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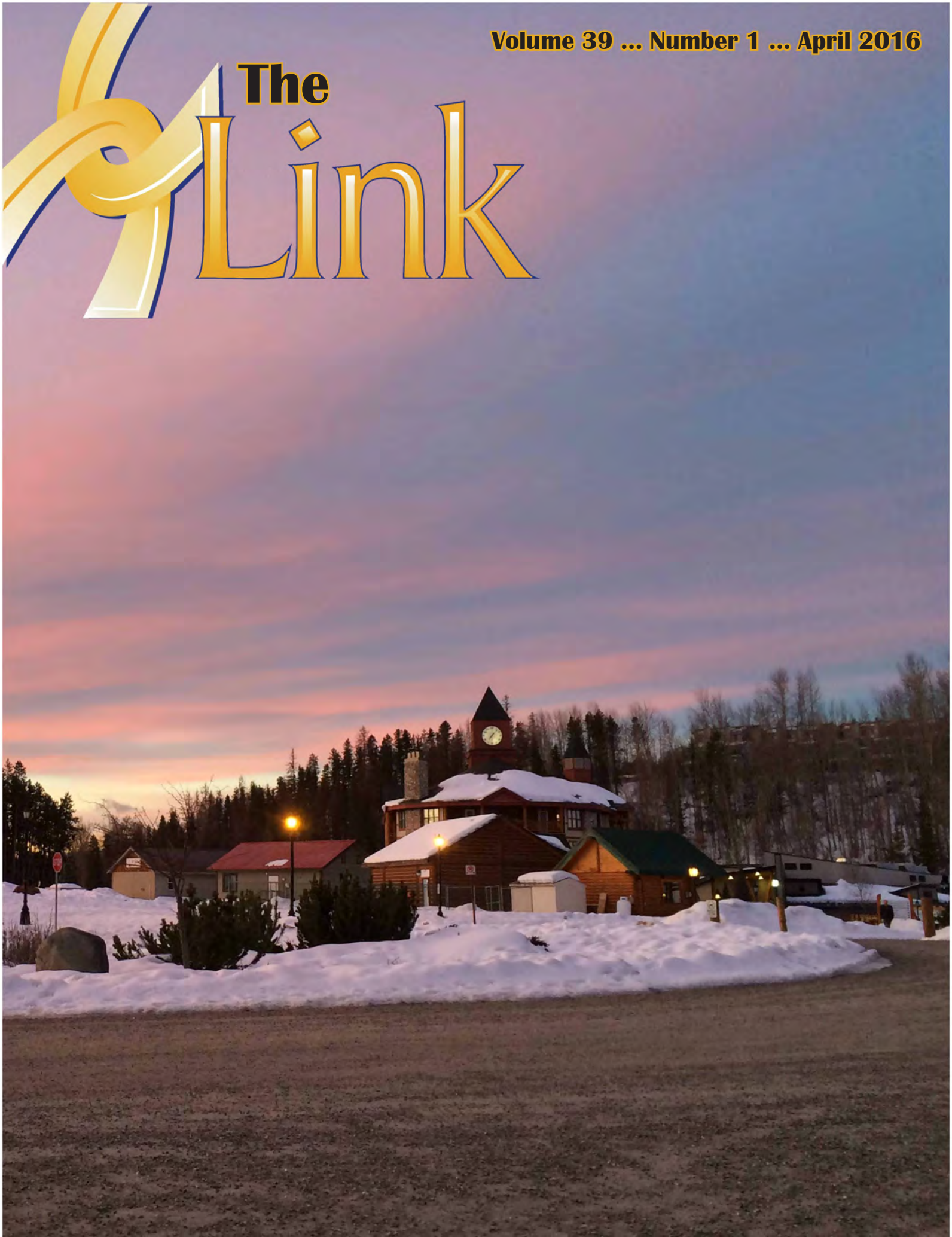
The Link



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Editorial Group

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The 'Link' was established in 1977 as an independent forum for the distribution of informed comments on surveying and for the exchange of ideas among surveyors, students and any interested parties.

Opinions expressed by individual writers are not necessarily endorsed by the Editorial Group or by the Association.

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Front Cover ... the photo was taken, in the early morning, at the bottom of the Kimberley ski hill.

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Contents

The Land Surveyor and Technology

By Dave Morton, B.Sc., BCLS

Some time ago, I stumbled across a website that described the technological progress of the professional land surveyor. The article brought back many memories of my surveying career and the effect that technology had on the performance of my surveying duties.

I began my survey career with the Provincial Government, after graduating from UBC in 1962. At the time I was working for Tony McLaughlin #336. In fact I was articled to Tony, although I never worked with him after 1962. I do remember one embarrassing moment with Tony that involved the interpretation of my field notes. The traverse had a significant misclosure and had to be re-run. It was eventually determined that Tony had interpreted a nine for a five in my, not too clear, field notes.

In those days my field work was carried out with the aid of a Wild T1A transit and a 300 foot chain. Calculations were carried out using a Monroe hand-crank calculator and seven place trigonometric tables.

Survey technology was just beginning to get particularly interesting when the Provincial Government decided to discontinue the involvement of staff surveyors in field work. Survey of crown land was to be conducted under contract with the private sector. Although we had progressed to the point of using Electronic Distance Measuring (EDM) systems and hand held Hewlett Packard calculators, we did not have an opportunity to utilize GPS systems or Total Stations.

Incidentally, land surveyors were one of the first professionals to make use of Global Positioning Systems (GPS) because it provides quick and accurate data over long distances without the need of a line-of-sight between survey points. On the ground Total Stations can electronically calculate large distances with extreme accuracy. Robotic versions are also available, allowing surveyors to single-handedly operate a total station by remote control.

Even more interesting is the use of 3D laser scanners which are used to interpret the shape of things such as buildings or land by collecting clouds of points to create digital 3-D models. For example these instruments can be used by surveyors to provide data to architects to accurately visualize the land they are going to build or design on.

Then there is the potential of the Drones or Unmanned Aerial Vehicles (UAVs) which come in many different models and sizes dependent on their application. Drones are starting to be used for commercial and even recreational purposes (not always a good thing). They're much cheaper and more nimble than a helicopter or other conventional aircraft but with the exact same advantages of aerial photography and mapping.

Editor's Note … shortly after I wrote the above article, I received an article entitled the FIG Young Surveyors North America, which pointed out the importance of utilizing the modern technology available to land surveyors (Page 14).

The Old and the New

Wild T1A Transit

Monroe Hand-Crank Calculator

HP 65 Calculator

Leica ScanStation

The Next Step

By Ron Johns, BCLS, President

I always return from our AGMs with new information, re-charged batteries and positive reflections of conversations with fellow colleagues. Kimberley was no exception. Not only was the attendance impressive, the entire program was phenomenal. Although many people contributed to the planning and organization of the events, much of the success lies with Bronwyn. I would also like to acknowledge the hard work that Chad, Vicki, Denise and Bonnie contributed to the planning, organization and follow through. For those that took part in the CPD opportunities and business meeting, they will have already exceeded one third of the credits required for the three year average under the new program. I am pleased by the respectful debate that took place on the floor of the business sessions. Even though the two main motions passed with a clear majority, many insightful and compelling reasons were presented on both sides. This collaborative approach is something I would like to foster during my term.

Congratulations to the 17 newly commissioned Land Surveyors. As I looked around the room at the AGM, it was encouraging to see so many young faces. Other associations and groups in our province and across Canada have not fared so well in attracting new members. Not only are we reaping the benefits of a successful career awareness program, we are also demonstrating that ours is a valuable, proud profession with many opportunities for a rewarding future.

As I reflect on my past three years on the Board, I realize how dynamic our Association is. The professionalism by which every facet of the Association operates is remarkable and I am certain, the envy of other organizations. I am honoured to represent you as your President and look forward to the year ahead with both the excitement and the challenges it presents. I have the privilege of working with a dedicated and diverse Board and an extremely capable management team. Many hard working volunteers step forward and make a considerable impact. I continue to be impressed by Bronwyn's leadership style and strive to measure up to her example. Thank you to Steve Buzikievich for all that he has given to our Association during his time on the Board and I welcome Chris Cryderman as our newest Board member.

We have accomplished a number of major objectives in the past couple of years. In my mind, the roll out of the Professional Competency Program has been the most important undertaking. This is a far reaching initiative that touches every member in some fashion. Mandatory CPD, practice advisory modifications, mentorship and changes in the requirements for accepting new Land Surveyors in Training are all achievements resulting from this program. The goals identified in our strategic plan have largely been accomplished with only the final goal of "enabling the utilization of new technology" to be fleshed out.

As I look ahead, there are number of important events and initiatives that will need to be addressed. The upcoming retirement of our Secretary, Chuck Salmon, will have a profound effect on our Association. Chuck has been a steady force, steering the ship for 13 years. He will leave some very big shoes to fill for the new Secretary. I remain confident that with the appropriate transition period, in which Chuck will work alongside the new person, that these skills can be passed along, enabling us to move forward effectively. Chuck's immense knowledge of the workings of the Association and his connection with members, students and stakeholders will definitely be missed. The skills that Chad Rintoul brings to us, and the familiarity that he has gained during his tenure, will be a great asset in assisting the new Secretary assume the role.

Tied into the final goal of the strategic plan is the rewrite of the General Survey Instruction Rules. I know, from talking to members, this is long overdue. The rules have been amended on a piece meal basis so many times that arrangement and continuity have suffered. In addition to volunteer efforts, we anticipate using contract services to assist in the development of the new rules. I look forward to working on the task to produce an effective "results based" standard. It will include both the involvement of the Board, and a member consultation process.

ParcelMap BC will become a reality for us this year, with mandatory survey plan data set submission just a couple of months away. This will be a monumental leap in the way

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that we view and access land title information. I would like to thank the Land Title and Survey Authority for all the work they have done to date and for allowing the Association to provide input at various stages of development.

The alignment of the Practice Advisory Panel within the current governance structure of the Association will provide more efficiency and clearer lines of communication. A task force is currently looking at ways to link the functions of the Practice Advisory Panel and Practice Advisory Department with various initiatives of the Association.

The Canadian Board of Examiners for Professional Surveyors (CBEPS) is necessary to ensure a strong stream of students for this Association. We rely on CBEPS to provide 'Certificates of Completion' for candidates that come to us from different streams, including geomatics institutions across Canada and foreign trained students. The Board is concerned that the current CBEPS model is not as effective as it could be on a number of fronts. The Board is in contact with CBEPS regarding information on their update process for learning outcomes and syllabi for all subjects. In addition, discussions will be ongoing at upcoming Presidents forum meetings to consider what is best for all provinces across Canada. My hope is that we can work toward the goal of having an accepted, functional and effective 'national body' that will work in the best interests of the students and the associations.

The 2017 Annual General Meeting will be held in Victoria, at the Delta Victoria Ocean Pointe Resort from April 5th to 7th. I invite all of you to mark your calendars and plan to attend. Marna and I are planning some great member/partner activities and we are certain that you will enjoy the meeting and the venue.

In closing, Terry Small (The Brain Guy) spoke at our meeting on the importance of being present in the moment. The next step for me is to endeavor to practice this and to focus on the task at hand, serving as your President.

Delegate Reports

Association of New Brunswick Land Surveyors Annual General Meeting

By Bronwyn Denton, BCLS

The Association of New Brunswick Land Surveyors held their annual meeting in Fredericton January 21st and 22nd 2016. The President's forum was held on the evening of the 20th and there was much to discuss since the last meeting of the Presidents in PEI in October.

The next day was a full day session of CPD, including a presentation by Norm Cote regarding upcoming changes to road standards for subdivisions in rural areas. Of note, the changes included a new requirement to have the initial tentative plans prepare by a NBLS, and the minimum road right of way will move from 20 metres to 24 metres to ensure the full road envelope is contained within the right of way. A very in depth presentation from Service New Brunswick regarding the new wetland policies was provided. In the afternoon, Izaak de Rijcke provided a detailed presentation on acting as an expert witness.

The business meeting was held on Friday. A report from the Board of Examiners indicated that one new candidate will receive his commission at this AGM, and there are currently seven surveyors in training (SIT) in the system. There are multiple situations where the SITs have not completed their exams within the time frame identified and requested multiple extensions which is a concern to the Board. As part of the French language requirements all exams will need to be translated and offered in French.

Interestingly, no VP had been nominated going into the meeting, and it was expected that a candidate would come forward from the floor. However, no one came forward and so instead a motion was passed allowing the Council to appoint someone in order to avoid needing a special meeting.

There was a motion from the floor to have a task force struck to investigate the possibility of NB, NS and PEI sharing administrative resources on a go-forward basis. There was also a lot of discussion on the floor regarding rejoining PSC, and ultimately it was decided that the ANBLS would re-join PSC.

