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on the cover ...

**Zooming in to the 2021 AGM
in London, Ontario**



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ON THE COVER ...

The 2 m resolution image of the City of London, Ontario was provided by First Base Solutions. This year, the AOLS Annual General Meeting (AGM) will be held virtually. See the article in The Last Word on page 36.

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President's Page

By Andrew S. Mantha, O.L.S.



At the risk of repeating myself, I must once again emphatically state that we have the BEST staff working at the AOLS office. The task of being your President is surprisingly easy when the right people are always just a call or email away.

As everyone is probably aware the majority of our staff currently work from home but we still keep a skeletal presence at 1043 McNicoll to pick up the mail and ensure building upkeep. I believe this will be our “business as usual” well into the Spring of 2021.

Council minutes are posted on our website and that website is pretty much up and running. We appreciated everyone's patience as we worked through the glitches. It turned out to be a bigger task than originally envisioned but we now have a reliable web platform which we can upgrade and build on for the foreseeable future.

Work continues on our online AGM. We have two possible options on how this is going to run and the option we go with will be based on the COVID status of RBC Place London (formerly the London Convention Centre) on the dates of our AGM. We have been testing the platform we'll be using to host the event and I believe most of you will be pleasantly surprised at how much can be accomplished by our very creative staff. Unfortunately, if we are ruled to be in a grey zone and put into lockdown, we will be forced to strip out a lot of the more innovative features of our AGM. (We are keeping our fingers crossed).

As most of you know already, Bill 213 has received Royal ascent and just in time too. One important change was to allow us to conduct on-line voting for ballots and motions. Council will be drafting a by-law that will include Procedures for voting on Regulations and By-laws, and

Electronic Meetings, which will be distributed by ballot for a vote by the members. You can see that this is somewhat timely in that we are about to hold our first online AGM.

The work of Council has been continuing albeit not as efficiently as we would like. It is very difficult to try and fit a full days' worth of business into a half-day “GoToMeeting”. I would like to thank all our Council Team for rising to the occasion and helping me keep our meetings on track.

Due to the economic uncertainty this year, Council voted to keep our 2021 Dues unchanged. By-Law 2020-01 (Fees) was drafted and sent out to the members for their vote and it was approved. While we have incurred additional costs setting up remote workspaces, these costs have been offset by saving the travel expenses to other associations' annual meetings.

Another by-law that Council sent out to the membership for ratification involved an increase in the fees for the Survey Review Department (SRD) Plan Submission Form. By-Law 2020-02 (Plan Submission Forms) was also passed by the members and allows the Survey Review Department to operate on a more balanced budget.

This really has been a momentous year for all of us and while we all just want to put 2020 and this COVID virus in the rear-view mirror, we did learn some positive lessons. Our staff at 1043 McNicoll really went above and beyond setting up the technology to keep our work on track. I'm hoping that when this is all over, we can still make use of many of these money-saving technologies.

Finally, I would like to thank the many members of this Association who have continually encouraged and inspired me as your President during this really strange year. Even though our association is small in numbers, we do punch above our weight.



129th AOLS Annual General Meeting Dealing with Changing Times – February 24 to 26, 2021

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Executive Director's Notes

By Brian Maloney



Since I have taken the job of Executive Director, I have been wondering about the AOLS's role with respect to professional liability insurance. The *Surveyors Act* identifies the principle object of the Association to be to “regulate the practice of professional surveying and to govern its members ... in order that the public interest may be served and protected.” Does that include operating a group insurance plan? Recently the Insurance Advisory Committee held a special meeting to consider this.

Clearly by its existence, professional liability insurance is required to protect the public to address damages caused by a surveyor and provides a means to compensate those harmed. But the question remains, why must the AOLS operate a group plan as opposed to having surveyors seek insurance on their own? The short answer is that the *Surveyors Act* gives the authority by order of Ontario Regulation 1026 for the AOLS to provide a group insurance plan for its members, who may participate voluntarily, but it is not required if they provide proof of their own liability insurance plan. This really does not answer the question since we could modify the regulation and have it removed.

Recent regulatory reviews have reminded regulators to focus on their regulatory functions. The insurance program has the potential to play several roles in assisting with regulation. Firstly, if proper information is maintained, it can point out trends and problem areas for surveyors. This can be used to inform changes to practice standards and to point out needs for additional training and education. At past annual meetings, the Insurance Advisory Committee provided information sessions where they discussed common problems and identified solutions. The Committee recently went back over almost 3 years of the claim history and identified the common areas of claims and high-level causes. Part of this summary information has been included in the dashboard provided to Council. Unfortunately, many claims lacked appropriate causal information which made it difficult to fully understand the problems. As a result the Committee is seeking to create an agreement with the insurer to be signed by surveyors the next time they renew their policies, or on entering into a new policy, that will oblige surveyors to provide that information. They have developed a questionnaire that has already been used in some cases.

Secondly, the insurance program could potentially identify members who may be following practices that could constitute professional misconduct or incompetence. This topic garnered significant conversation during the meeting. Committee members, like all members, have a responsi-

bility to report to the Registrar when they are aware of any gross or consistent practice or omission of another professional member that may constitute professional misconduct or incompetence. This has never occurred and is balanced by the desire to ensure timely and complete reporting to the adjusters so that timely and appropriate settlements can be reached with the public. Since not all members participate in the AOLS program, it could be considered unfair to have this additional level of potential oversight to members of the program. Nevertheless, this ability exists with the Committee members who see every claim.

Thirdly, the Insurance Advisory Committee provides funding formula advice to the insurer (underwriter) and it can put in provisions to help motivate surveyors to prevent them from making mistakes and having claims. Currently two provisions exist to do so, the first deals with recommendations for increased deductibles where companies continue to have similar types of claims. There is no formula, but this is used on occasion. The second relates to a surcharge related to payouts for claims over \$10,000 where surveyors are charged 4% of the insurance payout per year for the following three years. This helps fund the program and acts as a deterrent to those with multiple larger claims. The Committee is recommending this be raised to 5% to act as a further deterrent. This proposal puts an additional burden on those with the larger claims.

Fourthly the policy ensures minimum coverage for members that were insured, who retire in good standing. This ensures that the public is protected from prior survey errors discovered after the member retires. Given our growing age demographic, this is an important consideration that is not likely available to a member outside of our group policy.

Lastly and the least convincing argument is that the AOLS has negotiated a good policy and manages the program to help save members money. By operating a self-insured retention fund, we have been able to keep costs down and have invested the funds, which are now offsetting the cost of insurance for members. It is hoped that lower costs to members translate into savings for clients.

So although the professional liability insurance program of the AOLS could be considered a “member service” and perhaps inappropriate for a regulator's involvement, we believe that the program is being managed in the best interests of the public and is consistent with our role as regulator.



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The Double Front Era of Township Surveying in Upper Canada (1818 - 1829)

By Hugh Goebelle, Hons. B.A., B.Sc., M.A., O.L.S., C.L.S.

The following article is an excerpt from Chapter 4 (“The Larger Strategy for Surveying Townships”) of The Double Front Era of Township Surveying in Upper Canada (1818-1829) – a thesis presented to the University of Waterloo in fulfilment of the thesis requirement for the degree of Master of Arts in History (1996).

Traversing concession road allowances formed the main task of township surveyors; however, each township survey included approximately 125 miles of such road allowances spread over approximately 100 square miles of territory.¹ Since township surveys occurred in the wilderness of Upper Canada, surveyors and their crews hauled with them camping utensils and provisions along with their surveying equipment. Surveys therefore required some measure of planning in order to succeed; however, the absence of a professional association and a school of surveying hindered surveyors from learning, comparing and developing better methodologies of laying out townships. Consequently, no standard order for surveying concession road allowances had appeared by the beginning of the Double-Front era and throughout the 1820s.

According to modern surveying rules and regulations, surveyors must keep “exact and accurate field notes...[which]...clearly indicate the method and progression of the survey...”² Given this regulation, one might assume that surveyors laid out the lots and concessions of Double-Front townships sequentially as presented in their field notes which always read as follows: first, the retracement of existing township boundaries; second, the establishment of new township boundaries; third, the survey of the road allowance between Concessions I and II from the first lot to the last lot; fourth, the survey of the road allowance between Concessions II and III from the first lot to the last lot; and so on until the surveyor completed all the concession road allowances in the township’s interior. According to this interpretation of the fieldnotes, survey crews cleared and measured a concession road allowance from start to finish, approximately 12 miles, and then walked back to their baseline, another 12 miles, where they began the next concession road allowance. This sequential method of laying out the interior of townships tacked on an additional 125 miles of travelling to each survey during which time the crew remained idle.

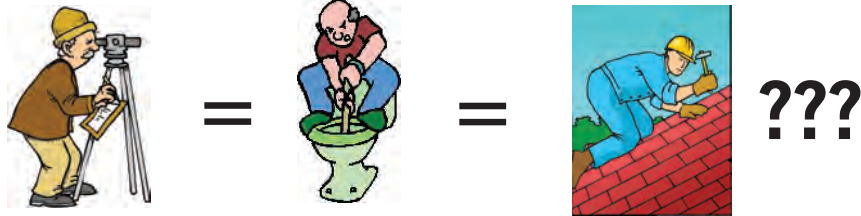
An example of a township survey proceeding sequentially arose during the winter of 1819, when Samuel Benson, Deputy Surveyor (D.S.), with the assistance of Richard

Bristol, D.S., laid out the extension of Toronto township (see Figure 15 [removed]). According to Benson’s diary,³ they conducted their “survey campaign” in the following order: first, the baseline (Base Line Road); second, the western boundary (Winston Churchill Boulevard); third, the check line (Highway No. 10); fourth, the road allowance between Concessions IV and V West; fifth, the road allowance between Concessions V and VI West; sixth, the road allowance between Concessions III and IV West; seventh, the road allowance between Concessions II and III West; eighth, the road allowance between Concessions I and II West; ninth, the road allowance between Concessions I and II East; tenth, the road allowance between Concessions II and III East; eleventh, the road allowance between Concessions III and IV East; twelfth, the road allowance between Concessions IV and V East; thirteenth, the road allowance between Concessions V and VI East; fourteenth, the eastern boundary (Airport Road); fifteenth and last, the northern boundary (Steeles Avenue). With only two exceptions, Benson and Bristol established each concession road allowance in turn from the western boundary to the eastern boundary. In addition, they surveyed each concession road allowance, consisting of 15 lots, from the southern baseline to the northern boundary. In other words, Benson and Bristol and their crew started each concession road allowance at Base Line Road, traversed six miles along the centre-line in a northerly direction until they reached Steeles Avenue, and then returned to Base Line Road where they started the next concession road allowance. As a result, they walked an extra 80 miles of territory, during which time they were not working, and extended the length of the survey by 13 days.

Both common sense and common knowledge however tell us that few surveyors established Double-Front townships according to this sequential order. In one of his many consultative reports, D.W. Lambden, a survey law expert, writes that

By far the greatest inked volume of Crown survey records in Ontario are copies made

cont’d on page 8



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by the surveyor after the completion of the survey; original field records are often in a sorry state after weeks of use under adverse conditions, [being] smudged and grimy and well worn and...nearly illegible.⁴

During this recopying process, surveyors translated the actual progression of their survey into the sequential order which, without exception, appeared in their field notes submitted to the Surveyor-General. A superb example of this translation process is the survey of Flos township by John Goessman, D.S., in 1821 and 1822 (see Figure 16 [removed]). Perhaps following the administration's inspired example of naming this township after Lady Maitland's dog,⁵ Goessman surveyed the concession road allowances in a random order as indicated by the following examples drawn from his diary.⁶ After completing the western boundary from Highway No. 26 to Georgian Bay, Goessman's crew walked 25 miles along the western, southern and eastern boundaries of Flos, thereby skipping all the intervening concession road allowances, to begin work on the northern boundary. After running the northern boundary from Highway No. 93 to Georgian Bay, Goessman's crew walked 19 miles back to the southeastern angle of Flos, again skipping all intervening concession road allowances, to work along the eastern boundary. In the spring of 1822, Goessman decided to run concession road allowances in Tiny, the township to the north, even though he had not yet finished Flos; however, in the middle of surveying Tiny, Goessman changed his mind and walked nine miles in order to run the remaining concession road allowances in Flos. After completing Flos, Goessman's crew returned to Tiny - a walk of 12 miles. Goessman's random approach, like Benson's and Bristol's sequential one, however does not represent the order most surveyors elected to traverse concession road allowances.

