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THE KEYSTONE PROFESSIONAL

In This Issue:

APEGM The Association of Professional Engineers and Geoscientists of the Province of Manitoba

APRIL 2004
www.apegm.mb.ca

An Evening of Recognition

By: J.A. Blatz, P.Eng.

A reception was held on Tuesday, March 2, 2004, at the Niakwa Country Club to welcome new members of the Association and to recognize the recipients of the 2004 Awards of Merit, Achievement, Early Achievement, and Professional-in-Training, and the Certificate of Engineering or Geoscience Achievement.

Merit Award

Presented to Mahesh C. Chaturvedi, Ph.D., P.Eng.

The Association of Professional Engineers and Geoscientists of the Province of Manitoba was pleased to present the Merit Award to Mahesh C. Chaturvedi, B.Sc. (Met. Eng.), M.Met., Ph.D., P.Eng.

Mahesh Chaturvedi received his Bachelor of Science in Metallurgical Engineering from Banaras Hindu University in Varanasi, India, in 1960. He received his Masters in Metallurgy in 1962, and his Doctorate in 1966, both from Sheffield University in the United Kingdom. After graduation, he moved to Winnipeg and became a Post-Doctoral Research Fellow at the University of Manitoba. Since then, he has risen in the ranks within the Department of Mechanical Engineering to become a full Professor and culminating in his present position as a Distinguished Professor, a Tier-I Canada Research Chair in Aerospace Materials, and an NSERC Industrial Research Professor.

Professor Chaturvedi has been doing research in several aspects of materials science and materials engineering for the last 35 years. He has done research on processing, microstructures, and properties of nickel-based alloys, aluminium alloys, titanium alloys, and steels. More recently his research has been focused on weldability and superplastic deformation of aerospace alloys and on solidification of alloys in microgravity. This research has resulted in an improved understanding of the behaviour of metallic materials in general and aerospace alloys in particular, the latter being of prime importance to Canada's aerospace industry.

He has contributed extensively to the published scientific literature through 153 papers in peer-reviewed journals and 46 peer-reviewed conference proceedings. He has also co-authored a text book on Phase Transformation in Materials with Dr. A.K. Jena and he holds three patents. Professor Chaturvedi has established a state-of-the-art materials processing and characterization facility at the University of Manitoba, which is widely used by various industries in Manitoba. With the help of this facility, Professor Chaturvedi has contributed extensively to the training and education of future scientists. Twelve students have obtained Ph.D. degrees and 21 students have obtained Masters degrees under his supervision. He has also supervised the research of 21 post-doctoral research fellows. Seven of his former students are faculty members in various Canadian universities and the rest are working in industrial research laboratories, further improving the understanding of the science of materials. He has been successful in attracting almost $10 million in external funding in support of his research.

Continued on page 4

Engineering and Geoscience Week in Manitoba:

Activities in Winnipeg

By: B. Stimpson, P.Eng.

Young eyes peered in wonderment at a toy car moving through a miniature, automated car wash, grown-ups (some of them our own engineers) tested their catapult designs with marshmallow missiles, and shoppers at St. Vital Centre took time off from swiping their credit cards to watch model bridges made of spaghetti and white glue put through their paces in load tests.

These activities were held at St. Vital Centre, Winnipeg, and more took place between March 4-7 as part of Engineering and Geoscience Week in Manitoba, thanks to the efforts of approximately 200 individuals. This annual event reaches thousands of people through TV coverage, radio, newspapers, display booths and competitions, and an APEGM-sponsored IMAX movie, and provides a singular opportunity for engineers and geoscientists to share the excitement of their professions and to provide information about careers.

The "Week" began with the appearances on A-Channel's "Big Breakfast" of young (Grade 8) robot-builder extraordinaire, Nishant Balakrishnan, and of APEGM's Celebrity Competition Planning Team who were bent on

Continued on page 7

Automated car wash (U of M, Dept. of Mech. & Manufacturing Engineering)

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The Communications Committee would like to hear from you. Comments on your newsletter can be forwarded to us through the Association office. Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.

Publications Mail Agreement Number 40062980

New Members Registered January and February 2004

J.J. Bell	B.A. Huminuk	B.T. McCarry (BC)	K.J. Stevens (BC)
J.F. Christie (ON)	R.M. Ilagan	D.A. Nelson	D.K. Storer
A.A. Collier (BC)	G. Jarvis	Q. Peng	C.W.W. Tam (ON)
A.P. Cyriac (ON)	J.A. Kaskiw	D.S. Perera	P.A.M. Timler (BC)
G.P. Dawson (SK)	V. Khandpur	S.L. Petras (SK)	A.A. Ulker (BC)
S.B. Dew	J.L. LaFrance	J.H. Price	G.G. Wang
J.T. Doering	J.P. Laninga	D.L. Robinson	R.L. Ward
P.C. Fazio	S.M.F. Lee (BC)	J.P.L. Sanguinetti (BC)	D.J. Warywoda (ON)
M.J. Fetherston	S.A. Lepper	D.S. Schultz	D.B. Wiebe
B.R. Graham (ON)	J.L. Loewen	T.W. Selley	C.D. Wilson
W.M. Hogan (ON)	P.F. Mayer		

Members-In-Training Enrolled January and February 2004

M.M. Alcock	T.D. Gibson	J.C.J. Lambert	M.D. Simpson
M.R. Beaudette	E. Ho	J.J. Lavallee	H.D. Smart
C.L. Capner	R.G. Horne	C. Martens	S.L. Summerfield
C.F. Chan	A.L. Isaacs	R.G.W. Mitchell	C.L. Taylor
D. Chan	C.J. Isaacs	E. Rivera	K.C.G. Tse
D. Chuang	B.S. Kibbins	D.D. Robbins	J.F. Van Gulck
M. Dupuis	W. Kobylinski	B.L. Schilleman	

Licenses Issued January and February 2004

P.D. Galloway (NJ)	D.A. Keef (CA)	C.W. Walker (WI)
S.H. Gebler (IL)	A. Reza (CA)	

Reinstatements January and February 2004

J.M. Giles	R.W. Johnson	B.C. Jorowski	B.J. Wood

Certificates of Authorization Issued January and February 2004

Gisborne Holdings Ltd.	Subterranean (Manitoba) Ltd.