Interestingly, real time translation was provided for the CPD session and during the business meeting itself,

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the President spoke in both languages. Moving forward, there will be an obligation to provide the proceedings in both official languages, as well as an obligation that any member of the public be served at the ANBLS office in their preferred language.

Thank you to Robert Frenette for his hospitality, and welcome to Dave Parkhill, incoming President!

Association of Ontario Land Surveyor's Annual General Meeting

By Bronwyn Denton, BCLS

The Association of Ontario Land Surveyors held their 124th Annual General Meeting in London Ontario on February 24th-26th, 2016. The business meeting commenced on Wednesday, and during this time committees and council reported to the membership on various projects underway. It was standing room only in the meeting room, with over 300 people in attendance! The AOLS has 22 committees and task forces with multiple initiatives in the works including a Digital Plan Submission task force working towards developing a strategy for digital submissions as well as a Digital Survey Index task force that is aiming to have the AOLS sponsor a single source for research in the province.

There is one discipline hearing underway and 14 complaints were received in 2015 which is below average. This particular discipline case is ongoing and has cost nearly $150,000 to date and they only expect to be able to recover about $50,000.

One of the updates provided was on the Constitutional Challenge which has been ongoing since May 2013. I understand the basis of the challenge to be around a copyright issue and the AOLS is named in the challenge. It has been very intense for the AOLS and their lawyers to navigate the process with affidavits being filed, understanding what to submit and dealing with repeated applications to strike evidence causing delays and hearings. This has cost the AOLS $210,000 to date, $54,000 thus far in 2016.

Numerous CPD seminars running concurrently took place on Thursday and were well attended. Ontario has a mandatory CPD program and has just ended the 3rd year in the first three year cycle. A recent update showed that 87% of members had met the requirements as of February 2016, 7% were on track and 7% were not on track or not participating. There was a big push since September to get members to report their hours and a stark comparison between the September and February statistics around the number of people on track!

The awards lunch was held on Thursday, and 15 new land surveyors received commissions. The guest speaker at the lunch was Charlie Wilkins, an Ontario author who has been commissioned to write a book in honor of the upcoming 125th Anniversary of the AOLS. There are currently 71 articled pupils in the system, the highest they have ever had and are pushing towards commissioning "OLS 2017" in the year 2017 and have 28 to go. The AOLS feel that a combination of a recent (and a very positive) salary survey combined with committee efforts towards public awareness and high school awareness have led to the increase in the number of students. Demographics have been a concern for this group. With 522 members, there are 474 cadastral land surveyors with 75% of the members over 50, and 35% over 60.

All positions on Council were filled by acclamation this year and Murray Purcell is the new President. I would like to thank Travis Hartwick and his wife Debbie for their friendship over the year as well as their hospitality in London. Welcome Murray!

Fourth Annual BCLS Boating Rendezvous

July 23/24, 2016.

Once again the "Surveyors On Boats" will gather at Montague Harbour, Marine Provincial Park on Galiano Island for a weekend social.

Camping is available for non-boaters. To register or for additional information contact Ron Johns, BCLS (ron@rljsurveys.com).

Montague Harbour

Chief Administrative Officer

From the CAO

By Chad Rintoul, Chief Administrative Officer

Another stellar turnout for the ABCLS AGM! Thanks to all of you who made the commitment to attend and special thanks to Bronwyn Denton for her leadership throughout the year and for adding so many personal touches during the week in beautiful Kimberley, BC. The resort and Conference Centre facilities are truly unparalleled for the scenic location and the incredible customer service experience.

My appreciation goes out to our hard working staff in Sidney who worked so diligently to deliver a fantastic event! Vicki, Denise, and Bonnie all put in long hours to ensure everything went off without a hitch. As with everything the Association does, so much of the credit goes to the volunteers, whose effort often goes unrecognized. To name only a few; my thanks goes out to the CPD Committee for putting together several engaging seminars for the membership: Shirley Fritch for all of her support and keen interest assisting Bronwyn to develop an entertaining partners program, Cheryl van Gurp for all her hard work, toiling behind the scenes preparing the decorations for the AGM evening functions, Nigel Hemingway and Neil Bennett for donating their photographs to the BCLS Foundation in support of fundraising efforts for student scholarships, and to John Armstrong, Bill Chapman, and Robert Allen for escorting the McVittie House tour and their ongoing support of the restoration project. So many members contributed to the success of this AGM, and helped to make this a truly memorable and productive week.

In my update to members I recapped our progress towards meeting the goals set out in the Strategic Plan. One critical component, raising awareness of the profession, will require ongoing effort. An online "tool box" hosted in the members area of the ABCLS website provides several helpful hints for land surveyors to serve as "ambassadors of the profession". I would like to challenge members to all take on one external commitment in the coming year. Just by participating and being involved in a local service club, municipal commission, community nonprofit board, or provincial appointment raises awareness of the profession tremendously. The expertise you will bring to any of these forums is valuable. Take a look at the Board Resourcing and Development Office website www.**brdo**.gov.bc.ca/ and seek a provincial appointment. As a small profession, it will take all of our effort to raise the profile of the profession, and awareness of the important work that land surveyors carry out in this vast and diverse province.

Also, stay involved in your Association and make a contribution towards protecting the public interest that is incumbent on any self-governing profession. I was so pleased that we had an extensive and well qualified pool of candidates seeking election to the ABCLS Board. My thanks to all those candidates who put their names forward, and congratulations to Chris Cryderman, whom I look forward to working with.

Finally, my appreciation to Steve Buzikievich. Steve has made a tremendous commitment to the well-being of this Association. For a sole practitioner to sacrifice so much of his time and effort to the betterment of this profession is truly remarkable. It has been wonderful to get to know Steve and Carolyn in recent years and I'm sure we haven't heard the last from Steve!

Surveyor General's Datum

Land Title and Survey Authority of British Columbia Update

By Mike Thomson, BCLS, Surveyor General

Note: This article is based on my speaking notes from the Report of the Surveyor General for the 111th Annual General Meeting of the Association of British Columbia Land Surveyors - Kimberley, BC - March 3-4, 2016

Material, particularly around ParcelMap BC has been updated where possible.

1. Introduction

It was my pleasure to be in Kimberley to speak with the membership and provide a brief update on activities at the Land Title and Survey Authority, with a specific focus on the

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Surveyor General Division. I also provided a PowerPoint presentation on the ParcelMap BC build, which I will summarize here-in.

Reliable and secure land title and survey systems are an essential underpinning to BC's private property market and civil justice system. These systems also support civic governance, taxation and Crown land management frameworks.

Annually, about 3.65 million online transactions are processed by the LTSA. Approximately 20% are for the registration of land title interests and approximately 80% are for searches of registered records and issuance of certificates.

The LTSA recently celebrated its eleventh anniversary, on January 20th, 2016, and we find ourselves in a place where we are trying to catch our breath a little. December 2015 and January 2016 were the busiest, December and January for transaction volume, respectively, since the inception of the LTSA.

Even in all that busyness in the last year, we have accomplished the following:

- We have completed the first two of four technology releases for ParcelMap BC, enabling our Parcel Fabric Management tools and enabling the submission, by land surveyors, of Survey Plan Datasets.
- Accepted into production the first three increments of the parcel fabric. The Nanaimo, Cowichan Valley and the Capital Regional Districts are now complete and under maintenance. We are just four weeks away from accepting the Fraser Fort George and Bulkley-Nechako Regional Districts into production.
- We completed our Fee Simplification project, which was a very intensive task for the internal team working on the project. It feels odd to describe a 'simplification' as so intense, but the variables in the project made it extremely complex. We are all glad it is behind us and we hope you are better able to explain our fees to your clients.
- We upgraded the website (www.ltsa.ca) to a streamlined and mobile-friendly environment. This was all part of the effort to reduce calls to our Customer Service Centre.
- On the Human Resources front, we have undertaken a leadership development program, focused on building skills and abilities in our Land Title Division.
- And at the end of January 2016, we welcomed a new CEO, Connie Fair, to the LTSA. More on that in just a minute.

As we look forward to the next year, we see a very busy year on a number of fronts, in addition to core business:

- The next year will see us focus on the delivery of the vision for a project we are internally calling Blueprint 2019. With a focus on an update and improvement to our customer facing systems, we will develop a plan and seek LTSA Board approval to proceed in June 2016.
- We will, in April, be introducing a new Parcel Activity Notifier, to allow myLTSA users to track activity, that is to receive a notice when an 'action' occurs in regards to a particular title. The service will allow the subscriber to be advised of any registrations or changes to the title. Look for announcements in April.
- We are also introducing Electronic State of Title Certificates. Certainly something long sought after by the lawyers and notaries active in conveyancing.
- Our bi-annual Stakeholder Survey will be conducted in September 2016.
- There is continued ongoing effort and focus by the E-business team on the Quality Verification program to communicate to and educate subscribers on policy and rules on truing up and electronically signing forms, and enforcing this where necessary. As previously noted, with this group the focus is on lawyers and notaries, but land surveyors need to ensure they are using their digital signatures correctly.
- Finally, as discussed below, the next 12 months will see significant progress on ParcelMap BC. The last two technology releases, another 15 or so increments built and added to the provincial map and of particular interest to land surveyors, the move to mandatory submission of Survey Plan Datasets. I will discuss this in detail in a few minutes.

2. Organizational Changes

The LTSA's founding President and CEO, Godfrey Archbold, retired at the end of January 2016. Godfrey had a

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35 year plus career in various government roles, including at one time, working with Chuck Salmon, when Godfrey and Chuck were responsible for the government's Crown survey records. Godfrey was instrumental in the creation of the LTSA in 2004/2005 and was truly its leader through launch to where it is today.

Our new CEO and President, Connie Fair, started with the organization on January 28th, 2016, officially becoming the President and CEO on February 1st, 2016. Connie had been the CEO at BC Assessment for approximately eight years, an organization she served in various executive capacities over a 23 year period. We look forward to working with Connie in continuing the LTSA's focus on continuous improvement.

We are aware of a handful of upcoming departures in the form of retirements, including:

- Doug Ford, our lead in our Crown Grant Services business unit, will retire on May 25, 2016;
- Ian MacDonald, the longtime Deputy Registrar in New Westminster whose focus has been on Business Transformation and E-business for many years, will retire at the end of March, 2016;
- Gurmeet Manhas, the lead in our Customer Service Center, will also retire on March 31, 2016.

Peter Haas remains focused on ParcelMap BC providing invaluable support to the team. Jeff Beddoes focusses on the day-to-day business of the Surveyor General Division with Dave Swaile and Cristin Schlossberger leading our three business units, Surveyor General Services, Crown Grant Services and Records Distribution Services.

We continue to work with Jeff as he considers a transition to retirement over the next little while. We have secured Jeff for at least one more year, but Jeff will be using some time that is coming to him and have some more regular absences over the next year. It is a strong possibility that we will look to add a land surveyor to the team in the next few months.

Jeff, Cristin, Dave and Peter make a great team and it is my pleasure to be able to work with them. They succeed in making my life easy by serving you folks so well.

On the ParcelMap BC front, Brian Greening continues to do great work leading this part of the organization. Brian is with us this week; in the exhibitor's area, upstairs, to answer your questions on ParcelMap BC and in particular on the Survey Plan Datasets and the submission process.

Bert Hol and O'Brian Blackall continue as ABCLS nominees to the LTSA Board. Geoff Plant, a nominee of the Law Society of BC, continues as the Chair of the LTSA Board of Directors.

3. LTSA 2015/2016 Year to Date - First 10 Months

The LTSA, the land title office, in particular, has had a very busy year to date, with registration activity well ahead of last fiscal year. As some examples:

Measured against anticipated revenue, core business, to the end of January, is 14.5% above expected activity levels. In fact, December 2015, saw core business with revenues 25% above anticipated levels, reflecting an extremely busy December, as mentioned earlier. January came in at 11% revenue above anticipated levels.

The level of business activity has continued in February 2016 and while results are not in yet, to mid-month, we were about 16% above anticipated revenue.

In the Surveyor General Division:

- Through the first 10 months of fiscal 2015/16, 71 Crown grant requests were received, 25.2% below the 95 in the same period in fiscal 2014/15.
- Through the first 10 months of fiscal 2015/16, 1,404 Crown land survey plans were received, up 8.8% from the 1,290 plans to the same point in fiscal 2014/15.
- Through the first 10 months of fiscal 2015/16, 285 statutory applications were processed, up 8 from the 277 to the same point in fiscal 2014/15.
- All transactions were completed within the mandated time targets; although, we have been a little slow with applications and plan confirmations these last few months. We hope to have this addressed shortly.