Based on the few surviving diaries, London represents the finest example of the progression of a Double-Front township survey (see Figure 17 [removed]). Mahlon Burwell, D.S., who established more Double-Front townships than any other surveyor, began his work during the autumn of 1818 - before Surveyor-General Ridout amended township surveying. When winter settled in, Burwell had completed the first five concessions according to the Single-Front method and had blazed the eastern and western boundaries to their northern terminus. After resting himself and his rheumatism through the winter, Mahlon returned in April of 1819 to complete the township under the new Double-Front pattern. Since Mahlon hired a second crew, led by his brother Lewis, also a surveyor, work progressed rapidly with each crew traversing an average of three miles of line per day. In addition, according to his diary,⁷ each crew worked on adjoining concession road allowances and laid them out in an easterly or a westerly direction as per their convenience. For example, after surveying a concession road allowance in a westerly direction to the western

boundary, each crew chained 66.67 chains northerly along the boundary and then surveyed the next concession road allowance in the opposite, or easterly, direction. Furthermore, they began each concession road allowance from one of three locations again as per their convenience: the eastern boundary, the western boundary or the proof line (Highway No. 4). Appendix 3 [removed] represents the daily, step-by-step, progress of the survey of London under the Burwells which smartly eliminated the extra walking mileage required when crews returned to the baseline after surveying each concession road allowance. Although their method involved more haulage than strictly necessary, it hinted at the more logistically sound methods which were developed during the 1830s. Naturally, the field notes submitted by Mahlon presented the survey in a sequential order.

Throughout their survey of London, the Burwells did not establish base camps where they might leave some of their equipment and supplies during their survey. Instead, both crews camped together in a convenient place at the end of each day's work typically using the ground for a bed. Since oxen were not suited to the thick bush and since horses, which represented less than half of the animal workforce in settled townships, remained scarce,⁸ crews hauled their surveying and camping equipment without the benefit of pack animals. Typically, a survey crew's "furniture" included four axes and a hatchet, six tin cups, four iron and two wooden spoons, a tin pan, a kettle, a tin pail, eight blankets and a gun with shot and powder.⁹ This selection of camping gear allowed the crew to prepare meals from their meagre selection of foodstuffs of salt pork, pea soup and bread.¹⁰ With few preservatives available to them, foodstuffs frequently spoiled. To compensate, crews supplemented their meagre diet with whatever game that they could shoot including the plentiful passenger pigeon.¹¹ To reduce the risk of spoilage, the Burwells left the majority of their supplies with Messrs Getty and Martin, who had settled in that portion of London township which Mahlon had completed the previous fall, and limited their supply of food in the field to one week. Throughout the course of the survey, Mahlon or Lewis sent crew members to these depots to re-stock on five separate occasions. Since the nearest towns normally remained a day's journey or more from camp, it was imperative for surveyors to provide adequate food and for the party to hunt successfully. Failure to do so caused delays in the survey and hardships for the crew.

In accordance with their instructions, surveyors left all sidelines, including allowances for sideroads, unrun at the time of the original survey. The responsibility for running sidelines fell to the settlers who were expected to hire surveyors, at their own expense, to establish their sidelines when warranted by sufficient homestead clearing and development. A comparison of the final appearance of London township (see Figure 17 [removed]) and the lines actually surveyed by the Burwells (see the last figure in Appendix 3)

reveals the magnitude of the boundary work left incomplete. Although these circumscribed procedures provided the minimum but adequate demarcation of lots required to facilitate settlement, they also omitted any form of quality control. The most common form of field check in surveying is the closed-loop traverse which requires surveyors to return to their place of commencement and to compare the actual field results with the intended dimensions and directions. To reiterate the point, Double-Front surveyors simply ran the concession road allowances from one end of the township to the other and made no attempt to measure across the concessions, along allowances for sideroads for

instance, to test the reliability of their work. If they had done so, the surveyors of townships like Belmont and Verulam would have discovered the problems which had appeared in their work before they became permanent features on the landscape rather than remaining oblivious to them.



Hugh Goebelle has worked as an Assistant Examiner of Surveys with the Ontario Ministry of Government and Consumer Services since the beginning of 2011. If you would like to have copies of Appendix 3 and the figures referred to in the article, contact Hugh Goebelle at Hugh.Goebelle@ontario.ca

¹ Since the Surveyor-General's Office did not employ any standard dimensions for the Double-Front system, the number of lots and concessions varied in each township.
² *Standards for Surveys*, 5th ed., (Toronto: Association of Ontario Land Surveyors, 1991), p. 7, s. 21.
³ Ontario Archives, R.G.I., CB-1, Box 38, 16 April 1819, Diary of the Survey of the Township of Toronto [New Survey] from 12 February to 16 April 1819 by Samuel Benson, D.S., not paginated.
⁴ D.W. Lambden, "Report of the Investigation of the Survey of the Township of Tiny in the County of Simcoe and of the Crown Patent Issued to Edwin S. Meeking, 21 August 1866 for Lot 18 in Concession XI in the Township of Tiny." (Unpublished, 1993), p. 71.
⁵ G.H. Armstrong, *The Origin and Meaning of Place Names in Canada*, (Toronto: MacMillan Co. of Canada, 1930), p. 106.
⁶ Ontario Ministry of Natural Resources, Survey Records Office, Field Book No. 414, pp. 6-109, 10 January 1823, Diary of the Survey of the Townships of Flos and Tiny from 18 August 1821 to 14 September 1822 by John Goessman, D.S.
⁷ Ontario Archives, R.G.I., CB-1, Box 19, 31 May 1819, Diary of the Survey of the Township of London from 26 September 1818 to 31 May 1819 by Mahlon Burwell, D.S., 1 April - 14 May 1819 at pp. 6-21.
⁸ *The Land Transformed 1800-1891*, Vol. 2 of Historical Atlas of Canada., ed. R.L. Gentilcore, (Toronto: University of Toronto Press, 1993.), p. 42.
⁹ "Biographical Sketch of Reuban Sherwood," in Proceedings of the Association of Provincial Land Surveyors of Ontario, No. 1 (1886), p. 61.
¹⁰ D.W. Thomson, *Men and Meridians: The History of Surveying and Mapping in Canada*, (Ottawa: The Queen's Printer, 1966), Vol. 1, P. 236.
¹¹ Ontario Archives, R.G.I., CB-1, Box 38, 16 April 1819, Diary of the Survey of the Township of Toronto [New Survey] from 12 February to 16 April 1819 by Samuel Benson, D.S., entry dated 13 April 1819.

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The Travails of Managing a Complex Business during the COVID-19 Pandemic

By G. Brent Hall, PhD, MNZIS

At the start of January 2020, the World Health Organization reported on social media the outbreak of a cluster of 44 pneumonia cases of unknown etiology with no deaths in Wuhan, China. A week later, by January 7th, the Chinese authorities had identified the cause as, rather than pneumonia, a new type of coronavirus (novel coronavirus, or nCoV) and had ruled out known respiratory pathogens such as influenza, avian influenza, adenovirus, Severe Acute Respiratory Syndrome coronavirus (SARS-CoV), and Middle East Respiratory Syndrome coronavirus (MERS-CoV) as the cause of the problem.

By January 13th, the first case of the disease that is now informally and globally known as the ‘Coronavirus’, ‘Covid’, or ‘COVID-19’ (the formal name of the virus is *severe acute respiratory syndrome coronavirus 2* or SARS-CoV-2) appeared outside China and in Thailand. From this point on, and with great speed and geographic dispersion, the virus commenced its global spread, fueled initially with travel of infected individuals to other countries, where they transmitted the disease to non-infected people with whom they casually came into contact. And so, the world fell into the grips of the deadliest pandemic since the emergence of the ‘Spanish’ Influenza A (H1N1) virus in 1918.

By January 30th 2020 there were over 7800 cases worldwide of COVID-19, still mainly in China. However, just over one month later, on March 11th, the intensity and speed of the spread of the virus, its virulence and severity, as well as the apparent inaction by governments on adopting strict border controls and curtailment of, especially, international travel, caused the World Health Organization to declare the COVID-19 disease a pandemic. Although this now seems somehow like years ago, these initial weeks gave rise to mounting alarm over the outbreak. However, as noted above, remedial action and reaction planning were generally slow to happen, with the assumption that this would not evolve into the international catastrophe it has become ten months later.

In fact, as news of the virus became more prominent in the media, the Education and Research Group at Esri Canada was preparing for our March 4th - 5th Research Conference at Hart House, on the downtown University of Toronto, St. George’s campus. Our first keynote speaker for this two-day, biannual event was Professor Michael Batty, an internationally leading British urban planner, geographer and spatial data scientist, and Bartlett Professor of Planning and

Chairman of the Centre for Applied Spatial Analysis at University College London. The second day’s speaker was Steve DeRoy, an award-winning Anishinaabe professional and Indigenous business leader, who is Director of The Firelight Group, one of Canada’s leading Indigenous GIS companies. Immediately prior to the conference, Professor Batty decided wisely not to travel to Canada and instead spoke virtually, as a harbinger of the new normal. On the other hand, Steve DeRoy travelled from Vancouver, and along with numerous other national attendees, was perhaps the last person to keynote and attend in person a major GIS conference. The week following this event, on or around March 11th, Esri Canada made the decision to close all offices across the country, and, along with many other enterprises, the transition to home-based work commenced for the duration of this year.

The initial stages of the transition from office- to home-based work required many adjustments to be made for multiple levels of staffing and multiple aspects of ‘normal’ operations within the company. Traditionally, Esri Canada has taken pride in being widely recognized as an organization that places a high quality and quantity of responsiveness to customer needs as a priority for all regional offices, as well as the head office in Toronto. This important aspect of the company mission has evolved over time into a highly developed and responsive approach to customer-company interactions. Hence, the transition to being based at home, and generally not available for customer-to-company or company-to-customer personal visits, changes were required not only in the medium of interaction, moving to virtual communications, but also in the nature of communications themselves. Visits to, and especially from, clients were substantially curtailed and, as noted, online meetings, along with virtual workshops, conferences, webinars and telephone-based technical support replaced the previously preferred interpersonal mode of interactions.

Despite initial teething issues, new tools were deployed and a combination of several virtual meeting software products were learned by staff and have subsequently been put to good use. Incrementally, the company has transitioned over the course of this year from an in-situ presence in our sixteen regional offices (3 in the Pacific, 4 in the Prairies, 4 in Ontario including the headquarters in Toronto, 2 in

Quebec, and 3 in the Maritimes) now to operate virtually out of approximately 460 offices, one based in the home of every staff person (including one temporarily in New Zealand). Clearly, this is not an easy task that has a very high level of complexity associated with it, while having a high degree of risk in terms of maintaining 'business as usual' and growing the company during a time of general global economic nervousness and uncertainty. However, through a combination of excellent senior level management, careful planning and support, and a strong commitment to pull together by all staff, the company has been very successful in continuing its business operations without adverse impacts on any major aspects of activity.

Realistically, there was not initially much forethought given to a timeframe when staff would return to the company's offices, at the time of exiting the offices in March. This remains very much of a moving target. Rather, planning and steps to facilitate business operations, pivoting quickly to a new normal, were initiated, with customer and staff health and safety placed on an equal footing to maintain as much of a 'business as usual' mode of operating as possible. As the year has progressed, weeks have turned into months that have required multiple adjustments to home, family and work arrangements. In general, four guiding principles have underscored the company approach to this new mode of operating. Specifically, (1) establish a clear communication structure that is understood by all, (2) check in frequently and personally from the top down and laterally across departments, (3) offer constant support and encouragement to all staff and make sure that managers, directors and the company executive are available when needed, and (4) ensure that there is ample time and options for social interaction.

Two potentially adverse scenarios of working from home were initially identified and steps were put in place to ameliorate negative outcomes. Specifically, the abrupt change in defined work boundaries clearly impacts individuals, depending on their circumstances, differentially, especially those with young school-age children who needed to be home schooled or who had to switch without much support from school-based to remote learning. The dissipation of peer contact and a lack of workplace supervision could potentially adversely affect the personal productivity of such people. Similarly, the scenario of young, single staff members suddenly isolated from peer contact and consigned to living without respite in small apartments with little to do other than work, was of equal concern. Some individuals thrive in the office environment, feeling more motivated and connected when working alongside their supervisor and co-workers. Without ready access to workplace supports, employees with radically changed work circumstances may feel unsupported and unanchored, without peer support or managerial feedback and guidance. To counteract these possibilities, the company made it understood for all staff from the outset that a clear commu-

nication structure was in place, and regular calls and company updates were scheduled from the President down. To provide a signal of company support, a staff home-based work monetary award was provided to assist with increased communications costs, and again at year end a small but important financial reward was provided to compensate for the missed company end-of-year celebrations that staff look forward to.

From the perspective of my own unit, we have met virtually this year on a weekly basis for a group catch-up in Microsoft Teams that each staff person looks forward to every week. This, plus regular 1:1 and small group meetings have allowed us to stay focused on our group mission and to have an excellent and highly productive work year. Although the outcome for 2020 for Esri Canada has been positive and the company is very optimistic about the short and longer-term future, there are one or two salutary messages that should not be forgotten in terms of management and general approach to work arrangements. Fortunately, the health of everyone in the company remains good, despite COVID-19 infection rates continuing to increase across the country. In general, I think it fair to say that everyone is looking forward to a return to our offices some time in 2021. However, this year, despite its upheavals, anxieties, and precautions, has allowed everyone to see that alternate forms of work are indeed viable, especially for those coping with long commutes that stretch home-to-home workdays often past 11 and often to 12 hours, five days a week. Moreover, staff with young children and/or aging parents to care for can perhaps seek a better balance between home and work.

