantial dividends in the coming decades," noted a 2009 report by the Canadian Centre for the Study of Living Standards. "Aboriginal education must be a key component in any such effort."

The same report determined that if, by 2026, Aboriginal Canadians increased their level of educational attainment to that of non-Aboriginal Canadians in 2001, the potential contribution of Aboriginal people to Canada's GDP would increase to $401 billion.

"Investing in Aboriginal education will not only benefit the Aboriginal population itself, but will also benefit Canadian governments, and, by extension, the entire Canadian population," the report's authors concluded. "Aboriginal Canadians are without doubt one of the groups where the potential benefits of increasing educational attainment clearly outweigh the costs."

Cree says there are four main aspects of the new program. The first is recruiting or outreach, which may involve visiting high schools and speaking with students, doing activities with students and possibly bringing them to visit Queen's. Another involves providing academic and personal support and a partnership with Queen's Four Directions Aboriginal Student Centre, so that students who come to the university will have a better chance of succeeding. Finally, a website must be developed, and funding secured.

Carol Ann Budd, Sc'89

The Aboriginal Access to Engineering Program recognizes that a solid foundation in math and sciences has to start in elementary school and proceed through the upper grades to ensure that more Aboriginal Canadians graduate from high school. Supporting this objective is the Native Access to Engineering website at www.nativeaccess.com *(see story, next page).*

The award-winning website offers downloadable educational resources in mathematics and science, and was donated to Queen's University by Corinne Mount Pleasant-Jetté of Mount Pleasant Education Services, former Director of the Native Access to Engineering Program (NAEP) at Concordia University in Montreal. Mount Pleasant-Jetté, a member of the Tuscarora First Nation, was a professor of technical writing with Concordia's Faculty of Engineering and Computer Science in 1993 when she approached the Dean about starting an initiative to encourage more Aboriginal Canadians to enter engineering, similar to the successful push to encourage more women to enter the profession.

The Ordre des Ingénieurs du Québec helped establish NAEP, and in 1998, a website was launched. The website content, aimed at Aboriginal students from kindergarten to Grade 12 and their teachers, was developed with input from members of the Aboriginal, educational, engineering, science and business communities.

In respect for Aboriginal tradition, Queen's Aboriginal Access to Engineering Program will be guided by a circle of advisors consisting of faculty members and Aboriginal engineers. They include:

- Dean Woodhouse;
- Corinne Mount Pleasant-Jetté;
- Vic Pakalnis, Kinross Professor in Mining and Sustainability;
- Merv Dewasha, a member of the Wahta Mohawk First Nation, Queen's alumnus, Sc'71 Civil, and majority owner of Neegan Burnside Ltd. and Nuna Burnside Engineering and Environmental Ltd.;
- Carol Ann Budd, Sc'89, Engineering Chemistry, member of the Sagamok Anishnawbek and Investors Group consultant; and

Merv Dewasha, Sc '71

- Dr. Mark Green, Sc'87, member of the Mohawks of the Bay of Quinte, and Professor and Associate Head of the Civil Engineering Department at Queen's.

Other partners include Queen's Aboriginal Council, the Queen's Native Student Association, Engineers Canada and the University of Manitoba, whose own Aboriginal engineering access program, ENGAP, is a national leader in access programs and has an excellent record of graduating Aboriginal engineers.

Professor Green is confident that the Queen's program can achieve similarly positive outcomes. "We have a lot of really good people committed to the program in our circle of advisors, key people who have been involved in general in engineering and science and Aboriginal education in Canada, so that puts us in a really strong position. We are the only program in Ontario now, and we are basing a lot of what we're doing on successful experiences in the last 20 years, on work Corinne did with Native Access, and on what has been done at the University of Manitoba – we have some good strong links with them."

The outreach work has already begun. This past summer, more than 10,000 workbooks were printed for distribution to Aboriginal children in Ontario and Manitoba through the collaboration with ENGAP.

Green says that there will be some challenges in establishing the program over the next few years, particularly with regard to funding. The program has received some initial government funding, support from industry partners and a generous recognition of the program through the Wasmund Family Aboriginal Scholars Award *(see story, page 8),* established in 2011 by Dr. Bert Wasmund, Sc '61, and Dr. Eric Wasmund, Sc'88. The award is for Aboriginal students entering first year in any program, but preference will be given to students entering the Faculty of Engineering and Applied Science.

That the Faculty is committed to addressing what the Association of Universities and Colleges of Canada has called "a crisis of First Nations, Inuit and Metis education" and "one of the most compelling national issues Canada must face", has not gone unnoticed by the Aboriginal community.

