

U of A • Engineer

Keeping in Touch with
Alumni

from
FORTRAN
to
FORTUNE

Peace and Profits
in the Jungle

ATCO Meets
Edison

Co-op Celebrates
25 Years

Woman in
Freefall

Greetings from the Associate Dean

It is my pleasure to introduce the winter 2006 issue of *U of A Engineer* alumni magazine. In particular, I would like to draw your attention to page 17 and the article entitled “Co-op Celebrates 25th Anniversary.” Since its inception in 1981, Co-op has facilitated the successful job placement of more than 18,000 students. U of A Engineering alumni have played a significant role in the support of the Co-op program by mentoring new professionals and creating summer and permanent employment. Thanks for your assistance in growing the profession.



The biggest success of the Co-op program is the overall impressive placement rate. There are three things which have made this possible: the quality of our students, the quality and dedication of the Co-op staff, and the strong support from the alumni community. The plan is to grow the program from the current 1,100 – 1,200 work terms per year to 1,500 – 1,600 work terms per year.

Services to Engineering students and to employers were further expanded last year by the creation of the Engineering Employment Centre. The Centre provides summer and permanent career opportunities for Engineering undergraduate and graduate students and alumni. The Centre provides career services such as assistance for students with job search techniques, cover letter and resume writing, and interview skills.

If you are an employer looking for new talent, the Centre hosts information sessions and gives companies the ability to post their engineering vacancies on-line. These services are free to employers.

In combination, the services of the Co-op program and the Engineering Employment Centre create a one-stop-shop for engineering employment needs. Thank you to all alumni who have supported these services to date, and I look forward to your ongoing collaboration in the years to come.

Dr. Ken Porteous, PEng
Associate Dean, Student and Co-op Services

Message from the Editor

Being a former member of the broadcast community, I have a special interest in this issue’s “Crosshairs on History” and the story of the birth of CKUA radio. Known as Canada’s unique and oldest public broadcaster, CKUA is a gem in the nation’s media mix. Yet how many readers know of the unique contribution of Electrical Engineering to the birth and maintenance of this historical treasure?

I hope you enjoy the stories in the winter issue of the magazine. Feedback is always welcome. Contact me at 780.492.4514 or at sherrell.steele@ualberta.ca.

Sherrell Steele
Publisher/Managing Editor



Faculty of
ENGINEERING
University of Alberta

Vision *To be one of the largest and most accomplished engineering teaching and research centres, a leader in North America.*

Mission *To prepare top quality engineering professionals, to conduct world-leading research, and to celebrate the first-class reputation and outstanding accomplishments of alumni.*

Values *Dedication, integrity, professionalism, and excellence in teaching, research, and service to the global economy and community.*

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Dean of Engineering
David T. Lynch
(PhD Chemical '82), PEng

**Assistant Dean,
External Relations**
David M. Petis

External Relations Team
Mandi Cronin, Vivian Giang,
Peggy Hansen, Allyson Haug,
Ana Herrera, Katherine Irwin,
Leanne Nickel, and
Laurie Shinkaruk.

Publisher/Managing Editor
Sherrell Steele

Assistant Editor
Vivian Giang

Art Direction
Halkier + Dutton Strategic
Design

**Contributing writers
and photographers**
ATCO Electric, Bluefish Studios,
Susan Beach, Andrea Collins,
Mandi Cronin, Vivian Giang,
Gail Gravelines, Don Hammond
Photography Ltd., Phil Haswell,
Tom Keyser, Ann-Marie Pelletier,
Roth and Ramberg Photography,
Richard Seymour, Bronwen
Strembiski, University of Alberta
Archives, Wanda Vivequin,
Bruce White.

Send your comments to:
Sherrell Steele
Faculty of Engineering
E6-050 Engineering Teaching
& Learning Complex
University of Alberta
Edmonton, AB T6G 2V4
Tel: 780.492.4514 or
1.800.407.8354
Fax: 780.492.0500
E-mail:
sherrell.steele@ualberta.ca
Website:
<http://www.engineering.ualberta.ca>

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addresses to:
Faculty of Engineering,
University of Alberta
E6-050 Engineering Teaching
& Learning Complex
Edmonton, AB T6G 2V4

e-mail: sherrell.steele@ualberta.ca

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A man with short grey hair, wearing a dark blue suit jacket over a light yellow button-down shirt, stands on a paved path in a lush, green garden. He is smiling and looking towards the camera. The garden is filled with various plants, including large green leaves and some red flowers. The word "Peace" is written in large, white, serif font across the right side of the image.

Peace

John Wright (Petroleum '81)

A third-generation Alberta oil executive, John Wright (Petroleum '81) has followed a successful career path through the most remote reaches of the Amazon jungle. Along the way, he has cultivated an abiding respect for the culture, traditions, and peoples of Latin America.

and profits

BY TOM KEYSER

in the jungle

Still in his mid-40s, the president and chief executive officer of Calgary-based Petrobank Energy and Resources Ltd. has good reason to feel grateful to South America, on financial as well as personal grounds. In 1999, Wright and investors in a public corporation known as Pacalta Resources Ltd. profited enormously when they sold the company and its oil-producing assets in Ecuador for \$1 billion.

Nevertheless, Wright is quick to admit that his lasting love affair for the lands and people of South America got off to a shaky start. "It was the first time I travelled to Colombia, during the early 1990s," he recalls. "Colombia was like an armed camp back then."

Wright's plane touched down shortly after suspected drug lords had blown up a plane on the tarmac. Naturally enough, the Canadian visitor was jittery when he found squads of armed men prowling the airport. Gingerly approaching the customs desk, he handed over his passport and muttered a sentence of fractured Spanish, trying to explain that he was far from fluent in the language.

"(The officer) said something back to me, but I just wasn't getting the drift of his conversation," Wright remembers. "Now I was getting really tense. Then he leans about this far away from my nose, looks me in the eye, and says, 'I'm ... speaking ... English.'"

Rest assured, Wright has since learned to tell the difference. And though he continues to visit South American oil fields a half-dozen times a year, his fascination with the land and its inhabitants has never faltered.

He looks back on his business history in both Colombia and Ecuador with a sense of special personal satisfaction. Certainly, both Wright and corporate shareholders have profited financially from their South American adventures and investments.

But as they did so, Wright's people—particularly the team at Pacalta Resources, which he headed as CEO from 1996 through 1999—introduced strategies for sustainable development, well site reclamation, and environmental stewardship which had been

previously unknown in the remote jungle oil fields where they set up shop.

Determined to behave as respectful and responsible guests within Ecuador's Oriente basin, Team Wright Pacalta helped promote education, training, good jobs, and reliable incomes for impoverished area residents accustomed to hacking out a hardscrabble, agriculture-based living from ruggedly inhospitable rainforests.

"With Pacalta, our rule was always 'no paternalism,'" Wright says today. "We refused to provide handouts, and we weren't about to pay off any troublemakers to leave us alone. But we did all we could to help the people create a sustainable lifestyle."

Today, Wright's best piece of advice for those venturing to the equator is to see beyond daily headlines proclaiming political instability and drug wars. Instead, he advises travellers to look deep into the eyes and hearts of the people.

"In life, you find places where you just feel comfortable," he says. "I think it's a



Family of Lois Victoria Macas and Angel Hilberto Chunchu Macas in their corn field in the Oriente.

value thing. In most parts of Latin America, there is a very strong family focus, a moral focus. You get seduced by it. You tell yourself, 'I could really learn to love this.'

Wright did. And the infatuation seems likely to last a lifetime.

A graduate of Calgary's Western Canada High School, Wright went to the U of A Engineering Faculty because, for a young person, he had an extremely clear perspective on what he wanted from life.

"I wanted to be an oilman," he says simply. Looking back, the personable chief executive cites three strict rules that applied to each of the Wright children: "You had to go to university, you had to pay for it yourself, and you had to leave home."

The U of A was the obvious choice for the son of an alumnus.

Working summers as a rig rat and relief pipeline operator, Wright earned more money than he did after graduation. At the time, the oil patch was active and optimistic about its future prospects. So, like many of his classmates, Wright was showered with job offers from the energy sector. "American Express sent me a credit card before I got my first paycheque," he adds.

Riding the tail end of another Alberta energy boom, Wright signed on with a number of companies before eventually landing at Morgan Hydrocarbons, where he spent nine years and ultimately rose to the position of chief operating officer. While with Morgan, he got his first taste of the life, attractions, and extraordinary opportunities waiting for

those willing to let Latin America get under their skin.

"The more we got into it, the more I became convinced there were vast reserves and opportunities in the region that were significantly underexploited," he remembers. "At that time, you could pick your country," he says. "About then, Argentina was opening up to outside investors. Venezuela opened, then closed, then opened up again. Colombia was always open. And Ecuador was receptive because the country had enjoyed some good experiences with international investors."

Wright had the chance to road-test his theories after he joined Pacalta Resources as CEO in May 1996. The company had purchased an attractive but problematic property on the eastern slopes of the Andes Mountains. It stood sentinel at the dark dead-end of a road heading into the spectacular but forbidding equatorial jungle—"where the buses turned around."

During his first week as Pacalta CEO, Wright found himself gazing across a 20-year-old oil field that had never produced fewer than 3,000 barrels a day.

"No oil field on earth does that," he marvels. "I started making plans to move to Quito (the Ecuadorean capital) as soon as possible." Within a year, tiny Pacalta (with only 85 employees in the country) was the most active offshore investor in Ecuador, an impoverished country that relies on oil for as much as 45 percent of its total national exports.

If the region was rich in natural resources, the residents of the Oriente basin weren't necessarily sharing in the bounty. Instead, many families in the district were exhausting themselves in the effort to cultivate large homesteads granted by the federal government.

According to Wright, the usual procedure was to clear the land, sell the lumber at a low price, and then try to eliminate the stubborn root systems that were left behind. Once these goals were accomplished, the next step was to try and coax a crop from one of the planet's most inhospitable landscapes.

"Every plant has spikes to keep you from touching it or else it's poisonous," Wright states. "Every animal and insect will bite you and sting you."

"It rains from 10 to 15 metres a year, and all the nutrition in the soil has been washed away. So the farmers break up their root systems, but it just keeps raining... and these poor guys watch all their land wash away."

After the purchase of the assets was finalized, Wright and the Pacalta team were beset by a host of problems. Some were more or less predictable. Others came straight out of left field. As outsiders, Pacalta had to deal with the predictable resentments of holdover employees. Some grumbled, some stirred up union troubles, some simply stole.

"Then there were the others.... people who turned out to be the best employees I've ever had," testifies Wright.

As a hands-on expert, Wright frequently speaks to students about the intensity of resistance met by any interloper, corporate or private, who refuses to meet the culture halfway. To succeed, outsiders must integrate with the culture as sincerely and as enthusiastically as possible.

In the case of the Oriente basin, it didn't take long to realize that impoverished area residents were "desperate enough to hold us up to ransom. They could put up road blockades or demand money."

Earlier operators in the region had relied on a "rubber-boots-and-chocolate" style of paternalism, says Wright. "They'd give the dads rubber boots to keep their feet dry and

give the kids chocolate as a reward for keeping clear of the operation.”

Wright preferred an approach he describes as “selfish benevolence,” or “keeping our own shareholders’ interest at heart while working towards doing the right thing for our new neighbours.”

Before any of that could happen, more immediate matters demanded his attention. Previous drillers had ravaged the landscape surrounding the well sites, creating an environmental wasteland.

“Their operating practices had been brutal,” Wright exclaims. “When drilling for oil, the REALLY really nasty stuff you produce is

Wright remains proud of how successfully the company tackled the task of cultural integration. As he speaks, Wright thumbs through a colourful and precious photo album, a farewell gift from the director of Fundación NanPaz, a sustainable development foundation that Pacalta set up for area residents.

Funded primarily by Pacalta Resources, NanPaz also attracted third-party endorsements and fiscal support from the United Nations and the World Wildlife Federation. The foundation promoted the health, education, and economic well-being of the region, not by providing handouts, but by helping residents learn to help themselves.



An aerial view of Petrobank's Orito 116 site in Columbia.

the water that comes out of the ground with the oil. It's full of heavy metals and salts. Dealing with surface water is always a bigger issue than oil spills.”

In response, Pacalta technicians drilled what Wright believes to be the first water-disposal well in Ecuador, although the authorities refused to allow them to return the water to its original subterranean formation (an environmentally friendly procedure commonly used in Canadian oil fields). In spite of such occasional bureaucratic headaches, Pacalta had the site thoroughly cleaned up within 18 months.

“By the time Alberta Energy Company (now EnCana) acquired Pacalta in 1999, I'd say they bought one of the best-maintained facilities on earth,” says Wright.

“We wanted to help them create a sustainable lifestyle,” explains Wright. “One of our board members encouraged the banks to help the people set up their own microcap industries... helping area women buy sewing machines or other equipment to start small businesses of their own.”

“It wasn't a handout. Local banks provided real loans and interest rates and expected a real return.”

Fundación NanPaz kick-started agricultural programs that were ultimately introduced to 830 area farms. It supported children's health and educational programs. NanPaz's Home Improvement Project strived to provide a safer and healthier living environment for area homeowners. Meanwhile, the foundation initiated projects that got the

locals involved in coffee growing and fish hatcheries.

Under the eye of foundation director James Geenaen, male residents were encouraged to join a work corps, which offered them training, equipment, and safety gear. Then the foundation helped participants find jobs for other contractors in the region.

“When guys have a job and come home with a paycheck, they don't take a gun and shoot holes in a pipeline,” Wright points out.

“We convinced them that we weren't going to provide them with social services, but that we would help them create their own social services. Initially, they were skeptical. But we made it work.”

Sadly, Fundación NanPaz withered on the vine after the sale of Pacalta. But in Wright's view, “we certainly left a legacy... tangible or intangible is in the eye of the beholder.” In any case, national tensions began to rise in the ensuing months, as economic conditions worsened and winds of political change picked up speed.

Four months after the sale, anti-government guerrillas kidnapped a dozen pipeline workers, eventually releasing them after 100 days. Ultimately, EnCana placed its Ecuadorean assets on the market after rebels overthrew the country's third president in a period of eight years.

Wright's current company, Petrobank Energy and Resources Ltd., continues to produce oil in Columbia. The chief exec frequently journeys to the region, though at present he's preoccupied by fresh and exciting strategies for extracting heavy oil from Canadian in-situ bitumen deposits.

A Petrobank subsidiary has been testing a patented process, known as THAI™ or Toe-to-Heel Air Injection, near Whitesands, in northeastern Alberta.

However, Wright's heart and mind seldom stray far from the urban jungles and equatorial wilderness of South America. “In a way, you define yourself by what you dream,” he says with a faraway eye. “And I often find myself dreaming in Spanish.

“But my Spanish still isn't the best... so I guess you'd say I dream in bad Spanish.”

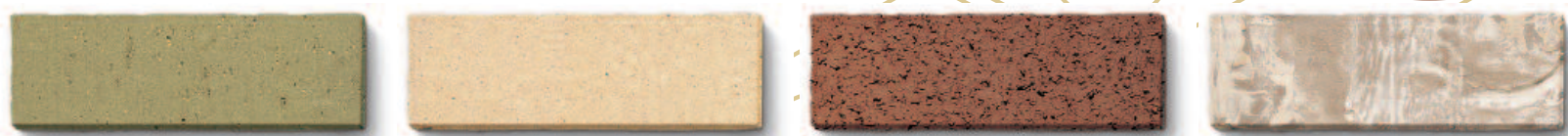


Tom Keyser is a Calgary-based freelance journalist.

(Left to right): A Medicine Hat residence, townhouses in Montreal, the Bob Prittie Metro Town Library in Burnaby, and the Southern Alberta Institute for Technology Heart Hall in Calgary.

building an empire

BRIC



by

BRI

the Sissons of



K

by Andrea Collins

Bricks have been a staple in the building trade for thousands of years—think ancient Rome, Egypt’s pyramids or the stories in the Old Testament (Genesis 11.3 “Go to, let us make bricks, and burn them thoroughly”) They also serve as a metaphor for the foundation of a good life.



CK

Medicine Hat

Bricks also form the foundation of a thriving southeast Alberta business, and of the Sissons family of Medicine Hat who have owned and operated it for four generations. I-XL Industries Limited is now the only producer of brick products in western Canada and the premiere dry-pressed face brick manufacturer in North America. Its bricks—available in an astonishing range of colours, sizes, and shapes—are shipped across North America and to Asia. They are in high demand by architects designing new, uniquely styled buildings and contractors renovating historic brick buildings. With its origins dating back to 1886, I-XL is believed to be Alberta’s oldest continuously operating manufacturing facility.

In the early days, Medicine Hat Brick and Tile was one of 116 brick plants across the west, all racing to keep up with the demands of a burgeoning pioneer population. Though competition was keen, the plant managed to keep afloat, providing the bricks for many of the early buildings in the “Hat,” including the Ewart Duggan house (1887), thought to be the oldest brick building in the province.

Medicine Hat was a perfect place to make bricks. There was plenty of clay, dry weather for mining and working it, natural gas to heat the kilns, and a central location on the



Impact Photography

The Sissons: (back row, left to right) Clayton, Paul, Malcolm, and Graham; (front row, left to right) Tom, Gordon, and Jack.



