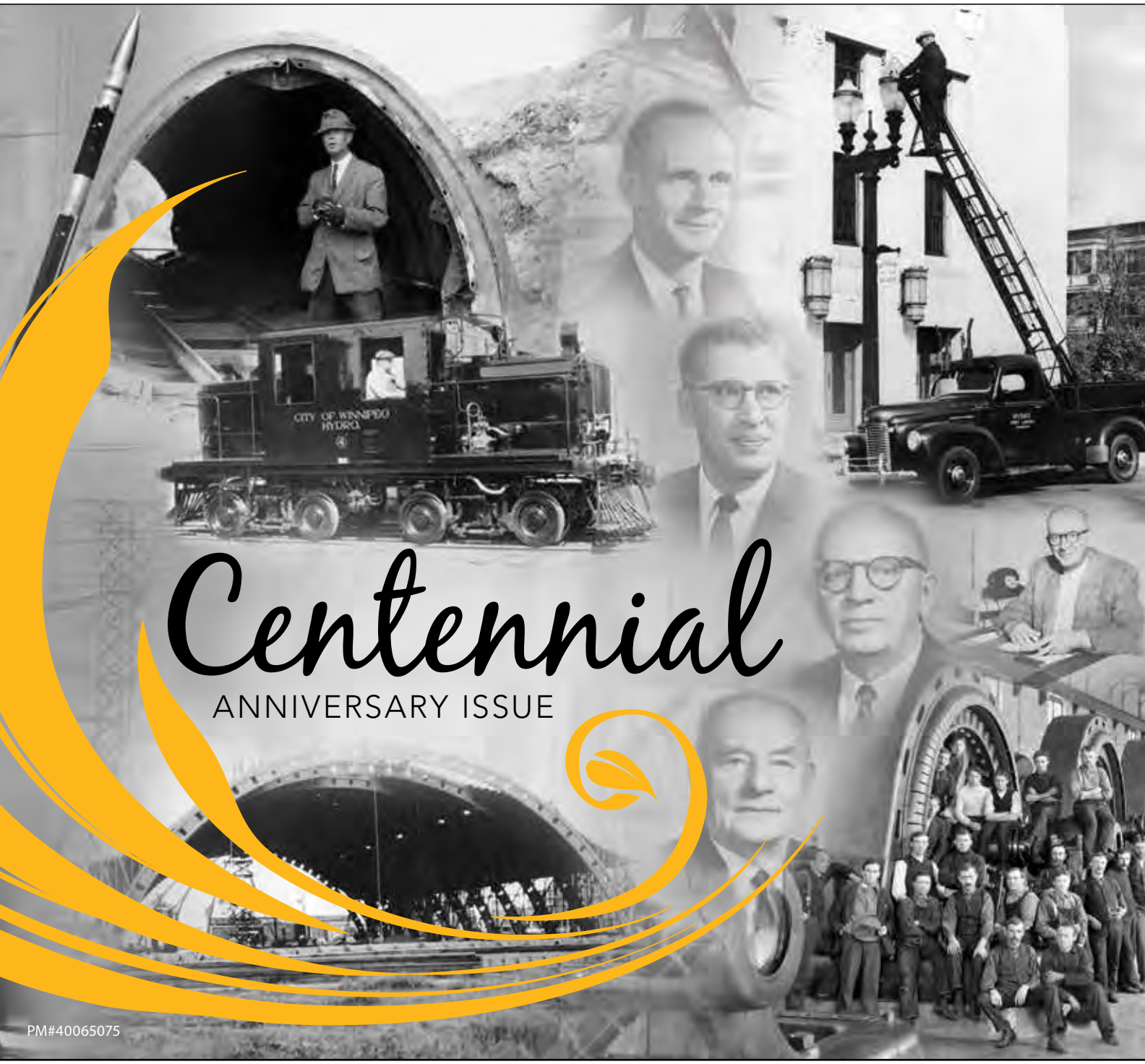
The official publication of Engineers Geoscientists Manitoba

THE KEYSTONE PROFESSIONAL

SPRING 2020



Centennial

ANNIVERSARY ISSUE

PM#40065075


PRICE BUILDING
ENGINEERS
GEOSCIENTISTS
MANITOBA
100
2020

HIRE A STUDENT

GET A FACULTY OF ARCHITECTURE OR FACULTY OF ENGINEERING CO-OP STUDENT WORKING FOR YOU

Employers hire University of Manitoba Co-op students because:

- students are skilled and motivated
- they're able to work flexible contracts from 4 to 16 months
- hiring incentives are available

HIRE A STUDENT

ARCHITECTURE
(204) 474-9432
FAUMCOOP@UMANITOBA.CA
UMANITOBA.CA/ARCHITECTURE/COOP

ENGINEERING
(204) 474-6586
ENGINEERINGCOOP@UMANITOBA.CA
UMANITOBA.CA/ENGINEERING/PROGRAMS/COOPIIP

University of Manitoba

MAPLE LEAF DRILLING LTD.

Serving Manitoba, Saskatchewan and Ontario since 1967 with safe, competent, year-round drilling services

Geotechnical

Environmental

B37X

- Geotechnical & Environmental Drilling
- Phase 2 Environmental Assessments
- Well Decommissioning
- Commercial & Domestic Water Well Drilling
- Commercial Pumps

B54X

New Office in Thunder Bay

ISN

204-224-3084

www.mapleleafdrilling.ca

NATIONAL COR STANDARD

Spring 2020
Published by Engineers Geoscientists Manitoba
870 Pembina Highway, Winnipeg, Manitoba R3M 2M7
Phone: 204-474-2736 Fax: 204-474-5960
Email: *info@EngGeoMB.ca*

The Keystone Professional Committee would like to hear from you. Please email your comments to: *DWawryk@EngGeoMB.ca.* Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.

Available in alternate formats upon request

THE KEYSTONE PROFESSIONAL

The official publication of Engineers Geoscientists Manitoba

ENGINEERS GEOSCIENTISTS MANITOBA

CENTENNIAL ISSUE

FEATURES

DEPARTMENTS

Publication management and production by: Kelman Associates

3rd Floor - 2020 Portage Avenue
Winnipeg, MB R3J 0K4
Ph: 204-985-9780 Fax: 204-985-9795
Email: info@kelman.ca
www.kelman.ca

Managing Editor: Reba Lewis
Art Design/Production: Jackie Magat
Marketing Manager: Jeff Kutny
Advertising Coordinator: Stefanie Hagidiakow

Send change of address to:
The Keystone Professional,
Engineers Geoscientists Manitoba,
870 Pembina Highway, Winnipeg, MB, R3M 2M7
Email: info@EngGeoMB.ca
www.EngGeoMB.ca

Publications Mail Agreement #40065075. Return undeliverable copies to: lauren@kelman.ca

Dr. Jitendra Paliwal, P.Eng., FEC

Reflecting on our Past, **Reshaping our Future**

As another decade gets archived in the annals of history, I would like to wish all of you a very Happy New Year! We had bit of a sombre start to the new year, as some of the members of our Iranian community lost their lives in the tragic shooting down of flight PS 752. My deepest condolences to the next of kin whose lives have abruptly changed forever. I hope the remainder of 2020 brings peace, progress, and prosperity.

This year marks the 100th anniversary of regulation for many of our Canadian professional bodies, and all I can say is what a difference a century has made! Flipping through the pages of our history books, we can argue that more technological advancements have been made in the last 100 years than in the preceding two millennia. Who would have thought a hundred years ago that our modest innovations would have resulted in the necessities of modern life? In the Roaring Twenties, post-war Canada was looking to build an identity for itself, and technology became a crucial part of realising that dream. The era did not just see breakthroughs in infrastructural megaprojects, radio broadcast, automobiles, mining for base metals, and cinema; it also saw the desire to regulate engineering as a profession, with six provinces, including our own, moving to regulate engineering in 1920. With Canada's contributions in fields such as telecommunications, sonar, electron microscopy, and biomedicine to name a few, it's safe to say that the move has served us well.

A reflection on our past is always helpful when we're looking to reshape our future. It helps us evaluate how much we are capable of accomplishing in a finite amount of time. At the same time, looking back helps us learn from our own mistakes and miscalculations, and question if we could have done better. While we focus strongly on technical excellence, we could have definitely done better on making ourselves more inclusive, diverse, and environmentally sustainable. Since the cornerstone of our professional training is iterative improvement, we are resolute in our commitment to addressing these issues, and the current Council exemplifies this transformation.

We have collectively laid the foundation to bring about these changes, and it is my sincere wish that the future generations celebrating the next centennial anniversary will fondly reminisce about these actions of ours. So, as we march forward into the second century of our Association, I would like to congratulate all members and interns for their outstanding work that makes life work better.

If you have any questions or comments, please email me at *President@EngGeoMB.ca*.

Can an Asper MBA work with my life?

Yes, we thought of that.

EXPLORE FLEXIBLE WAYS TO TAKE YOUR LEADERSHIP FURTHER
LEARN MORE AT AN INFO SESSION **ASPER-MBA.CA**

ASPER SCHOOL OF BUSINESS
STU CLARK GRADUATE SCHOOL

University of Manitoba

G. Koropatnick, P.Eng., FEC, CEO and Registrar

Happy 100th Birthday

Congratulations Engineers Geoscientists Manitoba! One hundred years old – WOW. It's heartwarming and satisfying to be a part of a longstanding organisation which has made a lasting contribution to the history of Manitoba. I've been a member for 28 years. Some members have been on the register a lot longer: 40, 50, 60 or more. Altogether, the years represent a century of members serving with engineering and geoscience skill to solve problems for our cities and communities across the province.

I'm going to highlight a few changes that have occurred during my time as Registrar. Here are a few notable changes that Engineers Geoscientists Manitoba has seen in the last decade of the centenary.

Website

Internet mass communication and new media has replaced traditional mailings, notices, and other paper-based information. Although the Association continues to offer a printed version of *The Keystone Professional* magazine, most members choose the digital version instead. Also, a weekly e-news is sent out at the click of a mouse, sending timely information and notices to thousands of recipients. Annual membership renewals are done online through the member profile and 99% pay using this virtual storefront. *EngGeoMB.ca* receives an average of 28,806 visits per month.

ProDev

The continuing professional development by-law was ratified by members at the 2011 Annual General Meeting. This marked a significant milestone in the professional practice of engineers and geoscientists. Now all practising members participate in the program by reporting their continuing professional development hours in their online profiles.

New Office

Hosting events in a larger space was made possible when the office was moved to its present location at 870 Pembina Hwy. In 2010, more than 200 members dropped in at the 90th birthday party, hosted on the main floor. Members enjoyed birthday cake, hot snacks, live jazz music, Wii golf, and many excellent displays of engineering and geoscience organised by the Heritage Committee. In 2018, the Association took over the whole building and the newly renovated second floor was opened with a ribbon-cutting reception that featured new meeting rooms bearing the names of engineering pioneers Wardrop, Weiszmann, Lyons, and Landon.

Rebranding

Over time, the public had lost recognition of the acronym APEGM. The solution was to rebrand the organisation by simply referring to ourselves with the three obvious words: "Engineers Geoscientists Manitoba." This had already been done by several local and national groups (including Engineers Canada). In 2015, the new name was launched with a new logo. The logo has been prominently mounted on the facade of the building.

Steady Growth

The Association has enjoyed steady growth over the last ten years. Due to large graduation classes from the University of Manitoba Faculty of Engineering and immigration of international engineers, the membership has grown 37% (from 6,303 in 2010 to 8,185 in 2020).

More Women

The Association is on track to address the historic problem of gender imbalance. In 2017, Council made the bold decision to focus time, energy, and budget on correcting the lop-sided register that shows only one in 10 members are women. In the last ten years the percentage of women in the membership has gradually increased from 7.5% to 11.5%. It will take a long time to achieve

gender parity but like the medical, legal, and accounting professions – change is possible and achievable.

Indigenous Members

In 2017, Council set a goal of practitioners reflecting the diversity of the public. More specifically, they wanted to see more Indigenous professionals join Engineers Geoscientists Manitoba. Over time, the Association will begin to reflect Manitoba's 18% Indigenous population. Indigenous engineers and geoscientists are invited to make a self-declaration, so that the Association can benchmark the number of Indigenous professionals in the membership. As of the start of 2020, Engineers Geoscientists Manitoba has 101 self-declared Indigenous practitioners.

In the Community

Engineers Geoscientists Manitoba contacts a lot of people in a year: members, other professionals, and the community-at-large. In 2019, the Association had contacts with more than 32 groups; supporting engineering and geoscience education, conferences, and community events. One highlight includes the efforts of students, teachers, parents, and Association volunteers to raise money for Winnipeg Harvest through the annual Spaghetti Bridge Competition. Over the last decade, $207,353 has been raised to feed hungry families in our community. Way to go Engineers Geoscientists Manitoba!

Vision for the Future

What will the professions of engineering and geoscience look like in the future? Already computers, software, and new technologies have revolutionised some aspects of design, development, exploration, and methods used in practice. Solving problems, improving designs, and discovering new resources will be easier because of big data, faster processing, intuitive algorithms, robots, and artificial intelligence. The ability to analyse a problem and provide a solution will result from the combining of ingenuity, engineering theory, big data, and computer software coding skills. One hundred years ago the indispensable tool for an engineer was a slide rule; for a geologist, it was a monocle. Today, software-based tools using computers, laser imagery, robots, and predictive algorithms, a plethora of new technologies, are available and emerging. What will be the new tools in the next one hundred years? What will engineering and geoscience practice look like? Engineers Geoscientists Manitoba will be there to guide the professions, reflecting society and serving the public with honour and integrity.

Happy 100th birthday and congratulations Engineers Geoscientists Manitoba.

Want to learn more about what's occurred over the last 100 years? The Heritage Committee is putting it all in writing and their Centennial book will be available for purchase later this year. If you'd like to share a story from the past 100 years, please email me at *GKoropatnick@EngGeoMB.ca*.

Meet the People That Make Life Work Better

Leonard A. Bateman…

A Trailblazing Manitoba Engineer

By R. Lewis

There's one thing in life that is never guaranteed: time. How we choose to spend the time we *do* have can make for the most intriguing of life stories and leave an indelible mark on those who are left behind. If there's one outstanding example of a life well lived and a legacy worthy of acknowledgement, Leonard A. Bateman's was nothing short of exemplary.

January 14 would have marked Mr. Bateman's 101st birthday. But, in spite of his passing on December 7, 2019, to have lived a century through periods such as the Great Depression, World War II, and some of the world's most extraordinary moments in history, is, of itself, remarkable.

Those within the engineering community will, no doubt, remember Mr. Bateman for his contributions to the field of engineering, particularly as they pertained to high voltage direct current electricity transmission, and the pivotal role he played in the development and expansion of Manitoba's electrical system as a hydro-based system, rather than a thermal-based system. But his illustrious career, which began in 1942 and spanned 70 years, went beyond this province, impacted the progress of developing nations and gave Canada a place on the world stage.

It's a feat that anyone could look upon admiringly with a sobering awareness that it takes a special kind of drive to keep going, to keep learning, and to keep achieving even when it seems as if you've just about done it all. And therein lies the legacy of Mr. Bateman.

Born in Winnipeg on January 14, 1919, Mr. Bateman attended Kelvin High School and went on to further his studies at what was then United College, now the University of Winnipeg. While his goal was to gain enough credits to pursue studies in mining engineering, he eventually switched his focus to electrical engineering, enrolling in the University of Manitoba in 1939. By 1942, he had completed his studies and was in search of the next challenge, which ushered him into the world of electrical engineering at City of Winnipeg Hydro Electric System, commonly known as City Hydro. For many, this achievement would have marked the summit of their careers, but Mr. Bateman

APEM Council 1956. Len Bateman is seated back left.

L to R, Leonard Bateman, Halina Zbigniewicz, and Will Ticshinski, all retired from Manitoba Hydro

was hardly satisfied and went on to successfully pursue a master's degree as the only student enrolled at that time in the electrical engineering program at the University of Manitoba.

Even with the responsibilities of a full-time career and a young family, Mr. Bateman realised the importance of being present and being involved. He joined the Association of Professional Engineers of Manitoba in 1948, and would go on to serve on the Council, and later become its president in 1958.

His professional career soared, too, with several promotions at Winnipeg Hydro up until his departure from the organisation in 1956 for the Manitoba Hydro Electric Board. When the newly created Manitoba Hydro opened its doors in April 1961, Mr. Bateman was among the five new directors chosen to helm the organisation's operations. By 1972, he was appointed chairman and chief executive officer. He represented Manitoba Hydro on a trade mission to China, and later on another mission to Russia. He also played a key role in securing funds to finance the province's hydro construction program at meetings across several U.S. cities.

While retirement for many equates to a withdrawal from the world of work, Mr. Bateman saw his, in 1979, as an opportunity to forge a new path. He opened his own consulting firm, offering his expertise both within and outside of Canada. Along with his work as a consulting engineer, Mr. Bateman still managed other professional ambitions, including serving as an adjunct professor at the University of Manitoba, and his appointment as the only Canadian to chair one of the Congrès International des grands reseaux électriques, or CIGRE's, most prestigious committees.