"I'm thrilled that Queen's has taken the initiative to do this," said Mount Pleasant-Jetté. "There is no doubt in my mind that many young Aboriginal people have the capacity and have the potential to succeed and can do a great deal with an engineering education."

Shawn A-in-chut Atleo, National Chief of the Assembly of First Nations, praised the Aboriginal Access to Engineering Program in his keynote address to the 2011 Queen's Conference on Indigenous Issues in Post-Secondary Education, calling it "an excellent example of an institution stepping forward and offering up a structural recognition [of First Nations], a remarkable innovation."

And one, he said, that is desperately needed. "We cannot afford to lose another generation to poverty and despair."

aboriginal access to engineering

WWW.NATIVEACCESS.COM

THE NATIVEACCESS WEBSITE: Giving Aboriginal Teachers and Students the TOOLS they need to SUCCEED

"Let us put our minds together and see what life we will make for our children."

That 1877 quotation, attributed to the great American Indian Chief Tatanka Iotanka (Sitting Bull), is an apt rationale for Queen's Aboriginal Access to Engineering Program. It's also the email signature of Corinne Mount Pleasant-Jetté, the moving force behind the creation of nativeaccess, a website that encourages Aboriginal youth to consider engineering as a profession.

Mount Pleasant-Jetté's determination to develop the site (www.nativeaccess.com) stems from Tatanka Iotanka's wisdom and from her own experiences of working with budding engineers.

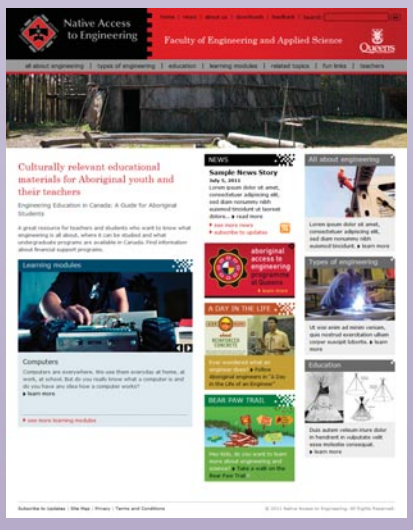
As a professor in the Faculty of Engineering and Computer Science at Concordia in the early 1990s, she helped shape a pilot project to introduce engineering to Aboriginal youth. The first step was Engineering Explorations, a camp that ran for four years.

The teenage participants enjoyed the camp, but once they returned to schools, frequently in remote parts of the country, a problem emerged: their classroom teachers had little understanding of engineering and few materials required to teach it. That's when Mount Pleasant-Jetté and her colleagues recognized the bigger challenge: they needed to teach the teachers.

They began by mailing fresh curriculum in mathematics and science to schools around the country, but that proved cumbersome. What was needed was an online resource that provided information for both teachers and young people. And so in 1993, with Mount Pleasant-Jetté's leadership, Concordia launched the Native Access to Engineering Programme (NAEP) and an associated website. The fledgling site eventually provided a full range of curriculum and resources for teachers and interactive learning tools for students.

Mount Pleasant-Jetté was an ideal person to develop the ambitious project, which is now being reinvigorated by Queen's. A member of the Tuscarora First Nation, she has researched and written extensively about Aboriginal issues and taught undergraduate students from all disciplines in engineering and computer science. But her retirement from Concordia in 2005 left the website's future uncertain.

During Mount Pleasant-Jetté's final five years at Concordia, nativeaccess saw significant growth aided by financial contributions and in-kind technological and creative services from IBM Canada, assistance from the federal government's Office of Learning Technologies, and the federal government department then known as Indian and Northern Affairs.



The nativeaccess website

Throughout it all, Mount Pleasant-Jetté focused on the underlying values that motivated her from the beginning.

"We wanted to show young people what it's like to be an engineer and not lose your cultural identity. That's always a concern with native communities and native kids, that they'll not remember who they were."

This awareness led to Mount Pleasant-Jetté to coin the term "ancestral engineering."

"Ancestral engineers designed a huge range of solutions to everyday problems, from cradleboards to longhouses to tools. There was real precision engineering involved in many of these things. Imagine building a bungalow and lighting a fire in the middle! A longhouse was big enough for 30 or 40 families, with a fire in the middle that didn't burn down, didn't smoke, with ventilation and air control. This kind of engineering knowledge is still very important today."

After Mount Pleasant-Jetté retired, the website remained online. Its offerings included everything from a video series called "A Day in the Life of an Engineer", which followed the daily work of Aboriginal engineers from various communities, to downloadable worksheets and teaching guides.

Even without fresh content being added to the site between 2005 and 2009, the site still logged a remarkable 15,000 to 20,000 visitors, and a million hits, per month. At one point Mount Pleasant-Jetté traveled to UCLA to present a seminar for teachers from Native American reservations and was astonished to discover that teachers in that region of California knew the site's content inside out. Still, the website had become static.