The Calgary Drop-In Centre

main route for western expansion with its requisite railroads and roads.

Though several brick plants were already established in the area, three men decided to give them all a run for their money. James Hargrave, a rancher and businessperson, had arrived in Medicine Hat in 1883 after a career as a fur trader. His partners were Herb Sissons, who was soon to become his son-in-law, and Jim Mitchell.

Together, they opened the Redcliff Pressed Brick Company in 1912 at nearby Redcliff. Hargrave was chair of the board. Sissons, the general manager, soon learned the business inside and out from master brick maker Arthur Woodcock, the plant superintendent.

“Our father was the spark plug,” said Gordon Sissons (Mining ’42) who later became I-XL’s general manager.

“There were five brick plants in Medicine Hat at the time, but they either failed, burned down or we bought them out. Eventually the family bought out the other original shareholders too and several other brick plants in the west. How did we survive? We owned our own gas wells, which kept our costs down, and we were shrewd about expansion. We were also careful with our money. After the original investment of \$55,000 in 1912, not another nickel was added. Both then and

now, we take the earnings and plow them back into the business.”

The Redcliff operation extracted clay from a nearby underground mine, which later became open pit. The clay from this site burns red due to heavy iron deposits. Until 1949, the plant was powered by a steam engine (now on display at Reynold’s Museum, Wetaskiwin) and produced dry-pressed solid brick using both clay and natural gas from the plant site.

A company trademark, I-XL (I excel), was adopted in 1921 and was later stamped in the frog (depression) of each brick. In 1929, the Sissons were able to buy Medicine Hat Brick and Tile, and the company’s head office and the family moved to Medicine Hat. Over the next 20 years, the family made other changes to the plant, including a conversion from wooden buildings to brick after three plant fires.

Herb’s three sons originally saw a different future for themselves than bricks. All three Sissons boys decided to become engineers and see the world. They attended the Faculty of Engineering during the war years, and two are alumni: Gordon (Mining ’42) and Tom (Electrical ’46). Tom’s twin brother Jack, who died in 2003, was a mechanical engineer and active partner in running the family business.

He began his undergrad studies at the U of A, but completed his degree at UBC.

Gordon recalls one adventure 65 years ago, when his class went with Professor Webb to build dams near Banff.

“Our family owned a cottage there and we broke into it one evening for a party. We lit a fire, not knowing there was a lid on the chimney to keep out squirrels. We had to lie on the floor to get below smoke level and were eventually smoked out.”

While at university, Gordon took summer jobs with INCO in Sudbury, which hired him full time after his graduation in 1942. Then, like most young men of the day, he felt he should join the war effort. He tried to enlist in the army but, because of his education and experience in mining, he was instead commissioned to search for strategic minerals in the Yukon.

At armistice in 1945, his father was aging and needed help with the business. Gordon returned to Medicine Hat to work as plant production manager.

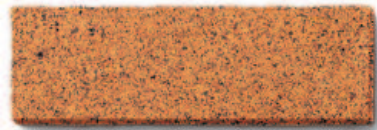
“My background in mining and geology fit running a brick plant,” says Gordon. “I had no regrets about coming back. Medicine Hat is a great place to live, and the business has grown steadily.”

Tom followed in his big brother’s footsteps to U of A Engineering.

“I always liked physics and math, and was interested in electrical engineering. One thing I remember about those days was we had Muriel Smith, one of the U of A’s first female engineering grads, in our class. We nicknamed her Butch.”

Tom fondly remembers his U of A years, and has attended and helped work on several class reunions. After graduating in 1946, he worked with General Electric for five years in Peterborough, Vancouver, and Calgary.

When Herb Sissons died in 1949, Gordon took over as general manager. His knowledge of the company, engineering education, energy, and ideas helped spur steady growth. The company replaced the old steam engine at Redcliff, and commenced mining at Cypress Hills, where the white mud formation produces a higher quality buff colored brick. (The company



still mines clay from both sites, as well as others.)

New technology intrigued Gordon, but he realized that modernization and expansion required strong leadership and a team he could trust. First Tom (1951) and then Jack (1953) came back to the family business, and the trio proved an indomitable force in the construction trade for the next 40 years.

Though their original markets were retail firms, the brothers soon realized marketing efficiencies by attending the Western Retail Lumberman's Convention in Winnipeg each January.

"It was always 100 below zero," recalls Gordon, "but we could see all the retailers in one trip and sell each of them a carload of chimney brick."

I-XL Industries also began shipping directly from the plant for large projects. Most of the distinctive large brick buildings built in western Canada since 1950 are faced with I-XL brick. Examples include most of the hospitals and university buildings in both Calgary and Edmonton, the Burnaby Library, and the RCMP "K" Division building. International projects include the Stata Centre at MIT, the Howard University Law Library, the Washington DC Convention Centre, and the Honda Race Track in Japan.

During the 50s, 60s, and 70s, the company progressively converted the central operation into a modern extruded brick manufacturing facility, with tunnel kilns (1953 and 1976) and automated handling equipment to increase capacity. Plants in Edmonton, Regina, and Winnipeg were either acquired or built. The company also diversified into sewer pipe production in 1954 and had three clay pipe operations active until plastic pipe took over the market.

In the 70s and 80s, the next generation entered the business. Today, Gordon's son Clayton is the president of I-XL Limited (holding company); Jack's son Malcolm operates I-XL Industries, the brick making works; and Tom's son, Graham, runs the investment company and Plainsman Clays, which sells clays and other products for the pottery industry.

Under this generation's leadership, the company has opened seven retail masonry dis-

tribution yards in western Canada, along with an extensive dealership network. They also acquired Clayburn Industries in Abbotsford, B.C., which makes clay refractories there, in Maryland, and in China. In 2003, the company consolidated its brick-making operations at the Medicine Hat site where the kilns, fired up to 1,100 C., run 24/7. Robotic equipment was installed that same year to set brick from the presses. The combined manufacturing lines have a capacity of 36 million modular bricks per year.

"We are not aware of any place else in the world where robots are used in press face brick production," says Malcolm, "and we know we are the only ones in North America. Our robots were designed in Japan, their handling system and software designed in Germany, and the plant design produced in the United States. The result is more capacity, faster production, and better health and safety for workers. Yet, in spite of modernization, our bricks retain the quality and uniqueness of the originals."

That uniqueness has seen the market for I-XL bricks expand far beyond Alberta's borders. Today the company makes 60 percent of its sales in western Canada, 13 percent in eastern Canada, 25 percent in the U.S. and the remainder in Japan. Though shipping costs are exorbitant, many architects and builders are eager to use this unique product in their projects.

Gordon and Tom officially retired many years ago, but they remain on I-XL's board of directors, and each has a parking stall and office at the plant. They are happy to let the fourth generation carry on the family business, and are watching hopefully to see if the fifth generation of Sissons, now young adults, will begin to take part.

I-XL has always given back to its community. Most recently, the company dedicated the refurbished Ewart Duggan House museum to Medicine Hat during Alberta's centennial year. It also donated the brick for the modernistic Esplanade building beside the house, a complex that will house a new museum, art gallery, and theatre. The Esplanade is on the site of Herb and Lissa Sissons's former home, bringing the old and the new together in a cycle of rebirth.

"Brick-making is what we do, and it's what we know best," says Gordon. "Like any company, we've had our ups and downs, but we've been able to weather the economic downturns and thrive. Our company's success goes beyond production and profit. It is founded in family, in maintaining quality products, making shrewd business decisions. And though we expect the company to exist for some time to come, it is the buildings constructed with I-XL bricks that form our lasting memorial."

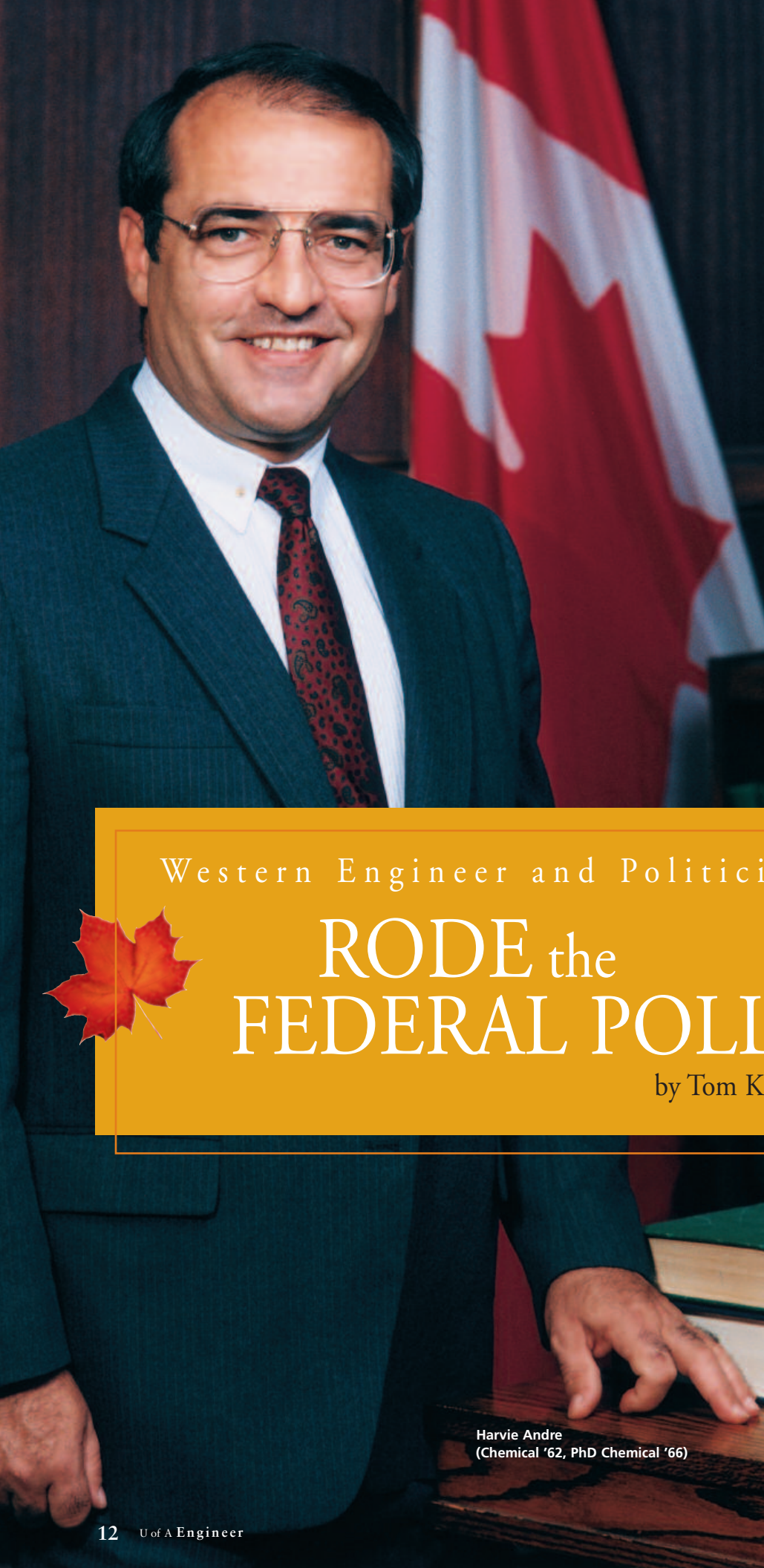
EDITOR'S NOTE: *I regret to inform you that just before this article went to publication, Gordon Sissons passed away. I offer sincere condolences to the family.*



Andrea Collins is an Edmonton-based freelance writer and communications consultant.



"We are not aware of any place else in the world where robots are used in press face brick production," says Malcolm, "and we know we are the only ones in North America. Our robots were designed in Japan, their handling system and software designed in Germany, and the plant design produced in the United States. The result is more capacity, faster production, and better health and safety for workers."



Western Engineer and Politician



RODE the FEDERAL POLLS

by Tom Keyser

Harvie Andre
(Chemical '62, PhD Chemical '66)

It was his first afternoon in Los Angeles and a recent University of Alberta grad named Harvie Andre (Chemical '62, PhD Chemical '66) was in immediate need of a roof and a bed. Hopping into a convenient airport limo, the fresh-faced young man explained his predicament to the driver. After a tour of the labyrinthine L.A. freeway system, the tourist disembarked at the Huntington Sheraton Hotel, where a glance told him he was out of his league.

"The doorman was wearing cutaways and a white tie," Andre recalls. "I was obviously in the wrong place. I grabbed (another) cab and went straight to the YMCA."

After acing his undergraduate chemical engineering studies in Edmonton, Andre had travelled to southern California to spend the fall and winter of 1963 pursuing post-graduate studies at the California Institute of Technology, informally known as Caltech.

And he spent that first weekend at the "Y" boning up for a battery of challenging entry-level evaluation exams. When results were tallied, the young Canadian was mildly surprised to learn he had bested all four of his fellow MSc candidates. That was no small accomplishment, considering they represented

the absolute cream of the chemical engineering crop, hailing from such hallowed U.S. campuses as Stanford, the University of California at Berkeley, and the University of Texas.

"That told me the knowledge I acquired from my professors at the University of Alberta was right up to snuff," Andre says today. "It gave me confidence. That's when I knew that I'd received a first-class education at the U of A."

Not surprisingly, the following year found Andre back in Edmonton working toward his PhD under the supervision of Robert Ritter (PhD Chemical '61). There he laid the foundations for a rewarding but abbreviated career as an engineering professor, followed by a longer and much more stringent tour of duty as a passionate and principled Conservative politician and federal cabinet minister. As such, Andre earned a reputation for plain speaking and unimpeachable integrity.

Now a fellow of the Engineering Institute of Canada (EIC), as well as chief executive of Calgary-based Wenzel Downhole Tools Ltd., Andre is described in the *Canadian Encyclopædia* as “a tough but relentlessly cheerful government spokesman.” That succinctly captures the style of a conscientious public servant who battled for fair and equitable treatment of the West with all his might.

Starting with the Tories’ election triumph in 1984, Andre became one of Brian Mulroney’s most reliable troubleshooters, a real go-to guy in the Progressive Conservative cabinet. He was asked to sort through the most complex administrative tangles imaginable and generally succeeded. Among Andre’s postings: Minister of Consumer and Corporate Affairs, Minister of Regional Industrial Expansion, and Minister of State for Science. He was also Conservative House Leader, Associate Minister of Defence as well as minister responsible for the post office.

Looking back, Andre considers the latter job one of the most rewarding—and challenging—of all. That’s no surprise. Contemporary historians credit his ministry with launching the organizational blueprint that transformed Canada Post (now a crown corporation) from a chronic money loser into a profit-maker.

Andre agreed to try politics only after conquering sincere misgivings. He was well along in his professorial career, and an abrupt change of direction might prove tough on his wife and two young daughters. But the persuasive former Prime Minister Joe Clark convinced Mrs. Andre that her husband could make a genuine contribution.

So with the family firmly behind him, he won the Calgary Centre nomination with little trouble, and then surprised himself by decisively knocking off future provincial Liberal leader Nick Taylor in the 1972 general election. (Andre remained Calgary Centre’s MP for the next 21 years.) To ease pressure on his growing family, he moved the household to Ottawa prior to his second term.

Andre’s first taste of parliamentary life coincided with the dawn of “western alienation.” Although the staunch federalist was never attracted by separatist rhetoric, he looks back on those years with considerable frustration.

It was the beginning of an east-west war over resources that culminated in the disastrous

National Energy Program of the early 1980s. This didn’t sit well with Andre’s sense of fair play. Fast forward to another disappointment. In 1992, eight years after his party had formed the government, Andre was genuinely excited by the Charlottetown Accord. He was crushed when Canadians—many of whom couldn’t live with an Accord provision granting Quebec status as a “distinct society” — rejected the Accord in a referendum.

A forthright believer in “telling it like it is,” Andre is not the type to play down such setbacks. But he clearly prefers to glance back at the good times and, in his case, there are plenty of fond memories to savour.

As head of the ministry then known as Supply and Services, for example, Andre introduced cost-cutting measures which brought a ballooning budget back into line, eventually saving \$500 million in administrative costs over a five-year period.

The Ministry developed a formula whereby StatsCan would begin marketing and charging for their products, while allowing management the flexibility needed to get the most out of an impressive talent pool. The formula worked.

Subsequently asked to pinch-hit in the Department of Defence, Andre got a chance to apply specific budgeting and communications lessons he had learned in the Supply and Services ministry.

Then, one day in 1987, while Andre was enjoying a successful run as Minister of Consumer and Corporate Affairs, the phone rang. It was the PM. “Mulroney said, ‘I’ve got bad news for you. I’m giving you the post office.’”

Then known as the Post Office Department, Canada Post may have been the most problematic of all federal agencies during this period. Organized labour represented one major challenge. Ministers in charge were forced to deal with four major unions and about 23 bargaining units in all, as Andre recalls.

In the years that followed, things turned around. But the prescription was far from painless: stamp prices increased and jobs were eliminated while corporate customers were wooed and courted. The post office stopped further expansion of door-to-door delivery

and introduced so-called “superboxes” in new residential areas.