Notice

Nominations for Election to the APEGM Council

The Nominating Committee of APEGM requests submissions from members and members-in-training, of the names of members who they consider to be qualified to participate in the governance of the Association and who might be willing to so serve the engineering and geoscience professions in Manitoba. There will be four professional engineer positions and one professional geoscientist position to be filled as of October 2004.

The Nominating Committee will consider submissions received by the secretary up to the close of business on May 15, 2004. In the event no submissions are received, the Nominating Committee intends to exercise its prerogative to put forward a slate of candidates for election to the Council that is equal to the number of positions to be filled.

Members can also be nominated directly and be on the ballot for the 2004 election by the completion of the prescribed nomination form that can be obtained from the Association office. The consent of the nominee must be obtained. To be included on the ballot, candidate nominations must be received in the Association office on or before the close of business on Friday, September 17, 2004. Each completed nomination form must be accompanied by the nominee's resume and platform. Resume forms are also available from the Association office.

David A. Ennis, P.Eng.
Secretary

Executive Director's Message

D.A. Ennis, P.Eng.

Being of Value

Our professions are often referred to as being value-added professions in that the services provided by the practitioners typically impart value greater than the cost. Those of us who have seen the presentation by Dr. Doug Ruth, P. Eng., Dean of Engineering at the University of Manitoba entitled "Enablers of Civilization" have an appreciation of some of that value, and from the geoscience side, if we reflect on whether engineers could provide their services without the metals, fuels, and minerals that have been discovered and extracted from the earth, we gain another appreciation.

However, in the broader context, value is an earned credential, not a right, and must be earned on an ongoing and constant basis. We can only use the term if each of us consciously creates value in everything that we do, both as we go about our professional duties and in our personal endeavors.

The Code of Ethics for the Practice of Professional Engineering and Professional Geoscience, which applies equally to the new MIT, the senior professional who is no longer practicing, and all the members in between, provides a framework for being of value. It binds us to apply our specialized skill and knowledge at all times in the public interest, with honesty, integrity, and honour. For those engaged in professions this concept is perhaps best encapsulated in an excerpt from a speech entitled "The Second Mile" to the Engineering Institute of Canada in 1941. With apologies for the lack of inclusiveness, it reads:

> "Every calling has its mile of compulsion, its daily round of tasks and duties, its standard of honest craftsmanship, its code of man-to-man relations, which one must cover if he is to survive. Beyond that is the second mile of voluntary effort, where men strive for excellence, give unrequited service to the common good, and seek to invest their work with a wide and enduring significance. It is only in this second mile that a calling may attain to the dignity and the distinction of a profession."

Be of value.

Survey of MITs

MITs will know that the MIT Committee recently conducted an e-mail survey on the Pre-Registration Program to which over 240 MITs responded. In one section of the survey the respondents had the opportunity to provide comments. We thank all of the respondents for taking the time to participate and the 168 who provided their comments. We use this opportunity to let them know that the Committee has consolidated the responses and the survey results will be made available. The staff will also be providing a compendium of observations that are based on the responses.

Thanks

Thanks to those of you who have completed and returned the Member Privacy Consent Statement and the Declaration of Compliance that were mailed to you with the annual dues invoice. You cooperation is very helpful to the Association's operations. For those of you who may have overlooked the task or misplaced the documents, copies can be obtained at the Association's web site at: ***www.apegm.mb.ca/practice/infomem/renewals.html***, by e-mailing ***apegm@apegm. mb.ca***, or by telephoning (204) 474-2736; Toll Free 1 (866) 227-9600.

Written observations or comments, preferably by e-mail to ***apegm@apegm.mb.ca***, on any of the topics raised in this article are welcomed. ■

Engineers in the News

Vector Construction Group and Manitoba Hydro receive 2003 International Concrete Repair Institute Award of Excellence

The International Concrete Repair Institute, ICRI, was formed in 1988 and is the association for the concrete industry devoted solely to repair and restoration. The object of the organization is to bring together those people who are truly interested in improving the concrete repair and restoration industry and to use their concerted efforts to bring about meaningful improvement in the quality of concrete restoration, repair, and protection, through education of, and communication among, the members and those who use their services. It publishes a bimonthly magazine and technical guidelines for concrete repair, and co-sponsors the World of Concrete (the largest concrete meeting and show in the world). Local chapters provide regional networking opportunities. Worldwide membership includes contractors, manufacturers, engineers, distributors, owners, and other professionals with a common goal: prolonging the useful life of concrete structures through quality repair, restoration, and protection. ICRI presents annual Awards of Excellence for outstanding repairs to concrete structures.

Vector Construction Group of Winnipeg and Manitoba Hydro were recently awarded the 2003 ICRI Award of Excellence for Longevity for their joint efforts in the Rehabilitation of Manitoba Hydro's Seven Sisters Generating Station.

The Rehabilitation of Manitoba Hydro's Seven Sisters Generating Station on the Winnipeg River was a five-year project to upgrade the structure. The rebuild work was completed in 1983. The Rehabilitation of the Seven Sisters Station, originally built in two stages, beginning in 1929 and completed in 1952, was to extend its useful life an additional 50 years.

The project used many innovative technologies of the time, most of which are commonplace practices in concrete construction and restoration today, to make the intricate reconstruction possible and to enhance the long-term durability of the restoration work.

The project's success was due in large part to the synergistic cooperation between the Vector Construction Group and Manitoba Hydro in sharing ideas and being open to trying new and innovative methods. The result of this innovation and synergy was a project that was completed one year ahead of schedule and over $2,000,000 under budget.

The concrete spillways and sluiceway today, over 20 years later, have performed as expected and show no signs of deterioration. Another 30 years of successful performance of the structure is expected. The award particularly recognizes the longevity of the repairs performed.

The award was presented at the 11th International Concrete Repair Institute Awards banquet held at the ICRI Annual Convention in Tampa, Florida. ■

Seven Sisters Generating Station

An Evening of Recognition

Continued from page 1

Professor Chaturvedi has also rendered services to the materials research and industrial community. He has served on the NSERC Grant Selection Committee and the Steacie Memorial Fellowship Committee. He has chaired several site visits for NSERC Major lnstallation Grant applications and regularly acts as an external examiner of doctoral theses from Canadian and international universities. He was Chair of an International Conference on Failure Analysis held in Beijing in 1995 and was the Program Chair of the Conference of Metallurgists held in Winnipeg in 1987. He regularly chairs sessions and presents invited talks at several international conferences each year.