"We had to shut it down or find major resources to upgrade it," Mount Pleasant-Jetté recalls.

Then came a phone call out of the

Corinne Mount Pleasant-Jetté

blue from Vic Pakalnis, a professor of Mining Engineering at Queen's. He wanted to draw Mount Pleasant-Jetté's attention to what he believed was an error in the website's representation of mining.

"I told him I'd love to update the site but couldn't afford to," says Mount Pleasant-Jetté. "That led to a conversation about what a unique website it is, that there was nothing in mainstream schools with the quantity of material that's on the site – not just for Aboriginals, for anyone. But I told him 'I'm going to have to shut it down, it's becoming too dated. A great loss, but there's nothing I can do.'"

It was a fortuitous conversation that led to further discussions with Dr. Kimberly Woodhouse, Dean of the Faculty of Engineering and Applied Science at Queen's. The result was that Mount Pleasant-Jetté donated the site to Queen's. She continues to participate in its development as part of a circle of advisors.

"Dean Woodhouse knows the issues are critical, that education is not strong in native communities and that housing, infrastructure and telecommunications require engineering to improve the living standards of First Nations."

One of Mount Pleasant-Jetté's hopes for the site is that it will continue to explore ancestral engineering and related topics connected to indigenous science and medicine.

"It would be wonderful to capture local knowledge and transmit it to kids in the context of the learning of Western science," she says.

The possibilities are vast, given the advancements in digital technology since the website's early days.

"Ten years ago, ideas like live chat were just a dream," says Mount Pleasant-Jetté. "I'd love to see a situation now where a young person doing science and math homework could receive online tutoring from engineering students, for example."

The impact on students and teachers in remote communities could be significant, particularly in the age of social media. And Mount Pleasant-Jetté says she's "very pleased" with what Queen's is doing with the website and looks forward to it once again having a vital role to play in the development of young Aboriginal engineers.

Meet Oke

Oke Maracle, a 23-year-old Mohawk from Tyendinaga Mohawk Territory, is excited about his first year at Queen's Faculty of Engineering and Applied Science for all the reasons you'd expect from a bright young student. "I'm looking forward to being around people with the same interest in learning and meeting new people, new friends, and learning about engineering."

But he also looks to the past as a way of moving into his own future as an engineer.

"The importance of the history of 'ancestral engineering' [the creation of kayaks, longhouses, etc.] to a young engineer shows anything can be done – if something is needed, someone will think of a solution. I think for historical accomplishments there was a lot of trial and error until the idea was perfected. We need to really study the research that has been documented over the years to make sure our trial doesn't turn into an error."

Maracle's pursuit of an engineering career began in Belleville, Ontario, at Loyalist College's Architectural Technologist program. He quickly discovered that design wasn't his strength – but then his teachers pointed out that architectural drawings require an engineer's approval before execution.

"I began to look into what engineering entails and realized that it's the field that I wanted to get into in the first place," says Maracle. "What interests me about engineering is knowing how a system works, why certain things happen the way they do, and the diversity of the field."

Maracle then completed Loyalist's two-year Civil Engineering Technician program. After graduating he began applying to civil engineering programs at universities – but then, as he puts it, "my past came back to haunt me." Not having taken physics, chemistry, math and calculus in high school blocked his entry to a university program. So he decided to do an intensive one-year common program at Lakehead University to gain the background and accreditation he needed to move forward.

All along Maracle has gained practical knowledge in the field, working every summer since he started college as an ironworker apprentice. His first-hand experience has cultivated a keen interest in steel design, and today he's interested in working on "buildings and structures as opposed to roads, sewers, or water." But where he'll ultimately apply his skills remains a question mark.

"I haven't really decided yet if I would work on the reserve or not. I really like getting out and working all over the country.

Oke Maracle

Traveling and working in many different environments will help me understand the third and fourth ways to skin the cat. I could see myself having a hand in some kind of infrastructure development on our reserve, but we'll see what the future holds."

Meanwhile, he's thrilled that Queen's has an Aboriginal admission policy geared towards helping Aboriginal students gain acceptance into the department. His reaction when he heard that news?

"I said, 'SWEET!'"

Jack Beaver: A QUEEN'S ENGINEERING Hero

Jack Beaver, *right*, at the Rolphton Nuclear Power Demonstration (NPD) in 1962

John Wesley "Jack" Beaver didn't have an easy childhood. That didn't stop him from becoming a distinguished engineer and a noted consultant to the power industry and the Department of Indian and Northern Affairs, now known as Aboriginal Affairs and Northern Development Canada. In fact, he was driven to succeed in part because of his own economically deprived youth.