Not surprisingly, such dramatic changes met with resistance, specifically the no-holds-barred letter carriers’ strike of 1987. Ultimately, the feds ended the strike with back-to-work legislation. Shortly thereafter, the inside workers walked out and the government faced a whole new set of impassioned strikers.



Meeting with former Prime Minister Mulroney.

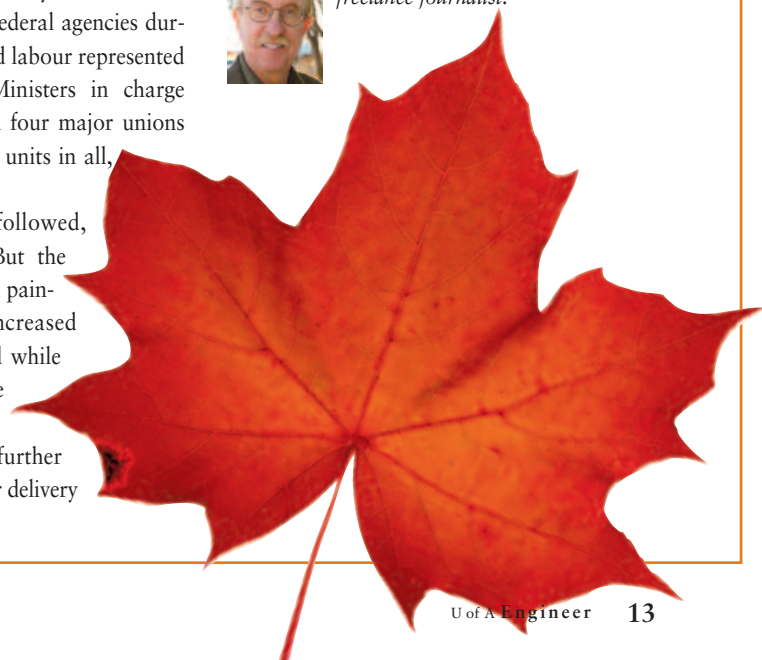
By the time the dust finally settled, Canada Post began to pull its own weight, turning a \$98-million profit in 1989.

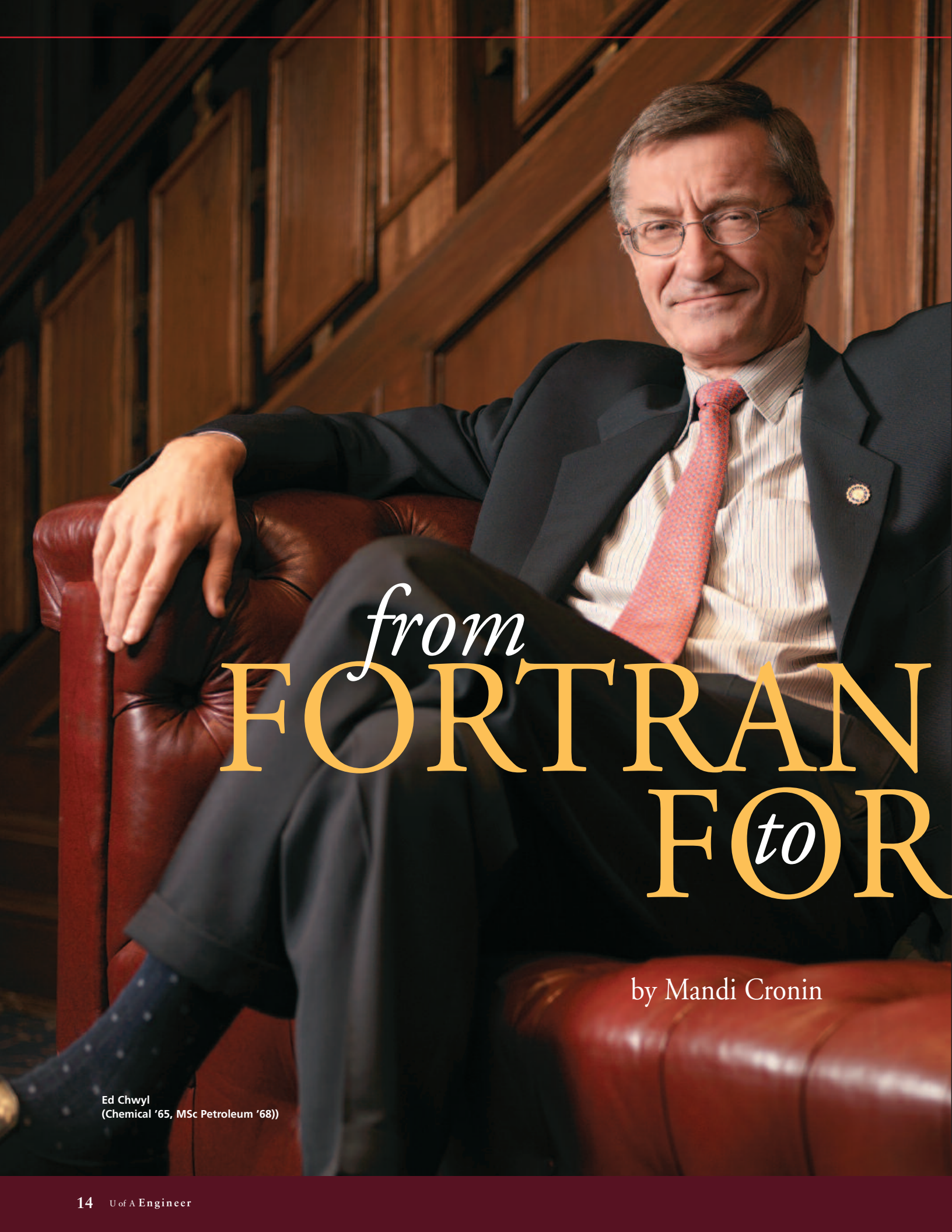
By 1993, however, Andre had grown weary of the political wars. After talking over his plans with his family, he returned to private business rather than stand for re-election that year.

Andre thus completed a dramatic chapter in Canadian political history. Looking back, he clearly enjoyed the ride.



Tom Keyser is a Calgary-based freelance journalist.






from
FORTRAN
FOR *to*

by Mandi Cronin

Ed Chwyl
(Chemical '65, MSc Petroleum '68)



Like many engineers, Ed Chwyl (Chemical '65, MSc Petroleum '68) traces his vocation back to his earliest years. As a boy, he loved playing in sand and building bridges. "In Andrew, Alberta, you were either a farmer or a teacher. Somehow I knew I was going to be an engineer."

TUNE

Parent-teacher interviews were rare in the 1950s, so his parents were more than concerned when Chwyl brought a note from his principal requesting a meeting. "He told my mother two things. 'You make sure Ed gets a university education, and you have to get him to not be so quiet.'"

Sure enough, with his mother's encouragement, Chwyl ended up at the U of A. But the principal's second piece of advice never quite took hold. "I see so much of me in my youngest son. I tell him to be himself. He doesn't have to be the life of the party. He's quiet and shy and that's okay."

In high school, Chwyl fell in love with chemistry. This led him to pursue Chemical Engineering at the U of A.

He struggled during his first year. "Being exposed to a huge city called Edmonton was an enormous social adjustment for this Ukrainian farm boy. As I progressed through the program, it all became easier."

"When I graduated in 1965, I interviewed with 10 companies, got nine offers, and chose Pacific Petroleum. Oil at Rainbow Lake was just discovered, and it sounded interesting." Chwyl enjoyed the exposure to the oil patch so much, he returned to the U of A to pursue his MSc in Petroleum Engineering.

Chwyl's thesis topic was computer analysis of fluid flow through porous media. Working with professors Peter Dranchuk (Petroleum '52, MSc Petroleum '59) and Don Quon (Chemical '44, MSc Chemical '46), Chwyl became proficient in computer analysis. Dr. Quon was on the leading edge of numerical simulation in those days.

"The language of the day was FORTRAN. I wrote programs all the time because it was the easiest way to solve things. When you wrote a program for something, your volume of output was higher than the guy doing it by hand. Once I got back into industry, the higher-uppers were impressed with my computer literacy."

Upon completion of his Master's degree, Chwyl was ready to see the world. He only interviewed U.S.-based companies and ended

up working with Atlantic Richfield (ARCO) in Dallas, Texas. He joined a select group of professionals to study Prudoe Bay, the giant oil field discovered on the north slopes of Alaska in 1969.

"My computer experience from the U of A got me included. Using the computer, I was able to design casing strings to keep the permafrost at Prudhoe Bay intact. The permafrost went down 1,500 feet. We knew flowing fluids out of the reservoir and up the well bore would heat things up, which would melt the permafrost. If that happened, the casing strings would collapse. The challenge was perfect for me: heat transfer and reservoir flow. And I got the model to run even with the complication of slanted well bores.

"While I was working in Corpus Christie, Texas, the exploration department used the computer through me. I used Monte Carlo simulation to analyze their exploration plays."

If Chwyl was successful as an employee, he became even more successful during his many years as an entrepreneur. He capped his career as a founding partner in Tarragon Oil and Gas Limited. In a period of nine years, he helped build Tarragon from a market cap of \$20 million to \$1.5 billion when it was sold to Marathon Oil in 1998.

Now retired, Chwyl has become actively involved with the Faculty of Engineering. He hosted an alumni reception in Victoria and proudly enjoyed the most recent Reunion Weekend on campus.

"Seeing the transformation Engineering has undergone was awe-inspiring. Seeing the students, my classmates, and professors brought back many memories. I was left with a feeling of wanting to give back."

Knowing the competition faced by today's young engineers, Chwyl offers the following advice: "Have a vision, but not a plan. Be flexible. Have confidence in your feelings and act upon them. Embrace new technology."

A man of values, Chwyl describes himself as a traditionalist.

"One value I've always maintained is the belief in a higher spirit. The higher up you get, the more responsible you are to be approachable, humble, to keep yourself under control. Wear your success well. I find spiritual belief helps keep my ego under control. Why is the oil patch doing so well right now? Because people are smarter? No, it's because oil is at \$60 a barrel. It's luck and timing. Acknowledge that."

Far from cavalier about his career success, Chwyl concludes, "I am a firm believer of the campground philosophy, where you leave the campground in better condition than you entered it."



Mandi Cronin is communications and development coordinator for Chemical and Materials Engineering.

Thanks for your contributions to the 2006 Engineering Perspectives Calendar. The calendar has been well received and your donations are greatly appreciated. If you have not yet made a donation, it is not too late! If you were missed in the mailing, please contact sherrell.steele@ualberta.ca for your copy.

Do you have feedback on the 2006 calendar?

Are you interested in participating in the 2007 calendar?

Contact sherrell.steele@ualberta.ca for further information.



2006 - engineering perspectives

Co-op Celebrates Twenty Five Years

by Bronwen Strembiski

Over the last 25 years, the realm of engineering has changed, as new technologies become available and new disciplines emerge. One constant, but evolving, element is the Faculty's Cooperative (Co-op) Engineering Degree Program. Now celebrating a 25th anniversary, the Co-op program represents a cooperative arrangement among the university, students, and employers. The program integrates academic studies with paid study-related work experience.

By spending five work terms with various organizations, students are able to explore a diversity of interests, consider possible career paths, and gain valuable work experience. They not only apply what they've learned in the classroom, but also gain a better understanding of the coursework as it relates to the work experience.

"My Co-op experience allowed me the chance to apply engineering tools and knowledge, while gaining an understanding of the limitations



Mike Bradley
(Civil [Co-op]),
a current student.

of theory and actual operation,” says Winnie Lieu (Chemical [Co-op] '01), an EIT at Imperial Oil. “I was even lucky enough to receive a job offer prior to graduation from one of my Co-op companies.”

Today, with approximately 1,200 work-term placements each year, the Faculty’s Co-op program is the second-largest engineering Co-op program in Canada.

About 60 percent of Co-op graduates take permanent jobs with Co-op employers. Clearly, the companies involved recognize the value of the program. The hands-on training students receive allows them to overcome the initial learning curve before being hired. Therefore, they come to the job with a higher level of productivity. Plus, the employer knows that the student is able to balance the soft skills with the hard skills.

“The biggest advantage is it gives the employer and the student a chance to test each other out before either has to make a longer-term commitment,” comments Joel Regenstreif

(Mechanical [Co-op] '92), Mechanical Department Head at Colt Edmonton.

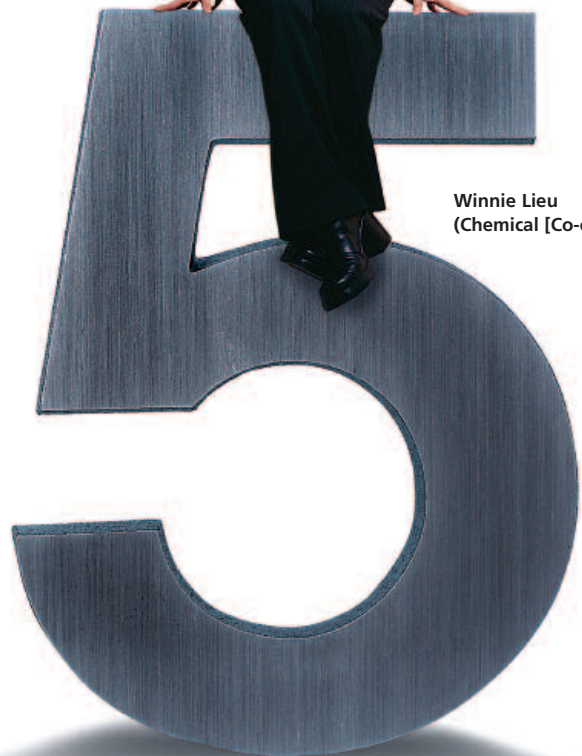
From 1981 through to the end of 2005, Co-op students have earned an estimated \$170 million excluding overtime and benefits. Over the last several years Co-op students have earned in excess of \$12 million annually. Approximately 85 percent of these wages have been earned in Alberta.

Despite its current scope and productivity, the Co-op program had a humble first few years.

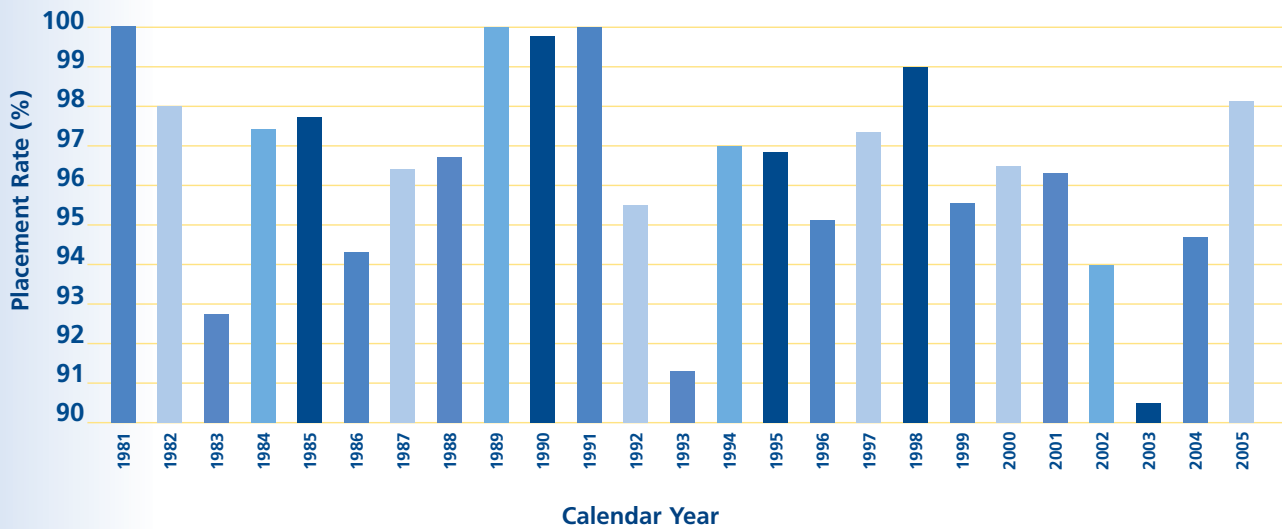
In 1979, Dr. P.F. Adams, then Dean of Engineering, requested that a formal proposal be developed for an optional Co-op program in Engineering. Dr. D.G. Bellow (MSc Mechanical '60, PhD Mechanical '63)



Winnie Lieu
(Chemical [Co-op] '01)



Engineering Co-op Program Annual Placement Rates 1981 – 2005



coordinated the task, with input from Dr. J.S. Kennedy (MEng Mechanical '73, PhD Mechanical '77) and Mrs. P. Kushnir.

At the time, Alberta-based employers were recruiting large numbers of engineering Co-op students from schools in Eastern Canada. This placed U of A students at a disadvantage. If the Faculty wanted to remain competitive, it had to provide recruitment options from within the province. There was also a prediction that Alberta might soon face a shortage of engineering human resources.