Mr. Bateman also gave back to the profession in other ways. In 2009, he created a scholarship fund to benefit third-year engineering students, appreciative of the financial difficulties that often arise for them, and that he too had experienced during his third year at the University of Manitoba. The fund has since grown to support two engineering students each year.

Mr. Bateman welcomed challenges and relished the idea of solving new problems. This acuity of mind was not lost on his community of fellow engineers and admirers. In 1994, he was awarded the National Gold Medal by the Canadian Council of Professional Engineers, and now Engineers Canada, for his contributions to the profession. In 2003, the province recognised Mr. Bateman's achievements with the Order of Manitoba. In 2016, he was awarded the Order of Canada for his efforts in advancing the development and expansion of hydroelectric power in Manitoba. The Association also celebrated Mr. Bateman's many achievements with the Merit Award in 1976 for his pioneering efforts in the production of power in Manitoba, and Honorary Life Membership in 2000 for meritorious service. He was also awarded the Queen Elizabeth II Golden Jubilee Medal in 2002 and the Queen Elizabeth II Diamond Jubilee Metal in 2012.

One could argue that Mr. Bateman was blessed with a lot of time to achieve as much as he had, but an even more compelling argument would be that he chose to use that time with which he was blessed to benefit so many.

As Engineers Geoscientists Manitoba celebrates its 100th year of engineering regulation in the province, it seems perfectly fitting to remember Mr. Bateman's legacy as a Trailblazing Manitoba Engineer.

Tribute to Len Bateman, a Trailblazing Engineer

I had the good fortune of working under Len Bateman's direction for most of the 23 years he worked at Manitoba Hydro. This was a hectic period at a time when electrical demand was growing. Len, as part of the Executive, helped make the prudent engineering decision in the 1960s, to develop hydro power on the Nelson River, rather than developing coal-fired generating stations in the south of the province, for which he awarded the Order of Manitoba in 2003.

Len was instrumental in pioneering high voltage direct current (HVDC) transmission in Canada, determining that point-to-point transmission, using HVDC, was the most effective way to transport a huge block of power from the Nelson River, some 900kms, to southern Manitoba.

Furthermore, Len recognised that, in building a hydro generating system, there would be considerable periods of time when there would be power surplus to Manitoba's needs. He decided that the best place to sell this surplus power was to the United States. Public controversy erupted over this plan, nevertheless, Len persevered, and three lines were built by 1985, with the largest interconnection being a 500,000-volt line from Winnipeg to Minneapolis, the highest voltage for Manitoba Hydro at that time. As the US power exports continued, and revenues flowed into Manitoba, the public gradually recognised the benefits of selling power to the States, and criticism faded away.

Len Bateman has left a legacy of competent engineering, which will serve Manitoba Hydro for many years to come. Even the most caustic critic would have to agree it was well engineered.

Due to Len's contribution to Manitoba Hydro, Manitobans enjoyed the lowest rates on the North American continent for a period of 50 years. There was never a shortage of power, neither did the lights ever go out.

Canadians owe a debt of gratitude to Len for his contribution to the power industry. His engineering works were duly recognised in 2016 by the Government of Canada, which awarded him the Order of Canada.

Will Tishinski, P.Eng(Ret)
Vice-President, Manitoba Hydro (retired)

Manulife would like to congratulate **Engineers Geoscientists Manitoba** on 100 years of engineering!

Just the facts

about Engineers Canada-sponsored insurance plans

Manulife has been proud to provide you with innovative insurance solutions for *more* than 70 years.

Here are more key facts about these valuable plans, which are enjoyed by over 90,000 of your peers:

- You have **exclusive access** to insurance plans created specifically for engineering professionals.
- Engineers Canada and Manulife **continually assess the plan benefits and rates** to ensure they're highly competitive.
- They're innovative, with recent enhancements like the **job loss waiver of premium** – the first of its kind in Canada.

- Term Life
- Health & Dental
- Major Accident
- Critical Illness
- Disability Income
- Manulife One

Learn more about how these plans can benefit you.

manulife.ca/egmb **1 877 598-2273**

engineerscanada ingénieurscanada

ENGINEERS GEOSCIENTISTS MANITOBA

Manulife

Underwritten by
The Manufacturers Life Insurance Company

Evolution and Revolution

– from APEM to APEGM to Engineers Geoscientists Manitoba

By D. Strang, P.Eng., FEC

"Fundamental change occurs most often in one of two ways: as a 'fatal discontinuity', a sudden catastrophic event that is potentially world changing, or as a persistent, gradual trend." This is an insight from Manitoban polymath and professor emeritus, Dr. Vaclav Smil. And, we can only judge which type of forces caused the change in direction by looking backward. So, what were the trends that nudged the trajectory of regulation of our professions? And, what were the shocks to the system that caused those sudden – perhaps game-changing – transitions?

From the 12th century, the word "engineer" referred to a military engineer, a maker of war engines. Simultaneously, the geological sciences were being developed as new data spawned new theories about the origins of the earth and its strata, with the term "geologist" being coined in 1785. It was really only in the 19th century that much of the practice of engineering gradually, persistently, trended to become more "civil" i.e., not military. Simultaneously, mineral exploration was driving advances in mapping the earth's surface and the stratigraphic column.

But, in 1867, a seminal event occurred, which would forever shape the regulation of modern-day engineering and geoscience in Canada. The passage of the British North America Act (Canada's constitution) gave provinces the authority to make laws in relation to property and civil rights, later interpreted to mean the exclusive jurisdiction to regulate professions. This "discontinuity" is why we have provincial-level regulation today.

Fast forwarding 20 years along the continuing trend towards civil applications of engineering in Canada, we see the 1887 founding of the Canadian Society of Civil Engineers, not to be confused with the more recent Canadian Society for Civil Engineering, a community of practitioners which became concerned about the faulty design and waste on major civil projects, for example canal locks, grain elevators, and multi-story buildings, as well as the unfortunate opportunities for wholly unqualified individuals to practice engineering.

Although we cannot point to any particular disaster as the impetus, there was sufficient pressure building up that the Manitoba Legislature, in 1896, passed the Manitoba Civil Engineer's Act. It was the very first law enacted in Canada to regulate the practice of engineering, and it restricted the practice of engineering in Manitoba to certain persons who were members of the Canadian Society of Civil Engineers. The intent was to implement a means to distinguish between qualified and unqualified civil engineers.

The pressure to regulate was not limited to just those that would design and build structures. There was also frustration with the quality of training of actors in the earth sciences. The State of Wyoming became the first U.S. state to regulate engineering when lawyers, notaries, and others without engineering training were making poor quality submissions to the state for permission to use state water for irrigation. When state licensure of engineers and land surveyors was enacted in 1907, it was said that there was an astonishing improvement in the "character of maps and plans filed with the applications for permits".

Meanwhile, back in Canada – a setback! Manitoba's 1896 act was repealed in 1913 because the 1896 act was said to have lacked the "administrative machinery" to enforce the practice restriction and fell into disuse. For a time, there was no longer any regulation of engineering in Manitoba. Yet, the long-run trend toward professional regulation would not abate, and the Canadian Society of Civil Engineers retained the conviction that legal standards of qualification for the safe practice of engineering should be defined. And, further, those individuals meeting the qualifications should be registered before practicing.

Then, a new fatal discontinuity! The assassination of Archduke Franz Ferdinand of Austria on June 28, 1914 lead (surprisingly, but directly) to World War I. The war was both a distraction and a time of rapid technological innovation.

As the horrors of the World War I ended, it became apparent that the practice of engineering was becoming more specialised. No longer just falling into the categories of "civil" and/or "military," new disciplines, such as mechanical and electrical, came to the fore. These fields, once dominated by artisans and inventors, became

increasingly complex and required the hand of technical specialists with deep knowledge in a specialised field. The word "civil" connoted something different than these new branches had to offer to the profession. "Civil" would have to stand alongside, not above, "electrical", "mechanical", and even "geological". Who could have imagined "computer engineering", or even "genetic engineering"?

In any case, by 1918, the Canadian Society of Civil Engineers had re-invented itself as "The Engineering Institute of Canada", and the newly rebranded society set about seeking federal legislation of the engineering profession in all the disciplines.

However, because of the federal-provincial power breakdown, it was necessary that legislation be passed at the provincial level. Not to be deterred, the Institute created a 1919 model act to be submitted to each legislature in what was then the Dominion of Canada. The regulation of engineering was to focus on protection of the public from quackery and charlatans. It is notable that this federal/provincial model is also the model for the National Building Code of Canada, which is itself a model code first published in 1941. Civil engineers would likely know that it has no legal status until it is adopted, in whole or in part, by a jurisdiction that regulates construction.

In 1920, the first provincial regulatory bodies were formed – Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, and Quebec – as legislatures, more or less having adopted the 1919 model act. Manitoba's act, "An Act respecting the Engineering Profession" of March 27, 1920, created "The Association of Professional Engineers of the Province of Manitoba". It would be known as "APEM" for short.

By 1930, eight provinces had associations regulating the practice of engineering, but each province had its own approach, and sometimes there were conflicts. To promote harmony among the regulators, the associations banded together in 1936 to form a forum for multilateral communication, to be known as the Dominion Council of Professional Engineers. Leading-edge practices could now spread throughout the land.

Thus, the regulation of engineering has become more harmonised and refined over the decades. Provincial regulators have evolved to serve both the general public and each association's respective membership base. One such evolution was in the area of regular communication with members. In Manitoba, after some false starts dating back to the 1930s, a quarterly publication was started in 1956 under the name *The Manitoba Professional Engineer*. It has been published continually since that time although the name has changed. You are reading it now.

Even though the regulation of engineering, and the capabilities of the Association, became more refined with time, the regulation of geoscience, perhaps apart from "geological engineering", was somewhere between minimal and non-existent. In that field, the west remained wild!

We can fast forward to the mid-1990s to find a new fatal discontinuity, in what is known as the "Bre-X scandal". After purchasing a gold deposit at Busang, Indonesia, in 1993, Canadian based mining company Bre-X Minerals announced significant amounts of gold had been discovered, sending its stock price soaring. After the company's market capitalisation soared to over six billion dollars, Bre-X collapsed in 1997 when the gold samples were found to be a fraud. This prompted the questions, "who said there was gold in them thar hills?" and, "what were their qualifications?".

The story of the Bre-X mining fraud and the individuals involved is a complicated and intriguing story on its own. But, suffice it to say that the impact on the Canadian financial industry was both stunning and profound. The business of resource extraction has an outsized influence on the Canadian economy and, especially, the Canadian financial services industry. And so, it turned out that many Canadian investors were fleeced, embarrassed, and seeking protection from the fraud artist. Canadians were now convinced that regulation of professional geology/geoscience, and especially, estimation of mineral-resource size, in Canada was essential.

In the wake of the scandal, the financial services industry acted on a national basis to develop new "Standards of Disclosure for Mineral Projects within Canada" (a.k.a. National Instrument 43-101) and the associated definition of a qualified person (think "professional geoscientist"). However, it was left to the provincial governments to begin the regulation and the determination of who would be deemed qualified. Some provinces created a new provincial association to register and regulate professional scientists. Others, such as Manitoba, chose to expand an existing engineering association to cover the new to-be-registered professionals.

In contrast to the United States where the common term for such a regulated professional is "professional geologist", Canadian regulators adopted the name "professional geoscientist", perhaps to signify that such an individual would require a broad base of knowledge of all things "geo". The term geoscientist also includes the practice of geophysics, sometimes considered distinct from the practice of geology. Geology and geophysics have traditionally been considered as separate sciences, and even as separate professions. For example, until recently, Alberta had two distinct geo professions (P.Geol and P.Geoph), in addition to engineering. They were APEGGA, and now they are just APEGA.

And so it was that the *Engineering and Geoscientific Professions Act* passed in the Manitoba legislature in June 1998. At the time, this meant that:

- In Manitoba, one association would regulate both professions, while parallel academic and work experience admissions criteria would be developed for the professions of geology, geophysics, and geochemistry.

- Parallel associations would spring up, or existing associations would re-invent themselves, in most other provinces and territories.
- It would be become a legal requirement to be registered as a P.Geo., to practice geoscience in Canada. At the national level, the parallel to Engineers Canada would be Geoscience Canada.
- We would all have to get used to saying APEGM (a-peg-um), instead of APEM (a-pem).

APEGM

- One quarterly publication would be served up to both professions and *The Manitoba Professional Engineer* would become *The Keystone Professional* in June 1999.

There was an increasing realisation that the combination of letters – APEGM – was not meaningful to the general public. And, it did not convey what the Association was about. At the same time, "use your words" became the new mantra. For example, after its 1936 formation, the Dominion Council of Professional Engineers, after morphing into the Canadian Council of Professional Engineers (CCPE) in 1959, had re-renamed itself to the much more meaningful "Engineers Canada" in 2007. A couple of other provincial associations then exchanged their letter combinations for actual words in their communications with members and the public.

By September 2015, Manitoba's Association had resolved its own identity crisis by adopting Engineers Geoscientists Manitoba as its working name. Since the original logo incorporated the old name, a change of logo occurred as well. The new logo presents strong bolded lines representing the letters E and G, the two first letters of the professions the Association represents. The lines appear bar-like, with the initial three reaching out horizontally, placed one above the other like building blocks, each an example of a bar set and raised.

ENGINEERS GEOSCIENTISTS MANITOBA

Always aiming to serve its members and the general public, the Association began considering shortening its name for greater clarity and ease of introduction, and went through many meetings and a Council vote to consider the change. "Although the (old) name is familiar to us, it is not easily recognised by the public. If you did a survey, how many people would know what APEGM is?" explained Grant Koropatnick, P.Eng., FEC, CEO and Registrar of the Association in a 2013 publication of *The Keystone Professional.*

Engineers Geoscientists Manitoba currently oversees over eight thousand members, and this number is expected to increase as demand and the population within the province continues to grow. As a public organisation assigned to serve and protect public interest, it may be agreed that changing the name of the Association to one that is more recognisable and concise, is doing just that. Never mind the fact that it just makes life work better as well.

Who knows what the future holds? But, at this moment in time, the name says it all…

Where Did the Association's Work Get Done?

By G.N. Cook, P.Eng(Ret), FEC and A. Moore, FEC(Hon)

In the beginning, not surprisingly, the Association was run out of personal offices and borrowed meeting rooms as a permanent office location was not the first order of business when the Association was formed. Recording minutes was, however, one of the first administrative items for keeping track of where the meetings were held, and was well documented since the beginning, creating an interesting bit of Association history. The locations of the early beginnings provide some insights into where the early leaders came from, where they worked, and where they liked to hang out.

The council meetings were usually held in downtown Winnipeg and almost always during the evenings. Quite often, the President's place of business or office space was used. This illustrates the kind of influence the President carried at his place of business, which, quite often, was a government or larger company, such as one of the railway companies.

The AGM was held at some of the most prominent locations of the day, including the Malborough Hotel and quite frequently at the Hudson Bay Dining Room.

Generally, the Council met monthly and there was, surprisingly, a wide range of spaces utilized. Places such as the offices of City Hydro on Princess Avenue, the University of Manitoba Building (likely the original building on Portage Avenue), the Law Courts Building, Electric Railway Chambers, even private homes (J. A. Meindl – 126 Ferndale Ave – Norwood Flats), and the Parliament Building were used as meeting spaces – just to name a few used in the 1930s. Parliament Building? Turns out that the Manitoba Legislative Building was originally named the Manitoba Parliament Building in the 1920s and the early 1930s. Several presidents seemed to have worked in this building, thus many meetings were held there and by the mid-1930s, council minutes referred to the location as the Manitoba Legislative Building.

It was not lost upon the early councils that this was a less-than-ideal situation. For example, in 1927, a committee was struck to explore the concept of having a joint headquarters along with the surveyors, architects, and the Winnipeg Branch of The Engineering Institute of Canada. However, after approaching the other organizations, it was learned that they were not interested in joining forces in such a venture. The committee nonetheless decided to proceed with completing its report. Upon presenting the findings, the committee concluded that having a headquarters was "beyond the financial means of the Association at the present".

As time went on, there were more and more occasions when traditional business spaces were used. It is not clear if the Association had to rent them, or if the Association capitalised on the generosity and fringe benefits of some of the more successful members of the day. Places like the Manitoba Club, Winter Club, Carlton Club, or the Southwood Golf Club were used fairly often, all of which were private business clubs at the time, and so remain today.

Eventually, the Association determined that a permanent office space was warranted. In 1956, the Association began renting office space at 418 - 265 Portage Ave; a one-room office in the Avenue Building, shared by a secretary, a part-time registrar, and used for committee meetings, which were held in the evening.

Council meeting at the first office space in the Avenue Building in 1956.

click HERE to return to table of contents

SUBSEQUENT OFFICE SPACES WERE THE FOLLOWING:

July 1967 to September 1980

710 – 177 Lombard Avenue, Chamber of Commerce Building, shared with the Manitoba Association of Architects.