For his contributions to materials research, training of graduate students, and service to the materials research and industrial community, he was awarded a Fellowship of ASM International in 2000. In 2002 he was also a recipient of the Dofasco Award from the Metallurgical Society of the Canadian lnstitute of Mining and Metallurgy. On 29 May, 2003, the University of Manitoba conferred upon him its highest academic title of Distinguished Professor for his outstanding and sustained contributions to research and teaching in materials science.

Leadership Award

Presented to
The Honourable Dufferin Roblin, P.C., C.C., O.M., LL.D.

The Association of Professional Engineers and Geoscientists of the Province of Manitoba was pleased to present the Leadership Award to The Honourable Dufferin (Duff) Roblin, P.C., C.C., O.M., LL.D.

Duff Roblin was born in Winnipeg in 1917, the grandson of Manitoba premier Sir Rodmond Palen Roblin. He was educated at the universities of Manitoba and Chicago. He served overseas with the Royal Canadian Air Force during the Second World War, retiring in 1946 as Wing Commander. He was first elected as a Member of the Manitoba Legislature in 1949 and became leader of the provincial Conservatives in 1954. Four years later, Mr. Roblin led his party to success in the first of four Manitoba elections. Achievements of the Roblin Government include the Manitoba Development Fund; creation of the Metropolitan Corporation of Greater Winnipeg; an up-to-date system of highways and roads; the Social Allowances Program; educational reforms and expenditures, including advances in post-secondary education; a visible tourist industry; and of course, the Red River Floodway. It is commonly understood that the reforms introduced by Mr. Roblin's governments were the most extensive and far-reaching in Manitoba's history.

After resigning as an MLA in 1967, Mr. Roblin was a leadership candidate for the federal Conservative Party. He was appointed a Companion of the Order of Canada, and in 1978, was appointed to the Senate by Pierre Trudeau, where he served as Senate Leader in Brian Mulroney's cabinet. He was among the first recipients of Manitoba's highest honour, the Order of Manitoba.

Mr. Roblin's most famous accomplishment is the Greater Winnipeg Floodway - popularly known as "Duff's Ditch". In the aftermath of a large flood in 1950 that swamped 10,500 homes and cost over $120 million in repairs, many studies were launched to determine how the city could best ensure it would not again suffer major damage from flooding. The $60 million cost of the 30-mile floodway delayed a decision on proceeding with construction until the river again threatened the city in 1956. Mr. Roblin saw that devastating floods were inevitable in Southeastern Manitoba and the only time to prevent a devastating flood in Winnipeg was before it happened. Work began on the floodway in 1962 and was completed in 1968. At the time, the Red River Floodway was an engineering marvel – the second largest earth-moving project in the Americas after the Panama Canal. The Floodway very quickly paid for itself, turning aside floodwaters on 15 occasions, including the major flood of 1997, when it was almost breached with flows beyond its design capacity. Now, 35 years after the completion of "Duff's Ditch", politicians, engineers, and constructors are working once more to extend Duff Roblin's vision and improve protection against even larger floods.

Early Achievement Award

Presented to Eric B. Loewen, B.Sc. C.E., P.Eng.

The Association of Professional Engineers and Geoscientists of the Province of Manitoba was pleased to present the Early Achievement Award to Eric B. Loewen, B.Sc. C.E., P.Eng.

Eric Loewen received his Bachelor of Science in Civil Engineering from the University of Manitoba in 1992. Upon graduation Eric began his career as an Engineer-in-Training with the Winnipeg office of Reid Crowther and Partners Ltd. From 1994 to 2002 he worked for Stantec Consulting Ltd. as a Structural and Project Engineer. In 2002, Eric joined Earth Tech's Winnipeg office and continues his engineering career in the position of Project Manager and Senior Design Engineer.

Eric Loewen has demonstrated his dedication to the engineering profession through enviable technical achievements during the early part of his career. Eric was a resident engineer responsible for the inspection of the substructure components on the $880 million, award-winning Confederation Bridge, PEI, Canada. Eric was also the project

Continued on page 5

An Evening of Recognition

Continued from page 4

engineer throughout the design and construction phases for the York Avenue Underpass, City of Winnipeg. This four track railway bridge, spanning York Avenue, allowed for the continuous operation of CN and VIA Rail during construction and involved satisfying the requirements of four major parties: the City of Winnipeg, CN, VIA Rail, and the Forks National Historic Site. Eric was the project manager for the 2002 Arlington Overpass Rehabilitation project in Winnipeg, which is a Consulting Engineers of Manitoba award-winning project. The University of Calgary, ICT Building, Calgary, Alberta, was a fast-track project that also proved to be an award-winning building. Eric was a design engineer on the project team, responsible for the design of steel roof structures in the 300-seat lecture theatres and the design of other steel and concrete portions of the complex. Eric is the design engineer and engineer of record for the 260 m long Netnak Bridge, which spans the Nelson River at Cross Lake, Manitoba. The bridge is unique in Manitoba for its high ice design loads, deep water depth and hard basaltic rock river bottom. The foregoing projects, although impressive, represent a small sample of Eric B. Loewen's technical experience and achievements.

As a professional engineer, Eric has given a variety of presentations to elementary and junior high school students on transportation bridges, in which he not only generated an interest in engineering but introduced the students to the engineering profession. Eric served the engineering profession through his technical presentations on the design and construction aspects of the Confederation Bridge, to Manitoba and Canadian technical associations including the ACI, APEGM, and the ITE, as well as to audiences like the Kiwanis Club and Senior Men's Clubs. He was a member of the APEGM Research & Development Committee in 1994, and since 2003 has been a member of the APEGM Professional Development Committee.

Eric Loewen has demonstrated his dedication to community service while living in Winnipeg and Calgary. He volunteered his services to a Winnipeg youth group within his church as a youth leader and to the Calgary Boy's Brigade (Boy's Club) in 2000 by participating with the youth in the design of a miniature golf course of timber construction.

In 1999, while taking a three month leave of absence, Eric went to Guatemala where he lived with a Spanish speaking family, took Spanish lessons to develop his knowledge of the language, and then, using his engineering expertise, assisted a team of local residents and his uncle to build a school and missionary seminary.

Certificate of Engineering or Geoscience Achievement

Presented to Bristol Aerospace Limited

The Association of Professional Engineers and Geoscientists of the Province of Manitoba was pleased to present the Certificate of Engineering or Geoscience Achievement to Bristol Aerospace Limited for the SCISAT-1 scientific satellite project.