In 1980, the Faculty forwarded a proposal to the Alberta Government. The government approved the proposal in early 1981. That summer, the first 27 Co-op students, all from Mechanical Engineering, went out on the first work term. In 1982, the Co-op program was expanded to Civil, Mining, Petroleum, and Metallurgical (now Materials) Engineering. Chemical and Electrical Engineering were added in 1983, and Agricultural and Computer Engineering in 1987.

At the beginning, it wasn't always easy to find students or employers for the program; however, success quickly led to more success.

For the first few years of the Co-op program, students were willing to go anywhere and take on almost any type of job. Today, they have much more specific expectations. With such a variety of options, students can



Joel Rogerstreif
(Mechanical [Co-op] '92)

try out various positions to quickly learn what they enjoy doing and what they don't. They can also move from company to company to see how they all work.

In 1996, the Faculty added a Calgary-based coordinator to serve the southern Alberta market. Another significant change was the addition of summer academic terms in certain programs.

Over the years, the Faculty also introduced new technologies into the recruitment process. Today, many of the recruitment steps are done on-line, including job postings, applications, and interview signups.

“By establishing a relatively simple and repeatable process through the Co-op program, you (the staff) have significantly improved the quality of those student jobs and also the quality of new grads from an employer's perspective,” states Regenstreif.

In the early years, employers had to be convinced of the value of hiring Co-op students. Now, many companies incorporate the hiring of a Co-op student into their human resource planning, as an investment in the future.

The Co-op program not only increases a company's profile, but also brings fresh ideas and energy into its workforce.



Chris Lewis
(Electrical [Co-op] '99)

“I enjoy being challenged by the Co-op students in terms of enthusiasm and new technologies,” notes Shane Freeson (Petroleum [Co-op] '94), senior staff production coordinator at Husky Energy.

Today, with approximately 1,200 work-term placements each year, the Faculty's Co-op program is the second-largest engineering Co-op program in Canada. Regardless of the state of the economy, the program typically has a placement rate in the fall and winter term at or near 100 percent. In the summer months, when there are two to three times more students to place, the rate is generally well above 90 percent.

“We always figure that we need at least two vacancies per available student to guarantee everyone a job in any given recruitment period. This reflects things like availability in specific disciplines, student preferences, and positions being offered at more than one school,” says Dr. Ken Porteous, Associate Dean Student and Co-op Services.

Chris Lewis (Electrical [Co-op] '99), systems analyst at Enbridge Pipelines Inc.,

attributes the success of the program to the fact that students can cover a good portion of their school expenses with an income. He also mentions the strong diversity of experiences and the value in acquiring new skills while meeting key industrial contacts. As Lewis explains, his Co-op jobs provided memorable experiences that supported and enlivened his entire engineering program.

While plans are in place to expand the Co-op program to 1,500 – 1,600 work terms per year, the program will always remain optional. Some students like having the extra income and the flexibility, while others simply want to finish their degrees as quickly as possible.

“To me, it would seem that choosing whether to go into the Co-op program really depends on what you'd like to do after graduating,” comments Mike Bradley (Civil [Co-op] '08 prospective grad).

“For example, because I'm not entirely sure if I'd like to enter the workforce or attend graduate school, Co-op is a good choice for me. The work experience to be

gained and the exposure to my chosen field/industry are invaluable. Additionally, I liked the idea of having my schooling broken up by work. However, if I was going straight into graduate school after my degree then I would probably have chosen the traditional stream.”

Graduates of the Co-op program are quick to recommend the program to anyone interested. Students enjoy the opportunity to be innovative and to be challenged with real-world engineering problems during their work terms. The program also provides students with a new avenue to receive the recognition that they deserve for their hard work.

Now celebrating 25 years of success, the Co-op program can clearly look forward to more success in the future.



Bronwen Strembiski owns *Connections*, an Edmonton-based communications and public relations company.



Student CENTRAL PRESTON HOLLOWAY

From Peru to Alberta, Preston Holloway (Metallurgical '98, MSc Materials '03) is working hard to clean up industrial waste.

In his research, Holloway applies a technique called transformational roasting to treat wastes from the metals industries. This process combines heat and selected additives to induce changes in the minerals in these wastes, allowing them to be treated using more conventional means.

“When transformational roasting is applied successfully, valuable metals are either recovered or the waste is stabilized, which allows the wastes to be disposed of in an environmentally safe manner,” explains Holloway. “To date, I’ve looked at the recovery of zinc, indium, gallium, silver, copper, and nickel from wastes from as far away as Peru, while trying to minimize the environmental impact of impurities, such as arsenic, chromium, iron, lead, and sulphur, which are contained in these wastes.”

Since the metals recovered in Holloway’s process can be sold, the treatment of these wastes would benefit companies both economically and environmentally. However, despite the size of the metals industry and its contribution to the global economy, research into the treatment of these wastes is often overlooked.

“I looked around at other universities and other supervisors before entering PhD studies, and I found that research in the areas of hydro- or pyrometallurgical processing of wastes is quite limited across North America. Extractive metallurgy is much less trendy than nanotechnology, I suppose, but it is not less important.”

Golden opportunities not wasted

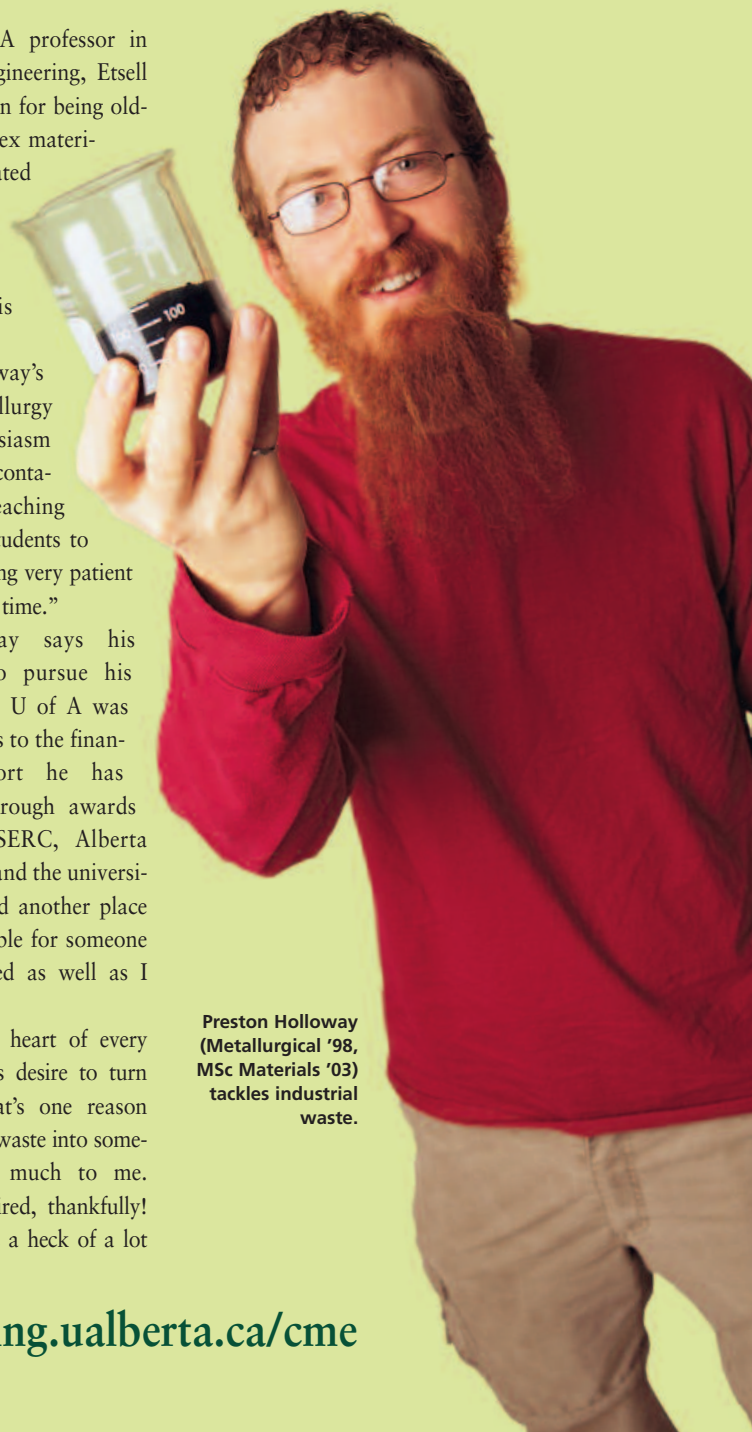
Dr. Tom Etsell agrees. A professor in Chemical and Materials Engineering, Etsell refutes metallurgy’s reputation for being old-fashioned. “These are complex materials; we use very sophisticated experimental and analytical techniques. Preston’s research will have global significance in how waste is processed and stored.”

Etsell recognized Holloway’s interest in extractive metallurgy early on. “Preston’s enthusiasm for extractive metallurgy is contagious. He has been a teaching assistant for me. He holds students to very high standards while being very patient at the same time.”

Holloway says his decision to pursue his PhD at the U of A was easy, thanks to the financial support he has received through awards and scholarships from NSERC, Alberta Ingenuity, Alberta Learning, and the university itself. “It’s difficult to find another place in the world where it’s possible for someone in PhD studies to be funded as well as I have been.

“Somewhere deep in the heart of every metallurgist is the alchemist’s desire to turn lead into gold. I think that’s one reason why the idea of transforming waste into something valuable appeals so much to me. No philosopher’s stone required, thankfully! Solid metallurgical research is a heck of a lot more reliable.”

www.engineering.ualberta.ca/cme



Preston Holloway (Metallurgical '98, MSc Materials '03) tackles industrial waste.



Energy for the FUTU

Natural gas, oil, and coal. Solar panels, wind turbines, and dams. All provide power for our electricity-hungry society, but each has its own downfall, economically or environmentally.

Because of this, fuel cell research has become big money. In 2003, the United States Department of Energy, in a bid to decrease reliance on international oil supplies, announced a five-year, \$1.2 billion hydrogen fuel initiative. Specifically, the initiative focuses on developing the science and technology for clean hydrogen production, distribution infrastructure, and commercially viable hydrogen-powered fuel cells.

Closer to home, two researchers at the University of Alberta have joined forces to work toward an economical and useful fuel cell. Karl T. Chuang (PhD Chemical '71), a Chemical Engineering professor, and Jingli Luo, a Materials Engineering professor, are funded by provincial and federal government grants to research high-temperature impure hydrogen fuel cells for power generation.

"We're looking at something you can use as soon as you dig it up from the ground, or use a pollutant like hydrogen sulphide as a fuel," says Luo, who also holds a Canada Research Chair in alternative fuel cells.

"Most research is being done on hydrogen fuel cells," explains Chuang. "But purifying the hydrogen is very costly. We are trying to use impure hydrogen as a fuel, thus reducing the purification cost of a fuel cell. We can get efficiency as high as 80 percent with fuel cells, a much higher efficiency than traditional combustion technology, which hovers around 40 percent. We are building a 'new mouse trap,' so to speak."



Luo points out three major benefits of hydrogen sulphide fuel cells:

- The fuel cell removes a toxic pollutant and converts hydrogen sulphide selectively to high-purity sulphur.
- Oxidation of hydrogen sulphide generates electric power instead of low-grade steam.
- The electric power produced replaces an equivalent amount that would be produced by consuming a hydrocarbon resource, thus reducing carbon dioxide emissions.

"Fuel cells are still expensive, but in time we should be able to make them cheaper.

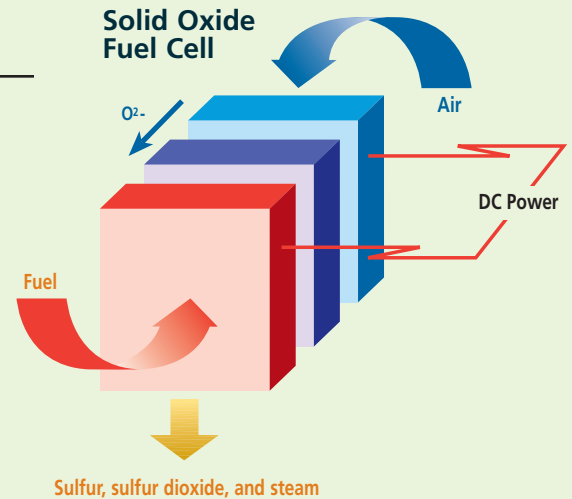
"We can get efficiency as high as 80 percent with fuel cells, a much higher efficiency than traditional combustion technology which hovers around 40 percent."

Or the cost of traditional energy will climb so high, fuel cells will not be costly by comparison," says Chuang.

"We're able to pull everything together because of the relationships we have with each other and with other researchers throughout the world," says Chuang. "We're lucky to be able to do what we like to do and

Harnessing Hydrogen

A fuel cell uses the chemical energy of hydrogen to cleanly and efficiently produce electricity, with water and heat as byproducts. Fuel cells can provide energy for systems as large as a utility power station and as small as a cellphone. They produce significantly smaller quantities of greenhouse gases than conventional energy sources and do not produce air pollutants that create smog and cause health problems. This diagram shows how a solid oxide fuel cell operates.



RE

can also make a contribution to society. Our research has the potential, in theory, to be developed economically. Then it will be a good thing for the whole world.”

Methanol and ethanol fuel cells are already finding their way into consumer's lives. These miniature fuel cells are easy to store and carry and are being used by early adopters in cellphones and laptop computers.

“If I give you a fuel cell that can run for a week instead of a conventional battery that lasts one or two days, would you be interested? Of course!” says Chuang. “Cost, relative to competing technologies, becomes a major consideration. In this particular market, consumers will pay the increased price over the traditional power source for the extra benefits allowed by the increased run-time of the fuel cell.”

Chuang cautions that the advantages of fuel cells must override all the traditional technology advantages before it will be embraced by the masses. In short, fuel cells must become reliable and cheap.

“It's still a long way away,” says Chuang. “It's a matter of when fuel cells take off, not if.”



WESTERN ENGINEER AND POLITICIAN RODE THE FEDERAL POLLS

After a rewarding but abbreviated career as an engineering professor, Harvie Andre (Chemical '62, PhD Chemical '66) became one of former Prime Minister Brian Mulroney's most reliable troubleshooters, a real go-to guy in the Progressive Conservative cabinet. He was asked to sort through the most complex administrative tangles imaginable and generally succeeded. Among Andre's postings: Minister of Consumer and Corporate Affairs; Minister of Regional Industrial Expansion; and Minister of State for Science. He was also Conservative House Leader, Associate Minister of Defence as well as minister responsible for the post office. Read about his stringent tour of duty as a passionate and principled Conservative politician and federal cabinet minister on page 12 of the Winter 2006 issue of *U of A Engineer*.



From FORTRAN to Fortune

Edward (Ed) Chwyl (Chemical '65, MSc Petroleum '68) is not one to take all the credit for his success. He admits to making his fair share of good decisions, but believes good luck and timing also played a role in his success.

Chwyl discovered his passion for oil right after graduation, while working in northern Alberta's oil patch. He earned his Master's Degree in Petroleum Engineering in 1968 and hasn't looked back.

Chwyl worked his way to Texas and back, moving up the corporate ladder along the way. As president and chief executive officer of Tarragon Oil and Gas Limited, Chwyl increased production from 300 barrels of oil per day to 40,000 barrels of oil per day. Tarragon was sold for \$1.5 billion in 1998.

Clearly, that kind of success requires more than good luck.

For more about Chwyl, turn to page 14 in the Winter 2006 edition of *U of A Engineer*.



The D.B. Robinson Distinguished Speaker Series

Each year, the D.B. Robinson Distinguished Speaker Series presents eight internationally celebrated experts in chemical and materials engineering. Each seminar blends exemplary scholarship and industrial relevance— an appropriate reflection of Dr. Donald Baker Robinson, a distinguished scholar and businessperson.

The D.B. Robinson Distinguished Speaker Series inspires students and faculty alike, while enhancing the growing international reputation of U of A Engineering. The series includes three featured events: the ICI Distinguished Lectureship, the Mackiw Lectures in Metallurgy, and the Canadian Utilities Lectureship.

For further information contact:

Mandi Cronin
Communications and
Development Coordinator
Faculty of Engineering
University of Alberta
E6-050 Engineering Teaching &
Learning Complex
Edmonton, AB T6G 2V4
Tel: 780.492.8969
Fax: 780.492.0500
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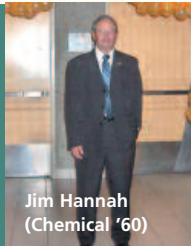
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Time to Celebrate

REUNION WEEKEND 2005

BY MANDI CRONIN

"This was the first reunion I had attended in the 45 years since graduation, and now, based on this experience, I am sorry that I hadn't done it much sooner. I can appreciate the work, the effort, and the attention to detail that went on to pull such an event together with the aplomb that was so evident. My wife and I were amazed that we were made to feel so much at home, so quickly, at every event we attended. Our every wish was attended to with speed and courtesy, and with a smile to boot," says Jim Hannah (Chemical '60).



Jim Hannah
(Chemical '60)

Over 230 alumni and guests for the Dean's Reception on Friday, September 30. "The Dean's Reception provided a great opportunity to reconnect with many Engineering colleagues as well as several professors," says Murray West (Chemical '65). "It was a fabulous way to start off Reunion Weekend festivities."