One additional net benefit of the exile from the company headquarters in Toronto is that an extensive renovation of our office space has been able to proceed unencumbered by staff within the affected areas. So, with some adversity comes somewhat of a silver lining.

In general, the global impacts of the COVID-19 virus are historically monumental, and in a century's time our great grandchildren will look on this era in much the same way that we look back on the Spanish Influenza which occurred just over a century ago. As international organizations, national governments, and we as individuals globally do what is necessary to protect life and livelihood, it is clear that adopting sensible protection and coping strategies start with each and every one of us. Extending common-sense behaviour from the individual to the home and to the workplace, where we traditionally spend most of our time, is the only way we will overcome this adversity and gradually return life to the rhythms that were previously in place.



Brent Hall is the Director, Education and Research at Esri Canada. He has been working remotely from New Zealand this year.

CANADA'S RADARSAT CONSTELLATION MISSION: OPPORTUNITIES FOR MONITORING



By Dr. Vern Singhroy, P.Eng.

Earth Observation (EO) using radar satellites is a major thrust of the Canadian Space Program. **RADAR** is an acronym for **R**adio **D**etection **A**nd **R**anging, which essentially characterizes the function and operation of a radar sensor. The sensor, installed on airplanes and satellites, transmits a microwave (radio) signal towards the target on Earth and receives the backscattered portion of the signal. The strength of the backscattered signal is measured to discriminate between different targets.

Canada is a world leader in spaceborne synthetic Aperture Radar (SAR) systems for data use and value-added products and services. In the 1980's Canada pioneered SAR airborne technology and developed applications in Canada and around the world. In 1995, the Canadian Space Agency launched its own RADARSAT-1 satellite (1995-2013) which provided images of all of Canada including the Arctic and maritime areas as well as global coverage during the day and night and under different weather conditions. RADARSAT-2 was launched in 2007 and is still acquiring images of Canada and the world. RADARSAT-2 provided improved multi-polarization, higher resolution and additional beam modes in comparison to RADARSAT-1. This allowed for new developments in sea ice characterization, ship detection, crop types and soil moisture estimation and other applications for the Government of Canada and service providers.

The RADARSAT Constellation Mission (RCM) was launched on June 12, 2019. RCM consists of three identical C-band (5.5 cm wavelength) radar satellites flying in a constellation. RCM provides complete coverage of Canada's land and oceans offering daily revisits of 95 % of the globe. RCM ensures SAR data and imagery continuity for

RADARSAT-2 users, as well as adding daily high-resolution images and additional beam modes and a series of new applications enabled through the constellation. The RADARSAT Constellation Mission is aimed at meeting the Government of Canada User Department's needs and requirements for Maritime Surveillance, Disaster Management, Ecosystem Monitoring and Northern Development. Figures 1 and 2 show the main application areas, the beam modes and resolution of RCM.

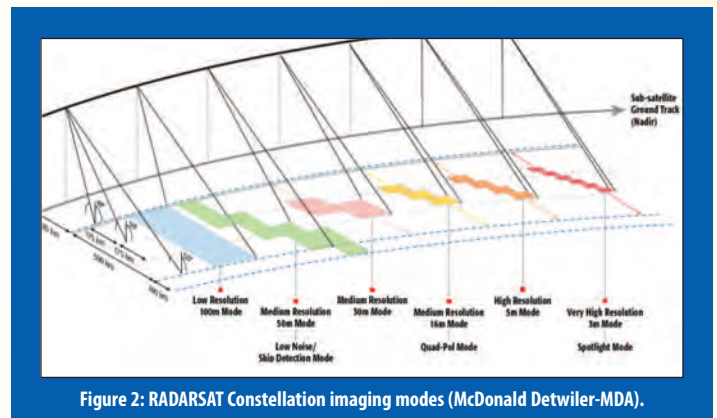


Figure 2: RADARSAT Constellation imaging modes (McDonald Detwiler-MDA).

The following is the Government of Canada data policy regarding access to RCM data provided from the Canadian Space Agency <https://www.asc-csa.gc.ca/pdf/eng/publications/rcm-sar-data-policy.pdf>.

“The Government of Canada retains the ownership of all RCM SAR data. All intellectual property rights to Value Added Products (VAPs) created from the RCM SAR data will remain with the creator of the VAP. The Government of Canada... facilitates the access to RCM SAR data to industry, researchers and the general public, subject to exceptions for security, privacy, and confidentiality. Registration and the creation of a user account will be required to access RCM SAR data. The user profile associated with the account will define the level of access to RCM SAR data. Vetted users may be granted greater access to RCM SAR data. The Government of Canada is the sole distributor of RCM SAR data. Users may distribute VAPs and services created from RCM SAR data. Distribution of archived image products of RCM SAR data will be at no charge to users. The Government of Canada may implement means to recover costs for data reprocessing and/or to meet demands for high volumes of RCM SAR data outside of the current capacity and capabilities of RCM SAR system. Under certain situa-

Figure 1: Applications of the RADARSAT Constellation Mission (Canadian Space Agency).

tions the RCM System may face limitations which could prevent data being made available in a timely fashion and within the applicable quality standards. Use of RCM SAR data must be in accordance with the applicable End User License Agreement (EULA) accompanying the data.”

Recent research has shown that satellite radar interferometry (InSAR) techniques are increasingly being used for monitoring rates of land movement triggered by geohazards, floods, climate change, etc. There is an increasing interest in these innovative monitoring technologies by the geospatial, survey and geotechnical communities. The InSAR monitoring techniques are also becoming more widespread and reliable with rapid improvements in image processing, the availability of coherent ground targets and the more frequent revisits of radar satellites. Radar interferometry was developed over the past twenty-five years and is increasingly being used by the global survey and mapping industry. The rapid revisit time of a specific area from RCM will allow the monitoring and measuring of millimetre land motion every 4 days using radar interferometric techniques. The InSAR motion measurements are particularly useful when integrated with GPS, GNSS and RTK, commonly used by surveyors (Van Sickle 2008). Time-based analysis of site conditions, such as monitoring installations for volume-changing and deformation analysis are also required by surveyors (Trevillian 2020).

Radar interferometry represents the phase differences between the backscatter signals in two or more time-series SAR images obtained from similar positions in space. Radar satellites acquire images from repeat-pass orbits. These orbit cycles for InSAR applications from current government-owned radar satellites, can range from 1- 6 days for Cosmo-SkyMed (Italian Space Agency), 4 days for RCM (Canadian Space Agency), 11 days for TerraSAR-X (German Space Agency), and 12 days for Sentinel-1 (European Space Agency).

The phase differences between two repeat-pass images at a fixed line of sight (LOS) can provide information on topography and small surface displacements. Land deformation measured from SAR interferometry ranges from millimeters to centimeters per orbit cycle. InSAR techniques are used to monitor deformation under specific conditions provided that coherence is maintained over the respective orbit cycle. Using data pairs with short perpendicular baselines, short time intervals between acquisitions, and correcting for the effect of topography and atmospheric effects, reliable measurements of surface deformation can be achieved (Singhroy 2016, 2020). The software to process and analyse the InSAR images can be purchased from several companies and more simple analyses are available online as open source software.

Two examples are presented to demonstrate the uses of InSAR to monitor land motion and improve safety and security of critical transportation corridors in Canada. The first example shows the use InSAR techniques to monitor a rock slope movement affecting a railway line at Gascons, Gaspé, Quebec. Our results show 20 mm movement per year using RADARSAT-2 images (Figure 3). This motion was confirmed by other field measurements. Using RCM images,

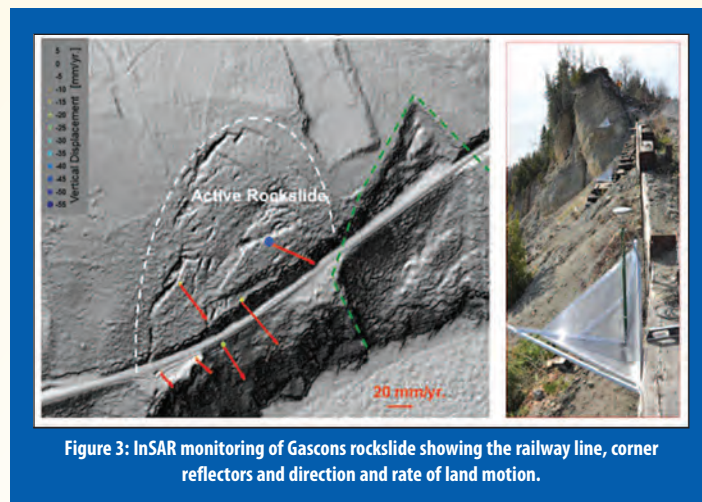


Figure 3: InSAR monitoring of Gascons rockslide showing the railway line, corner reflectors and direction and rate of land motion.

we will be able to measure continuous motion of this active landslide, especially in the spring months when the ground is wet. The Gascons site is highly vegetated with mature trees which reduces the InSAR coherence. We installed metallic reflectors (Figure 3) within and outside the landslide area to monitor the landslide motion. The reflectors serve as permanent coherent targets with high radar backscattering and produce an accurate signal to measure the minute land motion. The railway engineers are using our InSAR measurements and other field surveys to repair the railway line and build new retaining walls.

The second example shows a landslide along the Thompson River, within the Canadian Rockies, that is affecting both the Canadian National (CNR) and Canadian Pacific (CPR) railway lines. Pronounced sagging of the retaining wall and the bulging of lock blocks have occurred since 2005 (Huntley et al. 2016). The economic importance of the Thompson River valley corridor, along with the need to understand and manage the safety risk related to the landslides that threaten this route, make this area a priority for the Government of Canada (Dudley et al 2020). Using RCM InSAR images, scientists at the Canada Centre for Remote

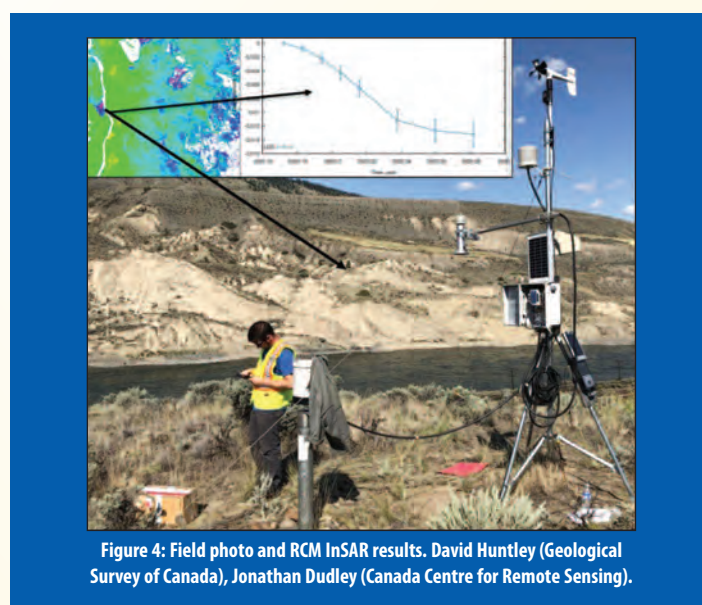


Figure 4: Field photo and RCM InSAR results. David Huntley (Geological Survey of Canada), Jonathan Dudley (Canada Centre for Remote Sensing).

cont'd on page 14

Sensing measured about 1.5 cm of motion from February 20 to 30, 2020. (Figure 4). The Ripley landslide is actively moving and monitoring its gradual motion behaviour is essential to reinforce the constantly sagging retaining walls to ensure the safety of both the CNR and CPR lines.

This brief account provides a review of the Canadian RADARSAT program and demonstrates the uses of RCM InSAR as another innovative tool available to surveyors.