WHO'S FIRST?

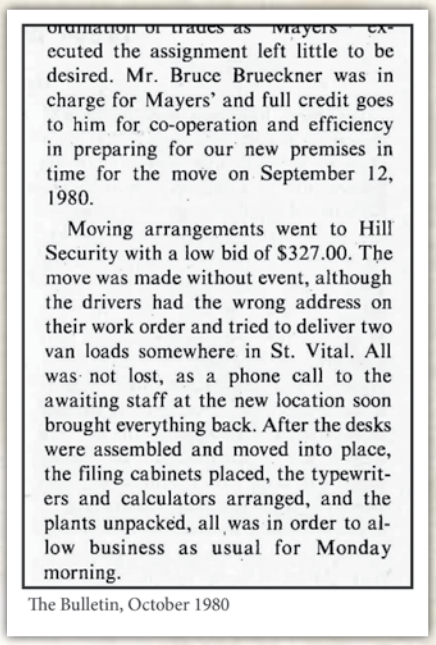
"The first shall be last and the last shall be first." And in reply to those who have asked why the name of the Association of Professional Engineers appears below that of the Manitoba Association of Architects outside the new premises, we offer the following two reasons: (1) Because by reputation and tradition engineers are the foundation and (2) Because we prefer to be asked "Why are we not first?" than "Why are we first?"

Manitoba Professional Engineer, October 1967

Manitoba Professional Engineer, June 1967

September 1980 to Fall 1983

640 -175 Hargrave Street, York Centre



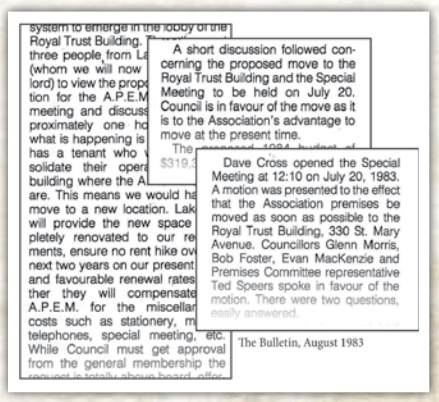
ecuted the assignment left little to be desired. Mr. Bruce Brueckner was in charge for Mayers' and full credit goes to him for co-operation and efficiency in preparing for our new premises in time for the move on September 12, 1980.

Moving arrangements went to Hill Security with a low bid of $327.00. The move was made without event, although the drivers had the wrong address on their work order and tried to deliver two van loads somewhere in St. Vital. All was not lost, as a phone call to the awaiting staff at the new location soon brought everything back. After the desks were assembled and moved into place, the filing cabinets placed, the typewriters and calculators arranged, and the plants unpacked, all was in order to allow business as usual for Monday morning.

The Bulletin, October 1980

Fall 1983 to June 1996

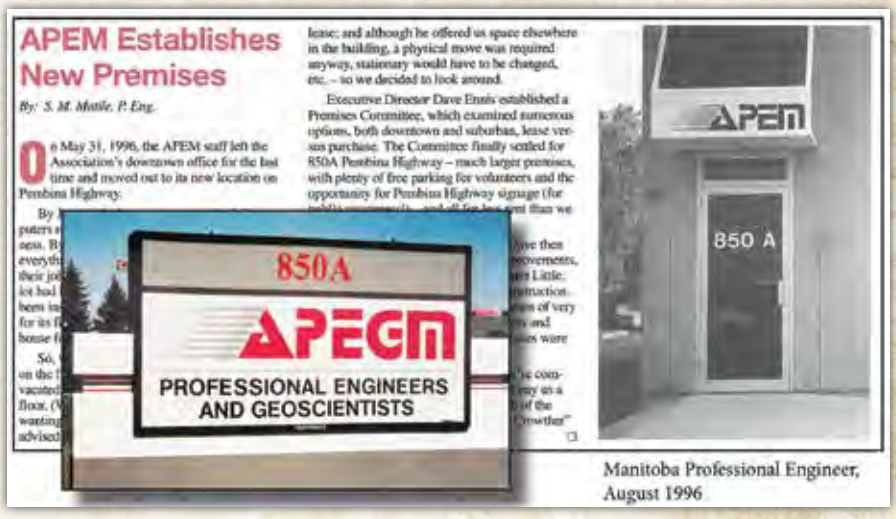
530 – 330 St. Mary Ave. Royal Trust Building



A short discussion followed concerning the proposed move to the Royal Trust Building and the Special Meeting to be held on July 20. Council is in favour of the move as it is to the Association's advantage to move at the present time.

Dave Cross opened the Special Meeting at 12:10 on July 20, 1983. A motion was presented to the effect that the Association premises be moved as soon as possible to the Royal Trust Building, 330 St. Mary Avenue. Councillors Glenn Morris, Bob Foster, Evan MacKenzie and Premises Committee representative Ted Speers spoke in favour of the motion. There were two questions, easily answered.

The Bulletin, August 1983



APEM Establishes New Premises

By: S. M. Mutile, P. Eng.

On May 31, 1996, the APEM staff left the Association's downtown office for the last time and moved out to its new location on Pembina Highway.

lease; and although he offered us space elsewhere in the building, a physical move was required anyway, stationary would have to be changed, etc. – so we decided to look around.

Executive Director Dave Ennis established a Premises Committee, which examined numerous options, both downtown and suburban, lease versus purchase. The Committee finally settled for 850A Pembina Highway – much larger premises, with plenty of free parking for volunteers and the opportunity for Pembina Highway signage (for

850A

APEGM

PROFESSIONAL ENGINEERS AND GEOSCIENTISTS

APEM

850 A

Manitoba Professional Engineer, August 1996

June 1996 – December 2008

850 A Pembina Highway

On May 31, 1996, the Association staff left its downtown office for the last time and moved out to its new location on Pembina Highway. The phone number was also changed to 474-APEM(2736), which was quite fitting.

Why did they move? All other tenants on the fifth floor of the Royal Trust building had vacated, leaving the Association as the only tenant. The landlord, wanting to rent the entire floor to a larger client, advised that they would be unable to renew the lease. Although he had offered the Association space elsewhere in the building, a physical move would have been required anyway and stationery would have to be changed, so it was decided to look around.

With the establishment of a Premises Committee, multiple locations were examined: downtown and suburban, lease and purchase. The Committee finally settled for 850A Pembina Highway – a much larger premises, with plenty of free parking for volunteers, and the opportunity for Pembina Highway signage.

December 2008 – Present

870 Pembina Highway

Although just a couple of doors from the previous location, the new building was worlds apart in functionality and design. From the reception area to the displays in the lobby, the building reflected a sense of professionalism. The use of curved surfaces and the strategic use of art, displays, and technology made this an office of which members could be proud.

The Association made the decision to move as the staff had outgrown the previous location. When APEGM started at the St. Mary Avenue location, there were six staff members in a 3,700 sq. ft. office. By December 2008, staff had grown to 11 full-time and one part-time employee. This growth in staff was due to an increase in membership and the addition of new program initiatives.

Moving into the main floor at 870 Pembina Highway, gave the Association approximately 7,200 sq. ft, 12 offices, two workstation areas, and three conference rooms. The office also has a full kitchen and is set up with the ability to cater events. The office was designed to maximize functionality and security. It features a secure, lockable sliding filing

2nd Floor Boardrooms

Landon

Six-person boardroom, named after C.S. Landon, P.Eng., Association Registrar from 1934 to 1966 and President in 1961.

Lyons

Four-person private meeting room, named after Manson Lyons, P.Eng., the Association's first president.

Wardrop

14-person boardroom with flexible layout, named after Les Wardrop, P.Eng., FEC, Manitoba engineering pioneer.

Weiszmann

Six-person boardroom, named after Judith Weiszmann, P.Eng., FEC, the first female applicant to the Association.

system for record storage and other features to keep information secure.

The new building houses a heritage display area, which features the history of engineering and geoscience in Manitoba. This display area, in conjunction with the main collaboration area, provides the Association with the opportunity to host members and guest events of up to 100 people.

In 2017, the Association took the opportunity for growth by expanding its office into newly vacant space on the second floor, which had been previously occupied by Granite Financial. The Association had been considering options for future office growth and Granite's move to Donald Street provided a timely opportunity to expand without having to relocate.

As of January 30, 2018, membership had increased to 8,201 and there were 19 staff supporting the growing membership and increased program initiatives. Prior to the expansion to the second floor of the building, several staff shared workspaces with no privacy and minimal storage, and a couple of staff members were working out of boardrooms, due to having no permanent work area.

The office expansion allowed all staff access to individual office space, while also including room for future growth, and additional storage space. Growing committees, task groups, and chapters are further accommodated with the addition of four boardrooms on the second floor, named after significant engineers in the Association's history. In 2019, the Association saw over 300 people regularly volunteer on committees, task groups, and through special events or activities. Even though the Association now has seven meeting spaces that range in size, staff are regularly seen negotiating with each other for optimal boardroom space to accommodate their committee or meeting needs.

The renovations to the second floor updated the décor and functionality of the space, while encouraging future floorplan flexibility through the inclusion of an innovative DIRTT wall system, as well as several open-plan areas. A new internal staircase linked the two floors and features a modern wall art installation, in keeping with the modern décor of the lower level.

As the Association continues to grow to better support members and the public, more working space is a necessity. This expansion ensures Association staff and members, both present and future, will have room to comfortably continue their work, and work with and for our members, volunteers, and the public of Manitoba.

DIRTT Wall System - Demountable wall systems create a responsive office design as they are modular and can be easily modified to suite growing needs while being sustainable; it reduces carbon footprint and impact on the environment. DIRTT supports modular furniture components for adjustability and accommodates technology for a clean design, and is an optimized acoustical separation compared to traditional drywall construction.

NORTH VIEW OF DIRTT SYSTEM: VIEW FROM PRIVATE OFFICES

Manitoba Trailblazers
- Engineers and Geoscientists Make Our Lives Better

When was the last time someone thanked you for the work that you do?

Because the scope of an engineer's or geoscientist's work is so varied, engineers and geoscientists don't readily spring to mind when you get behind the wheel of your vehicle, sit down to a meal, visit the doctor, or pick up your mobile device.

OK, maybe you'd appreciate their work with a cell phone, but more often than not, the work goes underappreciated.

Engineers Geoscientists Manitoba would like to change that.

Throughout 2020, the Association plans to highlight how engineering has made life better for Manitobans as it celebrates its centennial. Recognition is to be given to the individuals that changed the history of Manitoba through considerable achievements and innovative thinking. Here are a few trailblazers.

Les Wardrop was an engineering pioneer and the principal founding partner of W.L. Wardrop & Associates, one of Canada's pre-eminent engineering consulting firms for more than a half-century. A professional engineer with degrees from the University of Manitoba in electrical engineering in 1939 and civil engineering in 1947, one of his company's first assignments was the 750-acre residential development in Windsor Park. Other landmark projects from W.L. Wardrop include the Portage Avenue overpass at Polo Park, the Pembina-Jubilee interchange, Bishop Grandin Boulevard, the Provencher Bridge, the servicing of Winnipeg Beach and the Pinawa town site.

As one of the first female engineers registered to practice in Manitoba, **Judith Weiszmann** was a trailblazer. Breaking into a male-dominated field in the middle of the 20th century meant her expertise, background, and judgment were put under a much stronger microscope than those of her male colleagues. She went on to a successful 40-year career as a structural engineer, completing more than 450 projects involving industrial, commercial, municipal, and residential buildings. She also provided expert engineering opinions to the construction industry, the legal profession, and the courts.

Dr. Norman Halden
As a Professor of Geology and Dean of the Clayton H. Riddell Faculty of Environment, Earth, and resources at the University of Manitoba, Dr. Norman Halden's geochemistry research has focused on characterizing and quantifying the distribution of trace elements in zoned minerals, such that their patterns of distribution may be related to the environment of mineral growth and used as a predictor of geological and environmental processes. His research has been applied for mineral exploration research on the CAMIRO field projects of the Thompson Nickel Belt as well as for discerning the geographic migration of Arctic char and monitoring environmental effects to assess exposure to tailings from trace element mapping in otolith microchemistry.

If you are enjoying a full night's rest after months or years of tossing and turning, you might want to send **Dr. Zahra Moussavi** a thank you card. An expert in biomedical research, she has applied her electronic engineering skills to detect Obstructive Sleep Apnea by recording a few minutes of breathing sounds while you're awake and then analyzing the data. One of her current passions is the early detection and treatment of Alzheimer's disease. For the last six years, she has offered an eight-week memory program, including games for testing and exercising the brain, for seniors and people with dementia.

Dr. Digvir Jayas isn't a journalist, but he sure acts like one. He has authored or co-authored more than 900 articles in scientific journals, conference proceedings, and books dealing with storing, drying, handling, and quality monitoring of grains. He established the Canadian Wheat Board Centre for Grain Storage Research at the University of Manitoba, and his research has attracted more than $27 million in funding. His work has had a significant impact on the development of efficient grain storage, handling and drying systems in Canada, the U.S., China, India, and Ukraine.

Chris Bzovey might not have had an impact on your life yet, but give him time. Less than four years after completing his master's degree in biomedical engineering, he has already implemented a variety of medical equipment and system replacement projects at the Winnipeg Regional Health Authority. At the same time, he has continued to develop the surgical instruments repair portfolio. His goal is to become a leader in healthcare technology management and to grow the clinical engineering profession in Canada.

Alexandra Hoy didn't really know what engineers did when she applied to the Faculty of Engineering at the University of Manitoba. She had always been a strong student in math and science and enjoyed art, so when she discovered becoming an engineer could marry all three, she took a chance and applied. Ultimately, she chose civil engineering with a specialty in roads. She focuses on what we need out of our roadways and then sets out to design something that can handle not only the millions of automobile tires running over it throughout the year, but also extreme hot and cold temperatures.

Certain content was previously printed in the *Winnipeg Free Press* Engineering and Geoscience Week Supplement.

Changes in Practice

By R. Reichelt P.Geo., FGC

The engineering and geoscience professions have seen many changes in the past 100 years. Over my lifetime of 63 years, I have witnessed many of them. Here are a few of those changes:

Communication Technology

Before the Internet, there was voice and the written word. Then, as now, voice could be heard in person or on the telephone. People kept extensive files of telephone numbers, often on a mechanical device called a Rolodex. Speed-dial features were rare. By the way, the older telephones used a rotary dial to enter the number. The telephone company charged extra for a fancy "Touch-Tone" telephone. A large office might have a switchboard operator to manage telephone communications.

Where a hard copy was needed, information was written down in memos, formal letters, or reports. Memos could be written by hand (sometimes on a pad with carbon copies), or the handwritten draft given to a secretary to be typewritten. Some people used a dictation recorder, also known as its brand name Dictaphone, to give the draft to the typist. Having competent typists was vital to any engineering firm. So was a reliable postal service.

Report writing could be a long, drawn-out process. Handwritten drafts were circulated for editing and the final draft typed out by a secretary. Clear handwriting was essential, as was the ability of the typist to understand what the engineer or geoscientist had written down. Often, many typewritten drafts were needed before a final was accepted. Copying reports could be a major exercise; some firms sent the originals out to specialised printers for copying and binding.

The production of drawings (charts, plans, maps, etc.) requires special mention. Before computer-aided design (CAD) systems, there was hand drafting. Typically, the engineer or geoscientist would draw a rough draft on paper or card stock and give it to the draughtsman, who would make the final drawing by hand using a variety of drawing tools. The drawings were typically made on a transparent medium, such as Mylar, so copies could be made. Before the invention of Mylar, drawings were made on drafting linen. This was linen cloth saturated with starch to make it translucent. Drafting linen was difficult to work with and the drawings were committed to linen only after they were complete on card stock. The drafting linen was laid over the cardboard draft and traced.

Copying drawings made on Mylar or linen usually involved the use of blueprinting technology. Photo-sensitive paper was exposed by running the drawing and paper through an exposure machine. The paper was developed using an ammonia process. There's nothing like having litres of hazardous liquids hanging around the office.

Design and Calculation

In the 1960s, anyone doing design work needed a library of reference material to help in the work. Material specifications, design conventions, and previous successful designs were all referenced in the process of making a design. Most engineering firms kept a library of all kinds of reference books for this purpose. Sometimes, large firms had librarians.

Calculations were made by hand, or using a slide rule. Slide rules are precise only to three significant digits, and you had to keep the orders of magnitude in mind. Starting in the mid 1970s, inexpensive electronic calculators became common and were rapidly incorporated into practice.

If a project required extensive calculations, a team of technicians could be put to work on it, as you may have seen in the 2017 movie *Hidden Figures*. Beginning in the late 1960s, large mainframe computers became available at somewhat affordable prices. Specialist computer operators entered the programs via punch cards and delivered the results in reams of dot-matrix printouts. A typical smartphone in 2020 has more computing power than a 1970s-era mainframe.