Dean Lynch captivated the crowd as he spoke briefly about how students, faculty members, staff, alumni, and corporate partners have worked together to make our Faculty one of the top 20 Engineering schools in North America.

Over 185 alumni and guests began their day on Saturday, October 1 with the Dean's

Brunch. Dean Lynch provided an update of Faculty activities, discussed the future of engineering at the U of A, and the key role our alumni played in creating the top Engineering school in Canada, and one of North America's most respected Engineering Faculties.

Following the brunch, alumni enjoyed Open House, which included tours of Engineering buildings, student displays, and opportunities to learn more about the facilities and research going on in each department.

We look forward to seeing you at Reunion Weekend 2006.



Mandi Cronin
and Murray
West (Chemical
'65)

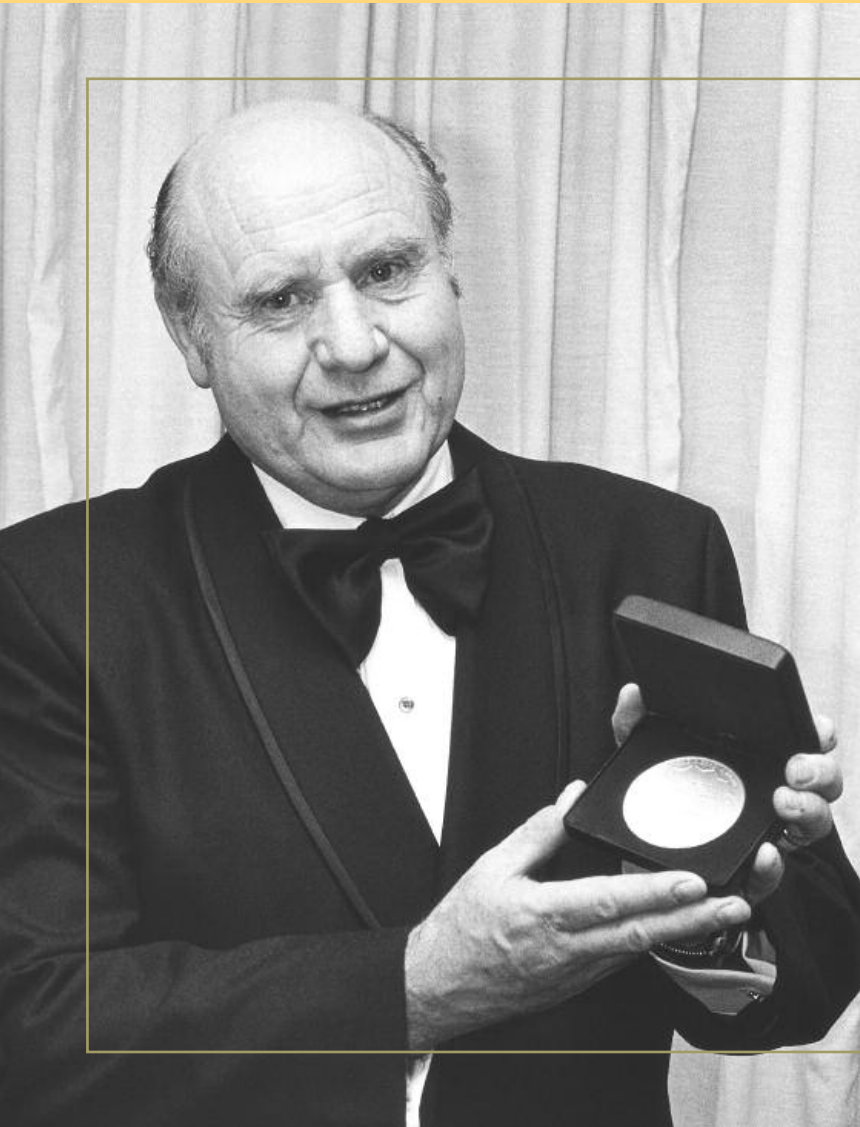
EDITOR'S NOTE: *This is follow-up to the article "To Sir, With Love," that was dedicated to the late Dr. George Ford (Civil '42, MSc Civil '46, DSc [Hon] '88) and appeared in the Fall 2005 issue of U of A Engineer alumni magazine. The full text of this article is posted at www.engineering.ualberta.ca/uoafaengineer/.*

BUILDING STRUCTURAL INTEGRITY: DR. GEORGE FORD'S LEGACY

by Susan Beach

Dr. George Ford's passion for teaching and mentoring engineering students for over 40 years is a mighty legacy. Ford also worked tirelessly, over a span of six decades, to strengthen the Faculty of Engineering at the U of A and the profession of engineering in Canada.

Over time, this work took him in many directions, continually testing and challenging him in new ways.





ATCO

meets

Edison

ATCO Electric President Sett Policicchio (Electrical '79) admits he was impressed last spring when the Washington DC-based Edison Electric Institute (EEI) called to say ATCO's Dover-to-Whitefish transmission line project had been short listed for the prestigious 2005 International Edison Award. BY GAIL GRAVELINES

E EI President Thomas Kuhn warmly praised ATCO Electric's leadership in balancing the critical need for additional transmission infrastructure with environmental and cultural considerations.

The call left Policicchio quietly satisfied to have captured the attention of the Edison Electric Institute judging committee.

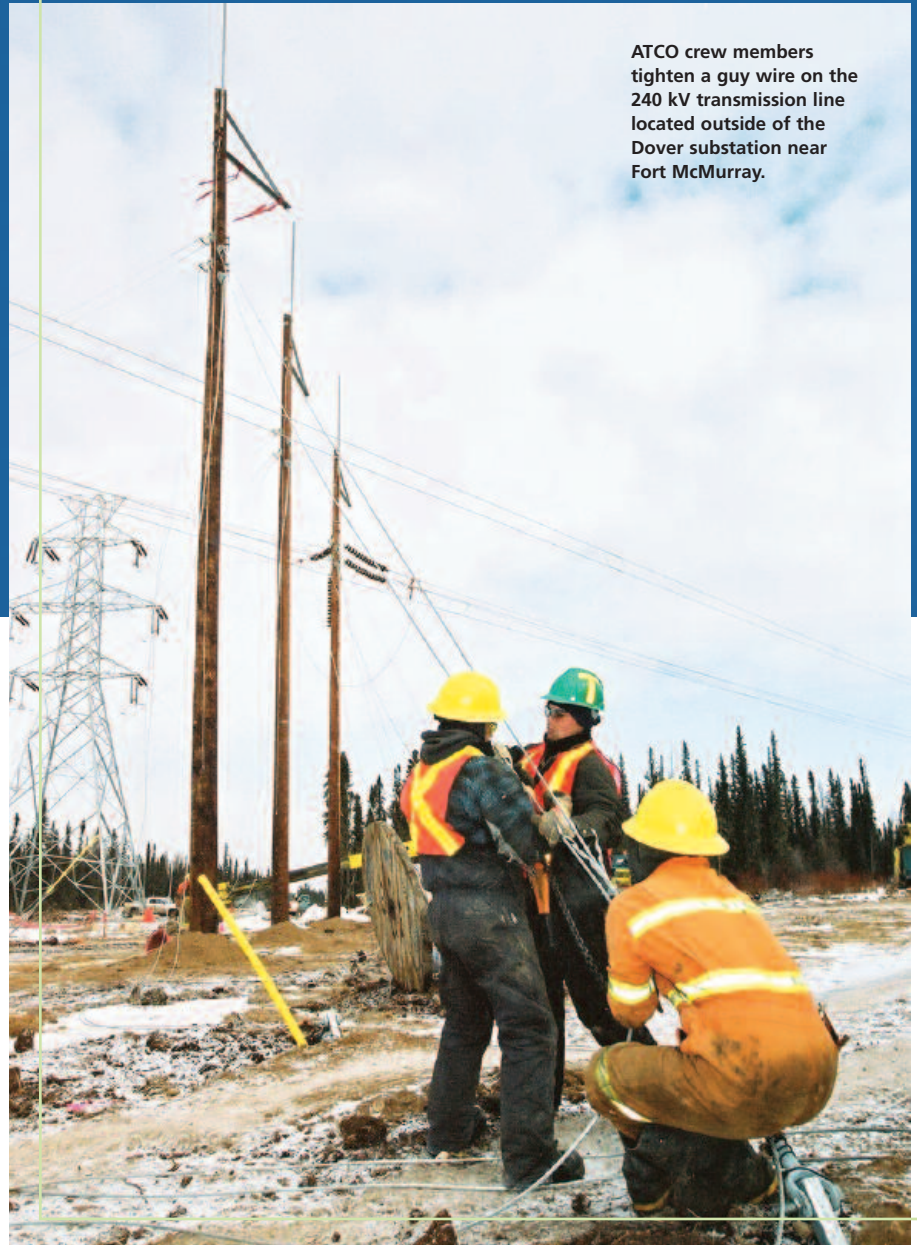
As ATCO Electric vice president responsible for planning, engineering, and construction, Policicchio had spearheaded the project. It set new benchmarks for the company's design and project philosophy, and resulted in Alberta's longest single transmission line to be built in just one winter. The \$99-million, 240-kilovolt transmission line funnels surplus, steam-generated electricity from Alberta's oil sands plants to the energy-hungry markets connected to the provincial power grid.

Winning the International Edison Electric Institute award would put the relatively small Edmonton-based company in the same league as former winners Scottish Power (with six million customers), Japan's Chubu Electric Power Company (with ten million customers), and Japan's Kansai Electric Power Co. Inc. (with thirteen million customers).

It would be optimistic to think that ATCO Electric would earn that kind of recognition. Besides, no Canadian company had ever won an Edison Award. Policicchio was pleased to even be on the shortlist.

But when Policicchio got the second call last June, saying ATCO Electric had taken home the electric power industry's highest international honour, he was, well, overwhelmed.

"There is not a word to describe it. To be selected by your peers is a big deal. And to know the kinds of projects we were up against! We're a small utility with 200,000 customers and 900 employees compared to 10 million customers and thousands of employees of some of the big utilities out of Europe, Korea, and Japan," says Policicchio. "It's a big deal."



ATCO crew members tighten a guy wire on the 240 kV transmission line located outside of the Dover substation near Fort McMurray.

The judging panel was impressed by the innovation needed to construct the 347-km transmission line across ecologically-rich, environmentally-sensitive muskeg in a record-breaking 10 months. It also noted ATCO Electric's early involvement of eight different Aboriginal groups living in the northeast Alberta region.

"Not only did ATCO employees bring online a major transmission project with a minimal footprint, they also engaged stakeholders from the beginning, producing a win-win situation for all," Kuhn said in announcing the award, "ATCO Electric embodies a spirit of innovation as evidenced by their continued success."



The award-winning ATCO Electric Dover to Whitefish transmission line project team included eight University of Alberta Engineering alumni (left to right): Tom Bradka (Civil '96, MEng Civil '97), Steve Brusselers (Electrical '84), Ben Korbutiak (Electrical '76), Sik-On Yu (Civil '74), Simon Pang (Civil '89), Stan Sladen (Electrical '93), and Daryl Park (Electrical '92).

In the fall of 2001, when the Alberta government issued its request for proposals for construction of a major transmission line between Fort McMurray and the Edmonton area, nobody could have guessed that the project would win such international accolades. What was known was that the region's transmission system was congested, stretched beyond its limits to serve the rapidly growing oil-sands economy of northeastern Alberta. At the same time, the new co-generating plants in the oil sands needed to transmit their electricity to the rest of the province.

ATCO created ATCO Utility Services (AUS) specifically to chase such competitive non-regulated transmission opportunities, and named Policicchio project manager. All in all, five competitors looked at the \$100-million Whitefish project.

"Our biggest challenge was getting the project," says Policicchio. "Competition meant rethinking our approach to the bid. Sure, there was the element of providing the lowest price, but there was also a 40-year contract to maintain the line that was tied to the bid. We had to go in, build a line, and make sure it would work."

Making sure it would work involved much more than the core function of electric transmission. The transmission line would present maintenance challenges over the 40-year contract. The proposed route was far from any highway, and forest fires would be a constant threat. Moreover, the Alberta government's Independent System Operator

would exact penalties if the electricity ever went out for more than eight hours at a time.

For the first time in its 80-year history, ATCO engineers took a serious look at using fire-resistant steel poles instead of wood. Of course, that would add to the bid's bottom line.

"We really had to sharpen our pencils and get the construction costs down. We calculated that we could use steel structures if we used fewer of them," Policicchio recounts.

A team of AUS engineers spent long weeks exploring alternative construction methods, new ways of traversing muskeg and rivers, and routes that would respect aboriginal lands. In December 2001, the Alberta Government awarded the contract to AUS. Ten months later, in a switch reflecting the tumultuous times of Alberta's electric industry, the Alberta Government's Transmission Authority re-assigned the project to ATCO Electric, resulting in Policicchio's return to the parent company and his promotion to vice president.

"Innovation comes out of necessity," says Policicchio. He credits the project's success to financial modeling, engineering, senior executive commitment, and consultation and commitment to the communities ATCO Electric serves.

That commitment meant investing the time to build bridges of understanding and support amongst the landowners along the proposed route, including the elders of eight different aboriginal groups.

Aboriginal elders are highly respected for their traditional knowledge. Their approval

is sought for major decisions, particularly those that involve land use. It is also considered a sign of respect that they meet with the senior representatives—their peers—of other communities.

Policicchio, who grew up in Edmonton's culturally diverse inner city, met several times with the elders. He invited them to view the proposed line by helicopter so that they could identify the historical sites that should not be disturbed, and consulted with them on how each of their communities could benefit from construction of the transmission line.

Ultimately, those meetings resulted in re-routing the line and the awarding of almost all of the essential clearing and brushing work—worth about 10 percent of the overall project—to aboriginal contractors.

Policicchio found the people part of the project personally rewarding. "People skills come from your whole lifestyle. Your upbringing, your cultural background, the environment you're in."

He ensured that each of the five bands involved in the project—the Métis Nation of Alberta, Heart Lake First Nation, Chipewyan Prairie First Nation, Fort McKay First Nation, and the Fort McMurray #468 First Nation—received its own Edison Institute medallion.

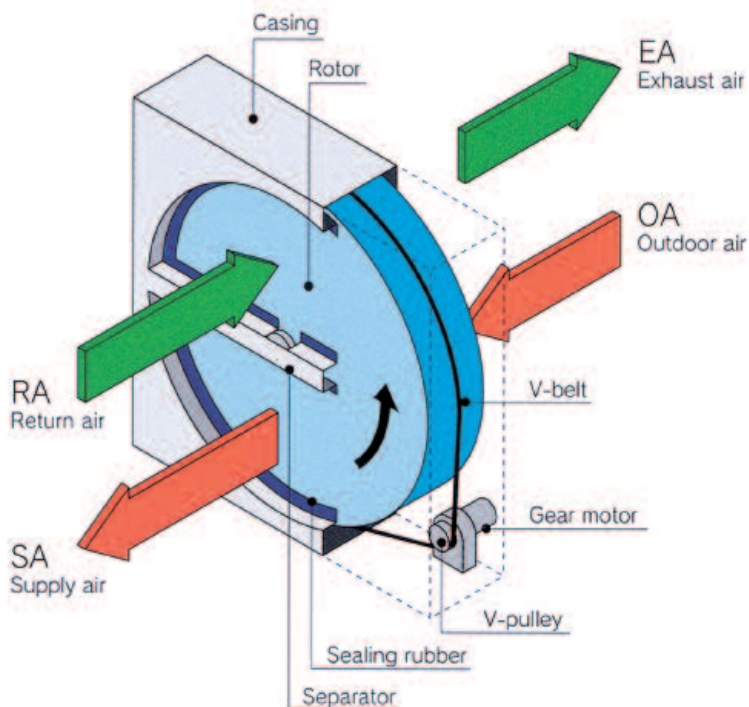
Last June 21, on the longest day of the year, the sun shone brightly on Policicchio and a handful of ATCO Electric executives at the Edison Electric Institute's annual convention in Las Vegas.

Not bad for the fellow who thought his childhood interest in taking things apart and putting them back together would serve him well as a mechanic. Policicchio counts himself lucky that a teacher at Edmonton's St. Joseph's High School encouraged him to shoot higher and look at engineering.

"I'd never thought of engineering before that teacher mentioned it," says Policicchio, looking out the 20th-floor office window. "I'm glad she did."



Gail Gravelines is an Edmonton-based communications consultant, award-winning freelance writer, and author of *The Irreverent In-Basket: Paper Trails Through the Office Tower*.



This is an illustration of HI-PANEX-ION, a total heat exchanger cassette. A honeycomb rotor is rotated at about 16 rpm in the direction of the arrow. Return air from the inside passes from the upper half of the cassette through the rotor and is exhausted outside. During this, most of the total heat (heat and moisture) of the return air is kept in the rotor and only soiled air is exhausted. On the other hand, when outdoor air taken in from the lower half of the cassette passes through the rotor, the outdoor air receives total heat that the rotor has kept and is pre-heated/humidified in winter and pre-cooled/dehumidified in the summer to be thus supplied continuously to the inside. In other words, the total heat exchanger is an energy-saving equipment that recycles energy lost in ventilation.