The Surveyor General Division continues to see a heavy focus on First Nations treaty settlement matters in our daily business. In particular, we anticipate the final agreement for the Tla'amin (Sliammon - Powell River) First Nation to come into force on April 5th, 2016. The Province, Canada and First Nations are all very active in moving forward with Incremental Treaty Agreements for a number of Treaty First Nations.

3.1 Electronic Survey Plan System - Land Titles Update

- 2015 saw the first month, September, where we achieved 100% electronic filing of land title office

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plans. To the end of January 2016, 99.7% of the 8,956 plans filed this fiscal year to the land title offices have been received electrically. That means only 23 plans have come in on mylar.

- The total of 8,956 survey plans filed in the first 10 months of the fiscal year represents a 5.3% (449 plans) increase from the 8,507 plans in the same 10 months in fiscal 2014/15.
- I want to bring your attention to a project that is underway in each of the land title offices. Efforts are underway to convert as many of the old Absolute Fee Parcels to indefeasible titles as is possible. At the end of the project, we will for the first time in BC history, have an accurate record of all of the Absolute Fee Parcels that remain and their owners. We can't say that today.

4. ParcelMap BC Overview

In the last year, we have seen significant progress on ParcelMap BC with a number of critical milestones achieved.

It is appropriate to remind everyone that the primary objective of the ParcelMap BC project is to deliver a *single, complete, trusted, and sustainable map of all titled and surveyed provincial Crown land parcels*.

We continue to work with stakeholder organizations which supported the development of the ParcelMap BC business case through the ParcelMap BC Advisory Committee, including:

- The Province of British Columbia
- Integrated Cadastral Information Society - ICI Society
- The Association of BC Land Surveyors - ABCLS
- BC Assessment Authority - BCA

So just where are we on the project?

A lot of work has been completed in the last year including:

- We completed our field and plan Cadastral Tie program. This included gathering 2,623 field ties, 4,488 from plans in Integrated Survey Areas (ISA's), and taking advantage of another 5,000 or so cadastral ties from other sources such as georeferenced survey plans outside of ISA's and ties available from GeoBC.
- We completed our first two (of four) technology releases. Release 1 focused on our core fabric management technology, Esri Parcel Fabric Editor.
- Release 2 delivered October 25, 2015, allows land surveyors to submit Survey Plan Datasets. We moved, with the great support of our pilot group of land surveyors quickly through a pilot project and since December 7, 2015, Survey Plan Dataset submission has been open to all land surveyors on a voluntary basis. I would like to thank Peter Haas and Brent Taylor for running the training webinars we have done, as we move towards mandatory submission. We have one more next week and one at the end of March. Please signup if you have not already.
- We are approaching Release 3, when we deliver the Surveyor Search and Download Service, obviously, aimed at land surveyors. We have recently had a short delay in the release date, which has now moved to April 17, 2016. The move was precipitated by a number of unusual factors, including an Esri software update release and complications related to the effective date of the Tla'amin Treaty being April 5, 2016.
- We will announce a series of training webinars for the Surveyor Search and Download Tools in a couple of weeks. We hope you will be able to attend one of these sessions.
- As such, we have amended Practice Bulletin No. 3 and announced a revised date for required submission of Survey Plan Datasets. The new effective date is June 15, 2016 for all plans with an electronic checklist date of May 23, 2016 and later. All required plans will need a Survey Plan Dataset effective September 1, 2016 regardless of the electronic checklist date. I will repeat this information in a few minutes.
- Our ParcelMap Direct Service that will deliver the contiguous fabric to the Province, BC Assessment, ICI Society (that will deliver it to local governments) and to those land surveyors that can take advantage of ParcelMap Direct will be available in July 2016. That will conclude our technology releases and we will spend the following 9 months completing the fabric build.
- On the Parcel fabric build side of the project, we now have Increments No. 1, No. 2 and No. 3, which include the Nanaimo, Comox Valley and Capital Regional Districts built, delivered and in the hands of our Operations Team. The team is now maintaining these working on catch-up plans, being

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those plans registered since the construction of each Increment began. We hope to be fully caught up and in pure maintenance mode by the April 17, 2016 release of the Surveyor Search and Download Tools.

As to the rest of the Increments, we note, that as of March 14, 2016:

- Increments No. 5 and 6, the Fraser Fort-George and Bulkley-Nechacko Regional District's compilation are complete, factory and release testing is complete. We are on target for full LTSA acceptance on or about March 28, 2016.
- Increments No. 7 and 9, the Kitimat-Stikine, Skeena-Queen Charlotte, Central Coast and Cariboo Regional District's compilation is complete, factory testing is complete and release testing is underway. We are on target for LTSA acceptance on or about April 21, 2016.
- Increments No. 11 and 12 the Columbia-Shuswap, East Kootenay, North Okanagan, Central Kootenay and Kootenay Boundary Regional Districts are in compilation and about 75% complete. The compilation team has struggled as the source data is of poor quality and topology and there are a significantly large number of missing parcels in these increments. The poor quality of the source fabrics makes resolution of the missing parcels more difficult. We are anticipating LTSA acceptance at the end of August, 2016.
- Increments No. 10 and 13 the Thompson-Nicola, Okanagan-Similkameen and Central Okanagan Regional Districts are in compilation, about 20% complete and we are trying to determine if we have similar source data quality issues as we have in Increments No. 11 and 12. We anticipate LTSA acceptance in November 2016.
- Increments No. 14 and 15 the Fraser Valley, Powell River, Squamish Lillooet and Sunshine Coast Regional Districts have just begun compilation.
- Increment No. 4, the northern portion of Vancouver Island including the Alberni-Clayoquot, Comox Valley, Strathcona and Mount Waddington Regional Districts and Increment No. 8, the Peace River and Northern Rockies Regional Districts are about to kick-off their build phases. In regards to Increment No. 8, I am pleased to advise that the LTSA Board approved an increase in scope, of over $1 million so that the LTSA could take on the mapping of approximately 4,100 – 4,500 Statutory Right-of-Way Plans over Crown land. Being mainly oil and gas related, these SRW Plans have not been mapped, as anticipated by GeoBC. This additional piece of work is obviously significant but is important for our primary project goal of single and complete, trusted, and sustainable map of all titled and surveyed provincial Crown land parcels.

- That really just leaves the Greater Vancouver Regional District (GVRD), now comprised of 3 Increments. The building of the GVRD Increments will kick-off in summer/fall 2016.
- If I may, I would like to acknowledge the staff at the City of Surrey who are taking steps to align their digital submission process with what the LTSA is doing. On February 11, 2016, Monty Brisson, BCLS issued a notice to all land surveyors describing Surrey's efforts. Well done Surrey. To Monty and the City of Surrey staff, we thank you for your leadership in this area, we certainly think the example will cause others to follow suit.

While I am on the theme of thank you's, a couple others if I may:

- Thank you to the members of the Land Surveyors Advisory Task Force, Rory O'Connell, Ivan Ngan, Ron Johns, Rob Tupper, Brent Taylor, Chad Rintoul and Chuck Salmon who continue to provide advice and direction on ParcelMap BC. We greatly appreciate the committed effort.

- Thank you also to the ABCLS CPD Committee who have created the additional one day seminar, tied to Getting It Right in BC, called **Getting The Most Out of ParcelMap BC**. I think it will be great and am hoping to attend the June 1st, 2016 session in Kelowna if the ABCLS and the Committee will accept my registration.

- Thank you to our team of contractors and staff working so diligently to deliver the ParcelMap BC project. While I thank everyone I must single out Brian Greening and Peter Haas. We would not be close to where we are without the expertise of both these gentlemen.

- And thank you to each of you as we work to deliver the ParcelMap BC project. It has been a long time coming, it feels like we have been talking about it for so long, and to date, I know you have not seen

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anything. It does take a while to spend $22 million. You will soon see the first set of Increments for the published fabric. We are looking forward to that day.

For land surveyors, the big thing to be aware of is the timing of the mandatory submission date for Survey Plan Datasets. As noted earlier, the requirement for Survey Plan Datasets to be submitted with all surveys commences ***June 15th, 2016*** *for all plans with an electronic checklist date of* ***May 23rd, 2016*** *or later. As of* ***September 1st, 2016****, plans will require a Survey Plan Dataset regardless of the ECR completion date. The Surveyor General Division will provide an ability to apply for an exemption. We will provide those details in the near future.*

Conclusion

In closing, I note that BC land surveyors continue to be very relevant in the growth and development of British Columbia, providing fundamental support to the economic and social fabric of the province through the diligent preparation of quality surveys.

We thank you for commitment to delivering a quality cadastre to the citizens of BC. Bronwyn, and to each of you, thank you for allowing me this time.

Robert's Corner

Lower Mainland Group Provides Generous Contribution to the BC Land Surveyors Foundation

By Robert Allen, BCLS (Life Member), CLS, Canadian Institute of Geomatics (Life Member), Trustee

At the Lower Mainland Group (LMG) meeting on January 29th, 2016, a motion was passed to support the BCLS Foundation with a yearly contribution of $20 per member. Before making the motion, Hans Troelsen had given a brief presentation on the history of the Foundation, its methods of collecting donations and contributions, and the number and amounts of scholarships and bursaries handed out each year to deserving students. In 2015, the LMG contributed $1000 to the Foundation and this year, 2016, the contribution will amount to $1600 or more, as the final membership count has not yet been established.

Hans Troelsen thanking Bill Chapman for his donation to the BCLS Foundation

Bill Chapman seconded Hans' motion and it was carried unanimously. Bill then announced his own donation to the Foundation of one-third of what the members in attendance would donate, up to $800.00. He asked for their donations to be $200 each and thirteen others very quickly took up the challenge.

They were: Ivan Ngan, Johnny Franko, Seamus Pope, Dan Machon, Harry Hickman, Bill Papove, Bert Hol, Dave Lyon, Greg Marston, Daryl Mitchell, Warren Barnard, Eugene Wong, and Raymond Yuan. For the thirteen of them at $200 each, the total was $2600 and Bill then donated his anticipated $800. Each of those donors will receive a charitable tax receipt from the Foundation.

The Lower Mainland Group would like all other Groups and their members to consider matching the $20 per member contribution and Bill challenges all British Columbia Land Surveyors to match his generous donation of $800 or the donation of $200 of the other thirteen LMG members.

There are no overhead expenses as the Trustees all volunteer their time and the ABCLS Office generously provides any required office support and so all donations and contributions to the Foundation go towards helping students achieve their goals and dreams through scholarships and bursaries. The 2016 BCLS Foundation Trustees are: Richard Wey (Chair), Hans Troelsen (Vice Chair), Mike

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Taylor, Laurie Salvador (Notary Public and Lay Trustee), Chad Rintoul (Foundation Clerk), and Robert Allen.

For further information on the Foundation and financial contributions to the Foundation, please visit: **http://www.abcls.ca/?page_id=300** and for more information about the scholarships and bursaries administered by the Foundation, please visit: **http://www.abcls.ca/?page_id=464**

The Foundation has prepared a booklet outlining the scholarships and bursaries that it administers and it can be viewed at: **http://www.abcls.ca/wp-content/uploads/pdfs/BCLS-Foundation-Booklet-January-20-2016.pdf**

Again, for any donations to the BCLS Foundation, a charitable tax receipt can be issued and any donation can be sent to: **British Columbia Land Surveyors Foundation,** #301 - 2400 Bevan Street, Sidney, BC V8L 1W1

Bulletins

FIG Young Surveyors North America and the Minnesota Society of Professional Surveyors Meeting ... February 10th - 12th, 2016

By Jordan Litke, BCLS #905

In mid-February, I had the pleasure of attending the 2nd International Federation of Surveyors (FIG) Young Surveyors North America (YSNA) meeting at the Mystic Lake Casino Hotel near Minneapolis. Both the ABCLS and FIG generously sponsored my attendance at the meeting. The meeting was well attended, with about 65 or 70 representatives coming from a diverse selection of geographic locations, including Alaska, New Brunswick, Jamaica, Uruguay, many of the continental states, as well as British Columbia.

The FIG definition of a Young Surveyor is either a surveyor 35 years of age or younger, or a professional within 10 years of graduation from a survey related Bachelor or Masters degree. Heading in to the meeting, I was curious to learn more about what the goal of the Young Surveyors network is and what I came away with is … it is an avenue for young professionals to network with their peers, discuss challenges faced and brainstorm solutions to those challenges. In addition to small group discussions and a panel Q and A, keynote speeches were given by the President of Leica North America, the Vice-President of Trimble Navigation and a senior strategist from Autodesk.