Dr. Vern Singhroy, P. Eng., is the President of EOSPATIAL in Ottawa. He is an internationally recognized expert on remote sensing applications and was the chief scientist of the Canadian Space Agency, RADARSAT Constellation Mission, launched in June 2019. Dr. Singhroy has published over 300 papers in scientific journals, proceedings, and books. He is a profes-

sional engineer. He was the editor-in-chief of the Canadian Journal of Remote Sensing, and he is the co-editor of four books, including the Encyclopedia of Remote Sensing. His recent publication *Advances in Remote Sensing for Infrastructure Monitoring* will be published in December 2020 by Springer Press. Dr. Singhroy has been a Professor of Earth Observation at the International Space University in Strasbourg, France (1998-2020) and he is an adjunct professor in Planetary and Space Sciences at the University of New Brunswick in Canada. Dr. Singhroy received the prestigious Gold Medal Award from the Canadian Remote Sensing Society and the Queen Elizabeth Diamond Jubilee Medal for his contributions to Canadian and international remote sensing applications and education. He can be reached by email at vern.singhroy@eospatial.com

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NEWS FROM 1043

Changes to the Register

MEMBERS DECEASED

Larry Monaghan	792	Jan. 21, 2020
Edward Barich	1243	Oct. 4, 2020
Eero Halinen	1240	Oct. 4, 2020
John Verhaegen	1203	Oct. 9, 2020
Donald I. Houghton	741	Oct. 21, 2020
Michael J. Clancy	1387	Nov. 11, 2020
John G. Boyd	1402	Dec. 14, 2020
John F. Goltz	1185	Dec. 15, 2020

MEMBERSHIP RELINQUISHED

Prashannath Segaran	1978	Dec. 31, 2019
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RETIREMENT

Donald H. Brown	1620	Oct. 1, 2020
Dino R.S. Astri	1650	Nov. 1, 2020
Robert C. Thaler	1563	Sept. 1, 2020
Theodor Ims	1797	Nov. 10, 2020
Tony Stauskas	1672	Dec. 31, 2020
Timothy Hartley	1528	Dec. 31, 2020
John (Jack) C.G. Keat	1678	Dec. 31, 2020
Gregory C.P. Bishop	1593	Dec. 31, 2020
Gordon A. Ray	1731	Dec. 31, 2020

COFAS APPROVED

Swift Surveys Limited
Toronto, Ontario
October 1, 2020

Northern Link Survey Group [o/b 2307869 Ontario Limited]
Barrie, Ontario
November 11, 2020

COFAS RELINQUISHED

Tony Stauskas Surveying Inc.
Mississauga, Ontario
December 31, 2020

Dino Astri Surveying Ltd.
Barrie, Ontario
September 1, 2020

Robert C. Thaler Surveying Limited
Bracebridge, Ontario
September 1, 2020

Donald H. Brown Surveying Ltd.
Mississauga, Ontario
October 1, 2020

COFAS CANCELLED

Houghton + Houghton Inc. Ontario Land Surveyors
St. Thomas, Ontario
October 2, 2020

Surveyors in Transit

Krcmar Surveyors Ltd. has acquired **Land Survey Group (LSG)** and the records of **Tom Czerwinski Surveying Ltd. Saša Krcmar** is the Managing OLS and C of A Holder of the Etobicoke office of LSG.

Protect Your Boundaries Inc. has moved its office to 777 The Queensway, Unit 1, Etobicoke, ON, M8Z 1N4.

Barich Grenkie Surveying Ltd. (A division of Geomaple Canada Inc.) has moved its Toronto office to 32 Essex Ave., Thornhill, ON, L3T 3Y7.

Phillip S. Swift is now the Managing OLS of **Swift Surveys Limited** located at 671 Spadina Ave., Toronto, ON, M5S 2H9. Phone: 416-436-6862.

Goran Lale is now with **Public Works and Government Services Canada - Real Property Geomatics Services** located at 4900 Yonge St., Toronto, ON, M2N 6A6.

Rick Della Mora is now with **Natural Resources Canada, Surveyor General Branch, Ontario Regional Office** in Toronto, ON.

Michael McKechnie is now the Managing OLS of **Northern Link Survey Group [o/b 2307869 Ontario Limited]** located at 65 Cedar Pointe Drive, Suite 204, Barrie, ON, L4N 9R3.

Vicky (Vaitheki) Kumar is now with the **City of Toronto, Engineering & Construction Services** at 18 Dyas Road, Toronto, ON, M3B 1V5.

The Field Notes and Records of **Dino Astri Surveying Ltd.** are now with **Krcmar Surveyors Inc.**

The Field Notes and Records of **Tony Stauskas Surveying Inc.** are now with **Ivan B. Wallace Ontario Land Surveyor** in Oakville.

The Field Notes and Records of **Robert C. Thaler Surveying Limited** are now with **Raikes Geomatics Inc.**

The Field Notes and Records of **Donald H. Brown Surveying Ltd.** are available from the owner.

The Field Notes and Records of **Houghton + Houghton Inc. Ontario Land Surveyors** are available from the owner.

Laurence Kuelling is no longer with **Guido Papa Surveying (a division of J.D. Barnes Limited)**. He is now with **J. D. Barnes Limited** at 142 Commerce Park Drive, Unit V, Barrie, ON, L4N 8W8.

J. D. Barnes Limited has relocated its Thunder Bay office to 1158 Russell Street, Thunder Bay, ON, P7B 5N2.

Kevin Haddad is no longer with **Omari Mwinyi Surveying Ltd.**

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“What They Did Was Big”: William Ogilvie, Surveyor of the Canadian North from Confederation to the Klondike Gold Rush.¹

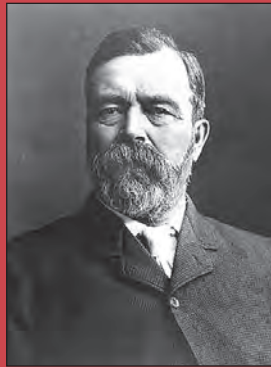
By Dr. Christopher Petrakos

William Ogilvie (P.L.S., D.L.S., F.R.G.S.) is almost completely unknown in our own time but in the second half of the nineteenth century was one of the most prominent surveyors of the far Canadian north. He is one of the few surveyors in history who drew national boundaries *and* played a significant role in the politics of the places that he, in effect, created. With telescope, micrometer, and compass in hand, Ogilvie created new spaces on a map but also set northern history on a fundamentally new course. His work in the north earned him significant praise from the Canadian government who compared him favorably to the legendary British explorers “Livingstone and Stanley.” His work, parliament declared, “...entitle him to the first rank of ... explorers of the nineteenth century.”² Ogilvie’s work certainly is important from a settler and national perspective. However, it must be acknowledged that the development of colonial spaces and the institution of colonial practices among Indigenous peoples created colonial subjectivities, the consequences of which are still being reckoned with today. The purpose of this article is not to celebrate Ogilvie’s achievements but rather to situate Ogilvie in his historical context and understand him in the context of his own time.

Born on April 7th 1846 in Glen Ogilvie Ontario—a small village founded by his grandfather that bears his name—William grew up on the outskirts of Ottawa. On July 12th 1869, he was admitted as a Provincial Land Surveyor (P.L.S.), conducting some of his earliest surveys just outside Ottawa.³ He surveyed for the federal Public Works Department in 1870 and 1871, but his commission as a Dominion Land Surveyor dated from April 14 1872.⁴ The Federal Government’s desire to “settle” western lands was intense, and the government wanted surveyors out in the field as soon as possible. He was first dispatched to survey Gloucester Township near his birthplace just outside of Ottawa. Between 1875 and 1887, he surveyed as far north west as the Peace River, including a survey of the 4th

Meridian. The borders he drew were later accepted “without adjustment as part of the Saskatchewan-Alberta boundary.”⁵ His reputation was burnished by his level of competence and ability to endure the harsh frontier life.

His unpublished manuscript “*Reminiscences*” at the Library and Archives Canada recounts his early years as a surveyor. It tells the story of his western travels from “Fort Garry” to his first glimpse of the Yukon River in 1887. It’s here that the reader gets a sense of Ogilvie’s priorities and sense of character. His writing evinces a comical attention to the frailties of human nature and the absurdities of northern travel. He was as interested in the topography and the opening of the frontier as he was the colorful characters who populated it. Here he wrote much about “the ubiquitous confidence men who ply their trade upon the uninitiated in all frontier life.”⁶ His stories often focus on those who outwit and reveal the machinations of those that try to take advantage. His own crew were not immune to his jocular sense of humour. On his way



Wikimedia Commons, William Ogilvie

east from Fort Walsh just west of Winnipeg, Ogilvie and his assistants were waylaid in the prairies due to a hailstorm, which Ogilvie describes as a “cutting, gale-driven blast of ice.”⁷ Jim, one of the assistants, declared he would “tough it out” by sleeping in his nightgown rather than his “warmest clothing” as Ogilvie had ordered. Jim’s tent eventually blew away and he was soon left out in the freezing cold. Rather than go out and help him, Ogilvie’s response was to holler out to him: “Tough it Jim! Why don’t you tough it?”⁸

Good humour was certainly part of Ogilvie’s personality. While the miscreants, settlers, and colleagues might have been the butt of many of Ogilvie’s jokes, there’s a good argument to be made that the central character of all of Ogilvie’s works was the frontier itself. For Ogilvie it was a constant source of amazement. His descriptions are often stilted and hyperbolic, borrowing from the language of the Bible and nature. The beauty of the pacific and Alaska-Yukon interior was, much like the Garden of Eden, “the

original,” as he put it. When he traveled through the interior of Alaska, he characterized it as “primeval.” He was, much like many travelers and frontiersmen of the period, prone to projecting high national aspirations on developing the frontier. To him and many others, the frontier was a canvas yet to be painted. On this national *tabula rasa*, surveyors would carve out new national spaces and thus transform the “western wilderness” into “the homes of Vice-Royalty.”¹⁰

Ogilvie’s trips to the north were significant from the perspective of the Canadian Federal Government. In the second half of the nineteenth century, the far north was from the perspective of the Canadian Federal Government, a low priority. But this changed when the US bought Alaska from the Russian Federation in 1867. Commonly referred to in the American press as “Seward’s Folly” because of the perception that the north possessed little strategic value, the Alaska Purchase had little impact on foreign policy for another two decades. In fact, it was not until two years after the Alaska Purchase that Americans realized that the Hudson’s Bay Company (HBC) post at Fort Yukon was west of the border. So poorly was the international boundary demarcated that after the HBC left and established a new fort at Rampart House, it too was discovered to be in US territory!

The political significance and social composition of the north all began to change in the 1880s as miners, missionaries, and bootleggers populated the area prompting missionaries to petition the Canadian federal government to establish a presence in the north. Ogilvie’s first excursion is detailed in his lively “Down the Yukon and Up the Mackenzie” published in the *Canadian Magazine* in 1893. It’s here that he discusses his travels in “*terra incognita*” surveying the Alaska Panhandle and Canadian Interior with three other parties including George Dawson and Richard G. McConnell.¹¹ This was his first trip to the Yukon, being tasked with locating the 141st Meridian, the 647-mile border between Alaska and the Yukon. It just so happened that two major gold discoveries were along major rivers close to that border: Fortymile Creek—described as “an American town on Canadian Soil”—and the Klondike River.¹² Gold was yet undiscovered at the latter, but, despite its geographical vastness, the north is a small place. While conducting fieldwork, he heard rumours of a low mountain pass leading into the Yukon interior (which will later be named the White Pass) and decided to investigate. Here he hired two guides that will come to play an enormous role in northern history: Skookum Jim and George Washington Carmack, the discoverers of gold at the Klondike River in August 1896.

On September 1, 1887, Ogilvie visited the “Tron-diuck” River (soon to be renamed “Klondike”) or “Hammer-Water” river, as it was known by the Tr’ondëk Hwëch’in.¹³ Near the headwaters of the river was a small village where salmon were caught and dried. Ogilvie had no way of knowing that in the next decade this fishing village would become the locus of one of the most lucrative gold rushes in human history. For his work establishing the 141st Meridian, he was awarded in 1891 the Murchison Gold Medal and elected as a member of the Royal Geographical Society.

Ogilvie returned to the north several times between 1893-1897, and each time his surveys increased in importance as gold was discovered and Americans began to flood into the area. Hundreds of thousands of dollars in gold headed out of Fortymile, and Canadian officials were naturally anxious to demarcate the entire international boundary both at the 141st and the Panhandle. Ogilvie made two trips to Juneau between 1893-1895 for just that purpose. Both excursions were to suss out potential entries along Alaska’s archipelagic Pacific coast into British Columbia

and the heart of the Yukon. At the time, Juneau was emerging as a central entrepot between the two countries. It was in this context that Captain Charles Constantine and a contingent of North-West Mounted Police were sent to Fortymile to establish a presence. Ogilvie felt that Constantine was incorrect in his assessments that the best routes to the Yukon went from Juneau to the Taku Inlet where a potential wagon road would lead to the Yukon. Ogilvie left Ottawa on November 30th 1894 and headed towards Juneau arriving at the Taku Inlet around Christmas. It was a disaster all around. Not only was there “no practicable wagon road” into the Yukon (as Constantine was sure of) but the entire excursion north was beset by horrific blizzards and ice storms. When he arrived back in Juneau, he reported that he lost almost twenty-five pounds as well as his son, who had died at home in Ottawa of an unknown malady.¹⁴

In 1895-96 he returned to the north, “busy with boundary matters.”¹⁵ This time, however, he brought his other son Morley. Because of his exemplary service, Ogilvie was offered the position of “Agent-General” by Alexander Burgess, the deputy to the Minister of the Interior. Ogilvie never enumerates the requirements of this position, probably because of its *ad hoc* nature. But it was clear that in the 1890s the Federal Government thought Ogilvie a prime candidate for important positions in the north. His survey work in the mid 1890s centered on clarifying the 141st



Meridian, continuing his work in 1887-88. What made this period of surveying different was that now the north was more fully opening up to miners—mostly Americans—and the North-West Mounted Police were keen to enforce mining regulations.