Diversity

In the 1970s, engineering and geoscience were male-dominated professions. There were some women, but they were curiosities. In most offices, women were administrative staff and men were the professionals. There were, however, some exceptions where a firm's accountant could be a man and draughtsmen could be women. However, typists, receptionists, and office managers were almost always women.

As more women began studying engineering and geoscience in the 1980s, more began practising as professionals, and the existence of engineers and geoscientists who are women is now considered unremarkable. The process was not without bumps. I remember one young woman geoscientist telling me that when she reported to work for a new position, she was immediately met by the office manager who put her to work typing. This continued until her supervisor retrieved her for professional work, much to the chagrin of the office manager.

The ethnic makeup of engineering and geoscience reflected our general society at the time with people of European ancestry dominating. Beginning in the late 1960s, with changes in the immigration policy, more ethnic diversity came to be seen in the professions. The process continues today.

Notes on Change

The process of technological change is interesting in itself. Computers, for instance, gradually went from mysterious devices operated by specialists to everyday office equipment. Slide rules were replaced by pocket calculators, which were themselves largely replaced by applications on our office computers. Handwritten drafts were replaced by electronic files. Handwritten memos were replaced by emails. CAD drawings gradually replaced hand-drafted drawings. Bound reference books were replaced by electronic databases. The process was incremental and involved the acquisition of new skills by professionals and support staff. In some cases, whole occupations were rendered obsolete.

Change can be difficult to manage. With regards to technology, carefully acquired skills can be rendered obsolete overnight. Learning new skills can be like the Red Queen's race in Lewis Carroll's *Through the Looking-Glass*, where you must run as fast as you can to stay in one place.

Attitudes about race and sex are often deep seated and difficult to change. But change they do, and today's younger readers will have the opportunity to reflect on the changes they will observe in their careers. We will see that our professions are a work in progress and their evolution will continue, whether we like it or not. Expect future changes to take unexpected routes.

KP Retrospective…

A nostalgic trip down the publication's memory lane

By. C. Cousin, P.Eng.

As Engineers Geoscientists Manitoba celebrates 100 years of engineering as a formalised profession during 2020, it's a great time to look back at the long and evolving history of the Association's communications with our membership. A continuous, regular publication was established with first issue of The Manitoba Professional Engineer in 1956, with over 300 issues published to date. The full archived collection is available through the Association's website at *http://www.enggeomb.ca/Keystone.html*. I encourage all members to take a look back, whether for nostalgia or out of curiosity. To provide this retrospective, I reviewed many past issues and spent far more time reading than I had intended. News and articles of celebration, challenge and frustration, technical advancement, and evolving approaches to business, all reflect the social atmosphere of the time; both the changes and constants within society and our profession are evident in the evolving look and content of these publications.

1950s

Today's reader will find a striking number of similarities between *The Manitoba Professional Engineer*, published in the 1950s, and what appears in our publication today. The newsletter typically had reports from the President and Registrar, a feature titled "Meet your Councillors" following elections, and writeups on events including the annual golf tournament and formal dinner and dance, then known as the Fall Frolic. New members, members-in-training, and company registrations were listed, and with a much smaller membership, birth announcements for children of members appeared as well. Active participation in Association events by the membership was evident, with over 20 percent attending the Annual General Meeting (AGM) in 1959. There was an active Engineers' Wives Association, reporting 147 members in 1956 when the total professional membership of the Association was the highest ever at 677 members, and invitations and reports from events held by the wives were included. This group surprised me by remaining active into the mid-1990s. The decade ended with a focus in the November 1959 issue on the increase in annual fees from $5 to $15, implemented to enable the Association to hire additional staff, expand services provided to members, and increase public outreach to improve the image of engineering.

1960s

The early 1960s were a great time for engineering in Manitoba, and along with the usual meeting notes and committee reports, *The Manitoba Professional Engineer* provided feature articles on major engineering projects, including: the development of suburbs and industrial parks, the new Winnipeg Airport terminal, construction of the Red River Floodway, Grand Rapids Generating Station, and the new Direct Distance Dialing telephone system.

The latter half of this decade revealed the social unease of the Vietnam War era, with shifts in society reflected in the focus of the Association and content of the publication. More active debate occurred in editorials, including the purpose of the Association and what it should be doing for members. The rise of unions and discussions of collective bargaining were regular topics, as was the rise of the consulting engineering section, which was discouraged from competing price-wise on engineering services. The 1969 editions included rants about the "radicals" overtaking the university and the supposed declining state of morality and standards of values.

1970s

The Association's various committees were active throughout the 1970s, including the Career Guidance Counselling Committee and the Committee on Safety in Engineering Practice, which investigated and reported on engineering failures. Increasing regulation of the practice of engineering is evident, with the Discipline By-Law established in 1970, and the *Labour Relations Act* coming into force in 1973, which defined a Professional Employee. Articles addressed the duty of practitioners to uphold professional integrity and promoted more use of the P.Eng. designation, along with regulation of the corporate practice of engineering, competing goals of the Association to support engineers and protect the public, and the importance of self-regulation of our profession.

In October 1976, the publication took on a new look as *The Bulletin*, which carried through to the end of 1985.

The cover of *The Bulletin* was selected following a competition. This look continued through February 1983, when photographs began appearing on the front cover. Although the look changed, much of the familiar content remained.

1980-1985

Perusing the 1980s' editions was very interesting and made me think of the saying, "the more things change, the more they stay the same". Each year's October issue was focused on the Annual General Meeting (AGM), as it is today, and typical content included editorials, the message from the President, listings of new members, committee and area reports, coming event notices, and member profiles. Feature articles from this decade and the focus of the Association feel recent, as much of the debates, which did not result in changes at the time, put into motion changes that would happen years later. Hotly debated topics included the merits of mandatory continuing education requirements and continuing competency for members, and allowance for another class of members (engineering technologists, now potentially eligible for Eng.L. registration). The October 1983 issue has a fun article looking at what the author predicted for the future with a mock edition from 2010. The predicted prevalence of robots in our lives didn't quite come to pass in the way envisioned!

1986-1989

In 1986, the publication returned to its original moniker of *The Manitoba Professional Engineer*, with a fresher look and an editorial emphasis on taking a more global outlook on the profession. This wider outlook included regular reports on the activities of other Canadian engineering associations as well as other countries. There were some exceptionally good issues in these years, with technical feature articles including "Engineering Under Pressure" (December 1986) about the Challenger disaster as an engineering failure. Other projects featured included: northern hydro transmission lines, parking structure failures, Fort Garry Place and its iconic revolving restaurant, and a history of the Pinawa Dam.

Throughout 1987, The Manitoba Professional Engineer celebrated the Centennial of engineering as a profession in Canada with a salute to exceptional Canadian engineering feats. A one-time award was given out that year as the Centennial Achievement Award to the Manitoba Flood Protection System, consisting of all flood protection components including the Red River Floodway, Seine River Diversion, Fairford Control Works, Shellmouth Dam, dyking systems, flood forecasting and response. This was described as a project that ". . . continues to exemplify the Association's mandate to protect the public in the field of engineering".

If you ever need a reminder of the importance of the work done by engineers in our society this is where to find it!

> Academics were also celebrated throughout 1986-1989, and I learned that U of M Professor Don Shields had a $20,000 research project to study methods of blowing up icebergs off the coast of Newfoundland to protect oil drilling platforms. Technically he referred to it as "fragmentation" but now I want to seek out the research paper to find the results of this study!

1990s

The same format and content continued into the 1990s, including the typical President's message, Council notes, committee and area news reports, and in-depth feature articles. The format of the publication was made easier to read and included more photographs and use of text boxes for a more modern look.

Changes in our society continue to be reflected in the publication, including a focus on sustainable development and what was called the "Greening of the Profession" (October 1990). A focus on women in engineering emerged, with regular articles from the APEM Women in Engineering Advisory Committee following a series of six cross-Canada forum events by the Canadian Committee of Women in Engineering in 1991. Ideas put forth to increase the number of women in our profession included encouragement in math and sciences in schools, direct outreach to high school students, and presenting a more visible and positive public image of our profession. If this sounds too familiar to anyone involved with the current 30 by 30 initiatives, yes, this did appear in April 1991.

1995 was the 75th Anniversary of the Association, and *The Manitoba Professional Engineer* celebrated with a series of articles showcasing engineering highlights and events of the first 75 years. In February 1995, Association President D.G. Osman wrote an article on "The Need for 20-20 Vision", addressing the question of what engineering would be like in 25 years. Some predictions were on target while others were not, but his entreaty to practitioners remains relevant: ". . . today's professional engineers must look beyond their day-to-day activities, prepare for the future of engineering, and continue to

be the leaders in society." See page 34 for a response on "The Need for 20-20 Vision" predictions.

National Engineering Week activities were celebrated, and the Spaghetti Bridge Competition was established as a centerpiece of this in 1995. Traditions are strong in our Association!

1999-2009

Once the *Engineering and Geoscientific Professions Act* passed in the Manitoba legislature in June 1998 and the Association began administering the professional registration of geoscientists as well as engineers, changing its name to the Association of Professional Engineers and Geoscientists of Manitoba, the title of *Manitoba Professional Engineer* for our publication would no longer do. A new name was indeed needed. Suggestions were sought from the membership. As it turned out, two members – Harold Larsen, P.Eng. and Brian Stimpson, P.Eng. – suggested the name "Keystone", finally adopted as *The Keystone Professional* by then-Executive Director and Registrar, Dave Ennis, P.Eng.

The name has geographical (of the "The Keystone Province"), engineering (the keystone being the stone at the apex of an arch, the design element upon which that whole civil structure depends), geoscientific (of stone), and professional symbolism. That name packs a punch! Perhaps it is unsurprising that Mr. Larsen and Dr. Stimpson were both geological engineers, each having a foot in both worlds.

In any event, the last issue of *The Manitoba Professional Engineer* was published in February 1999. The first issue of *The Keystone Professional* was published in June 1999. The look of the publication was updated, with one accent colour used in each issue. Advertising appeared, while detailed committee reports fell by the wayside.

Ron Britton became a familiar name to regular readers of this publication. His series of articles covering "Thoughts on Design" started appearing in 2001 with the "Engineering Philosophy 101" series following in 2006.

A new look emerged again in March 2007, with a more modern appearance and full colour. Prior to this time, articles and photos were sent separately to an outside provider who would lay out the articles and send the document to a commercial printer. In 2007, with the addition of an Association staff member with publishing capabilities, *The Keystone Professional* was designed and laid out in-house.

This look has remained very similar through to today, with the publication continuing to provide updates on the activities of the Association, Council, member chapters, and celebration of special events including the Ingenium Conference, AGM, Awards Gala, and Provincial Engineering and Geoscience Week (PEGW) activities.

2010-2019

The Spring 2010 issue was a special 90th Anniversary celebration edition, and the Heritage Committee provided a feature on "How the Association Got Started", along with a timeline of major milestones in Manitoba engineering. The publication still serves to communicate important information to the membership, including the mandatory ProDev program introduced in 2011, and the introduction of digital signatures.

Our Spring 2012 issue would be our first issue published by Craig Kelman and Associates, our current publisher. This partnership enabled us to provide an even more professional-looking publication, while freeing up Association staff to work on other priorities.

While much has changed in both society and the practice of engineering and geoscience since 1956, the continuity of the Association's publications and constancy in key content clearly demonstrate that we are a profession deeply rooted and steeped in tradition, while continually trying to evolve and grow. Understanding where we've been will help build on the past as we move into our future.

A fun fact for me was that Ron Blicq began offering the course "Technically-Write!" in 1970, and by 1974 had presented this to over 200 engineers, technologists, and technical managers across Canada. The Association offered a 10% discount for members signing up for this in 1974.

I remember taking this same course around 2002, when he was co-presenting with Lisa Moretto. Ms. Moretto, with RGI Learning, still teaches technical writing and was a presenter at multiple Ingenium Professional Development Conferences, including 2019. When we engineers find something we like that works, we sure do stick with it!

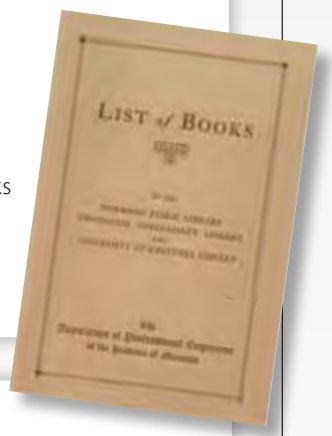
From our History

1921

The fees as outlined by the Association in 1921 for consulting engineers were for $50 per day for six hours of chargeable work for general consultation and reports, plus all out of pocket expenses and cost of any assistants and overhead equal to 100% of the assistant's costs. The direct engineers cost of $50 per day works out to be equal to $602 per day in 2020 dollars, or roughly $100 per billable hour.

1922

In 1922, the Association published a booklet listing the various reference books and which library each was held at.



1937

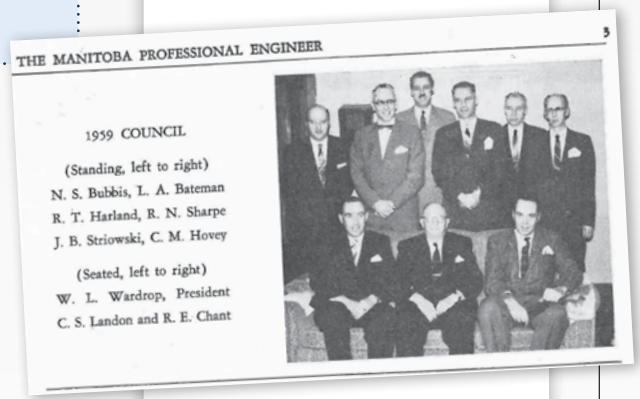
1st Honorary Degree: John G. Sullivan was bestowed a L.L.D. from the University of Manitoba in 1937, the first member of the Association so honoured by the University.

1940

Even in 1940, 20 years after the formation of provincial associations regulating the practice of engineering, it is still acceptable to be a member of The Engineering Institute of Canada and not a provincial association and to be considered an engineer.

1947

By 1947, the Dominion Council started to begin efforts to establish a uniform standard of two years of relevant experience for admission across the country which the Manitoba Association was already compliant with. By 1950 a new "Engineer-in-Training" by-law was adopted by council that allowed any person qualified for registration with respect to educational requirements but who did not yet have the necessary experience, to be enrolled as an Engineer-in-Training provided they were engaged in a line of work necessary to gain the required experience.


THE MANITOBA PROFESSIONAL ENGINEER 3

1959 COUNCIL

(Standing, left to right)
N. S. Bubbis, L. A. Bateman
R. T. Harland, R. N. Sharpe
J. B. Striowski, C. M. Hovey

(Seated, left to right)
W. L. Wardrop, President
C. S. Landon and R. E. Chant

1950s

In the 1950s, on a case-by-case basis, the Association still allowed for the registration of older individuals in positions of authority with many years of experience, but who did not have a formal engineering education. This was permitted within the Engineering Act under the grandfathering clause. After 30 years, the Association phased out its use. After 34 years of operation by 1954, it was estimated at the time that the Association's membership of 555 represented only 25% of the practicing engineers in the province. Recruitment efforts were intensified during the second half of the 1950's.

1989

The Association's 70th year began days after the December 6, 1989 Ecole Polytechnique massacre in Montreal. It shook the Canadian engineering profession and serves as a reminder of one of the important reasons for championing the participation of women in engineering.

1990s

One of the intended modifications when the initiative to change the Act started in the early 1990s was to have the authority regulate corporate practice. There had been internal discussions and proposals to recognize and provide regulation of 'group' practice in the 1970s, but they were turned down in membership votes at annual meetings. Ontario already had a requirement for a Certificate of Authorization and Alberta had a Permit to Practice – both effectively meant that an entity offering and providing engineering services by persons employed in the entity was required by the act to be registered with, and be accountable to, the Association. Manitoba opted for the Certificate of Authorization and, at the insistence of the Provincial Government, required that the certificate holder also carry professional liability insurance. That insistence did not apply to sole practitioners. By the end of 2019, there were 987 holders of a Manitoba Certificate of Authorization.

MANITOBA MILESTONES

Preparing to Grow

1881
Canadian Pacific Railway (CPR)
Canadian Pacific Railway (CPR) development begins.

1891
Winnipeg Transit System
Electrification of Winnipeg Transit System

1900
Minnedosa River Plant
First hydroelectric generating station is established in Manitoba.

1903
Winnipeg Union Bank Tower
Western Canada gets its first skyscraper.

1907
Winnipeg James Avenue Pumping Station & High-Pressure Fire Fighting System
Announced by the City Council in 1904 after a major downtown and numerous protests by insurance underwriters, the high-pressure water system for fighting fires opens.

1907
Winnipeg Telephone System
The first telephone exchange, Garry Telephone Exchange Building, is erected by Manitoba Government Telephones.

1910
St. Andrews Lock and Dam
A prototype of a dam on the Seine River in France, the Lock is completed in 1910 having a profound impact on the city's growth as a supply hub to Northern Manitoba.