In 1998, Bristol was selected by the Canadian Space Agency (CSA) to act as the prime contractor for SCISAT-1. As a result, a Bristol engineering team designed, built, integrated, tested, and supported the launch of the first Canadian small scientific satellite since ISIS-2 in 1971.

The goal of the SCISAT-1 mission is to measure the chemical and dynamic processes that control the distribution of ozone in the stratosphere and upper troposphere. The scientific data is being shared amongst researchers around the world and will be combined with measurements from other space platforms to help further the understanding of this global problem.

The major portion of the SCISAT-1 satellite is the spacecraft bus developed by Bristol. It, along with the science instruments developed by Bohem in Quebec City, EMS Space and Technology Group in Montreal, the University of Toronto, and the Meteorological Service of Canada, make up the entire vehicle. The spacecraft bus includes all functional elements needed to carry out the mission except the instruments. The bus includes the flight computer, flight software, power subsystem, communications subsystem, altitude determination and control subsystem, the thermal control system, and the bus structure.

Design and construction was at the Bristol plant in Winnipeg, but integration and functional/environmental testing took place at the David Florida Laboratory outside Ottawa. In June 2003, the spacecraft was moved to Vandenberg Air Force Base in California where it was integrated with the Pegasus launch vehicle. The Pegasus/SCISAT-1 combination was launched from the belly of a Lockheed 1011 on 12 August, 2003, off the California coast. The launch was perfect in all respects and the spacecraft was delivered to a 650 km altitude orbit and is orbiting the earth 15 times a day. To date, all spacecraft bus functions and instruments are performing normally.

Apart from an extremely complex technical undertaking, the SCISAT program required the management of evolving technical requirements. As a result, the expertise acquired through this program will lead to further opportunities in Manitoba for exciting and challenging technical developments in all spacecraft subsystem areas.

The Bristol Aerospace Team

The SCISAT-1 program met all technical, schedule, and cost objectives and it will be a model for all future projects of this kind in the province.

Professional-In-Training Award

Presented to Leanne Weedon, B.Sc. C.E., EIT

The Association of Professional Engineers and Geoscientists of the Province of Manitoba was pleased to present the Professional-in-Training Award to Leanne M. Weedon, B.Sc. C.E., EIT.

Leanne Weedon received her Bachelor of Science in Civil Engineering at the University of Manitoba in 2001, graduating on the Dean's Honour list. She was a student of the Engineering Access Program (ENGAP) and participated in the Co-operative Education Program. She is currently employed as a Resource Evaluation Engineer-in-Training with Manitoba Hydro, performing economic studies and other studies to assist Manitoba Hydro in the Clean Environment Commission review of the Wuskwatim Generating Station and Transmission Project. Her experiences with Manitoba Hydro include contract administration, inspection, laboratory analysis, dam stability analysis, and hydraulic modeling, as well as previous experience in performing Phase I and Phase II environmental site assessments.

In addition to her technical achievements at this early stage in her career, Ms. Weedon has an outstanding record of service to the engineering profession by providing an active voice for students and other professionals-in-training. She has participated in National Engineering Week activities on behalf of APEGM and Manitoba

Continued on page 9

National Engineering and Geoscience Week:

Celebrity Competition

By: E.P. Hancox, EIT

A few weeks in advance of the competition, teams were given kits containing various materials and were asked to build catapults. They were directed to conduct some research and then build a catapult to a design of their choice. The teams would then bring their pre-built, pre-tested catapults to the competition. Prizes that would be donated to a charity of the team's choice would consist of $600 for first place, $300 for second place, and $100 for third place.

Following the opening ceremonies for National Engineering and Geoscience Week, we kicked off the celebrity competition. This year's event saw participants from CKY, A-Channel, Law Enforcement and the U of M battle through four events.

The competition got underway with a round of trivia questions; points were awarded for correct answers. The second event had the teams display the performance capabilities of their creations with three attempts at firing a standard sized marshmallow as far as possible. Point values awarded cascaded down from first to last place based on the longest distance achieved. The third portion of the contest entailed setting the catapult at the front of the stage and firing the marshmallow ammunition at a cardboard castle. Competitors were given two opportunities to send munitions through one of two windows or in through the top of the castle. While these penetrating blows counted for the highest points, a direct hit on the castle itself also garnered points. A complete miss was not worth any points. Some teams had reasonable success hitting the castle, but no one was able to penetrate either the windows or drop a marshmallow through the top of the castle. Interestingly, accuracy mysteriously increased when the teams were given the opportunity to sacrifice one of their own to the cause by having them stand within the castle. When doubled points and a chance to smite a team member were on the line many direct hits were scored!

With scores very close between all teams, the fourth and final event of the competition was carried out:

Celebrity Competition Teams: CKY, University of Manitoba, Law Enforcement, and A-Channel

quality of design. The attending crowd was asked, by way of applause, to judge the catapults on their design. It was impossible to discern a winner so the judging went to the competition's committee members. Each took a position behind the catapult they felt had the best design. Caught up in the excitement, Sgt. Saunders from team Law Enforcement thrust a bear hug on a committee member when he selected that team's catapult for best design. With the tie-breaking assistance of Brian Stimpson (sans hugs), judging was completed.

Once the points were tallied, team CKY was awarded a large cheque for the sum of $600. Team CKY announced they would donate the proceeds to cancer research. Coming in second place and only a half point behind, was team U of M, who opted to donate their $300 winnings to the MS Society. Third place went to team A-Channel who will donate the $100 prize during their annual Hugs for Kids event. Finally, the remaining stores of marshmallow munitions were presented to team Law Enforcement for donation to a palette of their choosing.

The Celebrity Competition Sub-Committee would like to thank all participants for making this year's event such an overwhelming success. ■

Meet Your New Councillor – Muriel Smith

By: E.P. Hancox, EIT

APEGM would like to introduce our new appointed councillor, Muriel Smith.

Muriel spent her formative years growing up in three remote mining towns, during the construction phase of two of them. She was impressed with the romance of seeing something created where nothing had existed before. It was likely her childhood experiences that contributed to her enduring curiosity and joy in meeting new people from fields different from her own work in counseling and teaching. "I had always enjoyed theoretical science and learning about its practical applications…." Muriel was also touched by the positive influence of her father, a professional mining engineer, who, "took the responsibilities very much to heart. I remember many times during my childhood when he would talk about assisting younger engineers who had their university degrees to acquire their professional status. He offered them public speaking skills, talks on professional ethics and management skills, as well as technical assistance with their theses."