All of the keynote speeches had a common theme - technology in surveying and mapping is changing rapidly and surveyors are well suited to be leaders as those changes occur. These changes are being driven by the demand to have accurate geospatial data in real time. Ken Mooyman of Leica noted that 65% of smart phones use location functionality and 85% of the population under 50 has a smart phone. Terry Bennet of Autodesk spoke of how the use of Unmanned Aerial Vehicles (UAVs) are revolutionizing remote sensing, with cloud computing enabling vast quantities of data to be processed at a rapid rate. Following Bennet, Bryn Fosburgh of Trimble Navigation spoke very passionately on how the accuracy and implementation of all this data needs to be checked and validated. Fosburgh commented on how surveyors possess the expertise and ability to do so but we must be proactive in staying abreast in advancements in technology or we risk being left out of this segment of the industry, in the same manner as we have been left out of the use and implementation of GIS systems. All three speeches validated the Young Surveyors theme that 'the rapid response to change will be done by the surveyor of tomorrow'.

The YSNA meeting was held in conjunction with the Minnesota Society of Professional Surveyors meeting. Additionally, the National Society of Professional Surveyors (NSPS) is a member of FIG, all of which lead to a very heavy American flavour at the YSNA meeting. Following the YSNA meeting, I stayed for the second and third days of the MSPS meeting. The MSPS meeting was primarily professional development, with only a couple of hours of business meetings. While I don't know all the ins and outs of the structure of the state societies, my understanding is that unlike provincial associations, the state societies are not self-governing. As a result, the business portion of the meeting was very poorly attended and generally just a series of formalities. One thing that I did find interesting is that this was the first year the Society has adopted electronic balloting for election of their Board of Directors.

At a national level, there is a Young Surveyors network within NSPS. This mission of this network is the promotion of surveying. Just as we have experienced across Canada, surveyors in the US are struggling to bring people into the profession. This has led to the formation of the NSPS Young Surveyors Network and the mission of promoting surveying.

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This network was formed in 2014 and is just beginning to get their feet under them from an organizational perspective, but progress is being made and they are working on creating resources that can be utilized on a national level. In this sense, I see parallels with Professional Surveyors Canada's shift towards public awareness. However the Young Surveyors portion of NSPS is a couple of years away from having the organization and resources of PSC.

In summary, the FIG YSNA meeting was interesting, informative and thought provoking. I don't know when the next YNSA meeting will occur, but I would encourage any young surveyor that is interested to consider attending.

(FIG) Young Surveyors North America (YSNA)

OIP Luncheon ... Monday, January 11th, 2016

By Wayne Griffith, BCLS, CLS (retired), Secretary OIP Group

The Retired Land Surveyors, also known as the OIP Group, met on Monday, January 11th at the Oriental Buffet in Surrey. There was an excellent turnout with 19 surveyors in attendance. As usual there was a great deal of scintillating conversation and cross table banter.

Those in attendance were Robert Allen, Neil Bennett, George Fenning, Wayne Griffith, Chris James, Stan Nickel, Ron Scobbie, Ralph Turner, Martin Schulze, Larry Achtemichuk, Keith Errington, John Nash, Clare Hobbs, Dave Liddle, Bill Chapman, Dai Yates, Dick Mak, John Henderson and last, but not least George Robertson.

Left Clockwise: Keith Errington, Bill Chapman, Martin Schulze, George Fenning, Chris James, Robert Allen and Neil Bennett

Left to Right: Larry Achtemichuk, John Nash with Ron Scobbie and Dick Mak in the background

The luncheon was well underway by 11:40 am and after a bit of fine dining we eased into a brief business discussion. Wayne Griffith reported on the upcoming spring meeting. The group will once again meet at the Fort Langley Farm Museum and this time around we are going to present Hilary Ruffini with a Certificate of Appreciation from the ABCLS. Following the presentation, we will be heading to a local restaurant where we will treat Hilary to lunch.

The group briefly discussed the upcoming fall luncheon and we are considering the buffet at the Grand Villa Casino with a possible visit to the survey department of BCIT before lunch.

Left to Right: Dave Liddle and Keith Errrington

Stan Nickel and Robert Allen updated the fellows on how their recovery was progressing. Stan took this opportunity to thank everyone for their continuing support. He has recovered from most of his serious health issues, but Stan is still struggling with a bad back and mobility is a big concern. Hopefully his surgeon will be able to correct this problem in the near future.

Robert's situation has improved somewhat. He has just had another surgery on his foot in mid-December but the doctor has found another suspect area that will need some attention. We wish Robert well in his ongoing treatment. Robert also talked briefly about the upcoming presentation at the BC Farm Museum and then we moved on to the lighter side of the luncheon

Jokes and a bit of reminiscing of humorous events from times past were next. Once again Ralph Turner was in fine form along with Chris James, Martin Schulze, Robert Allen, John Henderson and Keith Errington. Dick Mak tells me

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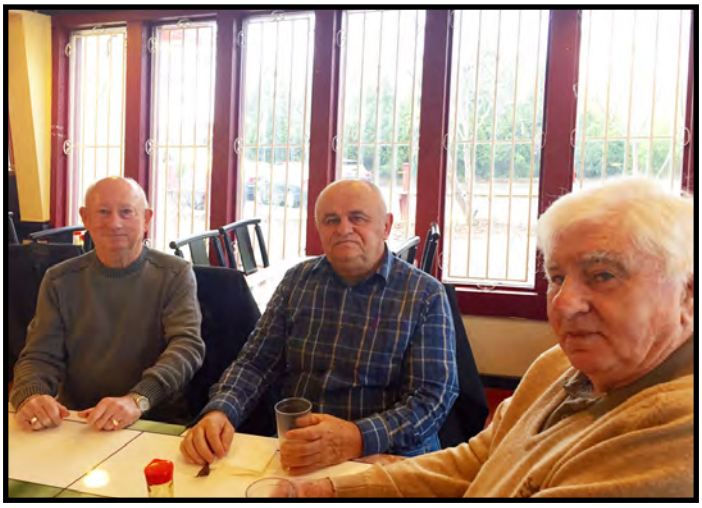
we had a couple of old timer moments as two of the stories may have been repeats from previous meetings. Such are the golden years.



Left to Right: Clare Hobbs, George Robertson and John Henderson

Ralph Turner (Right) appears to be napping at this exciting event. He assures me that he was simply leaning back so Dai Yates (Left) would not be blocked out of the photo.

Time goes by fast when you are having fun and by 1:30 pm members of the OIP Group started for home after an enjoyable day. By the time the luncheon bills were paid and the fellows said their goodbyes it was well past 2:00 pm before we vacated the Oriental Buffet.

Our next luncheon will be held at the Fort Langley Farm Museum on Monday, May 9th, 2016. All or part of the Survey Exhibit should still be on display for those interested, but our main focus will be the presentation of the certificate to Hilary Ruffini. This will be a fairly significant event for the OIP Group and we look forward to a big turnout. New comers are welcome.

Left to Right: Robert Allen, Neil Bennett and Stan Nickel

Left to Right: Ron Scobbie and Dick Mak are enjoying the moment

Anecdote ... Eugene O'Neill (1888–1953)

O'Neill always strongly objected to cutting any of his plays. When director and playwright Russel Crouse asked him to shorten the script of Ah, Wilderness! he was very reluctant. The following day he telephoned Crouse to tell him that he had cut fifteen minutes. Surprised and pleased, Crouse said, "I'll be right over to get the changes."

"Oh, there aren't any changes to the text," O'Neill explained, "but you know we have been playing this thing in four acts. I've decided to cut out the third intermission."

2015 BCLS Golf Tournament

By Marissa Moore, BCLS

The second annual BCLS Golf Tournament was a huge success this year! The event was held on September 25th at *Rivershore Estates and Golf Links* in Kamloops. Despite the not-so-great weather, the 47 golfers who participated had a great time (as surveyors we're used to the rain).

The First Place Team Trophy was awarded to Greg Calvert, Jason Whale, Tyler Fox and Steven Cheek. Greg generously designed and donated the trophy which he brought to the tournament and was lucky enough to bring back with him.

We had a prize table worth over $2000 and we were able to raise $5865 in donations. Proceeds went towards the *BCLS Foundation* and the *Prostate Cancer Foundation*. Our generous sponsors and donors included: Richard Redfern, Robert Allen, CG&B Group, the Land Title and Survey Authority of BC, Brandt Positioning, Spatial Technologies, Harrington Industries, Cansel, Robertson Manufacturing, the ABCLS, Vector Geomatics, the Lower Mainland Group, Doug Dodge, McIlvaney Riley, Ivan Royan, Peter Mueller, L E Fritsch and Abstract Registry Services.

For some added entertainment and extra donations, Mike Thomson, Chuck Salmon and Tyler Fox were gracious enough to be dumped with a bucket of ice.

Thank you to all the participants, sponsors, donors and the Association Office for contributing to another successful event! The 2016 tournament will be held on September 16th at *Talking Rock Resort and Quaaout Lodge* on Little Shuswap Lake - located approximately 45 minutes east of Kamloops. A block of rooms has been reserved at the Lodge and I encourage you to book soon to ensure you have a place to stay. I'm looking forward to seeing you all on September 16th!

Left to Right: Tyler Fox, Marissa Moore, Steven Cheek, Jason Whale and Greg Calvert

New Commissions

Alex Gorelik and Bronwyn Denton

Alex Gorelik, BCLS #950

Alex Gorelik was commissioned on November 19th, 2015 by Bronwyn Denton in Calgary, AB. Alex grew up in Moscow, Russia. He graduated from Moscow State University of Geodesy and Cartography in 2003 with M.Sc. in Geomatics and Cartography. Alex received his ALS commission in January of 2015 and SLS in October 2015.

He is married to Lena and has two children; Dmitri (8) and Roman (6). When he is not land surveying Alex enjoys travel, soccer and running.

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James Worton, Scott Pearse, Chuck Salmon and Alan Powell

Scott Pearse ... BCLS #951

Scott Pearse was commissioned by Chuck Salmon in Victoria on December 9th, 2015. He was born in Cranbrook and grew up in Victoria. Scott chose to become a land surveyor because he enjoys the combination of outdoor work, office work and researching the historical records of early days.

He would like to thank James Worton, Alan Powell and Brent Taylor for their mentorship along the way. Scott enjoys mountain biking, trail running, skiing, adventure racing and just about any activity that allows him to play outdoors in this beautiful province.

Scott Pearse hiking at Whistler with his sons Mitchell and Morgan

Scott Netherton, Harry Badial, Monty Brisson, Mike Thomson, Rob Glass and Peter Mueller

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Harry Badial ... BCLS #952

Harry Badial was commissioned by Mike Thomson in Surrey on December 10th, 2015. He was born in Prince George and grew up in Prince George and Burnaby. Harry chose to become a land surveyor when he came upon land surveying by chance.

As he has a sense of adventure, enjoys the outdoors, loved math in school …it was an easy decision. Harry would like to thank his family, friends and the City of Surrey's Survey Section. In his spare time away from work Harry enjoys hiking and photography.

Josh Hango and Steve Buzikievich

Jennifer Rosenkranz ... BCLS #959

Jennifer was commissioned by Bronwyn Denton on February 11th, 2016 in Calgary.

She was born in Edmonton and grew up in Wetaskiwin, AB. Jennifer choose to become a land surveyor because she enjoys the outdoors and she likes the challenges that come along with surveying - every day brings something new.

Jennifer's main interest away from surveying is her two little boys.

Please note that a photo of Jennifer was not available at publication time.

Harry Badial ... Hiking

Joshua Hango ... BCLS #953

Josh was commissioned by Steve Buzikievich on December 10th, 2015 in Penticton. Josh was born in Saskatoon and grew up in Castlegar. He chose to become a land surveyor as he was interested in the variety of work and the numerous skills needed to be successful professional.

Josh would like to thank his parents, fellow students and the land surveyors who have helped him along the way. In his spare time, Josh enjoys travelling, dogs, books, music and anything to do with the outdoors.

Josh Hango with his dog 'Harry'

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Chuck Salmon, Evan Wind, Mike Hansen and Dave Storback

Evan Wind ... BCLS #954

Evan was commissioned by Chuck Salmon on December 11th, 2015 in Courtenay. He was born and grew up in Calgary. Evan chose to become a land surveyor as he likes working outside and exploring.

He would like to thank his wife Shannon and his family, his master Mike Hansen, his mentors Dave Storback and Ian Lloyd for helping him along the way. When Evan is not working he enjoys being out in the mountains.

Brian Brown, Jeremy Childs and Martin Jones

Jeremy Childs at the top of Plinth Peak in the Mount Meager Complex (2009)

Jeremy Childs ... BCLS #955

Jeremy Childs was commissioned by Brian Brown in Whistler on December 15th, 2015. He was born in Vancouver and grew up in Squamish. Jeremy chose to become a land surveyor because he enjoys the outdoors and wanted a career that was technically challenging yet still allowed him to be outside.