His son, Rick Beaver, a wildlife biologist and artist living at Alderville First Nation in Ontario, remembers his father telling stories about things like wearing hockey skates without blades as shoes so that he could attend school. Or how he hunted for food because there was no money to buy it.

Jack Beaver, a descendant of generations of Mississauga Ojibway Chiefs, was born in 1920 at Alderville, a native reserve about 30 kilometres north of Cobourg, Ontario. After graduating from Queen's University with a Bachelor of Science in Electrical Engineering, he began his career at Ontario Hydro, the precursor to today's Ontario Power Generation. He started as a junior engineer and worked his way up through numerous engineering and management positions.

He played a significant role in Ontario Hydro's first forays into nuclear energy until he left the company in 1972 to become General Manager – Operations of the Churchill Falls hydroelectric project in Labrador. Later, he became president of the Montreal-based firm responsible for running the dam. He also served as special advisor to the federal government and was on the board of directors of the Native Economic Development initiative during the late 1970s and early 1980s. Jack received an honorary D.Sc from Queens in 1979.

Rick Beaver says his father was ambitious, but that ambition was rooted in critical human values.

"His strength of vision came from a fundamental belief in the potential of humans to demonstrate the very best of social virtues – respect, dignity, equality and compassion. It's my impression that those things were on his mind in everything he did, and he fought for them in every organization he worked with."

Jack Beaver literally fought as well, piloting a Spitfire fighter plane during World War ll. He came home with tales he would later tell his wife, Marjorie, and their five children. One story was of a dogfight with a German Messerschmitt around haystacks in a field in

Holland. It ended with his plane "taking a round in the oil pan," but somehow he survived and returned to base intact. After the war he regularly traveled to England to visit his former war buddies, a practice that continued until his death in 1989.

When he was sent home wounded from the war in 1944 he turned his veteran's allowance to good purpose – to study engineering at Queen's. His son believes his father's choice of university was based on its reputation of providing exceptional training for engineers. It was also within a few hours' driving distance to the Alderville First Nation, where he continued to live after the war and serve through the early 1950s as Chief. Rick says his father saw "opportunities for construction and rebuilding Canada's economy" in the postwar period, and wanted to be a part of it.

But as Jack's engineering career took off, he never forgot his connection to Canada's First Nations communities. He believed that economic opportunities for indigenous peoples could be developed by using what his son calls "latent ingenuity." Jack Beaver believed that education and economic power were essential to the success of the Aboriginal population of his day and acted on that belief by contributing to the development of Trent University's Department of Native Studies, since renamed Indigenous Studies.

His interest in furthering the education of future generations is recognized to this day by Ontario Power Generation (OPG) through the John Wesley Beaver Award, an annual $4,000 scholarship available to one male and one female student of Aboriginal ancestry whether they be status, non-status, Métis or Inuit.

The recipients are chosen by the OPG's Native Circle, a forum that supports OPG's Aboriginal employees and promotes cultural diversity. The scholarship recipients have demonstrated exceptional academic and community involvement. As acknowledgement of their achievements, they receive a limited edition print of one of Rick Beaver's beautiful paintings.

In his personal life Jack Beaver enthusiastically shared his knowledge of the outdoors with his family, taking his children fishing, hunting and to field trials, where he competed with his

Jack, with his wife Marjorie and children Wayne, Dennis and Rick, 1949

Labrador Retrievers, which he trained himself. He had a spiritual side, too, influenced by "Subud," an offshoot of Buddhism. His son feels this practice resonated with his parents native beliefs and "cemented a very strong moralistic and balanced influence in everything they did."

Jack Beaver was also known as "a kindly and gentle man," as H. Allan Leal, Q.C., a former Deputy Attorney General of Ontario, once described him. Leal's praise came during an introduction to an address Beaver delivered in 1975 to the Empire Club of Canada in which he spoke about "The Indian, Yesterday, Today and Tomorrow."