Muriel, having learned the value of serving the public from her engineer father, went on to serve the public for many years in the political arena. Her background includes serving as Deputy Premier and Cabinet Minister during the Pawley Government's term from 1981 - 1988. She went on to say, "I was, for a period during my tenure in Government, Minister of Economic Development and Tourism and was well aware of the importance of the work of the engineering profession to the economy of Manitoba."

Ms. Smith mentioned the interest of the Pawley Government and also of the earlier Schreyer Government (1969 - 1977), "in placing lay members on the boards of self-governing professions." She went on to say, "I believed in lay representation on the boards of self-governing professions. I had served as a lay bencher with the Law Society of Manitoba in the '70s and had become intrigued with the functioning, and the challenges, of a self-governing profession."

Muriel said that she, "had heard that APEGM was taking seriously the application of the Carver method of governance. I had been a board member of another organization that rejected this method, probably for reasons of limited understanding of its potential benefits, and as I have been interested in how to enable organizations to function effectively, I was keen to see the method in action." Other factors intriguing her with the role of lay member are the change and the challenge. Muriel admits, "…to date, APEGM has certainly provided me with that." Muriel finished by saying, "I have been very impressed with the seriousness and constant attention APEGM pays to serving the public good…"; "I have been, quite simply, impressed!"

Appointed Councillor Muriel Smith

As for Muriel's future aspirations as a new member of Council, she states, "I have no lofty goals, just the commitment to listening attentively, learning what I can, and contributing wherever I feel my particular experience or opinion might be helpful. I have been enjoying the process, found it satisfying, and expect to continue to do so."

Please join in welcoming Muriel Smith, appointed councillor. ■

Activities in Winnipeg

Continued from page 1

catapulting marshmallows through the studios at the Forks.

Friday morning saw the official opening at St. Vital Centre with the reading of a Government of Manitoba Proclamation by Mr. Bidhu Jha, MLA, legislative assistant to the Hon. Tim Sale, Minister of Energy, Science and Technology. Arnold Permut, P.Eng, APEGM President, presided and also introduced Dr. Doug Ruth, P.Eng., Dean of Engineering, University of Manitoba, as well as sending greetings from Mr. John Woods, P.Eng., President, Consulting Engineers of Manitoba who was unable to attend at the last moment.

Catapults tested in Celebrity Competition (teams from CKY, Design Engineering Program (U of M), Law Enforcement, and A-Channel)

Spaghetti Bridge specifications are checked before load testing

Speeches over, it was time for ingenuity to come to the fore in the annual Celebrity Competition. This year teams from A-Channel, CKY, Design Engineering Program (at the U of Manitoba), and Law Enforcement fought for catapult supremacy. The goal was to design and build a catapult in advance from a kit of materials (supplied), and then to put each catapult through a grueling series of tests using marshmallows as "missiles." With much jesting and accusations of foul play and a dramatic build up to launch by the Design Engineering Group, the teams fought with steely determination to a climactic end with CKY victorious. The ultimate beneficiaries to a total of $1,000 were charities of the choice of the top three teams. The 4th team was "awarded" with…you've guessed it…a packet of marshmallows!

The excellent organizational skills of the Spaghetti Bridge Building Group were again seen on the Saturday when nearly 100 youngsters vied for the title of making the strongest bridge while onlookers joined in the excitement.

On Sunday afternoon young children had the opportunity to try their skills at making floating concrete, a 10-minute electric motor, and candy and tooth-pick structures.

The final feature of the four days was the APEGM-sponsored IMAX Theatre presentation of the movie, Top Speed. As members of the audience waited for the movie they watched a silent Power Point presentation about how engineers and geoscientists make living in a city like Winnipeg possible. Ms. Leanne Weedon, recent winner of the APEGM's Professional-In-Training Award, also spoke on why she became an engineer and what she likes about her career. Free popcorn and free parking courtesy of IMAX Theatre and free collapsible frisbees courtesy of CCPE made for an inexpensive as well as an interesting evening.

Thousands of shoppers saw display booths at St. Vital Centre throughout the regular shopping hours on Friday, Saturday, and Sunday from APEGM, Consulting Engineers of Manitoba, MacDon Industries Ltd., Manitoba Geological Survey, Manitoba Hydro, Robot Games of Manitoba (Science Council of Manitoba), Standard Aero Ltd., University of Manitoba (Departments of Civil Engineering, Biosystems Engineering, Electrical and Computer Engineering, Geological Sciences, and Mechanical and Manufacturing Engineering), and Vansco Electronics Ltd. I know from spending some time at a booth myself that every individual helping at a display would have contributed to advancing the public's understanding of the importance of our professions to the welfare and quality of life of Manitobans, as well as planting interest and fascination in young minds from whom will come the future engineers and geoscientists. As one person said to me after I had explained a particular aspect of bridge construction, "We (the public) take this all for granted, don't we?" To all the volunteers and APEGM staff who gave of their time in planning and implementing Engineering and Geoscience Week in Manitoba 2004 in the Winnipeg region, a big "Thank you."

Planning for next year's Engineering and Geoscience Week in the Winnipeg area will start in September. If you are interested in participating or would like to develop some activities in your area of the province (if you live outside the Winnipeg region), call the APEGM office at 204-474-2736. ■

The winning CKY team receives a cheque for a local charity

Engineers in the News

W.O. (Bill) Kennedy, P.Eng., FEIC, assumed the presidency of IEEE Canada on January 1, 2004, for a two year period. He will sit on the IEEE Board of Directors as the Region 7 Director. A Senior Member of IEEE, he has been an active IEEE member for over 30 years and is a member of the Power Engineering and Industrial Applications societies. He is also active on the Power System Relaying Committee.

As President of IEEE Canada he will also sit on the Engineering Institute of Canada Board as President, Canadian Society of Electrical and Computer Engineers.

Bill Kennedy is Principal Engineer with the Alberta Electric System Operator (AESO). He has been associated with the deregulat-

Bill Kennedy, P.Eng., FEIC

Continued on page 10

National Engineering and Geoscience Week:

Pasta Anyone?

By: T.F. Kelbert, EIT

This year marked the 10th anniversary of the Spaghetti Bridge Competition in celebration of National Engineering & Geoscience Week. The competition was held on Saturday, March 6th, in the Food Court at St. Vital Centre. This fun activity gives budding young engineers the opportunity to challenge themselves and display their creativity in the design of a bridge made out of spaghetti and glue.