Big wheels

There is a big wheel on campus. Big heat wheels, actually. And heat wheels bring big energy savings to the Allan P. Markin/CNRL Natural Resources Engineering Facility (NREF).

Heat wheels have been a niche technology for the last 10 years. But they have found a home here on the University of Alberta campus during the past few years, initially as energy retrofits on existing buildings and, most recently, as a new installation in NREF.

A heat wheel warms incoming air needed for ventilation by transferring heat from outgoing exhaust air. In a winter city like Edmonton, recovered energy can cut ventilation heating costs by as much as 70 percent.

“This represents a huge advantage, given increasing fuel costs,” says Phil Haswell, the Faculty of Engineering’s director of facilities.

“Of the University’s \$469.9-million budget in 2005/2006, seven percent was spent on utilities. That translates to a staggering \$32.9 million for heat, light, and water. By using heat wheels, the Faculty of Engineering is doing its part to reduce energy costs.”

Haswell is not the only fan of heat wheels. Engineering grad Pat Fleming (Mechanical ’93, MSc Mechanical ’96) also praises the technology. “While the initial investment in heat wheels is considerable, the payback time is changing. It used to be that a heat wheel paid for itself in five years. Recently we see payback periods of three years.”

Heat wheels are a particularly good option for new lab buildings, because of their higher-than-average airflow requirements. The typical office building requires relatively modest outdoor airflow rates of 0.15 cfm per square foot

to meet minimum air quality requirements. A modern lab building may require five to ten times this ventilation rate to make up for air exhausted by laboratory fume hoods.

The U of A’s new wave of construction includes a large number of highly efficient laboratory buildings. As a result, you can expect heat wheels to keep on rolling here at the Faculty of Engineering and elsewhere on campus for some time to come.



Content provided by Phil Haswell, director of facilities for the Faculty of Engineering, and



Pat Fleming (Mechanical ’93, MSc Mechanical ’96), mechanical engineer for Hemisphere Engineering Inc.

“And I'm free, free fallin' | Yeah I'm free, free fallin' | Gonna

WOMAN in Freefall

by Wanda Vivequin

It doesn't make a lot of sense. Why would someone who studies risk throw herself out of an airplane 1,400 times in the last three decades?

“**W**hen you jump out of a plane, you don't get that sensation of the earth rushing up to meet you because you are so high up,” explains Dr. Cindy Jardine (MSc Environmental '88).

Jardine is regarded as a world expert in risk communication, having spent the last 15 years studying some of the worst health disasters in recent Canadian history.

During the SARS crisis in 2003, when Canada's television screens were filled with images of doctors in scrubs and facemasks and people quarantined inside hotel rooms and apartments, Jardine could not believe what she saw and heard.

“It was so confusing for people watching doctors in moon-suits cordoning off areas, yet the voice-overs were saying nothing was wrong and that things would get better over time,” she says. “People did not know what to believe, as there were just so many mixed messages.

“SARS gave people an opportunity to see just how well the public health system was

prepared to deal with an infectious disease outbreak situation. We know from the resulting reports and inquiries that communication played a critical role in how the outbreak was handled and that there was considerable room for improvement.”

Interviews with a broad range of people involved in the crisis, from nurses and first responders to public health officials and members of the public, will eventually give Jardine a clear picture of how a similar situation can be better managed in the future.

Jardine now works as an assistant professor in the Department of Rural Economy at the U of A. For the last two years, she has studied the SARS crisis, which she says was a wake-up call for public health officials and government to improve their methods of communication.

Jardine is often called on to comment on this important part of hazard management. “The premise of my work is about how well we communicate with each other,” she says.

Jardine also studied communication problems surrounding the E. coli outbreak at

Walkerton, Ontario, in 2000, which eventually claimed seven lives. “Government institutions became more complex and became more focused on things unrelated to their primary mandate,” she says.

“I think that today with increased access to information we increase our responsibility to seek out points of view and communicate this,” she adds. “Most people now go to the media for their information, yet they are still very skeptical about this source, so it becomes important to give the media access to the full spectrum of information.”

Jardine points out that risk is no longer just in the scientists' domain. “Now people have access to information, and we have to acknowledge their fears and concerns, and incorporate all of this into an integrated approach to risk management.”

Earlier in 2005 NATO invited her to travel to Moldova, in the former Soviet Union, to help advise on emerging risk responses. It's another example of Jardine's expertise.

“I think with all my qualifications, I occupy a unique niche in that I am able to translate the science as well as understand the human behaviour and communication aspects of the impact of science.”

free fall out into nothin' | Gonna leave this world for awhile"

Tom Petty, *Free Falling*



All photos Richard Seymour



Sebu Giken

Jardine's resume reads like a complex road map. It has taken her all over Canada working with environmental agencies, and into Indonesia in the early 1990s, where she worked on water quality projects for three years.

With a BSc in Zoology, an MSc in Environmental Engineering, and a PhD in Medical Science, Jardine has a broad perspective.

"After my BSc I was on the side of the government experts, but, I found we were doing a poor job in communicating the environmental risks we were discovering. I think that studying engineering gave me a better understanding of another point of view."

Her subsequent move into environmental risk communication came as the groundswell of public interest in the environment grew.

"It was at the time an emerging research area, as for the most part communication had often been something just tacked on to the end of the process after the decisions had already been made."

Western society has fewer major risks to deal with like poverty and malnutrition as it did 50 to 70 years ago," Jardine says. "We have taken away the big risks, and people now want greater control and information about the smaller risks."

A good example of this, says Jardine, is child vaccination.

"Informed people make informed choices. If we give people a choice, we have to be prepared for them not to agree although we do need to assess at what point does the public good outweigh the private individual's right to choose.

"The risks that really scare people are the ones that are out of their control."

Which brings us back to Jardine's own decision to engage in a sport that most people would agree is very risky. As an undergraduate, Jardine happened to walk past the notice advertising parachute jumping. It had been on her "life-list-of-things-to-do," so Jardine thought, why not?

Signing up in winter, she reckoned it would be months before her first jump. But the phone rang sooner than she thought, and the next thing she knew she was doing her first jump. She has been hooked ever since.

Although few people can relate to the sport, Jardine relishes the thrill and skill involved. Not content to just fling herself out of a plane, she has taken her involvement in skydiving to the highest level. A classic photo taken before a record-setting jump shows a beaming Jardine sitting inside a plane among a row of other women jumpers.

Formation jumping is a tricky and complicated process. While plummeting to earth from a great height, you have to "fly" yourself to a designated spot in the formation and

clutch onto small bits of material on another person's jumpsuit for up to 70 seconds. Meanwhile, over 100 people around you are all trying to do the same thing.

In September 2005, Jardine took part in a jump that made it into the record books: skydiving with 150 other women in freefall formation to help raise \$500,000 US for breast cancer.

What does her family think of this apparently risky sport? Well, her husband is a skydiver himself, and her parents are her greatest supporters.

"Anyone who comes to my parents' house is forced to watch the latest video of a jump," laughs Jardine. "My parents live their lives vicariously through me and are excited by all the things I do."

Clearly, as a woman in freefall, Jardine has done a good job of studying, managing, and communicating the risks involved.



Wanda Vivequin is an Edmonton-based freelance writer.

*Though you have trodden in travel
All the wide tracts of the earth,
Bear yet the dreams of your bosom
Back to the land of your birth.*

— STEPHAN G. STEPHANSSON

Restless

As an engineer in his early 40s, Stephan Benediktson (Civil '62) stood at the epicentre of the petroleum age. It was the mid-1970s, when Saudi Arabia poured forth 11 million barrels of sweet, light crude every day—oil to fuel all the Oldsmobile Toronados and Boeing 727s in the world, oil to heat houses so cheaply that it was hardly worth the expense to insulate them properly.

Saudi oil was, and still is, a fantastic source of energy and wealth. A single area, the Abqaiq Production Division, had 220 employees and 300 wells that produced three million barrels a day. To put it into perspective, those 300 wells produced twice as much oil as all of Alberta did at its peak conventional production a decade ago. They pumped out more than all the oil sands

mega-projects in Alberta are expected to produce 10 years from now. More than one-quarter of Saudi Arabia's peak oil production came from those 300 wells alone.

At the very heart of this prodigious outpouring of petroleum, U of A graduate Benediktson was working for Exxon affiliate Aramco as the production superintendent in charge of those 300 wells at Abqaiq. Not bad for a farm boy from the Hecla district west of Innisfail, Alberta, who quit school at the age of 15.

Born in 1933, Stephan Vilberg Benediktson is a grandson of Stephan G. Stephansson, an early Alberta settler (1889) who was also Iceland's most revered poet. (The Stephansson house at Markerville is a provincial historic site, open to visitors in the summer.)



as a
Viking

by Bruce White

Stephan Benediktson
(Civil '62)

When Benediktson was nine years old his father died, and the son left school in his teens to find work. Young Stephan ended up working for Imperial Oil on their rigs from Joffre, Alberta, to Norman Wells, N.W.T. It was the beginnings of the journey that would take him to Abqaiq and beyond.

An exceptionally ambitious young man, at the age of 24, Benediktson was married and father of the first of his three children, Steve Jr., when he made the gutsy decision to complete his education. First he returned to high school in Red Deer, and then he enrolled in Civil Engineering at the University of Alberta. For five years, he studied and supported his young family by working on the rigs for Imperial during the summers and holidays.

decided to take a job in Ottawa helping the government regulate and develop an Arctic oil and gas policy. Then from 1974 to 1977, he worked for Aramco, an oil company owned by Exxon, Chevron, Mobil, and Texaco that was in the process of being bought out by the government of Saudi Arabia.

“I was there when Saudi Arabia peaked in oil production at 11 million barrels a day, and I doubt they will ever reach that level again,” Benediktson says. It is also very unlikely that one engineer will ever again take charge of 300 wells producing three million barrels of oil a day. Yet that was all an ordinary day’s work for the ambitious, hard-working Albertan.

“We would have a conference call every day at seven in the morning, and there would

Hess Corp.’s operations in the United Arab Emirates.

“I’ve been under water a couple of times in my life and that was one of them,” he recalls. “I inherited an offshore production operation, a jack-up drilling rig operation with a major construction project in progress. It was quite a challenge.”

In 1983, right after the Falklands War and with a military junta still in power, he moved to Buenos Aires to take charge of the Argentine oil company Bidas—and for the second time found himself out of his depth. At first understanding only two words of Spanish, *si* and *gracias*, he says he didn’t know what was going on half the time. There were the challenges of running a business in a hyper-inflated economy.

“We gave everybody a cost-of-living raise of between 25 and 35 percent a month. A month! And there was all this wasted time and motion re-negotiating contracts, things like that.”

After four years, he returned to Alberta and started Benson Petroleum Ltd., a successful Alberta junior oil company that for a bargain price took over a significant oil field in Colombia.

“At the time, people asked, ‘What is a little Alberta company doing going international, especially in a country like Colombia?’” he recalls. “All I was doing was making money, because I bought proven producing reserves for 90 cents a barrel in the ground.”


His son Steve Jr., a Calgary-based geologist, joined Benson.

“I really got to know my elder son by working with him,” he says.

After selling Benson, he started another junior oil company, Kroes Energy Inc., which was a small partner in a big Cuban offshore play that turned out to be an elephant-sized pool of water. Kroes survived that disaster and continues to operate in Ukraine.

In 2003, Benediktson wrote and published a colourful and entertaining memoir, *Stefan’s Story: A Half Century in the International Oil Business*. It begins: “All of my life, I have had this drive to visit and to get to know new places. I have been following that drive since at 17 years of age I hitchhiked up the Alaska Highway to the Yukon Territories.”

Currently, he is CEO of Daleco Resources Corp., a small publicly traded American resource company based in West Chester,



“I was there when Saudi Arabia peaked in oil production at 11 million barrels a day, and I doubt they will ever reach that level again.”

As a graduate engineer, he worked for Imperial in Edmonton and Redwater, and then was sent to Exxon’s production research centre in Houston. The family moved in the late 1960s to Australia, where Benediktson was a part of Exxon’s pioneering achievements in offshore oil and gas developments in the Bass Strait. Next, he was sent to Indonesia in the early 1970s, soon after the revolution that saw the government of Sukarno overthrown by the military under Suharto; Indonesia was memorable for its primitive conditions at the time. He then

be two or three vice presidents on the call,” he remembers. “You had to report what you produced the day before and what maintenance you needed during the day.” As simple as that.

As restless as his ancient Viking ancestors, Benediktson left Saudi Arabia in 1977, but not the oil industry. Over the next three decades he worked in the Calgary oil patch as the vice president of drilling and production in Canada for Amerada Hess Corp. Then, in 1980, he returned to the Middle East as vice president in charge of

Pennsylvania. The company owns industrial mineral deposits (calcium carbonate, kaolin, and zeolite) in the U.S. Southwest and has interests in producing oil wells in the Appalachians, Texas, and Oklahoma.

Benediktson, who will be 73 this year, lives in the mountain resort of San Miguel de Allende, Mexico, with his second wife Adriana—but he shows no signs of becoming a typical retiree. He has an oil company to run.

“We need to get our cash flow up and there’s no better way to do this than with oil and gas production, particularly at these prices.”

He feels blessed that he’s had an eventful life in the international oil business. But none of it would have been possible without two people, he says. The first was his mother, who kept at him to return to school. The other was Charlie Visser, an Imperial Oil drilling superintendent. It took all the courage that Benediktson could muster to phone Visser one day in 1957 and tell him that he had decided to return to school.

“He told me, ‘Boy, if that’s what you’d like to do, go back. I’ll give you a leave of absence, and you can come back whenever you can.’”

The late 1950s and early 1960s were interesting times to be a student at the U of A, as it turned out.

“We had a lot of future leaders and future politicians at the university. (The Right Honourable Mr. Justice) Joe Clark was there, Hon. Harvie Andre (Chemical ’62, PhD Chemical ’66), Lou Hyndman, and Grant Notley, to name a few. It was a unique experience and one that I am very grateful for,” he says.

He also remembers the “exceptional” instructors who taught him engineering. They included dean of engineering Dr. George Govier (MSc Chemical ’45), who was later chair of the Alberta Energy Resources Conservation Board, Leonard Gads (Civil ’39), Alan Peterson (Civil ’52, MSc Civil ’54), Dr. George Ford (Civil ’42, MSc Civil ’46, DSc [Hon] ’88), and a PhD professor a few years younger than Benediktson, the future dean of engineering Peter Adams.

Like many engineers who went on to succeed as entrepreneurs, Benediktson credits his training for giving him an edge.

“Some people in the business world are very tunnel-visioned, but in the engineering world you are trained to look at the options and to analyze the situation, whether it’s an engineering problem or a business problem,” he explains.

And in the petroleum industry, engineering and business acumen are going to be in greater demand than ever before. Benediktson accepts M. King Hubbert’s projections that world oil production is at its peak during this decade and will steadily decline from here on out. On the upside of the oil supply curve, to get three million barrels of oil a day you had to drill 300 wells in Saudi Arabia. On the downside, it will take a \$100 billion investment in the oil sands.

(Editor’s note: M. King Hubbert was a geophysicist who worked for Shell’s research lab in Houston, and later at the U.S. Geological Survey, and as a professor at Stanford and Berkeley. He theorized that oil discovery and production when plotted on a graph would resemble a bell curve. He correctly predicted in the 1950s that U.S.

“Some people in the business world are very tunnel-visioned, but in the engineering world you are trained to look at the options and to analyze the situation, whether it’s an engineering problem or a business problem.”

production would peak in the early 1970s. He also predicted that world production would peak around 2000 to 2010. If correct, that means that we are either at “peak oil” or past the peak. It’s all downhill from there. Until demand can fall to meet production and discovery, we will be in a permanent state of oil shortage. The same happens to natural gas a decade or two out.)

“Capital requirements are endless, limitless. It boggles the mind,” Benediktson says.

There also is an insatiable demand for engineering talent.

“Right now our industry is straining for lack of resources, principally human resources,” he explains. During the downturn of the 1980s, fewer students went into geology or petroleum engineering, which now leaves a serious shortage of experienced engineers under 40 years old.

“Now, we’re overheated. We’re picking over old fields. We’re going into coal bed methane. Last week I sat through a presentation where they’re trying to extract natural gas from a shale formation in Arkansas. It’s almost unlimited the ways we’re going to try to have product available to meet market demand.”

In an industry where giants dominate such as Exxon, which made US \$9.9 billion in profit in three months last year, Benediktson believes there is room for small players like Daleco, with a market capitalization of \$14 million US.

These small fish concentrate on two or three areas where they know the territory and the people. He explains, “They will drill if they have to, but exploration is always risky and there are other ways to grow production.” Re-working and re-developing previously uneconomic reservoirs is one such method. Better surface equipment, lifting and injecting water into the reservoir can also increase production.

“All of these things help small companies to reach their production targets at which

time they frequently elect to sell out and do it over and over again,” he says.

As long as there is oil to be coaxed out of the ground, there will be ambitious engineers, Alberta farm boys with wanderlust, and the grandsons of poets willing to give it a try.