Ogilvie was the proverbial man on the spot. Fortymile was by then a maturing mining camp about 20 kilometers from the American border and the federal government was keen to keep it in British America. Capt. Constantine had recently constructed a fort and barracks at Cudahy just across the Yukon from Fortymile. While Ogilvie waited for the ice breakup on the Yukon, he surveyed the town site and some mining claims. The year was 1896, the momentous year of the Klondike Gold Rush, and Ogilvie was exceptionally placed to marshal his formidable talents in surveying the new town site at Dawson City and clarify what were haphazardly drawn as the earliest mining claims on one of the richest waterways in world history: Bonanza Creek.

His arrival back in Ottawa in 1897 corresponded to the news of the Klondike Discovery to the wider world, and the world was hungry for information about mining regulations, routes north, and customs duties at the border—all issues in which Ogilvie was expertly knowledgeable. Ogilvie's *The Klondike: Official Guide*, published in 1898, was something of a sensation precisely because it offered

on-the-ground information as well as detailed maps of a place that most North Americans had never dreamed of visiting. In this context, Clifford Sifton, the Minister of the Interior, sent Ogilvie to Great Britain to drum up interest in the Klondike within the Empire in order to maintain political leverage should the US attempt to annex the Yukon. Ogilvie was a fish out of water. The rough-necked explorer-surveyor was now in the company of high-flying British aristocrats including the Baroness Angela Georgina Burdett-Coutts, and Members of Parliament like James Roche, 3rd Baron of Fermoy, as well as South African industrialists looking for special leases and dredging rights in the area. It's unclear based on the documentary record just how successful Ogilvie was in "selling" the Yukon, but the episode does speak volumes about British-Canadian relations at the turn of the century. Fearing a bellicose and expansionist USA, Ottawa believed that stronger ties to Great Britain would provide a counterweight to American pretension in the Klondike region.¹⁶

Ogilvie would probably have preferred to decline the offer to become Yukon Commissioner (1898-1901) in 1898. Back in the Yukon, he was beleaguered by all kinds of problems. In one of his first letters to Sifton he complained: "Since I arrived here, I have been beset by all classes of people and all classes of questions, - disputed claims, whiskey permits, timber permits ... anything and everything. People seem to think that I am armed with extraordinary powers and can settle in a few seconds the most intricate questions. This has taken nearly all my time."¹⁷ His commissionership was a bad experience, and it's perhaps no surprise that Ogilvie's semiautobiographical *Early Days on the Yukon* focuses almost exclusively on the period *before* the Klondike Gold Rush.

Having participated in some of the defining events in northern Canadian history, Ogilvie's retrospective *Early Days* is highly enjoyable reading and provides insights into a world that has since been lost. It's in the final chapter "Home" that he describes the primitive standard of living in the north: beds consisting of grass (if you were lucky) or "smaller branches of spruce tree" (if you weren't). "Stoves are unknown," he wrote, and food was "eaten off the rough, uncovered table." The reader might expect that the purpose of this chapter would be to contrast the difficult northern environment with the luxuries afforded by modern civilization, but the reader would be wrong. For Ogilvie, the northern frontier *was* home. Looking back on his work in the late 1880s, he recalled most keenly how he felt living in a hastily built log cabin crammed with his team of surveyors. As he mapped what was then uncharted territory, Ogilvie and his crew participated in larger historical processes that were perhaps inexorable: opening the Canadian north to industrialized mineral resource extraction, nation-building, and colonial dispossession. Crucially, for Ogilvie, the experience was characterized by a degree

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of ambivalence. While he touted the benefits of civilization and the riches of the Klondike for a British and Canadian audience, the happiest times of his life were spent on the frontier—away from civilization. It was perhaps because of the hardship that he slept well at night. Describing his far northern winter quarters in 1887, he wrote, “I never spent a more comfortable winter in my life than in that house.”¹⁸ He died November 13th 1912, after a successful run as President of the Yukon Basin Gold Dredging Company, with Morley as engineer.¹⁹ Today, one can find William’s name all over the North: Ogilvie Street in Whitehorse, the Ogilvie Mountains, and the Ogilvie River. It seems then, in some sense, Ogilvie never left his home in  the Yukon.

Dr. Christopher Petrakos is an Assistant Professor, Teaching Stream, at the University of Toronto Mississauga where he teaches courses in British and European History. His current research project centers on settlers, missionaries, and Indigenous people along the 141st meridian at the Alaska-Yukon border.

¹ The quote comes from: William Ogilvie. *Early Days on the Yukon and the Story of its Gold Finds*. (London: John Lane, 1913), 302.
² Canada, Department of the Interior. Annual Report of the Department of the Interior for the year 1889. (Ottawa: Brown Chamberlain, 1890).
³ Association of Ontario Land Surveyors. “William Ogilvie.” 128; Don W. Thomson. *Men and Meridians: the History of Surveying and Mapping in Canada*. Volume 2. (Ottawa: Queen’s Printer, 1967), 148.
⁴ Thomson, *Men and Meridians*, 148;
⁵ Allen Wright. *Prelude to Bonanza: The Discovery and Exploration of*

the Yukon. (Sidney [British Columbia]: Gray’s Publishing), 168.
⁶ Library and Archives Canada. [Hereafter LAC]. *Reminiscences*. William Ogilvie Fonds. File 1: William Ogilvie Manuscripts, 2.
⁷ Ogilvie, *Reminiscences*, 11.
⁸ Ogilvie, *Reminiscences*, 12.
⁹ Ogilvie *Early Days*, 8.
¹⁰ Ogilvie, *Reminiscences*, 4.
¹¹ William Ogilvie. “Down the Yukon and Up the Mackenzie: 3,200 Miles by Foot and Paddle, Part 1.” *Canadian Magazine of Politics, Science, Art, and Literature* 1, no. 3 (September 1893): 531-549, 531
¹² Michael Gates. *Gold at Fortymile Creek: Early Days in the Yukon*. (Vancouver: University of British Columbia Press, 1994), 43.
¹³ Thomson, *Men and Meridians*, 152.
¹⁴ Ogilvie, *Early Days*, 150.
¹⁵ Wright, *Prelude to Bonanza*, 257.
¹⁶ William Ogilvie’s tour of Great Britain is discussed in: Christopher Petrakos. “William Ogilvie, the Klondike Borderlands and the Making of the Canadian West.” *American Review of Canadian Studies* 46, no. 3 (2016), 362-379.
¹⁷ William Ogilvie to Clifford Sifton. Dawson City, September 14th 1898. LAC. Microfilm Reel: H995.
¹⁸ Ogilvie, *Early Days*, 299-301.
¹⁹ See: “The Distinguished Career of Governor Ogilvie,” in *Yukon Basin Gold Dredging Co*, 23. University of Alaska Fairbanks. Digital Collections: <https://archives.library.uaf.edu/islandora/objects/eerl-rare-mining-and-development-2386#page/2/mode/2up> (Accessed November 20, 2020).

Sites to See

Is Mount Everest Really Two Feet Taller?

<https://bit.ly/3pjkMum>

As reported in Smithsonian Magazine in December, China and Nepal announced the results of a year-long joint survey of the tallest mountain in the world. According to their measurements, Mount Everest is 29,031.7 feet tall, about two feet taller than the most widely accepted height.

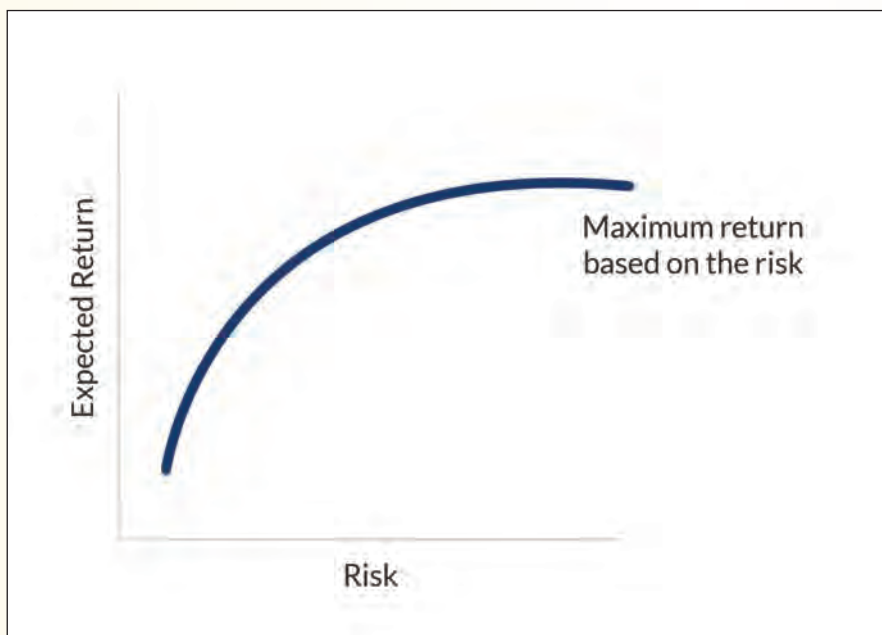
Surveyors used a combination of satellite measurements, taken with GPS and the Chinese counterpart Beidou, and triangulation, taken with laser theodolites, which use angles to measure the height difference between two points. At the summit, chief survey officer of the project Khimlal Gautam used ground-penetrating radar to measure how much snow was packed between their feet and the mountain’s actual rocky peak.

Do you need to take risk to get a better return?

By Julie Brough, CFA, CFP

We have all heard the line – if you want to get better investment returns, you need to take more risk. We accept this as a given. Every finance textbook teaches the same thing. But what happens to this oft-repeated phrase if the data doesn't back up the theory? Besides giving the entire investment industry a case of the vapors, what would this mean to individual investors?

Let's take a step back. The idea that you needed to take more risk to get a better investment return evolved from the Capital Asset Pricing Model (CAPM), which was introduced in the 1960's and still provides the foundations for financial education today. The basic concept of the theory is that, for each increment of risk taken by an investor, there is an optimal portfolio, which will maximize the return available for that level of risk. If you trace a line of all the optimal portfolios, you create what is referred to as the efficient frontier.



The model, therefore, concludes that if everyone has an optimal portfolio for the desired level of risk, the only way to increase returns is to move further out along the risk spectrum.

If you look at the CAPM exclusively as an asset mix model, created from an American perspective, it largely holds up. The U.S. data in the past 60 years since CAPM was created shows that stocks have outperformed bonds, which have outperformed cash with the risk level declining with each step towards safety.

When you try to take the model beyond that, the data begins

to show a different outcome than what the model projects. In fact, the data begins to show the complete opposite of what the CAPM implies. If you are looking at a pool of stocks, it is the lowest risk stocks that have led to the best performance over time. The same can be said for bonds. These patterns hold to varying degrees across countries, industries, and pretty much any other way you can carve up the data.

What does this mean to investors who are just trying to save for a comfortable retirement? First, don't speculate. Part of the explanation for these results is that the more risk you take on, the greater the chances of something going horribly wrong. You don't need a lot of big mistakes to offset the benefits of more prudent positions. In a study created by Brendan Bradley, Malcolm Baker, and Ryan Taliaferro in which they separate stocks into quintiles, the lowest volatility quintile outperformed the highest volatility stocks by a wide margin over the 40 plus year period reviewed. In

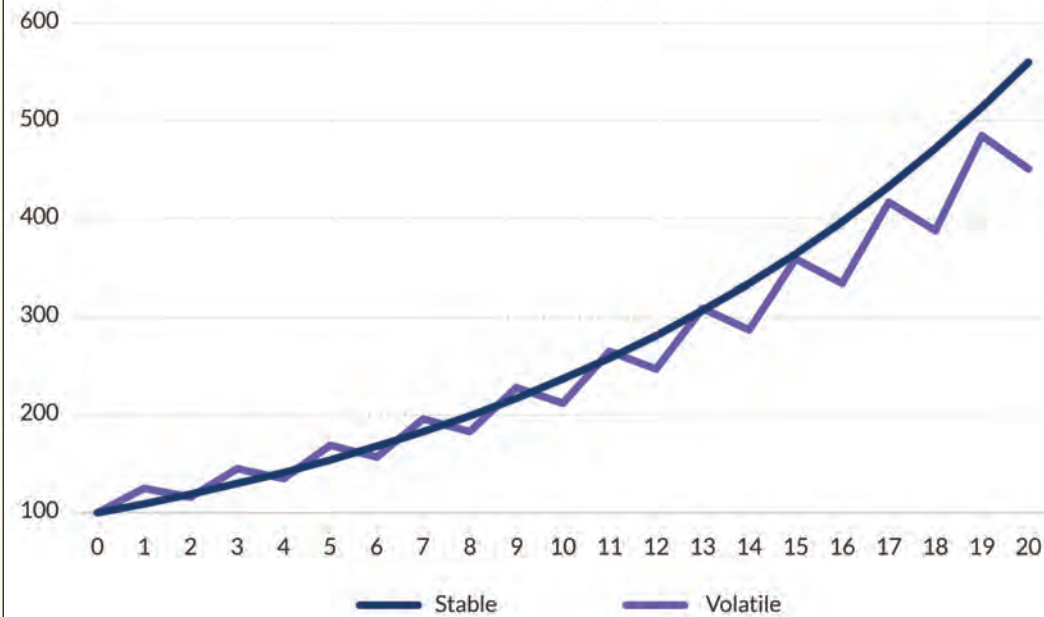
fact, \$1 invested in the low-risk portfolio in 1968 grew to \$81.66 by 2012. The highest risk quintile grew to only \$9.76. So, unless you think you are a stock-picking genius (which for most of us, only takes one lucky pick before we think we are invincible), save the gambling for the casino. You can find their paper "The Low-Risk Anomaly: A Decomposition into Micro and Macro Effects" that they published from the study on the Internet.