Not only is this competition held annually, but it has moved into the classroom setting as well, with the development of the "In-School Spaghetti Bridge Competition". The basis of this program is to promote engineering, as well as to teach students some basic engineering principles. Schools have the ability to hold their own competition and bring the test frame with load cell and display right into the classroom. In an initial visit, the basics of structural design, such as tension and compression, are explained to the students and a few pointers are provided in the construction of the bridges. During the second visit, breaking of the bridges occurs to the excitement of students, teachers, and principals. The novelty of teaching students with an activity that allows them to be creative and hands-on has been a real hit with schools, and so far the in-school program has been a success!

The annual Spaghetti Bridge Competition is open to students all over Manitoba, in grades 1 through 12. The objective of the competition is to design a bridge that can withstand the pressure of the highest load, while building under constraints that limit materials to spaghetti and white glue. As well, the bridges must weigh no more than 350 grams and have a span of at least 300 millimeters. Prizes of $50.00 were awarded to each grade winner and a grand prize of $200 was presented to the top winner in each of the grades 1-6 and grades 7-12 categories. All prizes presented to winners were on behalf of APEGM.

Attendance for this year's competition was 94 entries. Many innovative and creative designs were presented, ranging from freezing a large packet of glue to act as reinforcement, to painting the different layers of spaghetti to provide a visual treat. As well, there were many bridges built to recreate classic designs. The apparent time and effort that went into constructing these bridges made it heartbreaking to destroy them. In the end there were two top winners. From the grades 1-6 category the champion bridge supporting a weight of 182.09 kg (401.44 lbs!) was grade 6 student, Whitney Spangelo from Van Walleghem School. The grand prize in the grades 7-12 category went to grade 9 student Mabriel Madeau, from Ecole Gabrielle-Roy, whose bridge finally broke at a

Continued on page 10

Ed Leith Cretaceous Menagerie Promotes Outreach at University of Manitoba

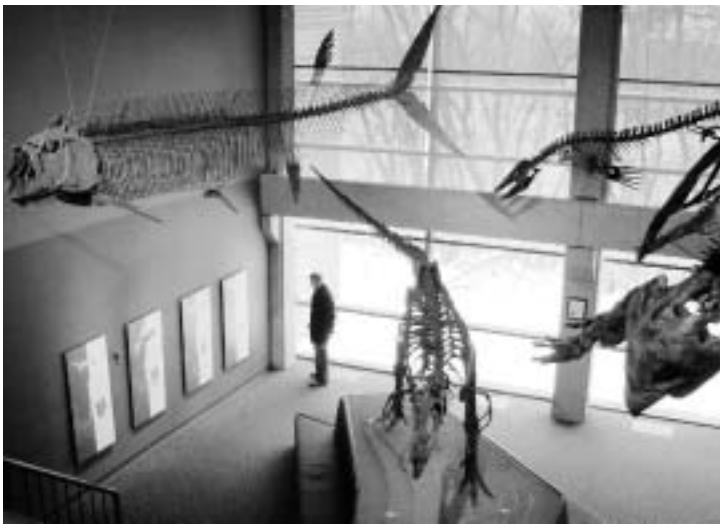
By: R.J. Elias, P.Geo. and W.C. Brisbin, P.Eng.(Ret.)

Geological Sciences Professor Ed Leith, who passed away in 1999, is remembered for his dedication to teaching and outreach, and his contagious, life-long love of geology. He introduced the wonders of paleontology, earth history, and earth processes to countless school children. Outreach was a mission close to Ed's heart and it is a legacy that his colleagues, students, friends, and family, as well as the Department of Geological Sciences at the University of Manitoba, wished to perpetuate and build upon. One aspect of the geological past provides an especially suitable bridge between us and the public, and that is what we chose to develop in the now-completed Ed Leith Cretaceous Menagerie.

During the Cretaceous Period of 145 million to 65 million years ago, the global climate was much warmer and the sea level was far higher than in the modern world. A seaway that covered Manitoba extended across the middle of North America from the Gulf of Mexico to the Arctic Ocean. Huge marine reptiles and fish swam in that water. West of the seaway, dinosaurs roamed on lowlands in places such as Alberta, while mountains were rising along the continental margin.

The Ed Leith Cretaceous Menagerie features complete skeletal replicas of four fantastic creatures. They were selected for visual and emotional impact, and to depict a diversity of Cretaceous environ-

Continued on page 9



Skeletal replicas at the Ed Leith Cretaceous Menagerie

An Evening of Recognition

Continued from page 5

Hydro. She is actively involved with the ENGAP Scholarship and Benefits Committee, which reviews the applications for awards and selects the recipients. She was profiled in an Aboriginal EnviroCareers Project as a role model for a national career awareness tool, which is to be distributed to secondary school teachers across Canada. She has made presentations to high school students on Careers in Civil Engineering at the Rotary Career Symposium and also participated in a Cool Jobs Television Program focusing on Manitoba Hydro's professional training programs, which aired nationally across Canada. She is a member of the Manitoba Hydro Professional Engineers Association Communications and Safety committees, and is involved in planning, writing, editing, and distributing the Hy-lites newsletter that keeps professional engineers and other professionals-in-training at Manitoba Hydro informed of activities and other topics of interest. Through her participation on the Manitoba Hydro Employment Equity Review Team, Leanne is helping shape policies that will enhance opportunities for employment equity designated groups. ■

New APEGM Members

Meet Your New Councillor – Frank Deniset, P.Eng.

By: A.N. Kempan, P.Eng.(Ret.)

Frank was Winnipeg-born and grew up in St. Vital. After high school, Frank attended the University of Manitoba and successfully completed his degree in Civil Engineering in 1974. He earned his spurs with Wardrop Engineering where he worked as a Structural Design Engineer from 1974 to 1979. His major projects included the City of Portage la Prairie's water treatment plant and a training school in the African country of Gold Coast.

After Wardrop, Frank took his career on the road and migrated to Saskatoon where he joined the firm of Reid Crowther. During his stay in Saskatchewan, from 1979 to 1980, he was involved in some typical Saskatchewanian projects, the three "P's": potash, pulp, and paper. He was involved with renovations to the Cominco potash plant in Vanscoy and the Prince Albert Pulp and Paper Company plant. He rounded out his Saskatchewan experience as an Operations Engineer with Genstar Building Materials in Saskatoon from 1981 to 1982.