“I think it’s a wonderful business,” says one restless Viking.

EDITOR’S NOTE: If you are interested in a copy of Benediktson’s book *Stefan’s Story: A Half Century in the International Oil Business or Stephan’s Daughter* (the story of Benediktson’s mother), contact Temeron Books Ltd. at (403) 283-0900.



Bruce Write is an Edmonton-based business writer and editor. (bruce@bizedmonton.ca)

Engineering Eternity

by Ann-Marie Pelletier

Mark Brosseau
(Electrical '82)

Mark Brosseau (Electrical '82) vividly remembers the astonished reaction of his engineering peers when he told them he decided to leave the profession and move into a pastoral role at his church.

"I know the people I was working with at the time pictured the church as a little building on the corner where there is a pastor and a secretary. They questioned what in the world would Mark the engineer and IT guy be doing working at a place like that, but you have to look at our organization to fully understand my role," states Brosseau.

You won't find him marrying, burying, or preaching the Sunday morning message. Brosseau primarily serves the senior pastor and helps guide the day-to-day operations and functions of Edmonton's Beulah Alliance Church, one of Canada's largest evangelical churches. Founded in 1921, Beulah has grown to a congregation of more than 2,400.

"There aren't too many churches that get over the 2,000 mark," says Brosseau.

In describing his role, Brosseau draws parallels to the corporate world. If the senior pastor is the chief executive officer, the executive pastor is the chief operating officer.

"I wouldn't be in a small church setting in a pastoral role because what I'm strongest at probably isn't required." Brosseau draws heavily on the administrative and organizational abilities he developed as an engineer.

"These are skills a church of this size requires."

The problem-solving experience Brosseau gained during his engineering education and career has proved invaluable to him as an executive pastor.

"I remember many times at university getting my assignments and looking at them, wondering if I had them right side up. It was only through much research and collaborating with others that I figured out how to get the job done," says Brosseau. His background also gave him transferable skills in management, supervision, and human resources.

While most people think of church as just an hour or so on Sunday mornings, Beulah is busy every day and every night of the week.

"Because of our size we have an opportunity to provide various kinds of ministry." The church offers not only children and youth ministries, but also recovery and support-based programs as unique as divorce care and cancer support.

"You have to be a big enough church before you typically have enough people to support things like that."

With such an active church, Brosseau faces many human resource and facility management challenges.

"There are more than 40 full-time equivalents working here. If you include all the volunteers, there are about 1,200 positions."

Because he grew up in Edmonton, it was just expected Brosseau would attend the University of Alberta. Brosseau graduated from high school at age 16 and began university that fall. After completing his first two years of his electrical

“My sense was if the gifts and abilities I developed in the marketplace could be used in a church setting, which was important to me, then I thought maybe I would give it a try.”

engineering degree, however, Brosseau dropped out.

“I’ll be honest. I said after two years if being an engineer is doing math for the rest of my life, I’m not sure I want to do that.” So he left university and became an electrician.

As an electrician, Brosseau found himself working with many engineers. They encouraged him to consider going back to university to finish his degree.

The second time around, Brosseau brought a lot of practical experience to the classroom. Married with one child, he had also matured quite a bit. He even remembers getting 100 percent in one course.

Brosseau’s employer, Sherrit Gordon, decided to sponsor him when he went back to university. He stayed with the company for 23 years in a number of different roles: first as an electrician, then as an engineer, and later as a director of information technology. When Sherrit Gordon moved its head office to Calgary, Brosseau’s family didn’t want to leave Edmonton. He looked for another position and was hired as a program director with Saville System, which later was bought out by an American company. Four years later, they let Brosseau go.

After leaving Saville System, Brosseau studied at Taylor Seminary in Edmonton for a semester.

“As I grew as a Christian and as I grew in my different roles, I always wanted to go to a Christian College. I wanted to deepen my understanding, and I wanted to experience what on-site campus life would be like in a Christian environment. It was great to be there. It was a time of restoration for me.”

After his semester at the seminary, Brosseau questioned whether God was leading him into full-time ministry.

“I was surprised at the end of the semester when nothing came up. No doors opened that would have suggested pastoral ministry.”

A great position did open up, however, with Churchill Corporation. Brosseau was hired as their director of information technology.

“I really hoped I would be with Churchill Corporation for a long time. I thought I had had an opportunity and a break at seminary

which I needed to re-invigorate myself for the future, and I was happy to continue my career in the marketplace.”

But just one year later, the senior pastor at Brosseau’s church asked him if he would like to come on staff. Having sat on the church board for three years and leading the church’s strategic planning process, Brosseau was familiar with the organization. Although he enjoyed his work at Churchill, he suddenly found himself questioning what he really wanted to do with the rest of his life.

After much prayer, reflection, and encouragement, in June 2002 Brosseau signed on as the executive pastor of Beulah Alliance Church.

“My sense was if the gifts and abilities I developed in the marketplace could be used in a church setting, which was important to me, then I thought maybe I would give it a try. I wanted to do something more significant with my life, something that would impact people’s lives and, from my perspective, their eternities.”

Brosseau finds himself particularly rewarded by seeing people’s lives changed through the church. He notes the story of a lady who had walked away from her marriage and child and had been involved in a self-destructive lifestyle for a number of years. She came back to church, worked through her addictions, and is now a radiant testimony of how God can change a life.

Besides the significant drop in his paycheck, Brosseau life was changed by the merging of his two separate worlds.

“I had a work world and I had a church world, but now the two have come together.”

This merging has changed his perspective somewhat.

“It’s one thing to be on a board of a church then it’s another thing to step onto staff. You move from the visionary side to more of the hands on. You start to hear the day-to-day complaints and opinions that people have,” he laughs.

Brosseau sometimes misses being involved in the marketplace.

“I don’t have as much contact with people outside of the congregation. Still, he doesn’t

know if he’ll ever go back into the marketplace.

“It’s really up to God’s leading,” he says. He notes he has been unable to keep up his professional engineering requirements with APEGGA, which would make it difficult for him to re-enter the profession.

“Can you believe they won’t acknowledge my arts courses?” he asks jokingly.

Presently attending seminary on a part-time basis, Brosseau hopes to achieve a Master of Divinity. Brosseau can hardly believe he’s back in university enrolled in a Masters of Arts program.

“Of all those things that we engineers say about artsy folks, and to think I’ll someday have an arts degree. That seems a little scary. Think of all the flack I’ll have to take for that,” he chuckles.



Ann-Marie Pelletier is an Edmonton-based public relations practitioner.

There’s a engineer, lawyer, and pastor...

A pastor, a doctor, and an engineer were waiting one morning for a particularly slow group of golfers. The engineer fumed, “What’s with these guys? We must have been waiting for 15 minutes!”

The doctor chimed in, “I don’t know, but I’ve never seen such ineptitude!”

The pastor said, “Hey, here comes the greenskeeper. Let’s have a word with him. Hi George. Say, what’s with that group ahead of us? They’re rather slow aren’t they?”

The greenskeeper replied, “Oh, yes, that’s a group of blind firefighters. They lost their sight saving our clubhouse from a fire last year, so we always let them play for free anytime.”

The group was silent for a moment. The pastor said, “That’s so sad. I think I will say a special prayer for them tonight.”

The doctor said, “Good idea. And I’m going to contact my ophthalmologist buddy and see if there’s anything he can do for them.”

The engineer said, “Why can’t these guys play at night?”

CKUA broadcast the first live football game in Canada on October 13, 1928. Pictured here are the two sports commentators, brothers at St. Joseph's and St. Stephen's colleges. (Names unknown)

CKUA *the mouse that* ROARED

The economy was booming, the world was at peace, and new technology was revolutionizing daily life. It was the Roaring 20s and fertile ground for the beginnings of CKUA.

by Andrea Collins

Radio has roots in Canada. Most of us know of that defining moment on that bleak wind-swept outpost known as Signal Hill, in St. John's, Newfoundland, where Guglielmo Marconi picked up the first transatlantic wireless signal from England on December 12, 1901.

Despite that historic demonstration, the potential for radio was largely ignored for years. The first commercial radio station began in Pittsburgh in 1919, with Canada's first station starting the same year in Montreal. The general public embraced the new medium with a sense of awe, and radio

receivers flew off the shelves. By the 1920s, entrepreneurs saw radio's potential for mass media advertising, and scores of new stations applied for and received licenses.

Alberta's first station, CFCN Calgary, was started by W.W. "Bill" Grant in 1922. That same year, the Edmonton Radio Club secured an amateur broadcast license and made an agreement with the Edmonton Journal to start CJCA, the city's first private commercial broadcasting station. Two other stations soon followed.

Forward-thinking academics quickly saw radio's educational potential. Among them were two members of the University of Alberta Department of Extension, its director Albert Ottewell and director of visual instruction H.P. Brown.

Extension had been formed to carry the university to the people, and it did so by sending adult educators to rural Alberta by rail, Model T, and horse and buggy.

Naturally, there were many hardships and postponed lectures, especially in winter. When Brown approached Ottewell about using radio to broadcast lectures, the advantages were obvious. They made arrangements for free air time on CJCA in 1925.

Lectures were initially delivered from the CJCA studio and then later directly from the university via a microphone and amplifier in Ottewell's office. Much of this early programming was agricultural lectures, but there was also a popular series on evolution, national evenings of song and dance for homesick newcomers, musical concerts, and several radio plays.

By 1926, the university was receiving so many letters of commendation on its programs that they lobbied for funds to start the first university station in western Canada. The U of A approved a budget of \$4,000 and applied for a license. The request was turned down—Ottawa had deemed Edmonton could

have only one frequency (CJCA) and no more than three stations, and three already existed. Undeterred, Ottewell purchased one of the existing stations, CFCK, for \$600. The license was transferred, the station renamed, and CKUA was born.

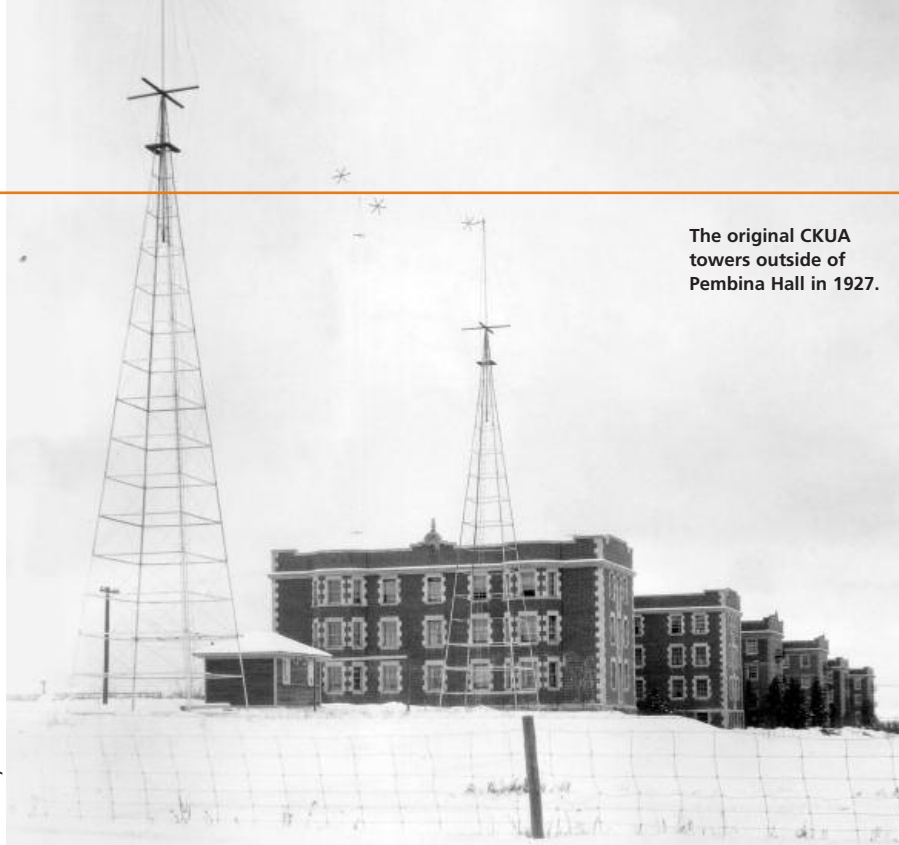
Another request was submitted to the university budget board for funds to build and operate a broadcast station with its own transmitter and studio. There are two records of what transpired. The romantic version, cited in *CKUA and 40 Wondrous Years of Radio* compiled and edited by Joe McCallum in 1967, says the funding request for \$7,000 was turned down and re-submitted successfully as a request for a new Extension instructor who oddly, never arrived. The second, more plausible version, described in *A History of the Department of Extension at the University of Alberta 1912-1956* by Ralph J. Clark, shows the request going through normal budget channels with success, albeit whittled down to a \$5,000 allocation: \$4,000 for construction and \$1,000 for annual operating costs.

This shoestring budget would barely cover the materials needed, leaving no money for labour. But nothing could divert Extension's growing ranks of supporters from their goal. Bill Grant of CFCN Calgary offered to serve as technical advisor, even though the new station would essentially become a rival for radio listeners. Professor Hector J. McLeod of the Department of Electrical Engineering volunteered his services and those of his fourth-year students.

The station first began using the old equipment obtained from the \$600 buyout of the older Edmonton station. CKUA went live (sort of) on November 21, 1927, after two mishaps. First, after problems with the new station's frequency, operators had to beg CFCN for airtime for its debut. Then, a powder flash from the camera on which H.P. Brown was taking the inaugural photograph for posterity exploded and lit the burlap curtains on fire. You could say CKUA literally "burst onto the air."

The fire was easily doused, but the frequency problems persisted. Electrical Engineering stepped into the breach and offered to construct a broadcast station from scratch. The Class of '28 began this work in November 1927 and continued in severe winter weather

University of Alberta Archives



The original CKUA towers outside of Pembina Hall in 1927.

University of Alberta Archives



The University Radio Orchestra performed on CKUA in 1929.

until completion in January 1928. They erected two transmitters, each made from an 80-foot windmill tower topped with a 20-foot flagpole and antennae on a sandy knoll immediately south of Pembina Hall. The studio was housed in the power house, where both Engineering and Extension were located, and consisted of a control room and a studio.

The original equipment included four 250-watt R-212-D tubes, which operated in parallel oscillation, and one 50-watt R-211-D speech amplifier, plus coils, condensers, etc. The studio had walls covered in burlap sacking (purchased for \$25 from a brewery), chairs, and a baby grand piano. Four lines led from station to studio via the university phone system: two for broadcast transmittal and two

for internal and external phone lines. Even after all this work, the station could only be heard as far as the outskirts of Edmonton.

Two graduate students, J.W. (Ward) Porteous (Electrical '28, MSc Science '33) and W.E. Cornish (BSc Electrical '28, MSc Science '33), who had caught radio fever while working on the new transmitters in 1927, chose to adopt CKUA's technical upgrade as the basis for their Master degrees. Their work began in summer 1930 and was completed in March 1933. Both of their theses are found in the University of Alberta archives and are rife with technical details.

Cornish's thesis summarizes the alterations made to CKUA's transmission equipment to reduce interference. The transmitter, though

still at 500 watts of power, was essentially rebuilt at Electrical Engineering with alterations to every piece of equipment from modulating tubes to antennae. Porteous's thesis focused on the construction of a heat frequency oscillator and alterations to the lines.

As he wrote, the original oscillator "was very unstable and in a heavy drum that on a high soprano note would shift frequency so that to a listener it would disappear." The alterations greatly improved the station's range; in one night test, CKUA's programming brought in listener responses from as far away as New York and Hawaii.

Another engineering alumnus, Dr. Edward Jordan (Electrical '34, MSc Science '36), solved a different broadcasting problem. Jordan, then on staff in the Department of Extension, became so intrigued by radio technology that he enrolled in Electrical Engineering in 1932. When an undergrad, he "became CKUA's first control room operator and while broadcasting a university lecture, saw the sibilance of a gap-toothed professor cause a modulation that forced the station off the air."

As a result he developed a device, known as the peak limiter, which not only solved CKUA's dead air problem, but earned him his Master's degree in 1936. The device "would control the modulation and prevent the station from being shifted off frequency or knocked off the air entirely by loud noises, lisps or sopranos hitting high notes."

It soon became standard equipment at all radio stations. Jordan became an international radio expert and, after earning his doctorate at Ohio State University, became head of the University of Illinois Department of Electrical Engineering, the author of nine books, and an international lecturer.

Electrical Engineering was responsible for the care and operation of CKUA Radio for its first decade. Even with improvements, it was still a crude operation. Porteous, who would later become U of A Dean of Engineering, recalled in a taped interview, "I well remember around that time Dr. MacLeod and the late Professor Cornish and myself being up at the station and having it completely apart and spread out all over the floor at four o'clock and having to put it back together again by six to go on the air."

The station has experienced many more expansions, upgrades, and ownership upheavals during its long history and now dubs itself "Canada's unique and oldest public broadcaster, specializing in eclectic and educational radio programming." Today, though, its focus is music, not university lectures. Contemporary programs, ranging from bluegrass to blues, all have their zealous fans.