Second, there is value within consistency. This is the theory of compound returns. When earning consistent returns, the gains compound and accumulate to a larger asset base than more volatile returns. For example, compare a portfolio earning 9% per year (which is approximately the long-term average for an equity portfolio), to a portfolio that earned 25% in one year and lost 7% in

the next year. Although returns in both portfolios averaged 9% in any two-year period, over a 20-year period, the stable portfolio would have accumulated 24% more in assets – just by eliminating the volatility.

Third, if you keep the risk in your equity selections low, you may be able to take on a larger equity position, thereby increasing the long-term return. This is about trying to combine the strengths and weaknesses of the CAPM. If stocks are likely to outperform bonds over time, to maximize your return, you want to hold more stocks. However,

Benefit of Stable Returns



you may not have the comfort with risk or the time horizon to have a heavy equity portfolio. But, if you move to a portfolio of low volatility stocks – which have historically provided better returns, maybe you can incrementally

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increase your equity exposure. For example, instead of 50% equities, you could go to 55%, improving your long-term return while still being able to sleep at night.

So, the next time someone tells you that you need to take more risk to get more return, or they have a hot new stock pick for you, tell them to check their data, while you focus on your strategy built on facts and prudence.



Julie Brough, CFA, CFP is Executive Vice President and Portfolio Manager at Logan Wealth Management, an independent investment management firm offering customized portfolios to its clients. She has been

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Know your History — Part 7

By Tom Bunker, O.L.S., C.L.S., P.Eng., C.P.A. (Ret)

The following article is Part 7 in a series of historical articles by Tom Bunker.

Do you recognize these Surveyors as makers of Survey Records?

In 2018 I investigated five surveyors who were known to practice in Muskoka, beginning in the 1870's and up until the 1960's, but whose records are not available¹. I discovered that the loss of historical survey notes and plans is not unique to Muskoka.

While there is a professional duty in the *Surveys Act* to preserve and share field notes, there is no statutory requirement for a retiring surveyor to place his/her plans and field notes with another surveyor while there is such a requirement in the case of death². Although the intention is clear, the AOLS actually has no statutory powers over a non-member or his/her estate.

My research found that over the period 1872 – 1891 there were 212 men (no women at the time) that passed their final examinations to become qualified as Provincial Land Surveyors (PLS). 159 of these became members of the Association of Ontario Land Surveyors (AOLS) when it was formed in 1892 and many of them operated surveying businesses in Ontario and passed on their records to successor firms as indexed in the AOLS records. However, there were 149 of the 212 PLS/OLS's for whom there is no field note placement listed. Of those, there are 98 that have published biographies available to the members so we may have some idea about the geographic area of practice, but still no records.

A prime example is Thomas Fawcett, OLS #174, born in England in 1848, died in Ottawa in 1920, who leaves us with a six-page biography, published in 1921, of his extensive career as an Ontario Land Surveyor, Dominion Land Surveyor (DLS) and Dominion Topographic Surveyor (DTS), Gold Commissioner in the Yukon, International Boundary Surveyor, and newspaper publisher, etc.

His parents and the first eleven of fifteen children settled in Draper Township, Muskoka District before 1863. Thomas, his wife and children were at Gravenhurst in 1899



Map of Ontario from the Modern School Geography and Atlas published at Toronto by James Campbell and Son, 1876



Thomas Fawcett with other Dominion Land Surveyors - 1919

while his career carried him across Canada. Posts and lines “by Fawcett” are recorded in contemporary records of Wm. Galbraith and others. Except for a few plans filed at the Registry Office, we have no Fawcett records for the work he did in Muskoka District between 1881 and 1900.

On the other hand there was no biography for architect/engineer Robert Pope, OLS #124, born in Ireland in 1832, died there in 1913, who operated throughout Muskoka-Parry Sound from 1875 until he returned to Ireland in 1894³ while leaving us no field notes or private plans.

The 1870's was a period of robust expansion in Canada, although tempered from time to time by economic recession. There was extensive development of roads and railways in Ontario, especially opening the area north of the Severn River.

cont'd on page 26

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The Canadian expansion of settlement in “Kewatin and the North West Territory” required a large number of survey crews to create Townships for farm allocation. This demand was met by Ontario surveyors heading west for a season of a year or more.

My research has identified that most of these PLS’s were Ontario-born but a few were immigrants from England, Ireland and Scotland. Many who qualified in the period as PLS’s had previously qualified as DLS’s, engineers or architects, and continued on to further those careers. Some PLS’s later became qualified as DLS’s and spent their careers in the West, while others joined railway firms, moved out of Canada completely, or sadly died shortly after obtaining their licences. One became a medical doctor (later returning to surveying for the Federal Government) and another became an Anglican priest. Some may have been employees only and their work is embedded in the records of their employers.

The following list highlights the location of initial practice of the 51 surveyors for whom no published record existed. I have created biographies to add to the AOLS records and a brief biographical summary is provided here for reference. If you have seen these names during your work and can confirm a record location, please advise me and the Association.



Map of Canada from the Modern School Geography and Atlas published at Toronto by James Campbell and Son, 1876

Issue for Current Surveyors

Although old fence-lines extant may not correspond to lines re-established by modern technology, it is possible they follow lines first established by our predecessors. Records exist for some of these historical firms and licensed surveyors, but others are yet to be discovered.



¹ NERG presentation, Lines Carefully Adjusted, Tom Bunker, November 2018
² *Surveys Act*, RSO 1990, Chapter S.30, Sec. 4.
³ Lines Carefully Adjusted, Tom Bunker, November 2018

Location	Year	Surname	Given	Occupation	PLS		DLS		OLS #	DIED	PLACE
					Year	Year	Year	Year			
Boston, MA	1889	Decker	Edwin	Stanton	engineer	1888			1932	Massachusetts, USA	
Boulder, CO	1891	Stephens	Lewis	Frederick	Architect	1890			1932	Boulder, CO	
British Columbia	1887	Drewry	William	Stewart	mining engineer	1883	1883	Belleville	197	1939	Victoria, BC
Darlington, ON	1891	Sanderson	Daniel	Leavens	farmer	1882		Willowdale	191	1895	Michigan, USA
Dominion Surveys	1881	Kippen	Alexander	Walker	Dominion Land Surveyor	1878	1884	Perth		1885	Batoche, SK
Dominion Surveys	1880	Miller	Robert	Brash	working for railway	1880	1880	Ottawa		1899	Trail, BC
Dominion Surveys	1877	Patrick	Allan	Poyntz	PLS, DLS, DTS, ALS, BCLS	1873	1877			1948	Calgary, AB
Dominion Surveys	1881	Patrick	Lorraine		Dominion Land Surveyor	1880	1881	Ilderton		1891	London, ON
Dominion Surveys	1881	Small	Woolston	Nathaniel	Dominion Land Surveyor	1880	1880	Ottawa		1940	Beamsville, ON
Grand Rapids, MI	1886	Carbert	Joseph	Alfred	physician & surveyor again	1876	1880	Orangeville	131	1932	Medicine Hat, AB
Guelph, ON	1881	Davis	John		civil engineer & postmaster	1878			157	1907	Alton, ON
Hamilton, ON	1877	Beasley	George	Hills	surveyor	1877	1878			1879	Hamilton, ON
Hamilton, ON	1871	Franks	Cecil	Bushe	Civil Engineer	1878	1880	Hamilton		1889	Rotterdam, N'lands
Hamilton, ON	1890	Wallace	Charles	Hugh	Civil Engineer	1889	1890	Hamilton	258	1912	Tyrone, Ireland
Kitchener, ON	1891	Bowman	Arthur	Meyer	structural engineer	1887	1888		239	1943	Pittsburgh, PA
London, England	1881	Batstone	Charles		surveyor	1875				1918	England
London, ON	1884	Hobbs	James		Civil Engineer	1884		London		1885	London, ON
Maidstone, ON	1891	Robinson	John	Kimpton	surveyor	1891				1891	Maidstone, ON
Michigan, USA	1885	Johnston	William	Oswald	Architect	1880	1883	Whitby		1936	N Tonawanda, NY

Location	Year	Surname	Given	Occupation	PLS DLS		OLS		DIED PLACE	
					Year	Year	Location	#		
Muskoka	1875	Pope	Robert T.	surveyor/engineer/architect	1875		124	1913	Ireland	
Nebraska, USA	1900	Ludgate	Bruce Allin	Civil Engineer	1886			1951	Pennsylvania	
New York, USA	1887	Burt	Frederick Percy	engineer - publisher	1885	Brockville	211	1945	Pierce, WA	
Oakville, ON		Bray	Harry Freeman	unknown	1884	1880	Oakville	190	unknown suspended	
Orillia, ON	1872	Brown	William	Ag Professor at Guelph in 1876	1872			1903	Australia	
Oshawa, ON	1892	Deans	William James	engineer/surveyor	1884	1886	Oshawa	202	1947	Brandon, MB
Ottawa, ON	1891	Gibbon(s)	James	DLS with federal gov't	1890	1892		264	1945	Vancouver, BC
Ottawa, ON	1880	Gore	Thomas Sinclair	DLS with federal gov't, BCLS	1880	1879	Gore's Lnding	1937		Vancouver Isl, BC
Ottawa, ON	1888	Pinhey	Charles Herbert	Civil Engineer	1888	1889		250	1955	Ottawa, ON
Ottawa, ON	1891	Tallon	Lawrence	surveyor	1878			1912		Victoria, BC
Owen Sound, ON	1884	Stephens	Haldane Hincks	Civil Engineer	1881	1883	Owen Sound	1887		Lindsay, ON
Pennsylvania, USA	1891	Burns	David	civil engineer	1890			1913		Pittsburgh, PA
Petrolia, ON	1901	Flater	Frederick William	Civil Engineer	1888			245	1941	Blenheim, ON
Railway Co's	1883	Norton	Frederick Wm	Civil Engineer	1883		Orillia	1916		France (WW I)
Sault Ste Marie, ON	1891	Wilde	John Absalom	Civil Engineer	1889			256		unknown
St Thomas, ON	1901	Kennedy	James Henry	Construction Engineer for railways	1887			235	1927	Vancouver, BC
St. Catharines, ON	1880	Reynolds	Samuel Henry	Civil Engineer	1880			173	1916	Chicago, IL
St. Catharines, ON	1877	Copeland	John Robert	surveyor	1877			1882		St Catharines, ON
Stamford, ON	1881	Tench	William Eastwood	real estate agent	1878			155	1895	Niagara Falls, ON
Sudbury, ON	1885	Duchesnay	Edmund Juchereau	Railway	1885	1880		1901		North Bend, BC
Sudbury, ON	1893	Johnson	Robert Thornton	Civil Engineer	1889			254	1952	New York City
Toronto, ON	1875	Kingston	George M.	Anglican Priest	1875	1875				Toronto, ON
Toronto, ON	1872	Crickmore	Arthur J.	Civil Engineer	1872			1929		Whitby, ON
Toronto, ON	1879	Ingles	John Chamberlayne	contractor/engineer	1880		Drummondville	1917		Niagara Falls, ON
Toronto, ON	1901	McFarlen	George Walter	Civil Engineer	1889			259	1941	Toronto, ON
Toronto, ON	1891	Mouat-Biggs	James Morley	Civil Engineer	1886	1886		1898		East Africa
Toronto, ON	1882	Paterson	James Allison	Civil Eng - Quebec, W. Virginia	1878	1882		158	1933	Toronto, ON
unknown		Davis	Charles Henry	unknown	1881	1881	Merrickville	unknown		
unknown		Hamilton	Charles John	unknown	1877			unknown		
unknown		Martin	Frank	engineer	1888			unknown		
Vancouver, BC	1887	Strathern	John	Dominion Land Surveyor	1876	1887		137	1896	Vancouver, BC
Victoria, BC	1889	Burnet	Hugh	Civil Engineer	1887	1885		231	1930	Ottawa, ON

Sites to See

CSRS-PPP service upgrade from version 2 to version 3

<https://webapp.geod.nrcan.gc.ca/geod/tools-outils/ppp.php>

On Tuesday, October 20, 2020, the Canadian Geodetic Survey of Natural Resources Canada updated the Canadian Spatial Reference System Precise Point Positioning (CSRS-PPP) service. This CSRS-PPP modernization includes PPP with ambiguity resolution (PPP-AR) for data collected on or after January 1, 2018. Data collected prior to this date will continue to be processed with the IGS final products without ambiguity resolution.