As he got further into his career he appreciated the historical research involved. He would like to thank Martin Jones for helping him along the way. When Jeremy is not at work he enjoys hiking, camping, skiing, mountain biking, fishing and volunteering as a firefighter.

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Chuck Salmon, Matt Schnurch and Richard Wey

Keith Ekman, Bronwyn Denton, David Kaczowka and John Armstrong

Matt Schnurch ... BCLS #956

Matt Schnurch was commissioned by Chuck Salmon on December 23rd, 2015 in Sidney. He was born in Comox and grew up in Courtenay. Matt chose to become a land surveyor because he enjoys the problem solving and day-to-day variety of the work.

He would like to thank his master, Richard Wey, Richard's other articled students Brent Mayenburg, Lloyd Eakins and Ryan Turner as well as his friends and family that encouraged him along the way. When Matt is not working he enjoys hiking, music and snowboarding.

David Kaczowka ... BCLS #957

David was commissioned on January 8th, 2016 by Bronwyn Denton in Cranbrook. He was born and grew up in Regina. David chose to become a land surveyor because he has a great love for the outdoors and his father was a chainman during university.

He would like to thank John Armstrong and all students and land surveyors for helping him along the way. Most importantly he would like to thank his wife Amanda for being the best support that a person could ask for and his three amazing children who helped to motivate him through the process. When David is not working he enjoys coaching hockey, hiking, camping and fishing.

Gary Borne ... BCLS #958

Gary was commissioned by Bronwyn Denton on January 18th, 2016 in Kelowna. He was born and grew up in Maple Ridge. Gary chose to become a land surveyor because his father was a party chief in Abbotsford for many years. His father introduced Gary to surveying by bringing him out to job sites around the age of 12. Gary loves the outdoors as well as the technology that is used to get the job done … the rest is history! After studying at BCIT he spent six years surveying in the Seattle area and a then a brief trip to Okinawa Island in Japan. Seeing how different countries survey and the different cadastral systems was intriguing.

Bronwyn Denton, Gary Borne and Tyler Fox

He would like to thank his wife Robyn and his sons Jackson, Aiden and Micah; as well as, Tyler Fox, Jason Whale, Peter Stringer, Greg Calvert, Parker Minard, Richard Good, Roger Galibois and Doug Goddard for helping him along the way. When Gary is not surveying he enjoys coaching his sons in baseball, basketball and volleyball, camping with friends and family and any activity on or by the lake.

111th AGM and CPD Days
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British Columbia Land Surveyors

Continuing Professional Development Committee Update

By Minda C. Riley, BCLS ... on behalf of the retiring CPDC

Kimberley, BC proved to be an exciting backdrop this past March for the Continuing Professional Development (CPD) events at the 111th AGM.

As always, the turnout for the CPD seminars was strong. This year the 1.5 days of CPD consisted of a combination of business, technical and survey related topics. The CPD events on Wednesday morning began with an informative and entertaining seminar about *The Brain*, and how to boost your brain power and health. The participants learned that sitting all day is dangerous to brain health, so after reading this article - get up and stretch! For the balance of the morning, two consecutive seminars were held, providing members with a choice of attending a session on managing Social Media for Business or a session on the Development Approval Process for subdivisions. The Social Media

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seminar delivered introductory material to attendees on various social media tools. The Development Approval seminar provided a wealth of information for members, on how to navigate and be a leader in the development approval process.

The Wednesday afternoon sessions began with an interactive Risk Management seminar providing members the opportunity to discuss areas of risk in both construction and legal surveys - as well as ways to mitigate those risks. The balance of Wednesday saw two concurrent seminars - one on Geodetic Positioning and the other focusing on Safety. The Geodetic Positioning seminar provided relevant information on the technical and complex issues land surveyors need to understand when using GNSS for georeferencing legal surveys. The Safety seminar gave attendees useful information around safety protocols for various offices sizes and the importance of establishing a culture of safety starting from the top down.

On Thursday morning the Roads seminar was presented by a panel of speakers that included land surveyors and provincial staff. The presentation was a comprehensive look at the creation and definitions for highways and roads. The presenters highlighted the complexities involved when surveying in and around "roads", requiring much research and communication with various bodies including MoTI, SG's office and local governments.

Most seminars had accompanying handouts, that can be obtained through the ABCLS website - in the Continuing Professional Development section. A number of the seminars were recorded with the intention of providing the material through GeoED in the future. Announcements will be made through the ABCLS as the material may become available.

Members in attendance at the various CPD events and business meeting portion of this year's AGM can claim applicable credit hours on the mandatory CPD reporting form. The online reporting forms are accessed through the GeoED website, or through a direct link from the CPD area of the ABCLS website. The following is a recap of the CPD seminar credit hours for Category A:

Seminar 1:	Your Brain At Work	1.0 credit hour
Seminar 2:	Social Media	2.5 credit hours
Seminar 3:	Development Approval	2.5 credit hours
Seminar 4:	Risk Management	2.0 credit hours
Seminar 5:	Health and Safety	1.5 credit hours
Seminar 6:	Geodetic Positioning	1.5 credit hours
Seminar 7:	Roads in BC	3.0 credit hours

Additional information is also available through the ABCLS website, including a CPD Program User Guide for members. Members can also contact the ABCLS office with questions regarding the mandatory CPD program or reporting tool.

Getting It Right BC (GIRBC) will be offered in both Richmond and Kelowna this spring! The GIRBC program material was refreshed and enhanced in 2015, and will now be offering the core two day *Fundamentals Workshop* with a newly developed one day module focusing on *ParcelMap BC*. Information and registration is available on the ABCLS website.

Richmond, BC

Fundamentals Workshop - April 25th-26th, 2016
Getting the Most out of ParcelMap BC - April 27th, 2016

Kelowna, BC

Fundamentals Workshop - May 30th-31st, 2016
Getting the Most out of ParcelMap BC - June 1st, 2016

Spring Regional Group Meetings are rapidly approaching. Regional Group Executives can contact members of the newly appointed CPD committee or ABCLS staff to coordinate sanctioned CPD events.

For years the Continuing Professional Development Committee (CPDC) has been structured as an ad hoc volunteer driven committee. As of the 2016 AGM the CPDC, in its original form, was retired and a new Board appointed committee was struck to continue building on the great work already done. This new committee will work under an updated mandate that includes the mandatory CPD Program.

It is with considerable gratitude that I wish to acknowledge all of the CPDC members who have volunteered their time and efforts to the committee. This committee has really evolved, particularly in the last decade. In 2007 the committee members met face to face for a strategic planning session. The outcome of that session saw a more robust and focused committee mandate. As part of that mandate the CPDC provided additional professional development for members, including up to two full days of CPD at AGMs and dedicated sessions for students and LST's.

The CPDC also provided regional representation by ensuring the committee had at least one member from each region. In turn this allowed for better dialogue and more consistent and focused CPD opportunities in conjunction

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with regional group meetings. The committee initiated the voluntary reporting program, encouraging members to track and report their professional development activities. Additionally, the committee has provided articles and updates to the *Link* Magazine and at regional group meetings to ensure the membership is kept up to date on committee activities and professional development opportunities.

In 2009 the CPDC, with the help of contract resources, developed the GIRBC quality control program, based on the Alberta model. This was a big undertaking, but well worth the effort as it is now evolving into something bigger than even we imagined at the onset. The CPDC also ensured the ABCLS was a leader regarding GeoED, becoming a registered provider and presenting professional development materials at the national level.

In the last few years the committee turned their focus to the Professional Competency Program as part of the current Association Strategic Plan. The result of this focus was the introduction of the mandatory CPD Program, which was ratified by the membership at the 2015 AGM, and as of January 1st, 2016 the CPD Program is now underway, providing a standard of professional development for the membership.

The new Board appointed CPD committee will, no doubt, continue the great work that has been achieved by all the previous committee members who passionately dedicated themselves to the CPDC and its mandate over the last decade and more. **Thank you** again, to all of those members who have brought the CPDC to this point, as well as the tireless efforts of the Association staff. The dedicated members and staff of this Association are a force to be reckoned with!

Front Row: Bronwyn Denton (Past President), Ron Johns (President) and Brian Brown (Vice President)

Middle Row: Mike Thomson (Surveyor General), Roger Galibois (Member), Jason Whale (Member) and Chad Rintoul (Chief Administrative Officer)

Back Row: Mike Waberski (Member), Chuck Salmon (Secretary/Registrar), Michael Burian (Government Appointee) and Chris Cryderman (Member)

Bronwyn Denton presenting a Certificate of Recognition to Bill Chapman

Bronwyn Denton presenting a Certificate of Recognition to Joe Johnson

Bronwyn Denton presenting a Certificate of Recognition to John Armstrong

Bronwyn Denton presenting a Certificate of Recognition to Robert Allen

Bronwyn Denton presenting the G.S. Andrews Award to Minda Riley

Bronwyn Denton passing the spats to Ron Johns

BCLS Annual General Meeting 2016 Photo Review

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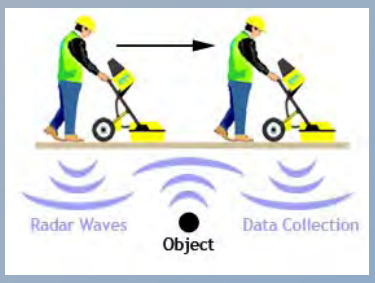

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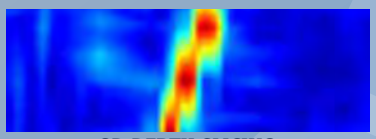

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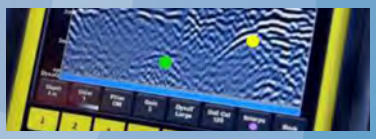

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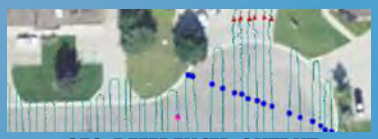

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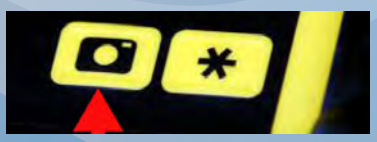

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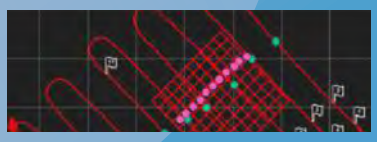

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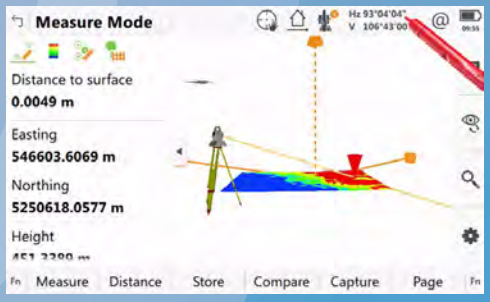

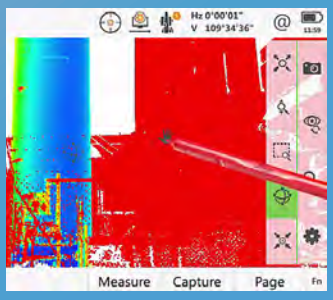

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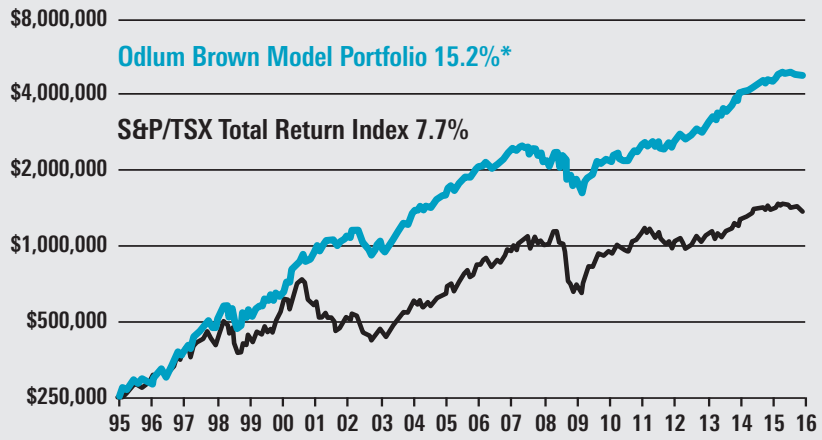

Compound Annual Returns (Including reinvested dividends, as of January 15, 2016) [1]

	YTD	1 YEAR	3 YEAR	5 YEAR	10 YEAR	20 YEAR	INCEPTION [2]
Odlum Brown Model Portfolio [3]	-5.0%	5.0%	17.4%	14.2%	9.1%	15.3%	15.2%
S&P/TSX Total Return Index	-7.1%	-11.4%	1.5%	0.8%	3.3%	7.2%	7.7%
S&P 500 Total Return Index ($CDN)	-3.4%	17.2%	26.1%	18.9%	8.5%	8.2%	9.2%

[1] Except for YTD period.