1911
Pointe du Bois
First hydroelectric generating station on the Winnipeg River is built by the City.

1913
Transcona Canadian National Railway Shops
Transcona Canadian National Railway Shops opens.

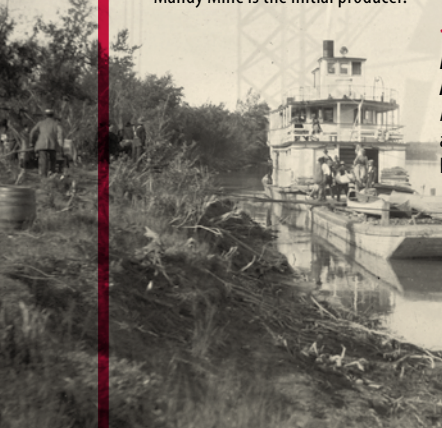
1913
Manitoba Rolling Mills
Manitoba Rolling Mills in Selkirk (Steel town)

1913
Transcona Parrish & Heinbecker (P&H) grain elevator
Transcona Parrish and Heinbecker (P&H) grain elevator foundation failure and restoration.

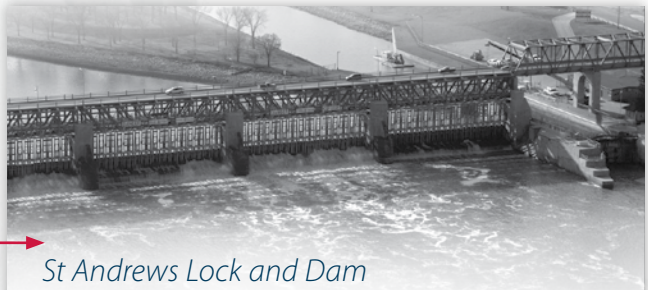
1913
Electric Street Cars
Electric street cars are introduced to St. Vital.

1915
Shoal Lake to Winnipeg Aqueduct
Construction of the 135-km-long Shoal Lake Aqueduct begins.

1916-1920
Flin Flon Copper-Zinc mining
Mandy Mine is the initial producer.



1918
Flin Flon 1st productive copper mine by Mandy Mining Co. Schist Lake
A claim for a site 2 miles from the northwest arm of Schist Lake, 3.5 miles SE of present-day Flin Flon, is registered.



St Andrews Lock and Dam

The dam has operated for more than 100 years helping to regulate the summer water levels of the Red River through the City of Winnipeg to aid navigation over Lister Rapids. The adjacent lock allows river traffic to operate between Winnipeg and points downstream, while the incorporated bridge provides a link for road traffic across the river. It had a profound effect on the City of Winnipeg in the early part of the last century by enabling river traffic to be loaded in Winnipeg rather than Selkirk and effectively enabled the City of Winnipeg to grow into a supply hub for Northern Manitoba, a role that formerly belonged to Selkirk.

The dam is a Caméré design from a prototype on the Seine River in France. This engineering system is comprised of three elements; a dam, a lock, and a bridge. The lock was completed 1910, the bridge in 1913, and a bascule lift was added later to accommodate tall ships. The fixed structure of the bridge is comprised of a combination of concrete/stonework piers and steel trusses. The design included frames from the piers which contained curtains of wooden laths that could be rolled up and down. It is the only structure of its kind in North America and one of only four of its kind in the world. At 240 metres long, it is also the largest dam of this type ever built. In 1990 it was designated as a national historical site due to the uniqueness of its engineering design.

Aqueduct

The Shoal Lake aqueduct was a significant development of a scale indicative of the confidence of Winnipeggers in the first decade of the last century. It continues to operate today as the main source of water for the City of Winnipeg for more than 100 years.

The aqueduct is 155 kilometres long and delivers water from the Shoal Lake/Lake of the Woods watersheds to reservoirs in and around the City of Winnipeg. The elevation of the intake is approximately 90 m higher than Winnipeg (at McPhillips Reservoir) and is the driving force to move the water to the Winnipeg area. The aqueduct was built between 1914 and 1919 of concrete with a dish shaped floor and a parabolic-shell unreinforced-arch.

Our picture shows W.G. Chace, chief engineer for the Greater Winnipeg Water District, standing in the aqueduct under construction. Mr. Chace would later become president of APEM in 1928.

What is truly amazing is that as a result of system enhancements and as a result of reduced per captia water consumption rates, the aqueduct water supply will continue to serve Winnipeg for years to come and will eliminate or defer the need for future capital expansion projects.

click **HERE** to return to table of contents

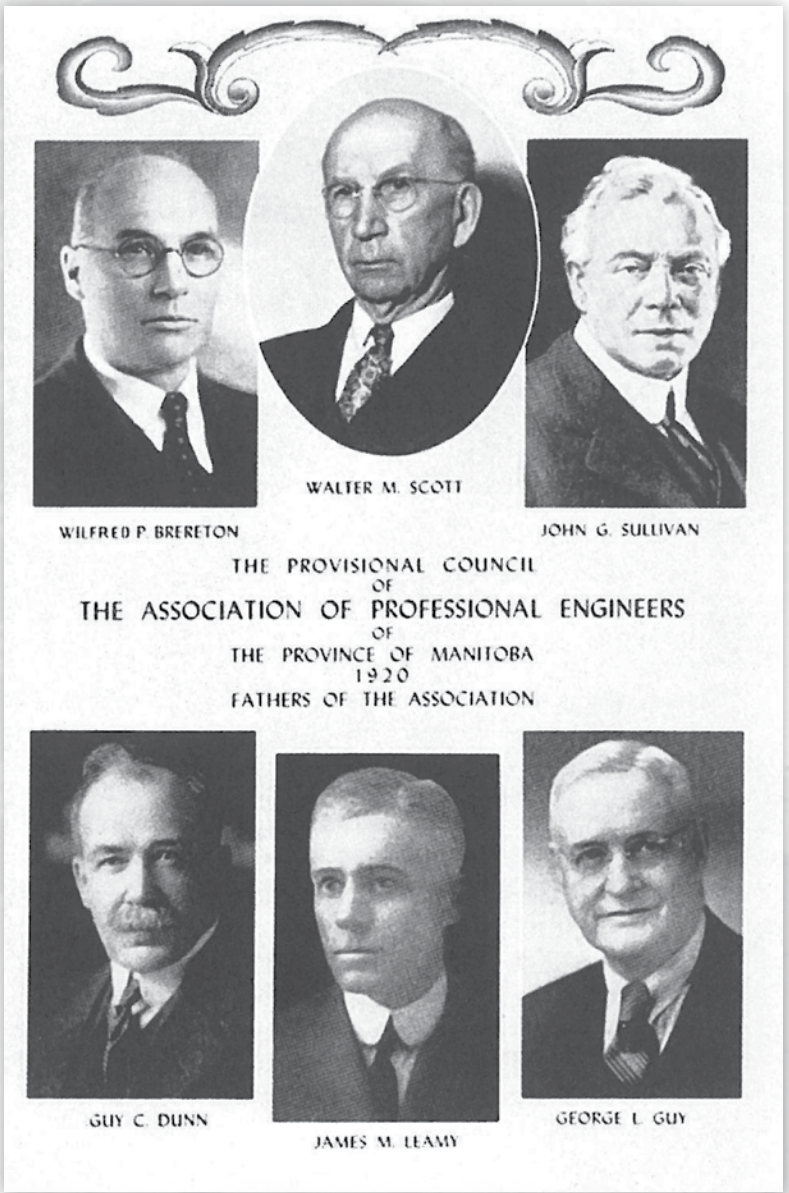
ASSOCIATION PRESIDENTS

2020 – Jitendra Paliwal
2019 – Ruth Eden
2018 – Jonathan Epp
2017 – Lindsay Melvin
2016 – Lesley McFarlane
2015 – Howard Procyshyn
2014 – Marcia Friesen
2013 – Dawn Nedohin-Macek
2012 – Adam Pawlikewich
2011 – Bill Girling
2010 – J.C. Woods
2009 – D.J. Himbeault
2008 – M.T. Corkery
2007 – R.L. Taylor
2006 – D.S. Jayas
2005 – A.D. Silk
2004 – A.H. Permut
2003 – L.R. Ferchoff
2002 – M.A. Barakat
2001 – A.J. Pollard
2000 – J.R. Hosang
1999 – M.G. Britton
1998 – P. Washchyshyn
1997 – J.M. Symonds
1996 – C.L. Stewart
1995 – D.G. Osman
1994 – D.G. Chapman
1993 – C.E. Anderson
1992 – N.P. Feschuk
1991 – Wm. M.A. McDonald
1990 – K.A. Buhr
1989 – G.E. Laliberte
1988 – W.D. Christie
1987 – E.A. Speers
1986 – E.W.J. Clarke
1985 – R.A. Kane
1984 – R.R. Foster
1983 – D.E. Cross
1982 – K.M. Jardine
1981 – R.C. Isaak
1980 – W. Saltzberg
1979 – R.A. Johnson
1978 – A.W. Gilliland
1977 – E.F. Glass
1976 – C.R. Bouskill

1975 – D.R. Grimes
1974 – G.A. DePauw
1973 – C.R. McBain
1972 – S. Barkwell
1971 – R. Hood
1970 – J.D. Adam
1969 – L.W. Blackman
1968 – F.M. Fowler
1967 – R.C. Sommerville
1966 – R.T. Harland
1965 – S.J. Borgford
1964 – B. Chappell
1963 – T.E. Weber
1962 – R.E. Chant
1961 – C.S. Landon
1960 – W.L. Wardrop
1959 – W.L. Wardrop
1958 – L.A. Bateman
1957 – N.S. Bubbis
1956 – J. Hoogstraten
1955 – J. Hoogstraten
1954 – G.B. Williams
1953 – J.L. Charles
1952 – C.L. Fisher
1951 – W.D. Hurst
1950 – W.D. Hurst
1949 – T.E. Storey
1948 – B.A. Johnston
1947 – B.A. Johnston
1946 – J.W. Battershill
1945 – G.E. Cole
1944 – H.S. Rimmington
1943 – H.S. Rimmington
1942 – C.V. Antenbring
1941 – G.E. Cole
1940 – F.S. Adamson
1939 – W. Youngman
1938 – P. Burke-Gaffney
1937 – E.V. Caton
1936 – A.L. Cavanagh
1935 – J.N. Finlayson
1934 – H.M. White
1933 – J.W. Sanger
1932 – J.W. Sanger
1931 – R.W. McKinnon
1930 – C.H. Attwood
1929 – C.H. Attwood
1928 – W.G. Chace
1927 – Wm. Aldridge
1926 – D.L. McLean
1925 – C.H. Fox
1924 – A.J. Taunton
1923 – A.A. Young
1922 – D.A. Ross
1921 – M.A. Lyons
1920 – M.A. Lyons

M.A. Lyons
First President

1920 Provisional Council



Past Presidents and their wives at the 1970 Wine and Roses Ball.

Back Row - Left to Right: Mr. and Mrs. Weber, Mr. and Mrs. Antenbring, Mr. and Mrs. Fowler, Mr. and Mrs. Sommerville, Mr. and Mrs. Blackman, Prof. and Mrs. Chant, Mr. and Mrs. Borgford.

Front Row - Left to Right: Mr. and Mrs. Bateman, Mr. and Mrs. Fisher, Mr. and Mrs. Youngman, Mr. and Mrs. Storey, Mr. and Mrs. Hurst, Mr. and Mrs. Wardrop.

click **HERE** to return to table of contents

100 year timeline

ENGINEERS GEOSCIENTISTS MANITOBA | 100 | 2020

1920

1920
An Act respecting the Engineering Profession
The Engineering Profession Act was created and the Association established to regulate the profession of engineering in Manitoba.

1921
Manitoba rural electrification
Manitoba rural electrification starts in the towns of Carman, Minnedosa, Morden, Roland, and Virden.

1921
The Association adopts its first Code of Ethics
The Code of Ethics initially adopted November 1, 1921, revised April 6, 1935, and September 23, 1959, subsequently rewritten and adopted February 28, 1968, revised April 13, 1992, May 9, 2000, and October 19, 2018.

1923
Hydroelectric expansion on the Winnipeg River
Built by Winnipeg Electric Railway Company, the hydroelectric expansion on the Winnipeg River starts with Great Falls.

1924
Winnipeg Amy Street Steam Plant
City Hydro's Amy Street Steam Plant goes into operation, providing electricity and steam heat to downtown Winnipeg buildings through a network of underground pipes.

1925
Pine Falls Pulp & Paper
Lumber merchant John D. McArthur forms the Manitoba Pulp and Paper Company.

1926
San Antonio Gold Mine
Entrepreneur J.D. Perrin develops a mine at Rice Lake near Bissett.

1927-1931
Hudson Bay Railway Line, Port of Churchill
Hudson Bay Railway Line is completed and Port of Churchill opens.

1930

1930-1933
Bus Manufacturing
Begins with Western Auto and Truck Body Ltd. (MCI - 1930) and Fort Garry Motor Body and Paint Works Ltd. (New Flyer - 1933).

1938
Flin Flon above-ground Water and Sewerage System
Flin Flon becomes the only city in the world to locate its water and sewage lines above ground due to its near-impenetrable bedrock in some parts of town.

1939
World War II
Manitoba engineers join effort for World War II.

1940

1940
British Commonwealth Air Training Plan
Infrastructure and building construction at several sites across Canada.

1941
Nickel discovery
Prospector Austin McVeigh discovers nickel in an outcrop at Lynn Lake.

1949
Killberry Industries
Agricultural machinery manufacturing begins (MacDon Industries Ltd.)

1950

1950
Red River Valley Flood
Manitoba, and particularly the City of Winnipeg, experiences severe flooding, later known as "Black Friday".

1950
U of M sets a record
Record number of engineering students graduate from University of Manitoba.

1951
Virden Area Oil Discovery
Daly Field marks the beginning of Manitoba's Oil Boom.

1953
Virden
Virden discovery of Roselea Oil Field.

1954
Tantalum-Lithium-Cesium Mine
First opened at Bernic Lake.

1956
Thompson Nickel Mining
John Thompson discovers nickel with leads to the Inco Ltd. developments, hydroelectric development at Kelsey on the Nelson River, and the building of the City of Thompson.

1956
First Association Office
The Association begins renting office space at 418 - 265 Portage Ave. (Avenue Building).

1958
Brandon Coal Generating Station
Manitoba Hydro first commissions the site to burn lignite coal from Saskatchewan. Replacement natural gas units were installed in 2002 and the last coal was burned in 2018.

1960

1960
Manitoba Flood Protection System
Government of Manitoba launches a comprehensive engineering project to protect its inhabitants.

1960
Bio Medical Engineering starts
Local development of the first modular system of lower extremity prosthetics.

1961
Black Brant Rocket
Canadian-designed sounding rocket built by Bristol Aerospace in Winnipeg, Manitoba is used in Canada's Eclipse Mission and becomes the rocket of choice by NASA and others.

1962
Grosvenor House
Grosvenor House early pre-cast concrete building construction in Manitoba.

1963
Atomic Energy of Canada Ltd. (AECL) nuclear research
Atomic Energy of Canada Ltd. (AECL) nuclear research started in Pinawa.

1965
Grand Rapids Hydroelectric Generating Station
First of four large Kaplan turbines begins operation.

1965
Agriculture manufacturing in the province expands
Versatile becomes the first in North America to mass produce articulated four-wheel drive tractors.

1966
Hydroelectric expansion on Lower Nelson River
Hydroelectric expansion begins with Kettle Rapids followed by Long Spruce and Limestone.

1967
Admissions Review Board
The establishment of an Admissions Review Board as a result of a recommendation to Council by the Board of Examiners, which evolved into the Experience Review Committee in 1994.

1967
Office Move
Association office moves to 710 - 177 Lombard, a shared office space with the Association of Architects in the Chamber of Commerce Building.

1968
Manitoba Centennial Concert Hall
Manitoba Centennial Concert Hall opens.

1968
Winnipeg Red River Floodway
Winnipeg Red River Floodway is completed.

1970

1970
Practice and Ethics Committee
The beginnings and operation of the Practice and Ethics Committee, which evolved into the Investigation Committee in 1992.

1972
High Voltage Direct Current (HVDC)
Manitoba Hydro commissions Bipole I, the first HVdc transmission line from the Radisson Converter Station near Gillam to the Dorsey Converter Station, just west of Winnipeg.

1972
Shellmouth Dam
Construction on the Lake of the Prairies, located 19 km north of Russell is completed. The earth-filled structure with a concrete spillway provides flood protection and low-flow augmentation to downstream areas including Brandon, Portage la Prairie, and Winnipeg.

1975
Salary Guidelines developed
The development of Salary Guidelines, to assist employers to establish equitable salaries when hiring Professional Engineers, and to assist engineering graduates to know what level of salaries to expect when seeking employment.

1976
Churchill River Diversion & Lake Winnipeg Regulation
The Churchill River Diversion is commissioned to increase the water flow to Manitoba Hydro's large generating stations on the lower Nelson River.