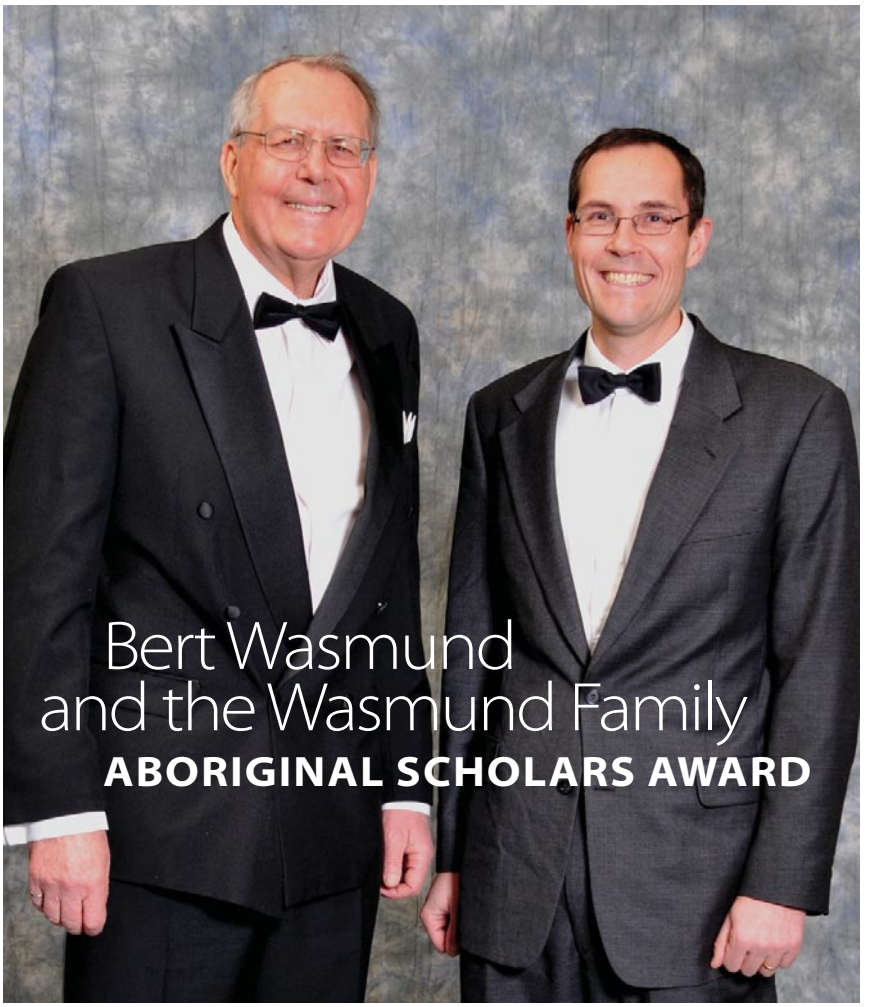
The start of Beaver's speech was strongly worded: "I have talked with many Indian leaders and governmental officials and almost without exception they all agree that the past one hundred years have been for Indians an unmitigated disaster." He continued with a detailed, fascinating précis of the history that led him to this perspective, outlining a strong set of economic principles for the future.

Through "education and skills," he stated, quoting an unnamed chief, "I shall build my race into the proudest segment of your society … I shall see our young braves and our chiefs sitting in the houses of law and government, ruling and being ruled by the knowledge and freedom of our great land."

No doubt Jack Beaver, were he alive today, would be keenly interested in the Aboriginal Access to Engineering Program at his alma mater. As Rick Beaver puts it, not only was his father a man who understood the values of "working hard and playing hard," he was also a man who believed in "creating and seizing opportunity" by studying and learning, and then turning the knowledge acquired into action.

Jack, *bottom left*, receiving his honorary D.Sc. from Queen's in 1979

Bert Wasmund and the Wasmund Family ABORIGINAL SCHOLARS AWARD



Bert Wasmund, Sc'61 and Eric Wasmund, Sc'88

Immediately after creating the Wasmund Family Aboriginal Scholars Award, granted for the first time in 2011, Dr. Bert Wasmund wished he had set up the funding sooner.

In 2004, Wasmund, Sc'61, Ph.D. 1966 (U of T), who is executive director of the internationally renowned engineering firm, Hatch Ltd., and his son Eric, Sc'88, Ph.D. 2005 (McMaster), established the Wasmund Family Memorial Scholars Award. In 2006 they set up the Bert Wasmund Scholarship for Sustainable Energy Research at Queen's.

Throughout his career, Wasmund senior had observed the challenges faced by North America's young Aboriginal population and figured that if those challenges could be mitigated, Aboriginal students could make enormous contributions to society.

Wasmund's motivation for establishing the scholarship was simple.

"The Aboriginal population has a legitimate grievance," he says. "They have not been treated fairly by governing regimes for hundreds of years. This scholarship is a way to help. Even the smallest donations that assist in obtaining a university or technical education are valuable."

Canada's Aboriginal population of more than a million, organized in 630 well-established bands, is a terrific asset with enormous economic and social potential for the country, says Wasmund.

Canada's natural resource industries, such as mining and hydropower generation, are located largely in remote northern areas. "Not enough of the commercial activities and benefits of those enterprises pour back to the citizens who live in these ancestral homelands. If our scholarships help to prepare young people to assume leadership positions in the resource industries and their ancestral communities, then it will be an important success."