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[1] Except for YTD Period. [2] December 15, 1994. [3] The Odlum Brown Model Portfolio was established by the Research Department in December 1994, with a hypothetical investment of $250,000. Trades are made using the closing price on the day a change is announced. These are gross figures before fees. Past performance is not indicative of future performance. *Compound annual returns are from inception December 15, 1994 to January 15, 2016. Member-Canadian Investor Protection Fund

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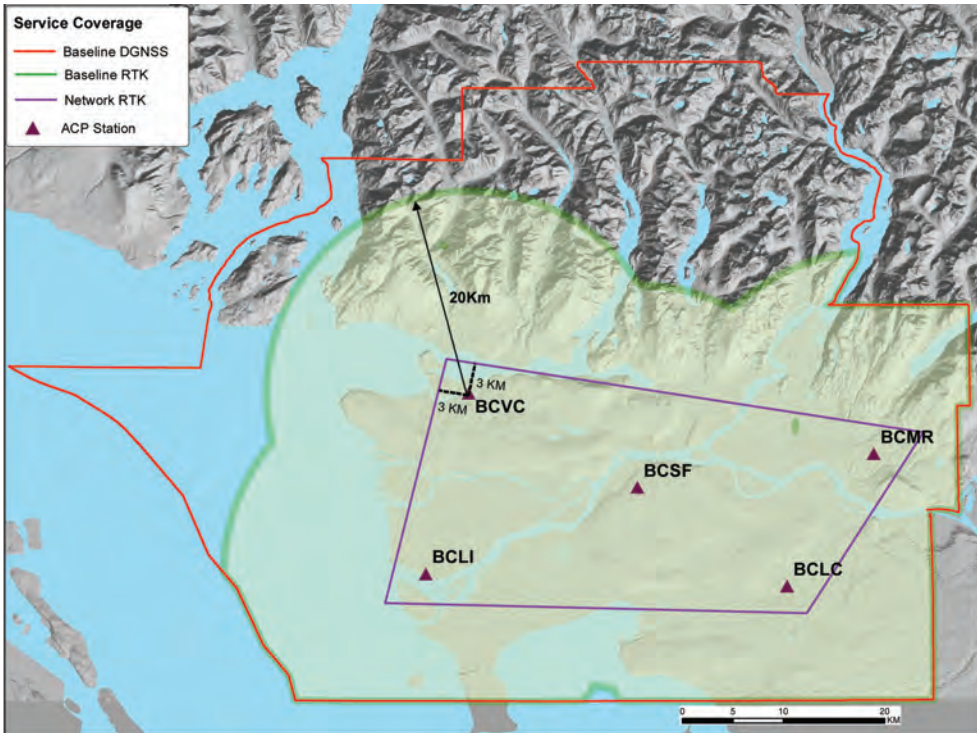

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Kenneth Kew Wong, BCLS #334, DLS #821, BCLS Life Member #48

By Robert Allen, BCLS (Life Member), CLS, CIG (Life Member)

Notes From Ken's Eulogy:

Most of this part was put together from the eulogy read by Ken's brother, George, who was at Ken's side when he passed away.

Kenneth Kew Wong, BCLS #334, BCLS Life Member #48, and DLS #821 passed away on June 21st, 2015 in Burnaby, BC. Ken was born May 5th, 1925 in Vancouver, BC, and received his BCLS commission on April 24th, 1953 in Vancouver, BC. Ken articled to F.C. Underhill, BCLS #143, Life Member #14, from 1948 to 1952. He also became a Dominion Land Surveyor (now Canada Lands Surveyor) on March 3rd, 1955 while living in Kitimat, BC.

Ken graduated from Vancouver Technical High School and took Senior Matriculation at Britannia High School. He then completed his first year of Engineering at UBC, but later dropped out of the Engineering program because he felt the course was not suitable for him. He then decided to enlist in the Canadian Army as World War II was still ongoing, but he was rejected because his weight did not match the standards of the day, required by the Army. It is interesting to note that the weight requirement was later lowered for individuals seeking to join the Army, but by then Ken had changed his mind.

Ken then started working in construction and one day the engineer on the job asked him to hold a level rod as he looked through the level to determine the elevation of the ground at various locations. It was at that moment that Ken knew what he wanted to do - he wanted to be the Land Surveyor, not the rodman!

Prior to 1947, when Chinese Canadians were given the right to vote, it was virtually impossible for minorities to enter into the professional fields, especially in the engineering sector, because of the mono-cultural society at that time. This is very different in comparison to the current multi-cultural society of today.

Ken was so determined to become a land surveyor that he went to several local land surveying companies to ask if he could article with them. He was rejected in all cases, but it was recommended that he check with Underhill & Underhill, one of the more prominent surveying companies in Vancouver in the day. Underhill & Underhill didn't have a job for him, but they did give him the names of six local surveying companies to check out. He went to each of them and was again rejected. This happened two more times for a total of 18 rejections. He didn't let all those rejections get him down as he went back to Underhill & Underhill for a 4th time and was finally accepted by them.

Ken noticed that individuals joining the company after he did would get the more important and advanced work, but despite that, he never complained and did his job the best he could. He was finally given his first big job, the responsibility for the survey of the transmission line running behind Harrison Hot Springs.

Sometime later, he injured his hand and was not able to handle the transit and, as a result of his injury, he was laid off by Underhill & Underhill. While Ken's hand was healing, he wrote the exams to become a Dominion Land Surveyor (now known as a Canada Lands Surveyor). This entitled him to work on all federal lands such as National Parks and Indian Reserves, the Yukon and the Northwest Territories.

Ken then worked in the Peace River area creating new quarter sections and sections for homesteading as well as some work on the local Indian Reserves. On completion of those jobs, he went back to Vancouver. From there he went to Victoria, BC, to see the Surveyor General and to obtain some information he wanted from the Land Surveying Association. The Surveyor General indicated that Alcan was looking for a land surveyor to help with the

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development for the first phase of the town of Kitimat and he recommended Ken for the job. Ken moved to Kitimat and soon had about 35 crew members working for him. Later, through the reorganization of the field operations, the Survey section was put under the control of the Engineering section.

Ken said "What do engineers know about legal surveying?" So he resigned from Alcan and moved back to Vancouver and started his own company, K.K. Wong and Associates, in 1957. It started as a bare bones operation with one chainman and himself, but Ken slowly built up the business. His brother, Edmund, who was also a Civil Engineer, started articles under Ken in 1961 and later received his designation as a British Columbia Land Surveyor.

The company, K.K. Wong and Associates, provided reliable and accurate surveys to its clients while always maintaining the high standards of work required by the BC Land Surveyors Association. Most of his surveys fell within the boundaries set up by the old original surveyors in the earlier days when the City of Vancouver was formed. Working within those parameters was no easy task given the technology of the day when those old surveys were done.

Ken enjoyed going to the annual conferences held each year in different cities and countries where he was able to meet his counterparts as well as learn new techniques and improvements in surveying. He always looked forward to these events. At one of these events Ken was invited by his American peers to join them in China and Ken gave a talk on how the Torrens System of land division was applied in British Columbia.

K.K. Wong and Associates provided surveys for big firms such as Bosa Developments, a well-known condominium developer in the Lower Mainland and also for architect, Bing Thom. Ken was involved in many community activities including the survey for the Dragon Boat Festival.

Like many responsible businessmen, he contributed to many charity organizations as well as scholarships set up by the BC Land Surveyors Association through the Vancouver Foundation. Ken felt giving back to the community and assisting family was very important. He even found time to sponsor a relative to move from China to Canada.

Ken was the first Chinese Canadian, at least in British Columbia, to enter the professional ranks when he became a British Columbia Land Surveyor. Although the iron wall of prejudices was bending after 1947, it wasn't yet broken, but by using determination and persistence and not giving up, Ken managed to break down the wall to enter his chosen career.

Ken started with basically very little and ended with a highly regarded company, K.K. Wong and Associates, with 58 years of providing surveys in Vancouver and the Lower Mainland. Ken's nephew and his brother Edmund's son, Steve, is also a British Columbia Land Surveyor and has now taken over control of the business and is providing the same traditional approach that Ken and his brother, Edmund, had instituted. The legacy continues!

Ken, may you have eternal peace knowing that you have achieved much more than you hoped for. You will be forever missed and never forgotten.

Ken was predeceased by his siblings: Joe, Kang, Ping, and Edmund and is survived by his siblings: George, May, Moy, Dorothy, Raymond, and Penny as well as two sisters-in-law, Trixie and Sieu Lan. Ken also had numerous nieces and nephews left to mourn him, including his nephew Steve Wong, BCLS #942, who as noted above has taken over running the family business.

Ken Wong's Memorial Addendum:

The following stories are ones that Ken's brother, George, wanted to tell at the service, but didn't have them with him. These are virtually exactly as George had written them and they add some insight into Ken's personal life.

When Ken was vacationing in Mexico, he was curious about how the property boundaries were maintained due to seismic activities. The authorities involved would not answer his question, so he went to the Canadian Consulate to ask if they could assist him. They told him the Mexicans may put him in a Mexican jail with other criminals as they might think he was stealing State secrets. Ken realized being free was better than being in jail so he backed off.

While vacationing in Hawaii, Ken found the weather was too hot. So after two days, he returned to Vancouver where generally the climate was more moderate.

I (George) always enjoyed the annual office Christmas parties as Ken invited his siblings' families, relatives, and close friends to share the festivities. For many years, to maintain the Christmas spirit, he bought live turkeys and had

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them cooked and then carved and served at the restaurant in addition to the ten-course Chinese meal. However, one year he felt that the restaurant was not serving all of the turkey parts so he discontinued having turkey in future parties.

One of Ken's hobbies was takes group pictures with his 35 mm camera attached to a tripod. During the year, there were a number of special occasions like birthdays, anniversaries, and marriages to celebrate. To get the best position for the picture, Ken sometimes even jostled with the 'official' photographer.

Ken always kept in touch with our relatives. When we toured Europe, we visited our relatives in Dover, England (famous for fillet of sole) and in Dublin, Ireland. The advantage of visiting relatives was they took you to their favourite restaurants as well as tourist sites that one may not be aware of.

In 1945, I was "slinging hash" (waiter) working behind the counter. Wages were $35 a week and all the food you could eat. It was a working class restaurant. Mid-afternoons were generally very quiet. So on hot days, I made myself a banana split (two scoops of ice cream laid on top of a ripe banana with chocolate syrup, powdered nuts topped with maraschino cherries). After several banana splits, I noticed that I was having digestive problems. So, I did not eat bananas from 1945 to 1996. When I retired, I stayed in Ken's house for a couple of months. He enjoyed his bananas every day and he generously offered a banana to me, but knowing the consequences, I declined his offer. However, I finally broke down and took a banana and surprise, no effect on my digestive system. I now enjoy a banana every day. An article in the newspaper indicated in the rural parts of India, where access to doctors were limited, parents gave very ripe bananas to counter the effect of diarrhea in their children. The constipation effect of very ripe bananas neutralizes the effect of diarrhea. Banana splits were not in great demand in the restaurant and therefore bananas were kept in a refrigerator shelf behind the counter causing very ripe bananas for my banana splits. My mantra now is "One bad apple does not make the whole basket of apples bad".

Thanks to Ken's persistence, he penetrated my 51 years of mental block. Just like the iron wall of prejudices in 1947 - what a powerful tool he unknowingly possessed!

Robert Allen's Personal Observations:

I had run across a number of Ken's plans for work he had done on the Sunshine Coast and I always knew who he was but we didn't really run in the same circles until about 1988 when we were both at an annual meeting of the Canadian Institute of Geomatics in Winnipeg. In those day, Ken always had his camera in hand and was taking numerous photos including one that he took of me that he later gave to me. It is still in my photo collection. From then on, Ken and I had a great relationship. Perhaps, in his mind, he was acting like a father figure. He often asked how my business was going and if I was having trouble trying to sort the old surveys and work in the thick brush on the Sunshine Coast.

Ken could be seen at almost all the Lower Mainland Group meetings, even long after he had retired. It didn't matter where the meeting was, Ken could always find his way there using public transit, something that amazed me. In those days, he would often ask me for a ride home because I was generally going in his direction. If I couldn't take him, I would always find someone to give him a lift.