New Councillor Frank Deniset

Frank returned to Manitoba in 1982, to the city of Brandon, where he joined Behlen Industries, manufacturers of pre-engineered steel buildings. In his role as a Design Engineer Frank worked on a wide variety of building projects, ranging from farm shops to aircraft hangars, to OSB plants, to multi-purpose recreational centres. His diligence was rewarded when he was promoted in 1986 to Manager of Engineering, a position he holds to this day.

Away from work, Frank is a member of several organizations. He has been with the Wheat City Lion's Club since 1984, serving as Treasurer from 1986 to 1988, and as President from 1994 to 1995. He is also a Toastmaster with the Sky-Hy Toastmasters Club, serving as President of that organization from 1997 to 1998.

Frank and his wife Debby have raised two children and achieved every parent's dream: to see their children become self-supporting adults, or at least close to it. Daughter Andrea is a Workforce Coordinator with Westjet in Winnipeg, while son Michael is in his final year of Computer Engineering at the University of Manitoba. Frank and Debby are avid golfers in the summer. In winter, Frank's favourite activities are skiing and watching the Brandon Wheatkings.

Congratulations to Frank on his election to Council. He will certainly continue the tradition of excellent Council service we have come to expect from the Westman area. ■

Cretaceous Menagerie

Continued from page 8

ments and animals in North America. As you enter the menagerie, you are greeted by Gorgosaurus. This tyrannosaurid dinosaur, representing the terrestrial environment, faces you in a threatening way. Its jaws were used to grip-and-rip large chunks of meat. When you look up, you can imagine the marine environment, with three monsters swimming above. Xiphactinus, the largest Cretaceous bony fish, was a nasty looking predator that swallowed other fish up to nearly half its own size. Platecarpus, a mosasaur or "sea-lizard", was an ambush hunter that lunged at victims by undulating its long body and tail from side to side. Archelon, the world's biggest sea-turtle, used its huge front flippers like wings for underwater flight. You can join these sea creatures by climbing the stairway to the balcony, where you can also get a bird's-eye view of the dinosaur.

In the menagerie, there are illustrated panels about each of the four beasts. Other panels describe the Cretaceous world and the Cretaceous rocks and fossils of Manitoba. In the "fossil bed" display, you can see how actual bones of marine reptiles appear as they are unearthed from layers of shale in southwestern Manitoba. There is ample space for individuals and groups to wander through the menagerie, to have a seat around the dinosaur, and to contemplate the past, present, and future of our evolving Earth.

The Ed Leith Cretaceous Menagerie increases the scope and effectiveness of the Geological Sciences museum as a teaching and outreach resource. It functions as both an educational service and a provincial-class public attraction. The menagerie and all the other exhibits in the Wallace Building are open free to all, Mondays to Fridays from 8:30 a.m. to 4:30 p.m. ■

THOUGHTS ON

Design

...and why nobody loves us

By: M.G.(Ron) Britton, P.Eng.

The Winter 2004 issue of *"Engineered Casting Solutions"* contains an article on "Understanding Design for Six Sigma" by Edward Vinaricik. Edward is a product engineer for a major automotive tier one supplier. Understandably his work environment dictates his perspective on the design process.

Six Sigma became a part of the manufacturing environment when it was instituted at Motorola, circa 1987, as a strategic management tool. Originally it identified a five step process: define, measure, analyse, improve, and control. Since then it has grown to include both soft skill elements and product design tools. But stripped of the formulaic rhetoric, it sounds a lot like what most of us would consider a prudent design process.

The part of the article that really caught my attention was the first sentence in the last paragraph. *"Emphasis on improving quality during manufacturing is limited because many quality problems (often estimated at 75%) stem from design."* Ouch! But one must resist the urge to strike out in anger and consider what may lay behind this statement.

The inference of the statement is that design input is inadequate. The inference of the evolution of management tools like Six Sigma (and others) is that design input needs to be "managed".

As well, one wonders if this is just a manufacturing issue. As recently as 2002, Simon Austin from the Centre for Innovative Construction Engineering in England observed that *"… design remains an area where the complexity of the process is not yet understood or managed effectively. For many, design is an unknown process - a 'black box'. It occurs at a particular time in the scheme, is performed by different parties, is creative and is often poorly controlled."* Now "understanding" is identified as an issue in addition to "control".

It is not uncommon to hear engineers lament that there is never enough money to do the job right, but there is always enough money to fix the problem. Is this, in fact, another way of saying that quality problems stem from design? Is this a quality or a quantity issue? Is the matter of "understanding" internal or external to engineering?

If we assume that the different parties Austin refers to are engineers in design offices, we can probably conclude that they know what is going on within their "black box". If we assume that his explanation of the overall process is reasonably accurate, it seems that those of us within that "black box" do not do much of a job of communication with those "on the outside". And if these two assumptions are reasonable approximations of reality, we have identified "groups" who can meet and accuse others of causing "the problem". This flies in the face of the concept of design teams that are populated by representatives of all parties involved in the delivery of a product.

The protagonists in this debate seem to be "Design" and "Management". It is probably fair to say that "Management" often looks upon "Design" as a cost. Design capability isn't looked upon as a resource that can show a positive return but rather as an unknown that must be controlled. Many a pint of beer has been consumed over the lament that we (engineers and designers) are seen as a commodity that can be bought and sold. Frequently our reaction is to withdraw into our "own world" and ignore the "non-believers".

Design is supposed to be the enabler of innovation. However, it cannot serve this function in isolation. Design may be the engine, but if it doesn't link with the transmission, the differential, and the wheels, there will be no forward motion. And linking is about understanding and communication. Those of us who occupy the technical silo need to initiate that understanding and communication. We are the minority in almost every employment situation, so we cannot expect to become fully integrated unless we take the lead.

The alternative is to remain the Rodney Dangerfields of the corporate world, with our contributions marginalised and a continuing flow of management systems that are intended to bring our costs under control. ■

Engineers in the News – Bill Kennedy

Continued from page 7

ed electric industry in Alberta since 1997.

He has broad experience in electric power systems for both utility and industrial power systems, and is the author of a dozen papers on power system protection. He is a member of the Western Protective Relay Conference Papers Committee.

A 1969 graduate of the University of New Brunswick in Electrical Engineering, Mr. Kennedy is a registered professional engineer in Alberta and Saskatchewan, and is a retired professional engineer in Manitoba. In 1998, he was elected a Fellow of the Engineering Institute of Canada.