Early in his own career, Wasmund, who grew up near Bancroft, Ontario, recognized that to go anywhere and make a real impact, one needed an advanced education. Education, he says, is "the key to our social and financial mobility, and engineering can play a pivotal role in that journey.

"Think of many previous generations of immigrants who started as labourers, but directed their children toward the professions, such as engineering. It's a great place to start."

Wasmund knows about this kind of personal advancement. He worked in the mines near Bancroft to put himself through Queen's. His engineering career blossomed from this platform: he saw Hatch grow from a company of sixty employees to a globally prosperous, employee-owned business of more than 9,000 staff.

Along the way Wasmund became a leader in metallurgical processes and plant engineering and design. He is recognized globally for technical innovations that helped clients virtually eliminate emissions of toxic effluents into the environment and substantially reduce energy consumption. Wasmund is also cited for clean-plant designs that improve workplace safety and plant productivity.

"I've always been involved with energy and concerned about where the world is heading," says Wasmund. "Our fossil fuel and uranium energy resources are finite, after all."

But the energy of young students is another matter. "We need real leaders – in particular, well-educated Aboriginal youth who will return to their ancestral land and make a real difference."

Queen's has already made much progress in this area, says Wasmund, citing Dr. Mark Green, who has been instrumental in the development of Queen's Aboriginal Access to Engineering Program, as one example.

Wasmund sees the impact that scholarships can have in the lives of students when he meets with the recipients at annual gatherings.

"It's just marvelous," he says. "It makes my life worthwhile. I can see that it's already making a difference."

ALUMNI EVENTS

Engineering at Queen s GTA Reception, June 2011. Over 150 alumni, along with faculty members and students attended this special reception hosted by Mike Norris and RBC on the 40th floor of Royal Bank s South Tower in Toronto.

Bob Beamish, Sc'60, his wife Marilyn, and their family enjoyed a *Beamish Family Celebration* in the Integrated Learning Centre, Beamish-Munro Hall, earlier this year. Other family members in attendance were son, Brian, Sc'86, and his wife, Susan, Sc'86, son David and his wife, Maggi, and daughter, Heather, Comm'86, and her sons, Harrison and Mitchell Lund.

In June 2011, Dean Woodhouse hosted a reception to recognize Bob and Doris Burnside s exceptional gift towards the new Innovation and Global Leadership Program at Queen s. Bob is a Sc'56 alumnus and long-time volunteer for Queen s. Several family members were in attendance, including Bob and Doris s daughters, Janet and Jay, their partners and children. Sadly, Doris passed away in May, but was remembered fondly by all in attendance

Members of the Class of '51 participated in Spring Reunion 2011, including the re convocation ceremony at Grant Hall.

Dean Woodhouse at Spring Convocation 2011 with Honourary Degree recipient, Dr. Bob Beamish, Sc'60, and guest speaker, Sue Riddell Rose, Sc'86

THE GREEN FAMILY – Following the path to success

Aboriginal peoples pursuing a university education often cite a lack of role models, an unwelcoming environment and cultural differences as barriers to success.

For Dr. Mark Green, Sc'87, who is a Professor, and Associate Head of Queen's Department of Civil Engineering and a member of the Mohawks of the Bay of Quinte, the reality was slightly different. Two generations trod a path for him to follow, one that led from a southern Ontario residential school to one of Canada's top universities. There were hardships along the way, but those who followed the path never lifted their eyes from the goal of a higher education. They didn't realize it at the time, but the journey would lead them to a rediscovery of their Aboriginal identity and language.

Ethel Eleanor Green – 1922

The story begins with Mark's grandmother, Ethel Green, who, after her mother's death, was sent from her home in Tyendinaga, just east of Belleville, Ontario, to the Mohawk Institute residential school in Brantford, Ontario. Ethel was about 10 years old.

"My grandmother always liked school and was very smart," remembers Green. "Originally she wanted to be a nurse, a high goal at that time, but in the end she was kicked out of the residential school."

"Her favourite teacher was leaving and she hadn't had a chance to say goodbye. When she found out at the last minute, she went to say goodbye. But that was breaking the rules."

Ethel's minor infraction hints at her enjoyment of school and affection for a teacher who had perhaps shown kindness to a motherless girl hundreds of kilometres from home.

"When she had to leave, her educational plans for herself didn't work out," says Green.

What happened next was typical of the times. Ethel went to work as a domestic, cleaning people's homes in the Belleville area. She had seven children, one of whom was given up for adoption. She raised the others – five boys and a girl – singlehandedly through the Depression, supplementing her income by taking in boarders or subletting a room. Eventually she saved enough to buy her own home.

Through it all, she never lost sight of what might have been, instilling in her children an unwavering belief in the importance of education.