In later years, he would call Bill Chapman to give him a ride to the Lower Mainland Group meetings or the OIP lunches. As Bill and I often travelled together to those meetings, we would pick him up and take him home. He always had some magazines that he subscribed to and he would save them for Bill and myself. I took the hunting and fishing ones and Bill took ones on architecture, gardening, etc. Ken was always very thoughtful in that way.

Ken would come to the OIP lunches with about 20 copies of multi pages of health-related issues and he would hand them out to everyone making us promise to read them. He lived to be 90, so he must have followed some of what he gave us.

Ken was involved in a gold mine in the East Kootenay near Jaffray and he often talked to Bill and me about it. The potential for a mine was there and Ken had reams of paper to prove it. All it needed was a few more investors to get it into production.

One of Ken's signature poses at any meeting was to have his head down on the table. I don't know if his eyes were open or whether he was sleeping but I'm sure his ears were always open.

Bill Chapman and I travelled to and from Fort Steele together in early July for the annual work party at McVittie House and Land Surveying Office. The grand opening was on July 11th and we figured if we left at about 3:00 pm we could get far enough west to spend the night and then get up

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early enough the next morning to make the funeral service on the 12th. We took the northern route through Golden, Revelstoke, Kamloops and then to Logan Lake where we could stay at my place there. We were guaranteed beds at least whereas we might not have found them if we had returned via Highway 3. The northern route was about an hour longer, but by taking turns driving, it wasn't a problem. We got in about 10:00 pm and we were on the road again about 6:00 am and we made it to Ken's service. If it was someone else's service, I don't know if we would have made the effort, but I'm going to say we probably would have. There were a large number of land surveyors in attendance and Bill said some words on behalf of our Association. It was an open casket service and Bill made mention of all of Ken's 'medals' on his chest. All of his land surveying pins were neatly attached to his suit and to me that showed the admiration and respect that Ken (and his family) had for our chosen profession. Ken was laid to rest in the early afternoon of July 12th in the City of North Vancouver Cemetery, located on Lillooet Road above Capilano University.

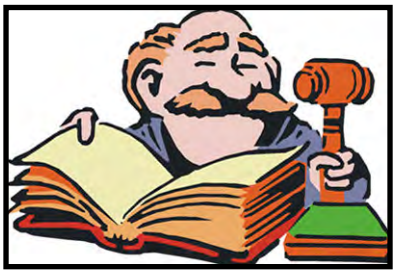
Kenneth Kew Wong, May 5th, 1925 - June 21st, 2015. May you rest in peace our old friend and colleague and I hope one day that you will be able to look down on your gold mine that you so often talked about and see it in production.

Legal Issues

Section 59.1 of the Land Surveyors Act

By Richard Redfern, BCLS

Section 59.1 of the Land Surveyors Act reads as follows: A practising land surveyor engaged in the practice of land surveying, or a person performing, for a practising land surveyor, duties in relation to the practice of land surveying, must be permitted to pass over any land without hindrance from any person.



In general terms, I have always understood that land surveyors need the right to enter onto lands in order to search for and locate survey posts. If we were not given unfettered access, then our ability to complete surveys properly would be significantly eroded, and the cadastre would suffer. Prior to July of 2014, every land owner that I had requested permission from to enter their lands for the purpose of carrying out a legal survey had agreed. More often than not they viewed it as an opportunity to find out where their property corners were.

So while I understood the concept that we should have unlimited access, and was familiar with the wording of Section 59.1, I had not been involved in any practical examples of using 59.1 to gain access against the wishes of a land owner.

Here is a summary of the events that led up to a land owner refusing to allow me access to his property and my reasons for supporting his refusal.

In early 2014, we were retained by a client (Client) to prepare a Reference Plan for easement purposes across an adjacent property (Owner).

The easement was to contain a water line and a pump station.

The Client's lawyer (Lawyer) was preparing the easement document.

The Client provided us with information on the proposed width of the easement and the intended location of the pump station based on his discussions with the Owner.

The intended water line location was staked across the Owner's property by the construction company.

The Lawyer asked us to provide him with a sketch of what the final easement was intended to look like.

We went into the field, surveyed the boundaries of the Owner's property, located the water line stakes, prepared a preliminary plan showing the easement as per the information provided by Client, and provided the plan to the Lawyer.

The Client then called to say that the water line and pump house were now constructed and that we could go back into the field to post the easement boundaries and prepare the Reference Plan.

Our crew arrived at the Owner's property and was told by the Owner that he did not want us to go onto his property to complete the survey because the water line and

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pump station were not constructed in accordance with his understanding of the agreement with respect to the size and location of the pump station.

We notified the Client and the Lawyer that the Owner would not give us permission to enter onto his property to complete the survey.

The Lawyer then contacted us and asked if we could rely on Section 59.1 of the Land Surveyors Act to access the Owner's property to complete the survey. I said no. We discussed my reasons, and he agreed.

The Lawyer then attempted to register the easement based on the preliminary plan that we prepared earlier, but the Registrar refused to accept the application.

The Client then attempted to sue both the Owner and the Registrar (as represented by the Attorney General of BC) to force registration of the easement, and as part of his submission, the Lawyer asked me to sign an affidavit explaining why, in my opinion, Section 59.1 did not apply in this instance.

I agreed and while there were also other details regarding my qualifications and who said what to whom at various points during the project, the crux of the affidavit contained the following comments regarding Section 59.1.

1. It is my opinion that the intent of section 59.1 of the Act is to give land surveyors the authority to enter onto land in order to properly conduct a survey that is being carried out on adjacent or nearby lands. British Columbia's system of land registration, namely the Torrens system, would be paralyzed if land surveyors did not generally have free and unimpeded access to survey posts that may be required during the course of their surveys to re-establish the existing framework of property boundaries.

2. However, I am also of the opinion that the authority given to land surveyors under section 59.1 of the Act does not extend to circumstances where one party in a dispute is under the belief that survey work carried out on their property and against their will may have an adverse effect on their rights. I understand that the owners of the Servient Property have the foregoing belief.

3. Access to the Servient Property is not required in order to re-establish the framework of property boundaries in the vicinity of that property. That process has been carried out. The purpose of the additional work would be to set survey posts at the extent of the land on the Servient Property that the petitioner wishes to obtain rights over. Without consent from the registered owners of the Servient Property, or a court order, I am of the opinion that it is inappropriate to attempt to enter onto the Servient Property to conduct this additional work.

4. Without permission from a court or clarification from a court regarding the ambit of section 59.1 of the Act, we will not complete the survey of the Servient Property as requested by the petitioner to set survey posts on the Servient Property.

As happens many times in disputes, the parties eventually came to a resolution and my opinion regarding the application of Section 59.1 was not tested in court.

In the interest of creating a dialogue around the interpretation of Section 59.1 and to help land surveyors seek a consensus on its meaning, I would be interested to hear from other land surveyors who either support or disagree with my opinion. If you have some thoughts, please consider writing a letter to the Link and sharing them with the membership.

Where the Roads Have no Name

By Geoff Manaugh (The New Yorker Publication)

Submitted by Warren Barnard, BCLS

Over decades and centuries, Vermont has become filigreed with rural pathways that hardly anyone, but the law can see. Norman Arsenault, a seventy-four-year-old retired forester, has turned discovering them into something of an art form.

Sooner or later, every road comes to an end - but not in Vermont. In other states, a road that goes unused for a reasonable period of time is legally discontinued; in Vermont, any road that was ever officially entered into a town's record books remains legally recognized, indefinitely. It doesn't matter if the road has not been travelled in two hundred years, or if it was never travelled at all, or if it was merely surveyed and never actually built. Any ancient road

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that exists on paper - unless it has been explicitly discontinued - is considered a public highway in the eye of the law.

As a result, over decades and centuries, Vermont has become filigreed with rural roads and pathways that hardly anyone, but the law, can see. In 2003, a couple in the town of Chittenden was denied permission to build an extension onto their home when an independent researcher, hired by the town, discovered an ancient mail route passing right through their property. In the tiny hamlet of Granville, a survey revealed a long-lost, invisible throughway passing through the wooded front yard of a mountain home; a pending lawsuit may open the road to traffic from timber-company trucks. In 2006, prompted by a groundswell of complaints from Vermonters unable to obtain title insurance for their properties or to keep snowmobilers out of their flowerbeds, the state government passed Act 178, which aimed to brush away the infrastructural cobwebs. The act gave the towns until February of 2010 to identify and map any potential ancient roads within their borders; these would then be reviewed by the state and added to Vermont's official highway map over the next five years. Any ancient road not added to the state map by July 1st, 2015, would be considered discontinued.

Photograph Courtesy of Geoff Manaugh

The Act's passage inspired a kind of statewide archive fever. Interested citizens, outdoors enthusiasts, industrial forestry advocates, and concerned homeowners began visiting town-records offices and poring through vaults, shelves, and filing cabinets stuffed with yellowing and re-bound handwritten notes, property transfers, mortgage deeds, and step-by-step narrations of particular routes across the landscape dating back as far as the seventeen-nineties. In a few cases, the ancient road under review actually predated Vermont's statehood.

Norman Arseneault took to the project of road rediscovery with the zeal of a convert - or, perhaps more accurately, with the enthusiasm of a retiree looking for something to do with his not inconsiderable reserves of energy. Arseneault, who is seventy-four and a sturdy five-feet-six, lives in Granville, about an hour south of Montpelier in a broad valley where the White and Mad Rivers unravel into a tangle of brooks and streams. His obsessive search for Vermont's lost byways has resulted in a self-published book, "A History of Granville Roads," which is due out later.

I met Arseneault on the morning after the solstice, in Granville's town hall. He was there with Kathy Werner, the town clerk; they had laid out several charts documenting the region's mountainous lot lines and a stack of old books from the town vault. Arseneault had turned the rediscovery of ancient roads into something of an art form, reading back through forty-two volumes of Granville land transactions

One of Norman Arsenault's many annotated topographical maps shows a segment of an ancient road.
Photograph Courtesy of Geoff Manaugh

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and property deeds, deciphering ornate handwriting, and then using those clues to figure out where, in the heavily forested landscape, the lost connections between long abandoned farmsteads and renamed villages might lie.

Finding even a seemingly well-documented stretch of ancient roadway involved "interviewing old-timers in the area," Arseneault said. "It included searching all the records. It included going out in the field, once we found a survey - and it was quite a mystery, in a lot of surveys, as to where the roads were. There were no road numbers; there were no road names. It was just bearings and distances."

Several of the roads that older townspeople confidently remembered taking seventy or eighty years ago simply could not be found either on the ground or in the town records. It was as much anthropological fieldwork as it was land surveying, sometimes more myth than geography. Arsenault flipped to a few pages in Granville's first town survey book to convey the difficulty involved in interpreting these old coördinates. Roads were described as commencing at stumps, or "beginning on the old road near a maple tree." They turned at unidentified bends in unidentified rivers and streams. The entire survey for a route that Arseneault still can't locate - he thinks it might be a lost bridge - describes "a road across the river, beginning in the middle of the road from the Burnham farm to the river on the southerly bank of said river, thence north twenty-one east six rods to the road on the opposite side of the river." There are ancient roads intersecting with other ancient roads that themselves can't be located. There are labyrinths atop labyrinths.

Arseneault had spent his career working for the U.S. Forest Service in Oregon, California, Colorado, and many other states, and it was clear that he would rather be having this conversation outdoors. "I'm a professional forester," he said. "I'm interested in surveying and finding things in the woods. The old roads lead to beautiful old foundations, abandoned farms, apple orchards, chimneys standing with nothing else around them." We hopped into his truck and drove several miles out into the forest along the meandering Patterson Brook Road, where we eventually pulled over and parked.

Arseneault led the way on foot into the trees, pushing through heavy branches and underbrush. As we slipped down rain-slick slopes and squelched through thick grass, it was hard not to feel as though we were effectively lost in the forest. To Arseneault, however, we were walking down old streets and property lines belonging to a long-forgotten part of town, one still filled with memories of the people who lived there long ago. At one point, we found a corroded wheel rim leaning against some trees; at another, we pushed aside some fast-growing plants and found ourselves looking down into a nineteenth-century foundation pit. These routes - not despite but precisely because they are so difficult to find - deserved to be preserved and given names, even plaques and signage, Arseneault said: "We already protect historic buildings. These are just as valuable."

About an hour into our hike, Arseneault stopped to consult a three-ring binder that he had been carrying; it was bursting with heavily annotated maps of the invisible roads around us, each page covered with adhesive tags, mud stains, and stripes of Wite-Out. It was now just past noon, and we were both beginning to sweat in the rising humidity. Arseneault pointed over his shoulder at a withered apple tree otherwise hidden in a thicket on the southeastern edge of the road.