Castor Canadensis

By David Coombs

This is David Coombs' 8th article for the Ontario Professional Surveyor.

What do many Canadian surveyors and philatelists have in common? They both know and respect the Canadian beaver (*Castor Canadensis*). The latter appreciate that the government chose to feature the beaver on the first postage stamp, issued in 1851. Queen Victoria did not appear until the third stamp. Surveyors who have slogged through the bush have encountered and learned to admire, while often cursing, the critter's engineering prowess. Beaver dams, lodges, ponds, and meadows are strewn across the country. Ontario alone boasts an estimated population of two million beavers. It is no surprise that this mammal has perfected the skills to survive and indeed prosper despite centuries of heavy trapping. The oldest beaver fossils date from twelve million years ago.

In my youth I was an avid stamp collector. I enjoyed the calm, deliberate hours spent searching for a stamp to complete a set. It proved very satisfying. I was introduced to the Canadian symbol when at age eight I purchased the lovely blue 1954 five cent stamp featuring once again the illustrious beaver. I probably paid the dealer with four or five nickels, all depicting the beaver.

I am not a surveyor, but I have traversed the beckoning land since my first canoe trip into Algonquin park in 1959. I climbed onto a beaver lodge, tried to dismantle a dam and proudly carried my knapsack along a portage which skirted a marshy pond that my dad cursed quietly as he struggled with the canoe. That night I heard my first explosive smack. I lay awake in awe praying to see the animal on the morrow.

Forty-four years later aspects of my life changed. My wife Sarah and I retired, moved from Burlington to the Madawaska Valley and built a house on the shores of Dixie Lake. We enjoyed the summer and that fall built a causeway to and a bridge across the stream that exits the lake to the east. We abided by all MNR regulations, frequently spoke to officials, and welcomed their visits. We made only one mistake. We did not consult the beavers.

From reverence and respect to fear and detestation is a short

journey when living with and dealing with Canada's symbol of perseverance. I spied

the first alder branches crisscrossing the stream the month after we completed the bridge. They may have been placed sooner but as the beavers had chosen to build their dam under the bridge, I missed their presence. I immediately waded in, extracted the branches that had been securely rammed between rocks lining the causeway and ingeniously laid across the stream bed. The beavers had weighed them down with rocks. This initial dam work should have given me pause to ponder but urban conceit prevailed and upon returning home, I announced to Sarah that I had cleared the mess and going forward everything would flow smoothly. She smiled and poured coffee.

The next morning, I ambled to the bridge to drink in the calming flow of water. There was no calming flow. The alder barricade laced with small logs, clumps of grass and mixed with mud staunched it. While some water still coursed over the dam, even I could tell there was a problem. If the enemy could accomplish this construction



in one night, what might they achieve in a week, a month or, God forbid, a year. I dismantled the dam and gingerly walked home. My back was a bit sore from bending under the bridge for an hour.

Back at the hearth I sat and thought. I made a list, grabbed my truck keys and drove to the town dump. The garbage attendant came my way and asked what I was looking for as I perused the metal pile.

"I'm building a beaver dam or actually a dam for the beavers." He took a step back

and looked a bit anxious. "No, I'm not nuts. The beavers are building under my bridge so I am going to give them a dam on the lake side of the bridge where it will be easier to control their efforts. I'll put in a pipe to keep the water level from threatening the causeway and I'll be able to maintain the height of the dam at a manageable level."

The local worthy stifled a laugh, tried to mask a smile and wished me the best. He walked briskly to his office



Canadian Museum of History, 2003.56.1, IMG2009-0063-0009-Dm

cabin and picked up the phone. I checked my list, walked around the pile and triumphantly loaded a somewhat rusted bedspring into my truck. I also grabbed a six-inch diameter pipe and several pieces of screening.

I returned to the causeway and secured the bedspring across the stream just in front of the bridge. I then threaded the pipe through the springs and fastened the screening to the lake end of the pipe. I contemplated stuffing grass clumps into the bedspring but decided to let the beavers take over. I hoped a cooperative effort might plant a seed of contentment.

The following morning, I drove to the site, keen to see if we were now on the same page. I had given them the basics of a new dam that I could easily control. I was elated. They had accepted my work and toiled diligently through the night. Some water seeped through the springs but their logs, branches, grass and even some stones had stemmed the tide. Over the course of the week bullrushes, mud and many more alders provided the finishing touches. Water streamed through the pipe but our jointly owned dam held. No more need for backbreaking dam breaking. Winter arrived and the pipe continued to provide a sufficient outlet for the water. I actually stopped worrying about the dam.

The next spring, I learned my place in life. I owned the land but did not control it. The awakened, refreshed beaver

clan descended on the dam to stretch their limbs, slap their tails and demonstrate who was in control.

The pipe was jammed with grass clods and stones. The screening was gone. An amazing array of rocks, twisted pine knots scooped from the lake bottom and fresh alders crowned the dam. It had grown in height. While not Boulder Dam, it was rock solid. The risen lake level swamped our dock, crept closer to cresting the causeway and caused me to panic. I called a local trapper, consulted with MNR and local elders steeped in local beaver lore. Over the course of the next fifteen years I had fifty beavers removed, hung bags of garlic from the bridge close to the dam, tore the dam down a good two feet several times a summer and considered moving.

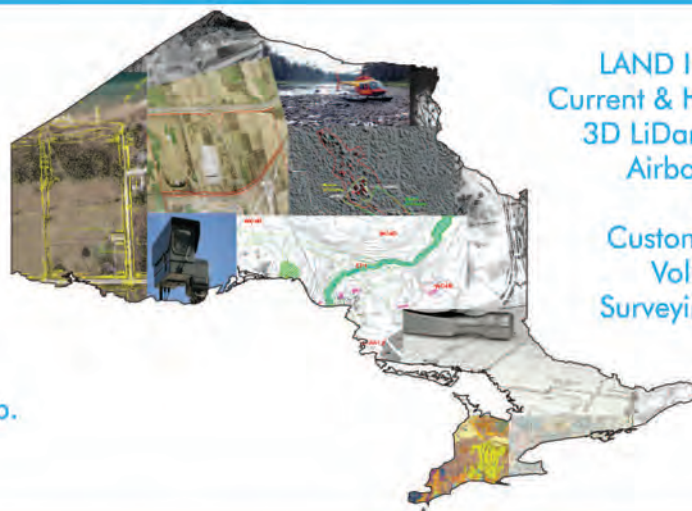
This year, worn down and humiliated, I turned to a final source of enlightened guidance. I asked Sarah her opinion. She suggested stamp collecting.



David Coombs has a Ph.D. in Canadian history. After his retirement as a stockbroker in 2004, he began to write. His articles have appeared in *The Country Connection*, the *Toronto Star* and the *Globe and Mail*. He is also the author of “*The Beckoning Land*” which is an historical novel set in his home town of Barry’s Bay during the Depression and WWII. A copy of his book is available for purchase at www.lulu.com (<https://bit.ly/2IpjDkl>)

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Survey Review Department Forum – Plan Checking Part 1 - The Schedule



By Tom Packowski, O.L.S., Survey Review Department Manager

Upon the completion of the research, field work, plan preparation and the completion of the request form for deposit or registration of the plan, a professional Surveyor will sign a statement certifying that the survey plan is correct and in accordance with the appropriate statutes and regulations. Plan checking is a critical step in the preparation of a professional opinion about the location of a boundary. Since this is the last or second last step before the final report is prepared, it tends to be subject to time pressures and deadlines.

The best way to avoid errors on a plan is through a thorough and well documented plan checking procedure. Checking a plan takes preparation, time and concentration. When checking a plan, it is recommended that one assemble all of the materials that were considered in support of the professional opinion and illustrated on the plan. Set aside sufficient time and advise your staff that you should not be interrupted. Close the door to your office, turn off your cell phone and thoroughly check the plan. The key to successfully checking a plan is attention to the details.

If you have not done so, prepare a plan checklist with two columns. Organize your checklist in a logical manner. The first column is initialed by the staff member within your firm who is responsible for the item being checked and the second column is for your initials after your review. It may be a little more difficult to be objective in your review process in smaller offices where the research, field work, evidence assessment, monumentation, drafting and plan checking are all done by the same individual.

There are suggested plan checklists available on the AOLS website. To locate the checklists, simply log into the AOLS website, click Splash page, Member Tools, Practice Manual, Survey Practice and Best Practices. On the Best Practices page, choose the link labelled Professional Standards Checklist. There you will find an excel spread sheet with a Master list. At the bottom of the Master list, you will find tabs marked 'Boundary confirmation', 'Construction layout', 'SRPR', 'RefPlan', 'MPlan' and 'Condo'. Select the tab that is appropriate for the type of work you are checking.

It is simply beyond the scope of any one article to list all of the items you need to check for every possible plan or construction project you will be asked to prepare. The following is a simple way to organize your approach to the checking process for a reference plan which is to be deposited in the Land Registration system.

With the door to your office closed, your cell phone off and a

'do not disturb' sign on the door, assemble your research, field notes, closure printouts, calculation sheet and a copy of the plan you intend to sign. Look at the plan as two distinct but related parts, the schedule and the body of the plan. The rest of this essay will focus on the schedule portion of the plan.

The Schedule

The schedule is a summary of the conclusions shown on your plan. The schedule relates the Parts to the PINs, to the geographics and to any applicable easements. Do not underestimate the importance of the schedule. It is the summary which is relied upon by other users of your plan to accurately and completely tabulate the title interests showing on the plan. The schedule assists the Land Registry office staff in proper filing of your plan, and alerts them to any potential changes to the PIN. It also assists the Solicitors acting on behalf of the Public in preparing documents for transfer. Usually, there is no such thing as a simple mistake in the schedule. Errors in the schedule can be costly and usually come with consequences.

Where possible, organize the Parts on your plan in a way that illustrates a clear and logical order for the schedule. This enables you to check your plan in an orderly manner. When checking the plan and schedule, it helps to have coloured pencils or markers to highlight the Part on the plan and the corresponding Part in the schedule.

The following is a partial list of potential errors that can creep into the schedule. This list is by no means complete.

1. Plan and schedule do not match.
2. Attributes in the schedule do not match the attributes on the plan.
3. 'Part' or 'All' of the PIN is incorrectly stated.
4. Incorrect STE in the schedule, particularly where easements cross.
5. Typographic errors, such as wrong PIN or wrong Block number in the schedule.
6. The Part number on the plan doesn't match the part in the schedule.
7. A Part on the plan is missing from the schedule.
8. Incorrect geographics in the schedule (wrong Lot/ Plan or Lot/ Concession).

When looking at the list of typical errors above, it is easy to recognize that the same list could be applied to the plan itself. The PIN number in the schedule might be correctly shown but the wrong PIN or Block number is shown on the plan. This is particularly important where the Block number on your plan abuts a different Block number. Be sure that all of the PIN and

Block numbers on your plan, as well as the abutting parcels, are correctly shown and are consistent with the title documents from your search.

Where there are easements and/or rights of way, be sure they are correctly illustrated as to their extent in a manner that is consistent with all the physical and documentary evidence in your file, both on the plan and in the schedule. The regulations require that where you have a portion of the land that is subject to an easement, that portion must be illustrated by its own distinct and separate part. If there are two easements within a portion of the surveyed land, then the lands occupied by each easement must have a separate Part. If at some point the two easements cross, then the portion subject to both easements must have a separate part.

Where your plan covers only part of a PIN, this must be clearly illustrated on your plan and the schedule must indicate “Part of PIN”. If you have two or more Parts that together cover all of the PIN, that information must be shown on your plan and the schedule must state “All of PIN”.

The Parts on the plan must be consecutively numbered, and the Part number on the plan must correspond with the Part number in the schedule. Occasionally, a plan will be constructed in such a way that the Parts on the plan enclose lands that are not part of the lands within your survey. If so, the plan must be clearly labeled to show that the lands so enclosed are not included within the plan of survey.

Finally, the geographics shown on your plan must match the geographics shown in your schedule.

After going through this checking process for the schedule, you may be pleasantly surprised at how far along you are at checking the plan. You have checked all the Parts and the PINs

in the schedule and on the face of the plan, and you have checked the abutting PINs. You have ensured that all of the easements and/or rights of way are shown as to their extent and location. You have identified the extent of the PINs on the plan and that no portions of the PINs have been unintentionally omitted. And you have correctly identified the geographics of your subject and abutting parcels.

To sum up this portion of the essay, pay particular attention to the schedule. It is not merely an afterthought. As a Land Surveyor, you may have a tendency to focus on the body of the plan because the method of survey, the evidence found and the extent of title in the form of bearings and distances, are your exclusive area of professional expertise. However, the users of your plan, such as the lawyers preparing transfer documents, rely almost exclusively on your schedule not on the body of the plan.

Devote the time you need to check a plan, free from the on-going distractions of running your office. It is usually your last opportunity to avoid a potentially embarrassing and costly error. Colour code the plan and schedule – ensure that they match. Organize the parts on your schedule in a logical manner. This will make your schedule easy to read, easy to follow and easy to check. Once you have checked the plan and it has been drafted, be sure all the changes on your check print have been made to the final copy of the plan. Check the plan you are going to sign, then sign the plan you checked.