"I think she always understood that education might be a way to get something better for her family, even if her sons could get a trade or something like that," recalls Mark. "My oldest uncle signed up for the navy near the end of the war. He was technically too young, so I don't think he saw active service, but when he came back he was able to get some education."

That uncle enrolled in a mining engineering program at the University of Toronto and became the first of Ethel's sons to pursue post-secondary education. Mark's father, Ron Green, Arts'65, completed high school and graduated from teachers' college, and

then he studied part-time to earn a Bachelor of Arts degree from Queen's. Next was his brother Jim Green, Sc'62, who took civil engineering at Queen's.

"In the end, most of my grandmother's children ended up with a university degree," says Mark.

Perhaps it was in his blood, or because his father was a math teacher, but young Mark excelled at math and sciences in school. When his father suggested that he consider a career in engineering, Mark enrolled in the Mathematics and Engineering program at Queen's. Today he sits on the circle of advisors for the new Aboriginal Access to Engineering Program and was instrumental in bringing the program to Queen's.

He is also rediscovering his own heritage as an Aboriginal person.

It's a contrast to his grandmother's experience as she struggled to keep her family during the Depression.

"To be an Indian in the '30s and '40s was not necessarily a positive thing in society, so I think that was downplayed and any connection to culture was avoided," says Green. "From my grandmother's experience, the way to success was to deny that part and try to fit in as best you could. Sometimes as a native person you can 'blend in' and not be specific about what culture you come from."

Three turning points reconnected Green with his past.

The first occurred when his grandmother regained her official Indian status and her family followed suit, one by one.

Then his father began to reclaim his Aboriginal identity, learning to speak Mohawk after his retirement and even teaching it in schools.

And when Mark married, he and his wife adopted four children of Cree descent. "That became even a bigger part of our life because it was not just my connection and my family, but also my children had this other connection.

"I have learned more over time and learned a bit of the language. It's something I'd like to learn more of."

That's quite a legacy for a girl who was kicked out of residential school. Instead of being bitter because her dreams didn't come true, because she had to struggle and scrape and suppress who she was, Ethel Green ensured that her children followed a different path. She must have felt then what Shawn A-in-chut Atleo, National Chief of the Assembly of First Nations, would articulate years later in a speech to academics at the 2011 Queen's Conference on Indigenous Issues in Post-Secondary Education.

"Education is the area that yields so much incredible potential," said Atleo. "[Education] can be the tool of our freedom, the tool that is going to support the reconnection to our people, our language, our lands, our territory, our cultures and our elders."

Green agrees. "However much my grandmother might have wanted to deny it externally, it still was part of who she was. It is part of who I am."

Tyendinaga, circa 1921

SHOOTING FOR THE STARS: Duncan Cree

Dr. Duncan Cree

As interim director of the Queen's Aboriginal Access to Engineering Program, Duncan Cree is well positioned to get the fledgling program off to a successful start. A Mohawk from Kanesatake, he's the first Aboriginal Canadian to earn a PhD in mechanical engineering. Recently, he completed a post-doctoral research fellowship at Queen's University, and earlier this year he received Canada's National Aboriginal Achievement Award in the category of Technology and Trades.

In fact, he's just what the doctor ordered. That would be Dr. Edward Cree, Duncan's uncle, role model and mentor, who constantly encouraged his nephew to aim higher. It was Dr. Cree, a world-renowned expert in oral and maxillofacial surgery, who badgered his brother's son to enrol in college after high school, to go to university, to work towards his PhD – and to uphold a family tradition of excellence: in 1999, the elder Dr. Cree himself received the National Aboriginal Achievement Award in medicine.

"I just told him, if you want a good job, you've got to go to university. Of course it was hard, being from a native community, being the only one, but I guess he understood," says Dr. Cree, a surgeon at the Centre Hospitalier de l'Université de Montréal. "His dad, Robert, really helped him a lot too. He was a very, very hard worker and was always there for his children – that was his priority.

"But 99 per cent was Duncan's hard work."

Growing up in Kanesatake, a Mohawk settlement of about 1,700 people west of Montreal, Duncan assumed he would be a car mechanic like his dad. He'd been accepted at an automotive mechanic school in Montreal.

His future seemed set – until the day his high school principal summoned him to the office.

"I thought I was in trouble," Duncan recalls with a laugh. "I was sweating. He asked me what I was doing after high school. I had been admitted to the car mechanic school in Montreal and I was ready to go. 'Why don't you go to college?' he asked. 'You have chemistry, physics, all the prerequisites.' I said, 'Oh, I don't know. What am I going to do in college?' I had no idea, nobody ever talked to me about different careers. Anyway, he opened a big book, a book with different schools and different programs, and I remember seeing a picture of a plane on the page. 'Why don't you do airplane mechanics?'