Bill can be reached at w.kennedy@ieee.org. ■

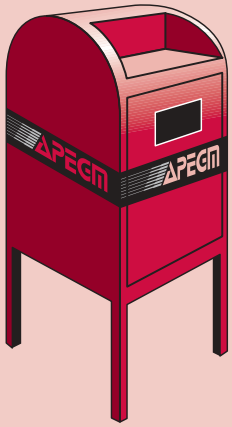
Pasta Anyone?

Continued from page 8

weight of 113.63 kg (250.511 lbs!). The most entertaining part of the competition, however, is the spectacular destruction of some of the bridges under pressure!

Organizers Glenn Penner, P. Eng., Shane Mailey, P. Eng., Don Spangelo, P. Eng., and Adèle Poulin, P.Eng., would like to thank APEGM for their support and thank all those students who came and took part in the competition. As well, we would like to recognize Reba Faunal, Jennifer Wolfe, Dallas Johnson, David Becker, Matt Jurkiewicz, and Twyla Kelbert who volunteered their time. As a further note, if you would like additional information on the "In-School Spaghetti Bridge Competition", please contact Don Spangelo (474-4395), Glenn Penner (474-4971), Adèle Poulin (474-3925), or Shane Mailey (474-4019). ■

Letters to the Editor



I am writing to express my concerns over the article, "Nuclear Power: Yucca Mountain".

An examination of the article shows three paragraphs describing the Yucca Mountain Project and nearly all the remainder are quoting those opposed to the project. One quote is from Craig Walton (a professor of political science) who is leading students in a review of laws that is somehow used to say the geo-science and engineering studies done of Yucca Mountain are not valid. How laws equate to the soundness of scientific studies is not made clear. As far as modeling is concerned it certainly is a key component of such research because how else is one supposed to determine impacts, which are improbable and may occur over 10,000 years? Numerical modeling is an accepted scientific tool and the modeling conducted for Yucca Mountain is based on engineering and scientific studies. Other quotes come from a Senator opposed to the project and the Sierra Club who have a well-known anti-nuclear stance. Worse, the article uses the words "garbage dump" and that the "house beat Las Vegas", which are extremely biased and totally inappropriate for a professional newsletter. This is using drama and emotion to convey its purpose instead of facts. As these lines are not quoted in the article one must assume that the author is stating his opinion.

Because the article was published previously in the Canadian Consulting Engineer magazine is no reason that there is merit to republish it here. If you disagree with the type of articles published in a commercial journal, you can show your dislike by not renewing your subscription, but in the case of the newsletter, you cannot because it is tied to the dues you pay. Thus we are paying for the dissemination of an article slanted to the anti-nuclear camp whether we agree with it or not.

And what is probably the worst part of allowing such articles into the APEGM newsletter is that it divides the membership instead of being a valuable tool that can help to bring members of the Association together. While it is fair for someone to have an opinion, it should not be published in a newsletter that is supposed to communicate news of the Association and be about matters of concern to all members and not a forum for select authors to bring forth quotes of those opposed to certain projects. The newsletter must represent us all, or none. By publishing an article that so radically represents one side of an argument, it may appear to the reader the Association supports such views. I would hope that is not the case. As the newsletter is accessible to the public on the web it is especially important that the views of the Association as a whole are presented.

In the future, it is my belief that articles in the newsletter should be descriptive and not opinion, otherwise the reputation of the APEGM will suffer.

Sincerely,
J.B. Martino, P.Eng.

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Editor's Note

A number of emails were received that were both favourable and unfavourable regarding the publication of the Yucca Mountain article in the previous issue of the Keystone Professional. The Committee endeavours to avoid printing articles that may be perceived as one-sided without providing an equal opportunity for a counterpoint to be published simultaneously to balance the discussion. In this case a counterpoint article has been solicited and we hope to have it published in an upcoming issue.

• • • • • • • • • • •

I recently read your article in The Keystone Professional about Multi-Jurisdictional Registration. I am a Canadian citizen. I obtained my first professional engineering registration in Quebec.

I now live and work in the United States for a company that manufactures engineered wood products. The department I work in designs roof, floor, and wall systems. We prepare shop drawings for projects located anywhere in Canada and the United States. I am registered in all 10 Canadian provinces and in 22 states. Just maintaining registrations and meeting professional development requirements (filling out forms – almost every province or state has its own format and guidelines, sometimes very different from one another) has become an administrative nightmare.

More and more companies are trying to increase their market share and are becoming more global, doing business in greater geographical regions than ever before.

I am very much in favour of a multi-jurisdictional registration (national license) system. On top of saving money, I see a reduction in administrative work. In any given year, I might do projects in eight provinces and none in a couple of provinces, but I am forced to maintain all of my 10 provincial registrations because I never know where my next project will be located. I end up paying registrations (full price) in provinces where I might not even do a project in that whole year.

I sure hope that one day the professional engineering associations will move from being provincial (or state) to becoming federally administrated (one Board for all of Canada, and one for all of the United States).

Christine Beaulieu,
PE, P.Eng.

Meet Your New Councillor – Brian Shortt

By: A.A. Poulin, P.Eng.

Brian is an employee of Manitoba Hydro, where he is a lawyer in the Legal Department. The appointment to the APEGM Council is Brian's first involvement with the Association.

Brian's practice at Manitoba Hydro mainly concerns contract and construction law. He regularly works closely with engineers in the various divisions of Manitoba Hydro, and typically is engaged in legal matters of a contractual nature including the review, negotiation, and drafting of contracts.

Brian was born and raised in Pickering, Ontario – right across from the Pickering Nuclear GS. In recalling his early years, he lights up recalling the view from the living room window – all eight reactors at the Nuclear GS. Although Brian spent his childhood in Ontario, he decided to move west to pursue his education, attending the University of Saskatchewan where he received an LLB (Bachelor of Laws). After graduating from Law School, Brian settled in Manitoba, where he has happily remained since. Called to the Manitoba Bar in 1993, Brian was employed in private practice and industry until joining Manitoba Hydro in 1998.

Brian is married and has two children, both boys, aged seven and five. His wife, Bernadine, is currently attending Red River College in the Accelerated Nursing Program. They reside in West Kildonan. Brian spends as much time as he can with his family. He also enjoys wood carving, spending time at the lake, and being an active member of his church. ■

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