1978
Bipole II Transmission Line
Bipole II Transmission Line is commissioned.

1980

1980
Winnipeg to Minneapolis Transmission Line
500kV Transmission Line completed.

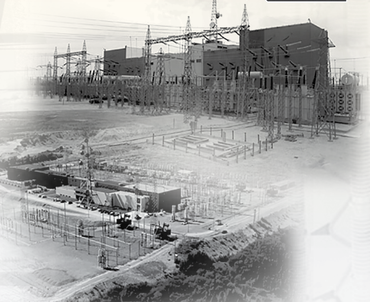
1980
Office Move
Friday, September 12, 1980, the Association moves it's offices into the York Centre, 640 - 175 Hargrave.

1981
Canadarm
Wardrop Engineering contributes to the design of components of the Canadarm device that is deployed.

1981
Minnedosa Ethanol Plant
Minnedosa Ethanol Plant comes on stream to produce 10 million litres of ethanol annually.

1983
Office Move
Association office relocates to the Royal Trust Building, 530 - 333 St. Mary Avenue.

1989
Airstrip for British Antarctic Survey
I.D. Group Inc. (since taken over by Stantec) designs and monitors the construction of an airstrip for the British Antarctic Survey at Rothera in the Antarctic.



1990

1990
Assiniboine River Walk
I.D. Engineering, Dillon Engineering, and KGS Group were involved in various aspects of the walkway over the years.

1990's
Inland grain terminals construction
FWS Group apply slip-form technique for construction.

1993
Thompson Chapter
Thompson Chapter begins, later renamed the Northern Manitoba Chapter in May 2018.

1993
Westman Chapter
"Created to focus on the practice of engineering and geoscience by members living and/or working within the Westman region."

1995
End of the 'Crow Rate'
Spurs revitalization of the grain storage, handling, and transportation systems in Western Canada.

1996
Office Move
Association office moves to 850A Pembina Highway.

1995
Churchill Transmission Line
This transmission line from Gillam to Churchill allows the retirement of large-diesel generators in the town of Churchill, reducing power costs and increasing supply.

1997
1997 Flood
1997 Flood results in improved forecasting and operation modelling.

1998
Taylor 'Smart' Bridge, Headingley
The two-lane, 165-metre-long Taylor Bridge in Headingley opens and advanced structural health monitoring systems are introduced.

1998
Geoscientific profession
Geoscientists join the Association.

1999
The Keystone Professional
First Keystone Professional magazine was released.

2000

2000
Power System Management Technology
Manitoba HVDC Research Centre begins commercialization of the Real Time Digital Simulator (RTDS®).

2002
Golden Bay
Restoration completed by Dillon Engineering

2003
SCISAT
Magellan Aerospace (formerly Bristol Aerospace) launch small science satellite buses.

2003
Hybrid Bus Deployment
New Flyer Industries develops and deploys hybrid buses for local transit.

2003
Esplanade Riel Bridge
Named in honour of Louis Riel, the side-spar cable-stayed bridge, designed by Architects Guy Préfontaine, Etienne Gaboury, and Colin Douglas Stewart, P.Eng. of Wardrop Engineering, opens.

2004
Association's role further defined
Inclusion of "the purposes of the association are to...advocate where the public interest is at risk" in the Engineering and Geoscientific Professions Act.

2005
Winnipeg Red River Floodway expansion
Construction begins on all works required to provide protection to the City of Winnipeg from a 1 in 700 year flood.

2007
University of Manitoba Faculty of Engineering
Faculty of Engineering celebrates 100 years and the opening of the new APEGM Design Studio, "Room 229" in the Engineering and Information Technology Complex at the University of Manitoba.

2007
Lalor Mine
Discovery of gold and zinc is made in the Snow Lake area.

2008
Manitoba Hydro Downtown Office Tower
The city sees its first "green" high-rise building.

2008
Office Move
Association office moves next door to 870 Pembina Highway.

2008
Canadian Museum For Human Rights
Canadian Museum for Human Rights construction begins, with a grand opening in 2014.

2010

2011
James A Richardson Airport Terminal
First airport terminal in Canada to be LEED-Certified.

2011
Filipino Members Chapter
Filipino Members Chapter starts.

2012
Ingenium beginnings
Association holds it first Ingenium Conference.

2012
Southwest Transitway
First phase commences operation.

2013
Chinese Members Chapter
Chinese Members Chapter starts.

2013
NeuroBlate System
Health Canada approves NeuroBlate System for commercialization.

2013
Reed Lake Mine
Copper mining starts at Reed Lake Mine.

2014
Diamond discovery
Diamonds are discovered for the first time in Manitoba near Knee Lake and Oxford House.

2015
Association gets a new name
Association adopts the working name Engineers Geoscientists Manitoba and updates logo.

2016
Indian Members Chapter
India Members Chapter starts.

2016
Public Awareness Campaign
First Association major public awareness campaign is launched.

2017
Arab Members Chapter
Arab Members Chapter starts.

2018
Bipole III Transmission Line
Bipole III Transmission Line is commissioned.

2018
Indigenous Members Chapter
Indigenous Members Chapter starts.

2018
Association expansion
Office space expands to the second floor at the 870 Pembina Highway location.

2019
Freedom Road
Freedom Road is completed, giving access to Shoal Lake 40 First Nation.

2019
Ethio-Eritrean Members Chapter
Ethio-Eritrean Members Chapter starts.

2020

2020
Pakistan Members Chapter
Pakistan Members Chapter starts.

2020
Nigeria Members Chapter
Nigeria Members Chapter starts.

2020
Centennial Celebrations
Association celebrates 100 Years!

Celebrating 100 years

click HERE to return to table of contents

1945

In 1945, the Association celebrated its 25th anniversary. In commemoration it published an anniversary book which highlighted and documented the history of the Association over the first 25 years. The main components of the book include the history of the founding of the Association, the 25 years of history after its creation, the engineering act and by-laws, and a listing of every engineer ever registered.

1930s

In the 1930s during the Great Depression, the Association created a joint Unemployment Committee with the local The Engineering Institute of Canada branch with the objective to investigate the number of engineers currently unemployed and to explore various methods of assisting members who had become destitute.

1966

At its meeting on July 20, 1966, Council adopted the purpose of the Association to protect of the public by ensuring that the practice of professional engineering in Manitoba is carried out only by competent and ethical practitioners.

1941

In 1941, the Engineer's Wives Club consisted of 130 members who met once per week. In order to help support those impacted by the war, the Club began sewing various articles of clothing and blankets. In all, there were approximately 50 members working hard at sewing and they turned over to the Refugee Department of the Red Cross; 11 afghans, 60 sweaters, 136 pairs of pyjamas for four-year olds, three quilts, and 550 yards of flannelette was purchased. All of this was self-financed by members, and if required they would hold teas to help raise funds.

1948

In 1948, the Association begins to allow the use of rubber stamps with ink to seal drawings after receiving an opinion from their legal counsel that it is considered legal to use. Prior to this only embossed seals where permitted.

1970

In May 1970, 350 members attended a special meeting to discuss Manitoba Hydro's plans to divert the Churchill River into the Nelson River and regulate Lake Winnipeg as part of the planned Nelson River Power Development.

1981

In 1981, there were 14 committees plus the Board of Examiners, The Admissions Review Board and Council. Of these, the Bulletin Committee and the Sports Committee were considered to be the most fun.

1990

In 1990, the 'Engineering Building' at the University of Manitoba was comprised of three buildings; one of that was built in the 1910s, the next in the late 1940s, and the third in the late 1960s. Not surprisingly, by the mid-1990s the needs of the Faculty had outgrown its facilities and a Facility Redevelopment Study by a prominent Winnipeg architectural firm was received in 1997. One of the challenges of redevelopment was that, while the buildings were connected, the floors of the 1940s building were a half-story different than the other two, and with the need for wheelchair accessibility, it became apparent that the most economical solution was to demolish the building and construct a new one. With that, there became a space in the new building intended for students to take their courses on design. Naturally, the Association was supportive of the whole redevelopment and it committed to a donation of $350,000. In the process, assured that the room, sentimentally numbered Room 229 from the previous building, would be named the "APEGM Design Studio". The Association's funding commitment also spawned a charitable foundation – the APEGM Foundation Inc., which continues to solicit donations and fund initiatives intended to raise awareness in students of the importance of seeking registration after graduation.

ENGINEERS HAVE SPOKEN.

79.7%

FEEL WELL-PREPARED FOR THE FUTURE BECAUSE OF OUR FINANCIAL SECURITY PROGRAM.*

WE CAN HELP YOU FEEL MORE CONFIDENT TOO.

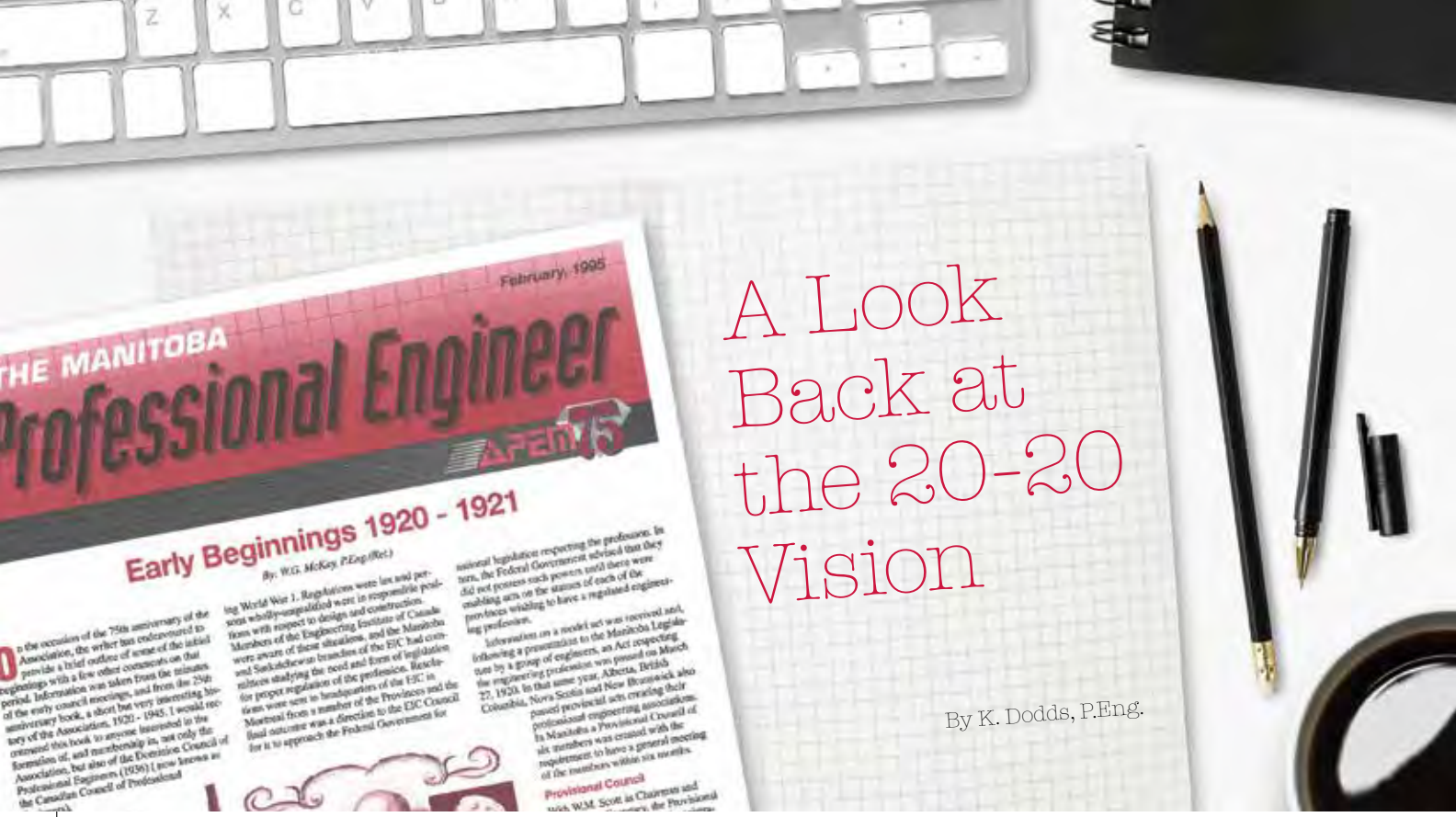
TELL US ABOUT YOUR FINANCIAL GOALS.

CANLIFE.CO/EXCLUSIVE

*Survey conducted by us in June 2019 with participants of the Engineers Canada-sponsored Financial Security Program.

Sponsored by:
engineerscanada
ingénieurscanada

canada life™



A Look Back at the 20-20 Vision

By K. Dodds, P.Eng.

It was the 75th anniversary of the Association in 1995 and many on Council were making some interesting predictions for 2020. I will take a brief look back at some of those predictions and see how close today's society meets with their expectations from 25 years ago. One prediction said engineers will have to be "equipped and appropriately skilled to address the needs of society". I think, through the expansion of engineering disciplines and diversity, we are strongly moving towards this direction. Today we see a pronounced surge in the variety of engineering disciplines available. In the past 25 years we have added specialties such as communications infrastructure engineering, biosystems engineering, nanotechnology and software engineering. These are certainly an expansion on the traditional mechanical, electrical, and civil engineering roles that for so long formed the foundation of the engineering profession.

Another prediction coming from Council highlighted some of the anticipated growth in the transportation sector. Here we have seen incredible advances in the logistics sector associated with the high-volume movement of goods, i.e., Amazon's distribution networks. However, we are more likely to see drone package drop-offs than the predicted pneumatic tube systems. Our vehicles have become more efficient but have not achieved the complete zero-pollution level that was anticipated. While near zero-pollution vehicles are available, they have yet to massively penetrate the Manitoba market. And while the predicted magnetic propulsion trains exist in Europe, we are lagging a bit behind the mark here. We are also seeing higher use of energy-efficient methods, such as geothermal heating.

When it comes to materials, they are not as foreign as what was imagined 25 years ago. While councilors anticipated that Kevlar would be as commonplace as rayon, it still has a little catching up to do to match its counterpart carbon. Our vehicles may not have dropped in weight by half, but Council was dead on the mark in regard to GPS systems and real-time updating of information which help us to minimize travel time, accommodate road construction, avoid traffic accidents or congestion, and even provide updates about the weather.

Certainly, the last 25 years have brought many advances and adaptations to the roles that engineers and geoscientists play in society. I can only anticipate the wonderful work that will come in the next 25 years as we continue to push forward while reflecting on the proud history of our profession.

Sporting through the Years

1935

In June 1935, then Secretary, C.S. Landon, asked one of the first registered members, Mr. McColl, to put on a golf tournament at an early date.

1949

In 1949, there was some brief discussion about discontinuing the annual golf tournament due to dwindling attendance. However, the president pointed out that we were duty bound to not let the custom become obsolete for the good and sufficient reason that they had a nice new trophy, which had been donated by the late J.G. Sullivan.

On the links at the recent golf tournament (left to right): George de Pauw, Bob Gottfred, Joe Sill, Ian Fraser, Charlie Lamlon, Gerry Foley, E. G. Eggertson, Alec Sim.

THE MANITOBA PROFESSIONAL ENGINEER 11

Curlers in action, Ken Jardine, Doug Grimes, Clyde McBain, Al Francis.

President Charles Bouskill hands the curling trophy to winning skip John Kavanagh, backed by Barry Rowley, Merv Cockal and Ron Gordon. (Ron Gordon is the one on the extreme right just out of camera range. Fumble-Fingers Lewis is new at the camera business.)

1976

1965

THE LANDON CUP: At a meeting held on July 7, 1965, Council acceded to a request received from the Sports Committee, asking Council to provide a trophy for competition at the Annual Spring Golf Tournament, to be known as the Landon Cup. The trophy was established at this time in honour of Dr. Landon's 80th birthday which fell in 1965, and in recognition of his many years of faithful service to the Association. Dr. Landon was Registrar of the Association from 1934 until 1960, and was President in 1961. The Landon Cup was used as part of the annual spring golf tournament until 2009 as the first-place trophy.

click **HERE** to return to table of contents

A Historic Look at the Women in Engineering

By R. Lewis

There's no denying that the field of engineering has been a predominantly male one. In fact, any study of professions that take women outside of what has long been considered their "traditional role" would uncover the challenges that women have faced breaking into male-dominated work settings. While women have come a long way in advancing their careers beyond the stereotypical ones to which they have traditionally been relegated, there's still quite a bit of work to be done, particularly when it comes to the field of engineering and women's inclusion and advancement within it.

Engineers Canada has set a lofty goal of 30 by 30; the aim of this initiative is that by the year 2030, at least 30 percent of newly licensed engineers will be women.