During its 78 years in operation, CKUA has pioneered many programming firsts. But it was the professors and enthusiastic students in Electrical Engineering at University of Alberta who provided the original infrastructure for the station, and pioneered much of the innovative, technical work that built a foundation for modern radio.



University of Alberta Archives

This photo appeared on a University of Alberta (Faculty of Extension) postcard (1926) advertising radio broadcasts.



Andrea Collins is an Edmonton-based freelance writer and communications consultant.

Chemical Engineering

Newton, Amber (Chemical '04) EIT

For a year after convocation, I was away from engineering entirely. I got back in the swing of things this summer when I became a project engineer at Jiro in Stettler, Alberta. I have also joined Team Diabetes Canada. Through Team Diabetes, I participated in the Honolulu Marathon in December 2005. Since its inception, Team Diabetes members have raised over \$4.5 million, walked or run more than 1,251,000 km, and lost more than 29,000 pounds. None of us are professional athletes, but we have accepted the dedication, time, and commitment necessary to be successful.

Diabetes has touched my own life, from both of my grandmas having the disease, to my mom fighting her own successful battle with it. I have committed to raise at least \$10,000 in the battle against diabetes, the leading cause of death by disease in Canada. Approximately \$13.2 billion is spent annually in Canada on treating people with diabetes and its complications. If you wish to offer support, please contact me at amber.newton@gmail.com.

Civil Engineering

Shaul, Chuck (Civil '53)

Every issue of *U of A Engineer* alumni magazine is most appreciated and certainly brings back many memories of university life.

We have a grandson who graduated this spring from the University of Calgary with two degrees. One was "with distinction" and the other was with "first class honours." (You know how grandparents are!) What is notable is that he is the first fourth-generation graduate in our family who have all attended universities in Alberta.

errors and omissions

There was an error in the photo caption on page 18 of the Fall 2005 issue. The captions should have read (left to right): Dr. Jeff DiBattista (MSc Civil '95, PhD Civil '00), Greg Miazga (Civil '83, MSc Civil '86), and Diana Chernenko (Civil '83, MSc Civil '89).

Electrical Engineering

Bath, Duncan (Electrical '45)

Regarding the *U of A Engineer*, Fall 2005 issue, page 27: In “good vibrations,” we see (velocity vs. frequency graph) “rms Velocity, micro m/s.”

It is my contention that um/s would have been better SI usage than micro m/s (here, “u” constitutes a stand-in for the Greek letter mu, the SI prefix for micro. I am not sure how to print a mu with my Outlook Express).

Although I grew up (some will challenge that) in a sea of acres out east of Calgary in the 1920s and 30s, I have come to the conclusion that we should adopt the rational, world-system of measurements, SI. I keep hoping that U of A can negotiate the shoals between a true system of measurement and the needs of today's (and tomorrow's) world.

Paranjape, Mak (Electrical '86, MSc Electrical '90, PhD Electrical '93)

From 1995 to 1998, I worked as a research consultant in Trento, Italy, after which I joined the Department of Physics at Georgetown University (Washington, DC) as an assistant professor. In 2004, I was promoted to associate professor with tenure, and in January 2005,

I started my sabbatical as a visiting researcher in the Chemical Engineering Department at Carnegie-Mellon University and in the Department of Molecular Genetics and Biochemistry at the University of Pittsburgh Medical Center. Also, in the middle of all these activities, I got married in October 2004.



Mechanical Engineering

Booth, Neall P. (Mechanical '97)

It's been a busy year. In May 2005, I married Rachelle Stutz, who is originally from Indiana. Rachelle is a CPA, with a BSc in accounting and an MBA, both from Indiana University. We reside in Windsor, but we both work in the automotive industry in the Detroit area. In September 2005, I left my position at Inergy Automotive Systems to take a product engineer position in the rear wheel drive division of DaimlerChrysler. I'll be overseeing the development of the fuel systems for the Jeep Grand Cherokee and the Jeep Commander. Outside of work, Rachelle and I spent the summer settling down after the wedding, visiting family, and camping.

In memory of Alvin Enns (Civil '64)

I have very recently received my copy of the Summer 2005 *U of A Engineer* magazine, which I always read with a lot of pleasure. It brings back to me the pleasant memories of my student days in Canada, starting in Calgary and ending up in Edmonton.

However, in this particular issue, I have learnt with sorrow from the “in memoriam” column on page 31 of the passing away of Alvin Enns (Civil '64). Bob Enns, as his friends knew him, was a year ahead of my class in Edmonton. As a foreign student, he assisted me greatly by introducing me to the management of the construction company he was working for at the time and recommending me to them for summer vacation employment in 1964. The company was involved in the construction of access roads into new oil fields in the Lesser Slave Lake region of Northern Alberta. The experience I gained from that employment assisted me to satisfy the requirements for the then “EC 450, Practical Experience” course in my fourth year. I was guided in the preparation of my report by Dr. S.H. Simmonds (Civil '54, MSc Civil '56), one of the associate professors in the Department of Civil Engineering at the University for the academic year 1964-65.

I would be most very grateful if I could use your magazine to convey my condolences to his survivors, as I do not know how to contact them. May his soul rest in eternal peace.

ELI MIANO (Civil '65)

in memoriam

The Faculty of Engineering sincerely regrets the passing of the following alumni and friends.

Anderson, William (Chemical '46, MSc Chemical '48)

Andru, Peter (Civil '54, MSc Civil '56)

Appelt, V. Mark. (Civil '50, MSc Civil '55)

Baldwin, Arthur (Electrical '25)

Barber, Ivan (Chemical '43)

Connell, Gordon (Chemical '37)

Davis, Stuart Dr. (Chemical '39)

De Vries, Gerard (Engineering Physics '65, PhD Mechanical '65)

Doherty, Peter (Mechanical '65)

Dutka, Rudy (Chemical '44)

Eerkes, Thys (Chemical '60)

Ferguson, John (Chemical '60)

Gibbons, J. Bib (Electrical '61)

Harvey, Thomas (Civil '51, MSc Civil '60)

Jensen, Ole (Electrical '71)

Johnston, C. Wesley (Electrical '50)

Lee, M. Glen (Metallurgical '90)

McQuitty, Stan (Mining '50)

McNeill, Donald (Mining '49)

Millar, Allan (Mining '37)

Nix, Charles (Civil '31)

Peregrym, John (Mechanical '61)

Phillips, Edward (Civil '51)

Pickett, Daniel (Mining '41, Civil '48)

Potter, Reverend Andrew (Civil '48)

Provost, Robert (Electrical '55)

Riddell, Joseph (Mining '56)

Riendeau, Marc (Civil '95)

Rix, Hilton (Civil '54, MSc Civil '59)

Saint, C. Bruce (Mineral '57)

Shiple, George (Mining '49)

Smith, Ronald (Civil '50)

Stout, Jack (Mechanical '69)

Williams, Henry (Chemical '42)

Williamson, Fred (Mining '59, MEng Civil '64)

Wong, James (Civil '75)

Wotherspoon, John (Petroleum '51)

The Faculty of Engineering was recently made aware that the following alumni passed away more than a year ago.

Amundsen, Owen (Electrical '47)

Belovich, Eugene Lieutenant-Colonel (Civil '59)

Bollefer, Francis (Civil '52)

Casault, Martin (Civil '73)

Fouillade, Brigitte (MEng Mineral '83)

Holub, Roman (Ray) (Mining '40)

Sedgwick, George Dr. (PhD Electrical '74)

BAER, BOB
(Electrical '75) PEng

has been appointed vice president, government affairs, with ATCO group. Baer is also

responsible for communications and corporate initiatives, utilities group, which includes ATCO Electric, ATCO Gas, and ATCO Pipelines. Baer has 29 years of experience in the industry with ATCO electric including generation planning, regulatory/pricing, and community development. Over the past 10 years, his major focus was working closely with the ATCO Group on deregulation and industry restructuring.

BENEDIKTSON, STEPHAN
(Civil '62) PEng

joined the Daleco Resources Corporation board of directors in August 2005. In addition to serving on the company's board, Benediktson joined the management team as chief executive officer. Daleco Resources is an international resource company with operating subsidiaries active in oil and gas, minerals, and environmental remediation technology. During his 43-year professional career, he has worked in Canada, the United States, Australia, Indonesia, Saudi Arabia, United Arab Emirates, and Argentina.

BERG, ARDEN
(Electrical '72) PEng

was recently elected as Chair of the Canadian Association of Members of Public Utility Tribunals (CAMPUT).

CAMPUT is a self-supporting, non-profit organization of federal, provincial, and territorial boards and commissions which are responsible for the regulation of the electric, water, gas, and pipeline utilities in Canada. Some CAMPUT members are

also responsible for the regulation of matters such as automobile insurance. Associate membership in CAMPUT is available to public utility tribunals or commissions from countries other than Canada.

CATANIA, PETER DR.
(MEng Chemical '69, PhD Chemical '77)

recently retired after 24 years of teaching within the Faculty of Engineering, University of Regina. In addition to teaching, Dr. Catania, together with his colleagues, helped to develop two undergraduate programs within the Faculty. Developing the International Energy Foundation (www.ief-energy.org) allowed Catania to focus his energies towards assisting in the transfer of energy technologies from the developed to the emerging nations, with due consideration to the technical, economic, and human dimensions. Working closely with the global community (government, academic, and industry) the Foundation has helped researchers respond to the energy needs of their respective nations.

DANIEL, PAT
(Chemical '68) PEng

has been appointed to the board of directors of Synenco Energy Inc. Daniel is president and CEO, and a director of Enbridge

Incorporated. Daniel is a director of EnCana Corporation and Enerflex Systems Incorporated. He is also a member of the Accenture Advisory Board and the North American Review Board of Air Liquide Holdings Inc., and is an active industry and community volunteer.

DESMARAIS, DENIS
(Civil '91) PEng

has been appointed vice president of operations at Chandos Construction Limited. Desmarais

joined Chandos in 2001 as a senior project manager and was promoted to construction manager in 2003. Desmarais has worked on various projects including the University of Alberta Hospital Emergency Centre, the Edmonton International Airport Parkade, and Telus Field.

DiBATTISTA, JEFF DR.
(MSc Civil '95, PhD Civil '00) PEng

has joined Cohos Evamy as a partner in their Edmonton studio of architects, engineers, interior designers,

and planners. With Cohos Evamy for six years, DiBattista was structural engineering project manager on the Allan P. Markin/CNRL Natural Resources Engineering Facility and on the National Institute for Nanotechnology at the University of Alberta. Currently, he is working on the Royal Alexandra Hospital North Treatment Centre/Lois Hole Hospital for Women, now under construction, and on the design of the expansion to the Royal Alberta Museum. This is his tenth year on the executive of the Edmonton section of the Canadian Society for Civil Engineering and he remains active in the U of A community, guest lecturing and teaching courses in the Faculty of Engineering.

DUDA, PETER
(Mechanical '80) PEng

has been promoted to vice president, operations, at OPTI Canada Inc. Duda joined OPTI in early 2003 with 23 years of experience, focusing on refining and petrochemical plant operations in both Canada and abroad. Recently, Duda relocated to Fort McMurray in preparation for the commissioning, start-up, and long-term operations of the Long Lake upgrader.

EDEN, ROBERT W.
(Chemical '60) PEng

recently accepted the position of counsel with Borden Ladner Gervais LLP.

FROST, WARREN
(Electrical '75) PEng

has been appointed vice president operations and reliability for Alberta Electric Systems Operator (AESO). Frost is accountable for operational planning, and ensuring the safe, reliable and economic operation of Alberta's interconnected power grid. Frost has 29 years' experience in the electricity industry, including policy development, government relations, system operations, transmission asset management, pricing, regulatory, and customer service. Before joining AESO, Frost was director, infrastructure policy, with Alberta Energy, Electrical Division, where he was responsible for the development of government policy and legislation related to transmission and generation infrastructure in Alberta.

HIBBARD, GLENN DR.
(Metallurgical '97)



has been promoted to assistant professor at the University of Toronto.

HORTE, VERN
(Chemical '49) PEng



has been inducted into the 2005 Canadian Petroleum Hall of Fame.

HRYCIW, AARON
(Engineering Physics '02) EIT



was commissioned to write a musical composition for the Canadian Association of Physicists. His music for string quartet debuted at the World of Physics Symposium in June 2005. It was played in celebration of the World Year of Physics 2005. His composition entitled "From Water to Ice" was inspired by the three phases of water.

HUANG, BIAO DR.
(PhD Chemical '97) PEng



received the 2005 Syncrude Canada Innovation Award for his distinguished contribution in the field of chemical engineering, and the McCalla Professorship for his research in dynamic operation and monitoring of fuel cell clean energy generation systems. The fuel cell, an emerging clean energy generation system, is considered to be a potential candidate to meet the requirements of the Kyoto Protocol. Fuel cells feature the potential for high efficiency (up to 80 percent with cogeneration), low to zero emissions, quiet operation, and high reliability. Huang is a professor in Chemical and Materials Engineering.

KVISLE, HAL
(Civil '75) PEng



received a distinguished alumni award from the University of Alberta. Kvisle was recognized for his strong, unwavering commitment to business excellence and is one of Canada's most successful CEOs. A respected businessperson at home and abroad, Kvisle is known for his strong leadership and commitment to the energy industry in his role as president and CEO of TransCanada Corporation. Under his direction, TransCanada has grown into North America's largest natural gas pipeline company and built a successful power business. An *Alberta Venture* magazine poll named Kvisle and TransCanada among the most respected leaders and corporations in Alberta in 2005. Previously, Kvisle held leadership positions at Dome Petroleum and Fletcher Challenge Energy. Combining exemplary professional skills with economic, financial, and political wisdom, Kvisle was the first Canadian to be elected to chair the board of directors of the Interstate Natural Gas Association of America—a role representative of the importance of Canada in meeting the natural gas demands of North America. He also gives back to his profession and the community by serving on many boards and through his membership with many professional associations.

McCRAE, KEITH
(Mechanical '67) PEng

has been appointed to the board of directors for Profile Resources Incorporated. McCrae's career has spanned leading and management positions in engineering and construction and project management of large projects. Additionally, he has had profit and loss responsibility at the senior officer level in his previous employment.

MITCHELL, WARREN
(Chemical '94) PEng



has been appointed vice president of advanced applications, Matrikon Incorporated.

MORGAN, GWYNN
(Mechanical '67) PEng



is stepping down from the position of CEO of Encana Corporation after 30 years of building and leading the company.

PFAU, BARRY
(Civil '87) PEng



has been appointed branch manager for Ledcor's Edmonton and Northern Alberta building division. Pfau worked as a project coordinator for a major construction company in Saskatoon and moved with the company to a new branch in Vancouver. He came back to Alberta in 1990 and spent six years working as a project manager for new facilities in Alberta and Saskatchewan. After a one-year venture in Utah, overseeing a large renovation to the Salt Lake City International Airport in 1997, Pfau returned to Alberta again and is now with the Ledcor Group of Companies where he has worked for over five years.

ROBSON, NEIL
(Civil '99, MEng Structural '01) PEng



has recently been promoted to Associate and Structural Engineering Department Head at Cohos Evamy in Edmonton. Working with Cohos Evamy for five years, Robson specializes in bridge engineering and project management. Currently, Robson is working on the Low Level Bridge Northbound

Rehabilitation, scheduled to start construction in February 2006, and numerous other bridge design projects across Edmonton and Alberta.

SHOOK, DAVE DR.
(PhD Chemical '91) PEng



has been appointed chief technical officer with Matrikon Incorporated.

SUNDARARAJ, UTTANDARAMAN DR.
(Chemical '89)



received the coveted Rutherford Award of Excellence in Undergraduate Teaching. He also received the Alexander von Humboldt Fellowship, which enables highly qualified, early-stage researchers from abroad to carry out research projects of their own choice in Germany. Sundararaj is a professor in Chemical and Materials Engineering.

VAN GASTEL, LINDA
(Chemical '67, MSc Chemical '72) PEng



has been awarded the Alberta Centennial Medal, which pays tribute to Albertans whose achievements have benefited their fellow citizens, their community, and their province. Van Gastel is now retired, lives in Calgary, and is an active volunteer.

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Katherine Irwin, Development Officer,
External Relations,
Faculty of Engineering,
University of Alberta,
E6-050 Engineering Teaching &
Learning Complex,
Edmonton, AB T6G 2V4,
tel: 780.492.1317
fax: 780.492.0500,
email: katherine.irwin@ualberta



Sheldon (Bob) Comfort (Mining '33) has given a gift of a lifetime to Faculty of Engineering



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* To best meet Faculty of Engineering's needs, donations may be directed to endowed funds. Donations made to endowment funds are invested in perpetuity and the investment earnings are used to advance the specified purposes of the fund within the University.

I would like my gift to support:

\$ _____ Faculty of Engineering in support of undergraduate student projects, new educational initiatives in all disciplines, and general student life enhancement activities.

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I would like information on how to make a gift of publicly traded securities to support the Faculty of Engineering at the U of A.

I would like information on how to include the Faculty of Engineering at the U of A as part of a will, life insurance, or other planned gift instrument.

I have provided for the Faculty of Engineering at the U of A in a will or trust agreement.

Please return to:
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University of Alberta
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