"I thought, *Me, an airplane mechanic? Why not?* So I applied and was accepted."

After completing two years at John Abbot College in Sainte-Anne-de-Bellevue and one year at the École nationale d'aérotechnique at Collège Édouard-Montpetit, Duncan was ready to put his skills to work. But his uncle had other ideas and suggested university instead. "At first I didn't want to," says Duncan. "All my friends were going to work. But my uncle said, 'Just apply. If you get in, you can try one year. If you don't, then you can go to work.'"

Duncan chose mechanical engineering because it sounded like aircraft maintenance and was accepted at Concordia University. But while college had been fun – taking engines apart, making noise, drilling, riveting, folding sheet metal – university was different.

It was tough. For the first two weeks he didn't sleep, unaccustomed to the city's constant cacophony of blaring horns, screeching tires, shouting people. He didn't know his way

around campus, how to study, how to sit for exams. He failed his first year and had to reapply.

That's when he met Corinne Mount Pleasant-Jetté, an Aboriginal professor of technical writing in the Faculty of Engineering and Computer Science at Concordia and director of its Native Access to Engineering initiative. In 1992 she was named to the Order of Canada and now sits on the Circle of Advisors for Queen's Aboriginal Access to Engineering Program. Mount Pleasant-Jetté helped Cree navigate through the system. He took as many workshops as he could, on subjects including how to take a multiple choice exam and how to take notes.

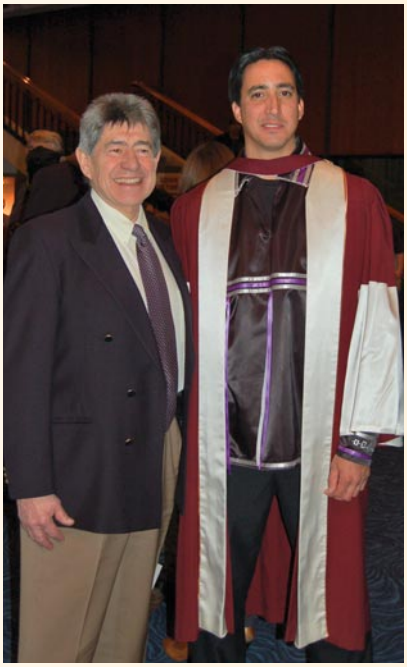
"I didn't give up," says Cree. "I thought, *They're not going to get me!*"

It worked. Gradually his marks improved. He enjoyed mechanical engineering and the diversity of learning it offered. By the time he graduated, he was getting A's.

After university Cree worked for two years in the flight research laboratory at the National Research Council (NRC) in Ottawa. But his uncle still wouldn't let him be. "I don't want you to put the bolt in the plane," he told Duncan. "I want you to tell the guy where to put the bolt in the plane."

"For two years, he bothered me every time I saw him."

Intrigued by the interesting research being conducted at the NRC by researchers with doctorates, Duncan returned to Concordia to earn his Master's degree and completed his PhD in 2009. In 2007 he became the first Aboriginal Canadian to be accepted into the summer Space Studies Program at the International Space University, and the next summer he was chosen to participate in the Governor General's Canadian Leadership Conference. He is also a long-time collaborator with the Quebec Aboriginal Science and Engineering Association and a judge at its annual Aboriginal Science Fair. Accustomed now to aiming for the stars, he even applied to be an astronaut when the Canadian Space Agency launched its latest recruitment campaign in 2008.



Dr. Edward Cree *(left)* with Duncan at his convocation in 2009

The following year he was awarded a two-year postdoctoral fellowship by the Natural Sciences and Engineering Research Council of Canada, which provides support to Canada's most promising researchers. He chose to come to Queen's, where he knew Dr. Mark Green, Professor and Associate Head of the Department of Civil Engineering. Cree was just wrapping up his research on the rehabilitation and strengthening of concrete columns with fibre reinforced polymers when the position of director of the Aboriginal Access to Engineering Program opened up.

Cree once told an interviewer that people on the reserve sometimes laughed at him, asking, "What grade are you in now, Grade 25?" But they don't laugh anymore. And his uncle is no longer 'bothering' him.

The boy who loved to tinker in his father's garage, build tree houses and push buggies and sleds made with two downhill skis and a board has become, in the words of Roberta Jamieson, president and CEO of the National Aboriginal Achievement Foundation, "a global role model, not only for our people, but for indigenous people the world over."

"I never thought I would be a role model," Cree says. "It feels good. We need more."

Duncan at the NRC in Ottawa

Duncan ice fishing outside of Kingston in 2010

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