A Dive into History

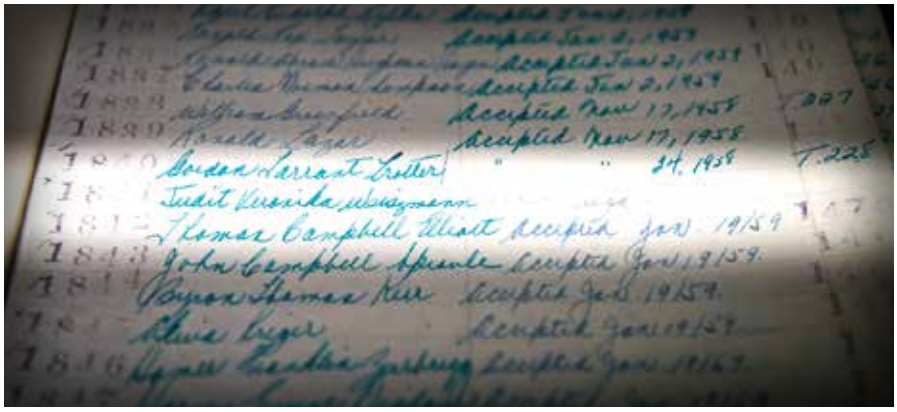
While 30 by 30 may seem like an ambitious goal, there are women within the profession who have set an historical example to illustrate that impossible feats are simply bumps in the road on the way to achieving what they set out to accomplish. One such woman was Judith Weiszmann, who had emigrated to Canada from Hungary during the country's political upheaval and the takeover by the communist regime.

Weiszmann was the first woman with the Association to apply to become an engineer, in 1958. Her application, however, was rejected. While Weiszmann had already graduated as an engineer in Hungary, the change in the university's name during the country's time of turbulence resulted in the university no longer being recognized in Canada as an approved institution. Weiszmann's efforts to meet the Association's criteria were further complicated by the fact that there were two program streams: a day stream and a night stream. Weiszmann had attended the night stream, which was not held in the same esteem as the day stream. It would take Weiszmann several attempts, six qualifying exams, a thesis, and another decade before she would finally be accepted as a registrant of the Association in 1969.

Image of Judith Weiszmann from the 1983 Bulletin supporting an Association event.

By that time, Weiszmann had fallen to fourth on the list of women registering to practice engineering in Manitoba. But her determination in the face of countless challenges, while still taking care of her family

Judith Weiszmann



Judith Weiszmann's name, listed in the register 1958.

and working full-time alongside her husband, gives not only a glimpse, into the challenges that women at that time faced, but also insight into Weiszmann's tenacity. For every minute Weiszmann may have lost in achieving her goal of becoming an engineer sooner, she made up for with an outstanding 40-plus-year career and her second "first" as the only woman in engineering to have practised for 45 years.

Several months after Weiszmann's initial 1958 registration application, another woman decided to try her luck at registering with the Association. Minke Kuiper, who had immigrated from Holland in 1950 was successfully registered with the Association in 1959, making history as the first woman to become a registered engineer in the province. While her path to the profession held fewer challenges than Weiszmann's, and Kuiper only remained a registered professional engineer for 10 years, it would be remiss to not acknowledge her accomplishment at a time when women in the profession were non-existent. While other women like Naomie Raz, Inge Sveinbjornson, and Irene Shumada would later successfully register with the Association, it was Weiszmann, the woman who, ironically, encountered the most challenges, would be the only one to maintain her registration and remain active professionally.


MRS. KUIPER

Engineers' Association Registers First Woman

Courtesy of the *Winnipeg Free Press*, dated May 2, 1959.

While several of the women who registered with the Association came to Canada looking for a better life, the University of Manitoba saw its share of women entering the Faculty of Engineering. The first of these women was Edna Russell, who graduated in 1946 from the university, yet, for reasons unknown, did not go on to register. Some 14 years later, in 1960, another woman, Wendy Woods, entered the Faculty of Engineering, but sadly never graduated, as her life was cut short by a tragic car accident. In 1974, one woman, Kathleen Kompauer, not only graduated from the institution and registered with the Association, but also went on to have as illustrious a career as Weiszmann.

An image of Edna Russell, the first woman to graduate from the engineering faculty's 1946 class, on the walls of the engineering building, University of Manitoba.

This 1960 photo from the Grinding Geers for 100 Years features Wendy Woods, the second woman to graduate from the University of Manitoba, 14 years after the first woman.

The Stats

Of the 15 women who were registered engineers from the period 1959 to 1975, seven of them were Manitobans. Further, the 28-year gap between the first University of Manitoba graduation – Edna Russell's and Kathleen Kompauer's – begs the question of why fewer Manitoban women were seeking careers in engineering at that time. One could argue that Europe's culture was more open and accepting of women looking to advance their careers than perhaps was the case in Canada. But change, of course, takes time. While by 1980, only 10 women were actively working in engineering, that number soared to 72 by 1990, a 2.1 percent increase in representation. By 2010, 396 women were practicing engineers, and by 2018, that number had jumped to 712.

Not only was the presence of women being felt by the steady increase in numbers with each passing year, but women in engineering were also making their voices heard. In 1996, the Association welcomed its first female president, Catherine Louise Stewart, P.Eng. The Association has since had six additional female presidents steering its Council.

The field of engineering is not the only one that has suffered a tremendous loss with the absence of female representation. The Association's first female geoscientist registration only happened in 1999.

End Goal

The Association is working diligently towards its goal of equity, diversity, and inclusion, not just for women, but for all minority groups so that practitioners reflect the diversity of the population. Here are a few of the ways in which the Association is working to meet the 30 by 30 goal:

- encouraging employers and stakeholders to look internally and address gendered biases and barriers, both systemic and individual;
- supporting women with mentorship opportunities and awards;
- providing guidance toward an education path in engineering;
- making women more visible as role models to students.

The Association has taken on the challenge of making this dream a reality with campaigns such as Engineering Changes Lives and the Manitoba 2030 Coalition. Ambitious? Certainly. Challenging? Most definitely. Achievable? Absolutely.

VERSAPILE
HELICAL PILE CONTRACTORS

site managed by:

Concord Projects

THE CONFIDENCE & QUALITY YOU NEED.

Helical piles have a rich engineering history and are used in a variety of situations from difficult soil conditions, projects with low accessibility, or sensitive sites to typical construction sites.

Realising the goal of a quality helical pile foundation is not just a matter of good design but also an experienced and knowledgable helical pile install team. If your firm would like more information or to book a product knowledge session please contact us.

VERSAPILE
HELICAL PILE CONTRACTORS

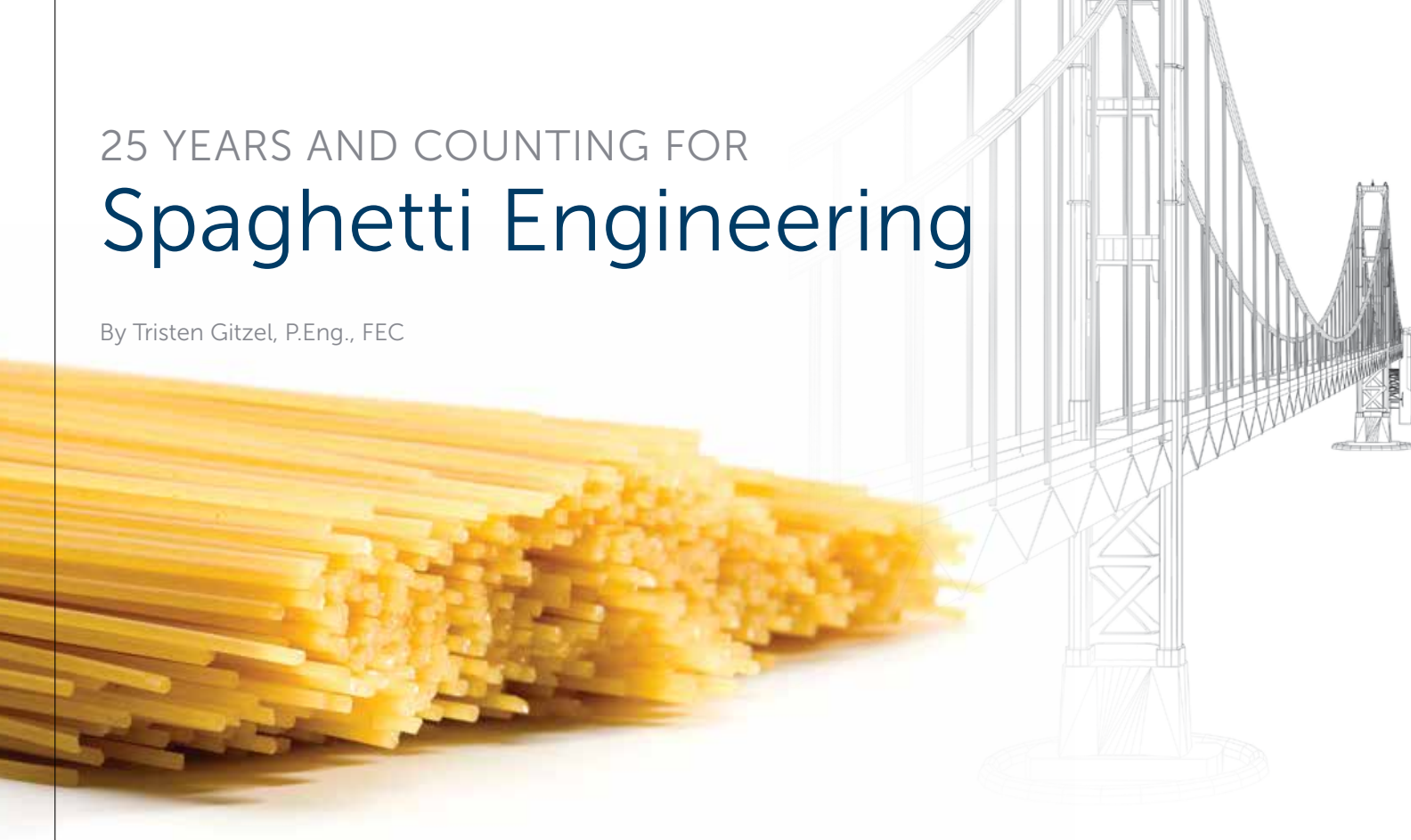
www.screwpiling.ca

Office 1 204 793 0653

25 YEARS AND COUNTING FOR

Spaghetti Engineering

By Tristen Gitzel, P.Eng., FEC



For those not familiar with what the spaghetti bridge competition entails, the rules are simple, but difficult in practice. The goal is to build a bridge truss out of spaghetti and glue that spans 300mm – longer than a single strand of spaghetti – and has maximum dimensions of 400mm x 150mm x 140mm. It also must weigh less than 350 grams. It sounds easy, as anyone can draw a triangle on a piece of paper. However, I can tell you from experience that it is difficult to manufacture properly! I think most engineers can relate to this problem, which is why I think this event has become so enduring.

Promoting Engineering in a Non-Traditional Way

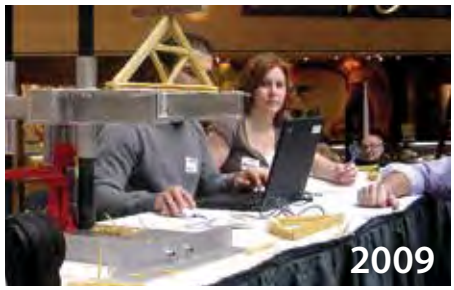
This competition was started in 1995, by a group of professional engineers: Alan Pollard, Don Spangelo, Glenn Penner, and Shane Mailey. Why? They believed it was a great opportunity to introduce students to science and engineering in a non-traditional way, with added fun to promote the cause. The concept was initially developed by Alan with support from Association staff. This involved a great deal of promotion and planning, and the most difficult task was finding sponsorship and prizes. The first year's prize was a 486 IBM-compatible PC donated by Mind Computer Products, designed and manufactured here in Winnipeg. I'm a bit jealous of the 45 or so teams that attended that year: a state-of-the-art computer for someone who only had to beat out 44 other teams!

Like all great projects, the concept was conceived, sold, and planned for execution at Polo Park shopping centre, all without proper procedures or equipment in place. The testers (Shane, Glenn, and Don) were only contacted a few weeks before the event and asked to put together a testing system. The first year didn't have any fancy technology to test the spaghetti bridges. Instead, a trapeze system rested on top of the bridges, with a pail below. The testers added sand to the bucket until the bridge broke, then they weighed the pail of sand.

The next year, they found and used a testing rig from the University of Manitoba with a hydraulic ram, but the University's rig had a load cell with too high a minimum load. So, they found an electronic load cell from another test lab and improvised. The following year, Don Spangelo designed a test rig built by a local aluminium manufacturer that we continue to use today. Manitoba Hydro's instrumentation group put together the current electronic load cell system and read out.

Rocky Starts

It wasn't always without difficulties. In 2001, anxious onlookers waited for the event to start when technical difficulties needed to be solved. It wasn't certain if the event would need to be cancelled, as event volunteers scrambled to solve the problem. The problem occurred during setup with the equipment used to communicate read-outs from the load cell to a computer program. While organizers tried to fix the problem, they contemplated their options, including how to quickly set things up in the "old-fashioned" manual way to load the bridges. Then Joe Begin, P.Eng. of the Industrial Technology Centre, the equipment sponsor/provider, was called to the rescue bright and early that Saturday morning. A new computer was taken to the scene but, alas, no real progress could be made. Finally, as we all know engineers are diehard problem solvers, and the nagging suspicion that it was a power problem, caused organizers to find a voltmeter provided by Radio Shack.



They determined that indeed there was no power being supplied to one component of the system. A new power supply was installed and we were back in business with the first bridge being broken at 11:30 a.m.

A number of years later, a second rig was built based on the original design for redundancy and consistency of operation.

Why Spaghetti?

One might ask "why are we using perfectly good food for building competitions?", and that is a fair question. The Association has donated thousands of dollars to Winnipeg Harvest to offset the loss of edible spaghetti – a total of $207,353 between 2010 and 2020. Because of Winnipeg Harvest's buying power with other suppliers, this financial donation translates to 4 million pounds of food for families in Manitoba in the last decade.

David Northcott, previous Executive Director at Winnipeg Harvest said this best in 2013. "Utilizing pasta to construct bridges is a great way to inspire tomorrow's engineers. By including such a generous donation to Winnipeg Harvest, it helps illustrate that building bridges to reduce the number of people

relying on food banks is important for any professional moving forward. There are more bridges to build as we try to reduce the number of people using food banks." As of 2020, each month 52,000 Manitobans use food banks, and more than 44 percent of the clients are children. As an engineer who did not come from an affluent family, I am proud to help feed families and children who are still looking for their brighter future.

Don Spangelo, one of the original volunteers who continues to be involved today, has some advice for young people. "Engineering is not for everyone. You need to figure out what your passion is and pursue it. If you are interested in maths or science and how things work, or if want to figure out how to make things better, then perhaps engineering could give you enjoyment and fulfilment as a career. I feel we need to educate teachers, and even parents more about our profession. Since the general public, including teachers, do not typically have a way of interfacing and learning about engineering like they do with lawyers/doctors/dentists/accountants, we need to open up better dialogue opportunities to inform them."

25 Years Later...

Fast forward to this year – 2020 – 25 years later. The Spaghetti Bridge Competition has grown by leaps and bounds. Expansion has taken place over the last few years from the single day to now five days in a row. With the increased interest, four additional days were added at schools in each quadrant of Winnipeg in addition to the traditional Saturday at a shopping center where the general public can participate in the final day and award ceremony. Exposure inside the schools allows the volunteers to have more interaction with students, speaking to why they choose engineering or geoscience, as well as promote the professions as great career options. Student participants can ask questions, get specific feedback on improvements to their designs, and other classes that may not have actively participated in the competition can join their peers in cheering for success.

We are expecting more than 1,000 students to participate this year, with no signs of slowing down. Volunteer practitioners, students, and teachers all recognize the importance of this event's impact on Manitoba. If young people don't understand what engineers do, how can they ever become interested in it as a profession? If we live in a society without engineers, will our future be one that works better? I don't think it would, and this is why I've volunteered my time with the Spaghetti Bridge Competition since 2012. Please join me if you can.

Do you have any memories, stories, photos, or tidbits about the Association from the last 100 years?

We'd love to hear from you!

ENGINEERS GEOSCIENTISTS MANITOBA

1920-2020

100

We know there is so much more to share from throughout our 100-year history than what can be included in this issue. Additional stories and photos will be included in upcoming issues of *The Keystone Professional*, through our Centennial webpage, and weekly E-News. Submit your information by emailing *DWawryk@EngGeoMB.ca*.