In the next edition of the OPS magazine, we will examine the process required to check the body of the plan including, method of survey, evidence used, sufficient monumentation to meet the minimum regulatory requirements and closure print outs.



Sites to See

Newly conserved rare map of the County of Peel provides a unique snapshot of life in 19th century Ontario

<https://bit.ly/2L2yx1Z>

In the 1850s, southern Ontario looked vastly different from the urban expanse we see today. Instead of sprawling subdivisions, small villages with names like Sand Hill, Charles Town and Westervelt’s Corners dotted the landscape. Instead of high-rises and big-box stores, churches, one-room schoolhouses, and family businesses, like the Orangeville Tannery and R. Chisholm & Co. Dry Goods, made up the familiar scenery of everyday life. Though most of these landmarks have long since vanished, a newly preserved rare map is providing a snapshot of what life in the GTA looked like 160 years ago.

Using new, experimental techniques, McMaster University Library conservators have painstakingly restored a large-scale 1859 wall map of the County of Peel produced by famed map publisher George Tremaine. Produced between 1856 and 1888, Tremaine’s county maps contain a wealth of period details that provide unique insight into life in 19th-century Ontario. “The maps include the usual things like roads, towns, and property lines but they also contain little vignettes – sketches of churches, businesses and other important public buildings from the time, many of which no longer exist,” says Gord Beck, McMaster’s map specialist.

Working in McMaster University Library’s Preservation Lab – one of the few facilities of its kind in Canada – conservator Julie Niven, who led the project, looked for ways to combat these issues by experimenting with a range of new conservation techniques. The finished result is a legible, structurally sound historical artifact that can now be digitized and used by scholars and the public.

Registrar's Review



By Kevin Wahba, B.Eng., LL.B., O.L.S., Barrister & Solicitor

often receive notifications from Certificate of Authorization (C of A) holders or Supervising OLSs that they have added, moved, or removed professional staff from a branch office or their firm. In other instances, we become aware of these changes after the fact which may lead to issues with a member's obligations under our governing legislation. In addition to the provisions under section 14 of the *Surveyors Act* as well as section 22 of General Regulation 1026 under the *Surveyors Act*, members should also take notice of subsections 34(2)(a), 34(2)(b) and 34(2)(c) of Regulation 1026 which state as follows:

34. (2) *The standards of practice of the Association require that,*

(a) every professional surveying office that operates under the authority of a certificate of authorization shall be operated and supervised on a full-time basis by a professional member or professional members of the Association qualified in the professional surveying services offered;

(b) no professional member shall hold himself or herself out as carrying on the practice of professional surveying from more than one office unless specifically authorized by the Registration Committee;

(c) no partnership or corporation authorized to practice the profession of surveying shall list a professional member as being in charge of more than one office unless specifically approved by the Registration Committee;


The Association differentiates between three roles related to the supervision of a survey firm offering cadastral services to the public. These include the C of A holder, the Supervising OLS and the Managing OLS. The C of A holder is the member who is named as the one responsible for maintaining the C of A for a firm, whereas the Supervising OLS is the member responsible for personally supervising the practice of professional surveying within the firm. As per subsection 25(2)(c) of Regulation 1026, a member applying to be a C of A holder must state the name of the member who will be acting as the Supervising OLS of the

firm. In most instances, the C of A holder and the Supervising OLS are one and the same. Additionally, each branch office must have a listed Managing OLS who will be responsible for the operations within the specific branch. Again, the individual who is acting as the C of A holder and the Supervising OLS is most often the same person who is named as the Managing OLS.

The situation becomes slightly more complex when the C of A holder operates multiple branch offices. As per subsection 34(2)(c), a member may act as the manager of only one office unless otherwise authorized by the Registration Committee. In addition, as per section 34(2)(a), each office must have a Managing OLS. Accordingly, a Supervising OLS and/or Managing OLS may be in breach of our Standards of Practice if there is not an approved Managing OLS operating each of a firm's branch offices.

These conditions are important to consider when there are changes in employment within a firm, which may cause one of the above referenced provisions to be breached. Accordingly, we highly recommend that C of A holders and/or Supervising OLSs contact the AOLS immediately upon learning that there are changes to employment or management. In a similar vein, it would be important to ensure that any professional member who intends to operate out of several offices of a firm obtain authorization to do so by the Registration Committee to ensure compliance with subsection 34(2)(a) of Regulation 1026.

Another situation to consider is if a C of A holder intends to purchase another firm and retain that firm's C of A. For one member to hold two C of A's simultaneously, authorization must be given by the Registration Committee to comply with our Standards of Practice. It would be prudent for a member who is considering the purchase of another firm to contact the AOLS to discuss the intentions and plans associated with the acquisition prior to the event taking place.

In general, C of A holders are required to advise the AOLS of any changes to their professional staff, office structure, and future survey firm-related acquisitions to ensure compliance with our governing legislation. 

Sites to See

International Women's Day -
March 8, 2021

<https://www.internationalwomensday.com>

International Women's Day (IWD) is a global day celebrating the social, economic, cultural and political achievements of women. The IWD 2021 campaign theme is **#ChooseToChallenge**. A challenged world is an alert world. Let's all join together to celebrate International Women's Day on March 8, 2021.



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EDUCATIONAL FOUNDATION NEWS

Congratulations to our Fall Award Winners

Fanshawe College – In November, the award for a student in the 2nd year of the Civil Engineering Technology course, who has demonstrated the highest proficiency in the Plane Surveying Introduction course, was presented to **Carly Parker**.

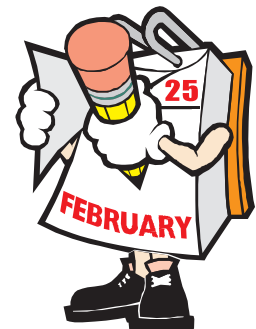
Loyalist College – In December, the Undergraduate Award for a returning student in the Survey Engineering Technician program was presented to **Matthew Robinson** for overall scholastic achievement and leadership. This award is sponsored by the Eastern Regional Group.

University of Toronto – The Civil & Mineral Engineering Department holds two (2-week) survey camps in the month of August at the University's Gull Lake property in

Minden, ON as part of its 3rd year curriculum. The **Jack Young Memorial Award for Survey Camp**, which is sponsored by the members of the South Central Regional Group, was presented to **Sarah Elizabeth De Sousa** for achieving the highest average in Survey Camp #1 and **Julia Maxine Ovsenek** for achieving the highest average in Survey Camp #2.

Mark your Calendars

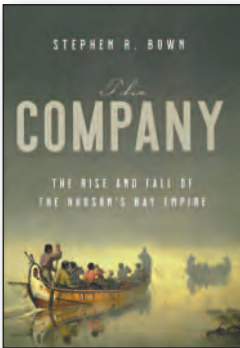
The Educational Foundation Annual Meeting of Members will be held on Thursday, February 25, 2021 from 10:00 a.m. to 11:00 a.m. during our virtual AGM. Details to follow.



BOOK REVIEWS

The Company The Rise and Fall of the Hudson's Bay Empire

By Stephen R. Bown



Published by Penguin
Random House Canada
Limited
ISBN 978-0-385-69407-0

The story of the Hudson's Bay Company – dramatic and adventurous and complex – is the story of modern Canada's creation.

The Company started out small in 1670, trading practical manufactured goods for furs with the Indigenous inhabitants of subarctic Canada. Controlled by a handful of English aristocrats, the Company tapped into pre-existing Indigenous commercial networks that enabled its expansion from the lowlands south and west of Hudson Bay, to the tundra, the Great Plains, the Rocky Mountains and the Pacific northwest. While transforming the culture and economy of Indigenous groups from Montreal to Vancouver Island, the Company itself transformed from a smattering of foreign agents into a culturally

blended self-sustaining domestic entity. It founded the capital cities of Winnipeg, Edmonton and Victoria and became the most important political and economic force in northern and western North America.

When the company faced competition from French traders in the 1780s, the result was a bloody corporate battle, the coming of Governor George Simpson – one of the greatest villains in Canadian history – and the Company assuming political control and ruthless dominance by the 1840s. By the time its two-hundred-year monopoly was rescinded, the Hudson's Bay Company had reworked the entire North American world.

Information taken from inside the front cover.

Transatlantic Upper Canada Portraits in Literature, Land, and British-Indigenous Relations

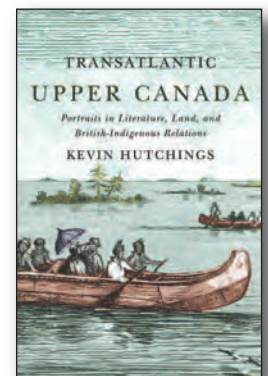
By Kevin Hutchings

Investigating the ties that bound Upper Canada and Great Britain together during the early nineteenth century, *Transatlantic Upper Canada* demonstrates the existence of a cosmopolitan culture whose implications for land and its people are still felt today. The book examines the writing of Haudenosaunee leaders John Norton and John Brant and Anishinaabe authors Jane Johnston Schoolcraft, Peter Jones, and George Copway, as well as European figures John Beverley Robinson, John Strachan, Anna Brownell Jameson, and Francis Bond Head. Hutchings argues that, despite their

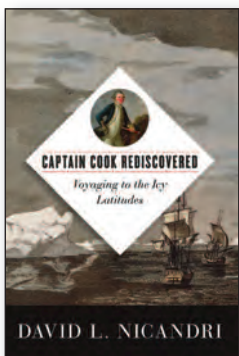
cultural differences, many factors connected these writers, including shared literary interests, cross-Atlantic journeys, metropolitan experiences, mutual acquaintance, and engagement in ongoing dialogue over Indigenous territory and governance.

A close examination of relationships between peoples and their understandings of land, *Transatlantic Upper Canada* creates a rich portrait of the nineteenth-century British Atlantic world and the cultural and environmental consequences of colonialism and resistance.

Information taken from the back cover.



Published by McGill-Queen's
University Press
ISBN 978-0-2280-0129-4



Published by UBC Press
ISBN 978-0-7748-6222-6

Captain Cook Rediscovered is the first modern study to frame Captain James Cook's career from a North American vantage. Recognizing that Cook sailed more miles in the high latitudes of all of the world's oceans than in the tropical zone, this book gives due attention to his voyages in seas and lands usually neglected, such as South Georgia in the far southern Atlantic and the Alaskan subcontinent,

Captain Cook Rediscovered Voyaging to the Icy Latitudes

By David L. Nicandri

whose dimensions Cook first delineated. David L. Nicandri acknowledges the cartographic accomplishments of the first voyage but focuses on the second- and third-voyage discovery missions in the icy latitudes near the poles, where Cook pioneered the science of iceberg and icepack formation.

Information taken from inside the front cover.

The Last Word

Zooming in to the Virtual 2021 AGM

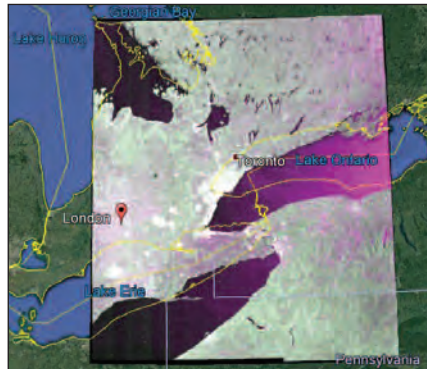
By Maureen V. Mountjoy, O.L.S., Editor

This past year has had its challenges, but fortunately the Association has managed to keep running smoothly. Most of the staff have been working from home and regularly scheduled meetings are being held remotely. The downside is that we were all supposed to gather in person at the 2021 Annual General Meeting (AGM) at the RBC Centre in London, Ontario but unfortunately COVID-19 has made that impossible.

This situation has even affected the OPS magazine. For many years, the tradition for the Winter issue, which immediately precedes the AGM, has been to highlight some feature of the host city or the venue on the cover. Since we are holding a virtual meeting this year, I had to come up with something different.

Dr. Vern Singhroy, whose article in this issue describes the opportunities for Earth Observation (EO) using radar satellite images from Canada's RADARSAT Constellation Mission

(RCM), contacted the Canadian Space Agency and they provided a 50 metre resolution image of the Great Lakes area taken in November. It is quite a colourful image as you can see to the left. When you layer it with Google Maps it doesn't quite fit, but you can identify the general location of London. Unfortunately, the image is too coarse and I wasn't able to use it. Fortunately, First Base Solutions came to my rescue and provided a 2 m resolution aerial photograph of the City of London for the cover.



There are plans for members of Council to stay in London during the AGM to broadcast the business sessions live from the Convention Centre, although as the printing of this issue draws near, it is not definite that this will happen. However, wherever we are across the province, I look forward to meeting with you virtually as we "Zoom in" to the AGM together.



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	1 time	4 times
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2nd and 3rd Cover	Not Sold	\$715
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Full page 4 Colour	\$705	\$660
1/2 page B&W	\$280	\$245
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Advertisers	15

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