Welcome New Members

O.J. Adebajo
C.E. Agha
R.Z. Ahmar
S.M. Ali
M. Amiri
D.J. Anderson
S. Aniscikli
M.K. Bauer
A.H. Bedane
L.D. Behuniak
R.P. Bewick
I.B. Bolliger
T.A. Bui
U.M. Cancino Aguilera
D.J. Chekerda
W.J. Chen
S.Y. Cheng
D. Chotard
J.A. Cospito
G. Cosset
M. Cournoyer
D.R.R. Crowley
B. Cui
W. Dai
S. Di Palma
S.E. Dickin
R.G. Dollevoet
H.P. Doornberg
A.J.T. Douglas
Y.M. Duchesne
K.T. Duong
S.J. Entz
S. Esfandiarpour
W.D. Fingas
G.M. Folk
M.A. Frayne
M.J. Gauthier
M. Ghaffari Dolama
S. Goel
C.L. Goodyear
Z.H. Guo
D.M. Hart
D.J. Harwood
S.H. Hassan
P.E.R. Ho
L.L. Hynes
K.S. Ibrahim
J.J. Jackson
P.L. Jones
J.L. Kalesnikoff
K. Kang
D.D. Kirkwood
B.J. Kitt
M.D. Koverzin
R.W. Kozun
G.A. Kulczycki
P.S. Lammay
R.J. Lavich
S.H. Lerner
K. Liu
M.D. Lyon
T.J. Maes
M.J. Magnus
A.M. McGregor
D.R. Melling
Z. Milutinovic
A. Muhammad
G.O. Oladapo
D.R. Oliver
A.O. Omidele
D.C. Pantazi
E.L. Pare
K.L. Paul
B. Pelletier
K.W. Pohl
G.R. Potter
K.M. Prabhu
B.B. Preiss
F. Raeisi Mehdiabadi
J.W. Rentz
W.R. Ridgley
M.H. Ritchie
B. Rose
M.S. Saini
O.V. Sampson
W.J. Saretsky
C. Sigmen
J.A. Smith
P.R.R. Soriano
B. St-Georges
J.A. Sternbauer
K.P. Tan
H. Tao
J.P. Tenove
S.L. Toth
L.D. Tran
J. Trottier
S.L. Tweel
J.M. Van Hove
J. Villiard
L.H. Vizcarra Carranza
Z. Wang
J.G. Wilkinson
D.C. Woodall
Z. Zeng

Licensees

M.J. Cash
A.D. Gipson
J.Y. Wang

Specified Scope of Practice Licence

N.D. Homuth
S.K. Jeschke

In Memoriam

Leonard Arthur Bateman
Edward William John Clarke
Bahareh Hajesfandiari
Easton Irving Lexier
Patrick Martin
Ramesh Kumar Suri

Interns

M.A.M. Adam
E. Afsharipour
J.E. Arellano
G. Asala
S. Bagheri
S.M. Bahumanyam
A.R. Baker
E.K. Barnson
J.S. Batth
P. Beiraghdar
P. Bhusal
P.S. Chun
R.A. De Guzman
C.N. Devanarayana
H.K. Dhillon
A.K. Dult
J. Dunn
X. Fang
W.D. Ferris
K.D.J. Froese
K. Gaurav
H.M. Getachew
Y.K. Getahun
A. Ghanbari Mardasi
A. Ghosh
B.M. Giesbrecht
J. Gill
K.K. Gill
Z.J. Grossart
M. Haddadi
E. Hajibandeh
D.M. Hancock
K.N. Henrie
V. Heshmati
A.M.A. Ibrahim
J.R. Ilnisky
M.P. Joshi
C.R. Kaatz
M.A. Kamal
H.G. Kassa
R. Kaur
D. Kazado
I.H. Kizner
H.K.K. Konara Mudiyanselage
M.J. Kroeker
O. Kuo
C.N. Law
J.H. Lee
H. Li
I.P. Malo
H.S.A. Mariolle
K.D. Mazur
A. Mohammadzadeh
K. Nadir
T. Ngulube
S. Noor
V. Oligbo
J.S. Osahan
D. Patel
D.N. Patel
R.A. Penner
Y. Qi
M.R. Reich
F. Sagamba
M.P. Sansom
S.S. Sawhney
N.A. Schultz
A.S. Sekhon
L.P. Semasinghe
Z. Shen
X. Shi
A.B. Shyiak
N.I.S. Sidhu
G. Singh
S.K. Somashekar
M.S. Song
S. Suryavanshi
S.H. Susanto
F. Tasnim
A. Teodoro
B. Tiechenou
M.G. Tully
M. Umar
D.G. Van Deynze
M. Wang
B.D.R. Whittington
J.B. Wroblewski
W. Wu
M. Yacoub
V. Yarova
D. Yon Wu
E. Zeynali
Y. Zhang
Y. Zou

By M. Gregoire, P.Eng., FEC

Ethics - The Time Factor

Several years ago, I was lucky enough to receive a copy of the Code of Ethics from 1921; the first ever Code of Ethics for the Association. There are likely a few things that will stand out for those of you who are seeing this document for the first time.

The first thing that might strike you is the notion that there has been any kind of change to the code of ethics at all. For those of us that are inherently attracted to deontological morality, we might be pre-disposed to the idea that ethical requirements are fixed. However, by studying codes of ethics, it becomes clear that ethical requirements change as we move through time or geographical position.

The other element that will jump off the page is the exclusive use of the masculine pronoun "he". A hundred years ago, the membership was entirely male. However, hindsight makes it clear that this example of gender exclusiveness discouraged approximately half of the population from becoming members.

There is a third aspect to the first code that speaks to a fundamental shift in the approach of engineering and geoscience regulation through its first century. In the 1921 version, there are three groups of 'duties': "to the state", "to their client", and "to their fellow engineer". When comparing these three categories to modern codes of ethics, the group that is notably absent is a duty to the public.

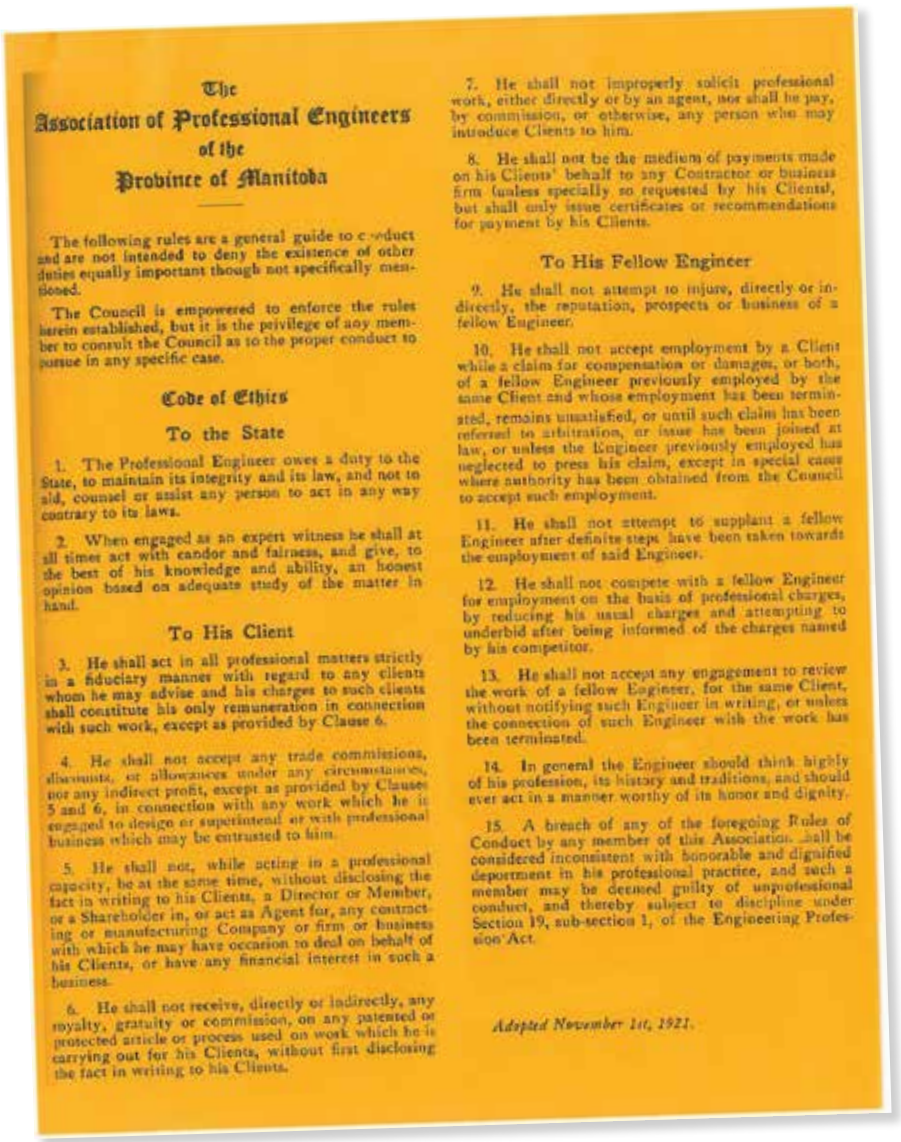
When comparing the 1921 version to the one that was in place from 2000 – 2018, there are quite a few canons that have persisted. Sometimes this persistence included nearly identical language. However, the 2000 version has an entire section devoted to the "well-being of the public." This duty also explicitly extends to a duty to protect the environment; a word that is notably absent from the first code.

In the 2000 code, this duty to the public is further labelled as being the paramount duty for practitioners. This sense of hierarchy exists still today in the current code. In today's code, the first canon's reference to the "safety, health, and welfare of the public and the protection of the environment" is the most important duty for professional engineers and geoscientists in Manitoba.

In the contemporary context, there is no shadow of doubt to the notion that Engineers Geoscientists Manitoba exists to protect the public. To that end, we require that practitioners consider the public in all work they do and hold the protection of the public as being more important than satisfying the client or protecting their fellow practitioners.

Do you have a copy of a Code of Ethics from before 2000? Or a copy of an engineering/geoscience code of ethics from another country? If so, I'd love to see a copy of that code.

As always, I appreciate comments and discussion about standards issues. If you'd like to talk about the above topic or any other area of concern, please do not hesitate to contact me at: *MGregoire@EngGeoMB.ca.*



The
Association of Professional Engineers
of the
Province of Manitoba

The following rules are a general guide to conduct and are not intended to deny the existence of other duties equally important though not specifically mentioned.

The Council is empowered to enforce the rules herein established, but it is the privilege of any member to consult the Council as to the proper conduct to pursue in any specific case.

Code of Ethics

To the State

1. The Professional Engineer owes a duty to the State, to maintain its integrity and its law, and not to aid, counsel or assist any person to act in any way contrary to its laws.

2. When engaged as an expert witness he shall at all times act with candor and fairness, and give, to the best of his knowledge and ability, an honest opinion based on adequate study of the matter in hand.

To His Client

3. He shall act in all professional matters strictly in a fiduciary manner with regard to any clients whom he may advise and his charges to such clients shall constitute his only remuneration in connection with such work, except as provided by Clause 6.

4. He shall not accept any trade commissions, discounts, or allowances under any circumstances, nor any indirect profit, except as provided by Clauses 5 and 6, in connection with any work which he is engaged to design or superintend or with professional business which may be entrusted to him.

5. He shall not, while acting in a professional capacity, be at the same time, without disclosing the fact in writing to his Clients, a Director or Member, or a Shareholder in, or act as Agent for, any contracting or manufacturing Company or firm or business with which he may have occasion to deal on behalf of his Clients, or have any financial interest in such a business.

6. He shall not receive, directly or indirectly, any royalty, gratuity or commission, on any patented or protected article or process used on work which he is carrying out for his Clients, without first disclosing the fact in writing to his Clients.

7. He shall not improperly solicit professional work, either directly or by an agent, nor shall he pay, by commission, or otherwise, any person who may introduce Clients to him.

8. He shall not be the medium of payments made on his Clients' behalf to any Contractor or business firm (unless specially so requested by his Clients), but shall only issue certificates or recommendations for payment by his Clients.

To His Fellow Engineer

9. He shall not attempt to injure, directly or indirectly, the reputation, prospects or business of a fellow Engineer.

10. He shall not accept employment by a Client while a claim for compensation or damages, or both, of a fellow Engineer previously employed by the same Client and whose employment has been terminated, remains unsatisfied, or until such claim has been referred to arbitration, or issue has been joined at law, or unless the Engineer previously employed has neglected to press his claim, except in special cases where authority has been obtained from the Council to accept such employment.

11. He shall not attempt to supplant a fellow Engineer after definite steps have been taken towards the employment of said Engineer.

12. He shall not compete with a fellow Engineer for employment on the basis of professional charges, by reducing his usual charges and attempting to underbid after being informed of the charges named by his competitor.

13. He shall not accept any engagement to review the work of a fellow Engineer, for the same Client, without notifying such Engineer in writing, or unless the connection of such Engineer with the work has been terminated.

14. In general the Engineer should think highly of his profession, its history and traditions, and should ever act in a manner worthy of its honor and dignity.

15. A breach of any of the foregoing Rules of Conduct by any member of this Association shall be considered inconsistent with honorable and dignified deportment in his professional practice, and such a member may be deemed guilty of unprofessional conduct, and thereby subject to discipline under Section 19, sub-section 1, of the Engineering Profession Act.

Adopted November 1st, 1921.

The Keystone Professional wishes to thank the following companies and organizations for their advertising support. Please think of them when you require a product or service. We have tried to make it easier for you to contact these suppliers by including their telephone numbers and websites. You can also go to the electronic version at *www.EngGeoMB.ca* and access direct links to any of these companies.

Company	Page	Phone	Web address
ACEC Manitoba	45	204-774-5258	https://acec-mb.ca
AECOM	43	204-928-8318	www.aecom.com
Asper MBA Program Asper School of Business University of Manitoba	7	204-474-9221	www.umanitoba.ca/asper/mba
Associated Engineering	46	204-942-6391	www.ae.ca
Association of Professional Engineers and Geoscientists of Saskatchewan	47	800-500-9547	www.apegs.ca
Bird Construction	20	204-775-7141	www.bird.ca
Centre for Technical Engineering Leadership	38	866-744-3032	www.rgilearning.com
Crosier Kilgour & Partners Ltd.	51	204-943-7501	www.ckpeng.com
Daco Piling	37	204-392-5122	www.getdaco.com
Dillon Consulting	51	204-453-2301	www.dillon.ca
E.F. Moon	10	204-857-7871	www.efmoon.ca
Eng-Tech Consulting Limited	8	204-233-1694	www.eng-tech.ca
EPIC Training	44	877-238-0432	www.epictraining.ca
Fastnet Communications	34	204 289 9654	www.fastnet.me
FWS Group of Companies	48	800-553-0007	www.FWSgroup.com
The Canada Life Assurance Company	33	204-946-8100	www.canadalife.com
Greeman Asset Management Solutions Inc.	15	204-298-2401	www.greemanassetmanagementsolutions.com
J.R. Cousin Consultants Ltd.	45	204-489-0474	www.jrcc.ca
KGS Group	43	204-896-1209	www.kgsgroup.com
Manitoba Architects Association (MAA)	46	204-925-4620	www.mbarchitects.org
Manitoba Hydro	46	800-565-5200	www.hydro.mb.ca/careers
Manulife	12	877-598-2273	www.manulife.com/apegm
Maple Leaf Construction Ltd.	42	204-783-7091	www.mapleleafconstruction.mb.ca
Maple Leaf Drilling	4	204-224-3084	www.mapleleafdrilling.ca
Oldfield Kirby Esau	49	204-943-1441	www.oldfieldkirby.com
Paddock Drilling Ltd.	51	204-725-0657	www.paddockdrilling.ca
PCL Constructors Canada Inc.	41	204-949-8900	www.pcl.com
Postech Screw Piles Manitoba and NW Ontario	39	204-793-0679	www.screwpiling.ca
Red River College	54	204-632-2597	www.rrc.ca
Sellors & Associates Wealth Advisory Group / IPC Securities	6	204-477-8500	www.sellors.org
SMS Engineering Ltd.	9	204-775-0291	www.smseng.com
Stantec	52	204-489-5900	www.stantec.com
Teshmont Consultants LP	52	204-284-8100	www.teshmont.com
Tetra-Tech-Canada-Inc.	44	204-954-6800	www.tetratech.com
The Personal Insurance Company	49	888-476-8737	www.thepersonal.com/apegm
Titan Environmental Containment	45	204-878-3955	www.titanenviro.ca
Tower Engineering	21	204-925-1150	www.towereng.ca
University of Manitoba Faculty of Engineering	3	204-474-9034	www.umanitoba.ca/engineering


RED RIVER COLLEGE
COLLABORATING WITH INDUSTRY
Bring your project ideas to life through Red River College's technology, facilities and expertise. We deliver research and development, technical services and training to industry partners through our industry-focused centres:
AEROSPACE AND MANUFACTURING
TECHNOLOGY ACCESS CENTRE
BUILDING EFFICIENCY
TECHNOLOGY ACCESS CENTRE
PRAIRIE RESEARCH KITCHEN
TECHNOLOGY ACCESS CENTRE
RED RIVER COLLEGE | TECHNOLOGY SOLUTIONS
RED RIVER COLLEGE | CORPORATE SOLUTIONS
VTEC
Vehicle Technology & Energy Centre
ace Project Space
Where Education and Innovation Collide
WHAT WE'RE DOING IS WORKING.
rrc.ca/partnerships


ENGINEERS
GEOSCIENTISTS
MANITOBA
100
2020


Celebrating
100 years
THE MANITOBA
PROFESSIONAL ENGINEER
bulletin of the association of professional engineers of the province of manitoba
March, 1970