"This used to be an orchard," he said. I looked farther into the woods and began to see unkempt apple trees everywhere around us, extending back into the forest out of sight. The geometry of an abandoned farm gradually became visible, with a half-collapsed stone wall snaking

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downhill and camouflaged by the underbrush. The property had been uninhabited probably since the eighteen-forties, Arseneault said; the old roads that led to it were now faded and overgrown.

Johnathan Croft, a G.I.S. specialist with the Vermont Agency of Transportation's Mapping Section, told me that Arseneault had set something of a standard for rediscovering the state's ancient roads. Croft and his mapping team, working in Montpelier, have been given the unenviable task of reconciling hand-gathered descriptions of ancient roads and combining them with the state's official highway map. Some of the most important clues have come from an unexpected source, an airborne LiDAR survey commissioned in 2011 to assess storm damage from Hurricane Irene. LiDAR is a form of radar that can see through vegetation to map the topography underneath in astonishing detail. Croft pulled the LiDAR model up on his computer model to show me. There were outlines of limekilns hidden in the trees, old quarrying sites, and capillary-like whorls of trails and ancient roads that even the most eagle-eyed hiker would be hard-pressed to detect.

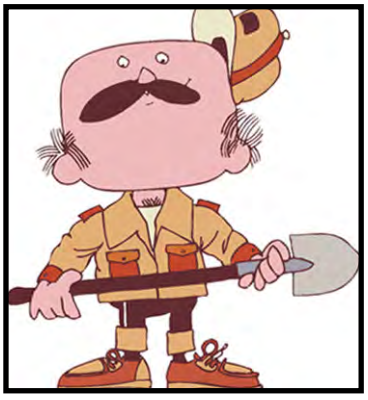
According to Act 178, one factor in how an ancient road is added to the state map is "whether clearly observable physical evidence exists." The advent of new visualization technologies such as LiDAR promises to give new meaning to the phrase. The Act was written with the aim of putting history, or at least some of history, finally to rest, but it might well have the opposite effect, breathing life into roads that perhaps even Arseneault could not have discovered. July 1st will come and go, but the disputes engendered by Vermont's ancient roads are nowhere close to ending. "There's a certain element of clarity," Croft said with a laugh. "But there's some murk still in the process."

Survey Techniques

Timber Surveys in the Kinbasket Public Sustained Yield Unit

By Nick Raeside

In the spring of 1977 I stopped working as a surveyor's chainman and joined International Forest Fire Systems, a company that supplied contract fire-fighting crews for attacking remote access fires in the forests of BC. The crews would be flown to these fires by helicopter and rappel to the ground through an opening in the timber from the hovering aircraft. (This delivery method was subsequently taken over by the BC Forest Service and is now called Rapattack).



By the beginning of June I'd completed the required training courses and was assigned to a crew that was sent to Golden BC, where we would be working under the direction of Evans Products. This company had extensive forest harvesting operations within the Kinbasket Public Sustained Yield Unit, a form of timber tenure that existed at the time these events took place. They were replaced by Timber Sale Areas shortly afterwards, and the Kinbasket PSYU became the Golden TSA.

Ironically I'd been selected for the Golden crew because of my surveying experience. Presumably they hadn't contacted former employers for a character reference. We were told that our crew would be involved in timber cruising operations when we weren't fighting wildfires, which was somewhat unexpected as my only prior experiences with trees were limited to climbing them or chopping them down with an axe.

As a compassman my job was to walk ahead of the timber cruiser on a designated bearing with the lead end of the plastic measuring chain attached to my belt. This meant that I'd be the first to get to any patch of ripe huckleberries that happened to be growing in our path. The down side was that I also got to find underground hornet nests first, but if I was quick on my feet I could get the insects stirred up then let the guy following take the blame. I wasn't the most popular compassman for my habit of never deviating from the compass bearing, no matter what was in the way. If a cliff was ahead of us I'd go straight up it rather than do an offset bearing, much to the annoyance of the man on the tail end of the chain who'd have to follow behind and dodge any loose rocks I might have dislodged while climbing. I'd make a beeline through swamps also, indifferent to the squelching and swearing sounds that would inevitably follow in my wake.

The first timber cruising project we worked on was near Tsar Creek which flows into Kinbasket Lake. The crews were flown in by helicopter and stayed in a tent camp

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Creek Crossing

Valley View

(known as a 'fly camp', probably after the mosquitoes that greeted our arrival). There was a full-time cook in camp who would keep us well fed. A pair of trail bikes was flown in along with all the other gear in order that two crews could drive back and forth along the few miles of the old Big Bend Highway that hadn't been inundated by the Mica Dam. The bikes saved a fair bit of walking as we could motor to the start of our hike up the mountainside each morning and travel back in relative comfort at the end of the day. It worked well until the cruiser sitting on the back of the bike I was driving inadvertently let the blade of the axe he was holding rub against the tire. There was a sudden bang and we ended up pushing the motorbike for the remaining distance back to camp. That wasn't the only catastrophe during that project, as one night the rain swelled the creek next to our camp and washed our beer supply down into the lake. Most of it was subsequently recovered but there may still be some lying in the mud at the bottom of the lake.

This timber survey was what's known as a production cruise, designed to give an accurate estimation of the amount of merchantable timber available within the boundaries of proposed cut blocks. Starting from the point of commencement (POC), sample plots were established every ten chains. As the timber cruiser stood at plot centre, writing up notes, I would get busy numbering the individual trees that would be tallied with a can of red or orange spray paint. Those trees also received a horizontal line exactly 4.5 feet above the ground, a point known as 'breast height'. I would measure each tree diameter at breast height (dbh) so that the cruiser could make a note of its vital statistics and any defects that it might have such as conks, crooks, sweep forks, frost cracks, mistletoe or root rot . Tree heights were measured by sighting the top with a Suunto clinometer from a measured distance uphill. This could be challenging in dense undergrowth as it was easy to lose sight of an individual tree top while fighting your way backwards through buckbrush and devil's club. (The name Oplopanax horridus for the latter plant is most appropriate. Digging out its diabolical spines became a regular evening event for those who'd been in the thick of it).

I never quite understood the mysteries of statistical sampling and was happy to leave this to the cruiser. He would peer at each tree in the plot through an optical device known as a basal area factor (BAF) wedge prism, which in actuality was a piece of ground glass cemented inside a short length of black plastic pipe. I would get to use this instrument at every plot as I had to confirm his tree tally. When a tree stem was viewed through the device, the prism would cause an apparent displacement, and the tree would only be included in the tally if this offset still touched the rest of the stem image. Tree height and diameter measurements had to be taken accurately enough to satisfy the BC Forest Service, who would be following in our footsteps at a later date to perform a check cruise to verify our results. Discrepancies in measurements could bring ignominy upon the head of the compassman responsible for the error. If it was discovered that one or more trees within a plot had been missed completely, the cruiser would be held responsible and receive the verbal equivalent of a keel-hauling.

The other type of timber survey I was involved in was the reconnaissance (recce) cruise. This was designed to give an estimate of the amount of merchantable timber available in an area that might be worth logging. It would require less measurement work in each survey plot and wouldn't need to be checked by the Forest Service. I participated on a few of these that were carried out in side valleys adjacent to Kinbasket Lake during the following two summers and

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got to see the western side of the Rocky Mountains with its winged insect life up close. The crews would be flown in by helicopter along with tents, camping gear and enough food to last for several days. We were allowed to shop for our food and, as the company was footing the bill, we'd throw in a few extra delicacies such as canned lobster and canned strawberries along with the biggest steaks the supermarket could provide.

One recce cruise in a side-drainage of the Sullivan was especially challenging because, for some reason, I was required to pace the distance as I followed the bearing. Pacing on flat open ground is easy, but inaccuracy increases sharply as the terrain becomes steep. It gets even worse when dense undergrowth and creeks are encountered, particularly when you fall off the log you're balancing on while crossing a creek. After fishing yourself out and climbing back on the log you have to remember what the pace count was at the moment you fell off. I ended up pacing a total distance of well over three miles uphill and down as well as falling into a couple of creeks. I needn't have worried about accuracy as it turned out, as it seems my cruiser had misread the scale of the map he'd been using.

About this time, the country switched over to the metric system of measurement. This posed a slight problem as we now had to pace in metres instead of yards. One solution might have been to wear boots several sizes too large in order to compensate, but fortunately we were issued Topofil hip chains for use on recce cruises, which made life much easier. There were drawbacks with Topofils; however, as the string would break from time to time and accuracy fell off when descending steep slopes too quickly.

We were one of several cruising crews that had been flown by helicopter into various parts of the upper Sullivan River drainage. It seems my cruiser and I had drawn the short straw, as we had the longest distance to go to reach our camp location. The cruising supervisor had arranged for our gear to be dropped off at a camp site some miles down the valley and we heard on our handheld radio that all would be ready for us on a rockslide, which apparently was the only suitable location. At the end of the day's cruising we found that we were still about a mile upstream of the slide and on reaching it, we had to climb straight uphill to find our gear, which was piled in a heap. It was late in the day by the time we'd moved enough rocks to set up the tent, and a helpful radio call from another crew advised us that a severe thunderstorm was headed our way. The intense lightning that arrived soon afterwards fortunately didn't zero in on the aluminium tent poles in our rain-soaked tent. As the nearest source of drinking water was several hundred yards away in the middle of thick slide alder we'd set up our only saucepan beside the tent to be filled by the rain overnight. Unfortunately this water supply was lost sometime during the night when I crawled out of the tent to take a leak and knocked it over.

Most of us enjoyed our time in the fly camps, as we were being paid to be in some really spectacular Rocky Mountain settings. There was one individual who didn't quite fit in, however, as he seemed much too fastidious to be a timber cruiser. We realized this when he insisted on purchasing dish washing liquid and a draining rack for washing up the utensils after each meal. The rest of us would simply scour the pots and plates with silt scooped out of the riverbed, and we regarded him as a cleanliness freak. Our suspicions were confirmed when he was spotted washing his face at the river's edge one morning, with a sponge bag placed on the ground beside him. It came as no surprise to anyone when later in the season his head came into contact with his cruising partner's clenched fist after a heated discussion.

By some mischance I was appointed cook when there were several two-man recce crews working out of one fly camp up the Sullivan River. I did my best to clean up my culinary act, but the food I produced was pretty horrible. The others were very nice about it and didn't throw me into the river, but from that point on it was decided that I'd never be allowed to cook for them ever again. Perhaps the fact that I didn't change the grease in the frying pan had something to do with it, as everything came out the same colour. Greasy gray leathery fried eggs first thing in the morning weren't to everyone's taste it seemed.

At the end of the first day of this recce one unfortunate cruiser and his compassman had to be towed across the river, as the water had risen to the point where it was too deep and swift to wade. Those of us on the camp side managed to get a rope across so that we could pull them over one at a time through the ice-cold water. It was a bit like hauling in a couple of very large fish, except fish don't use that kind of language once you've got them out on the bank.

After we'd finished in the Sullivan, the next timber survey project took place in the adjacent Kinbasket River valley. Travel to and from recce strips involved crossing the braided channels of this river which, while of lesser volume than the Sullivan, was equally cold. As the water would often be chest-deep, it was necessary to carry your clothes and boots in a bundle over your head while wading across. Due to the suspended rock flour in the glacial meltwater

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it wasn't always possible to ascertain depth, but I always assumed still waters ran deep and preferred to avoid same. Unfortunately the cruiser I was paired with didn't heed this adage, and one day he attempted to cross a dubious looking side channel despite my warning. I was soon treated to the sight of him bobbing off downstream with only his fingers visible as they clutched the soaked bundle on his head...

We were issued pocket flare launchers along with a supply of flares. The red flares were supposed to be used for attracting the attention of a helicopter pilot if he was unable to spot us on the ground. The object was to have the flare pass close by the helicopter without actually hitting it. The other type was 'bear flares', which were designed to explode with a loud bang in order to scare off unfriendly bruins. They weren't much of a deterrent, as I discovered when testing one on a pair of grizzlies near Mica Creek. One ran a few feet then stopped, but the other refused to move. They were more effective on humans and whenever two crews were camped on opposite sides of a river the first to get up in the morning would fire a bear flare at the other camp as a wake-up call.

It seemed we went through a lot of flares during the field season, particularly if there'd been a flare battle between crews. It did get a little out of hand when we were cruising up the Wood River. Individual crews had been dropped off by boat and were being picked up again at the end of the day. As the boat came close to where one crew was waiting they fired a red flare directly at us. It passed just above the boat, so naturally we returned fire, switching to bear flares when we ran out of the red ones. As the battle heated up, we suddenly realized there were several five-gallon jerry cans of gasoline sitting on the exposed deck, all leaking fumes. It might have been interesting if a flare had landed amongst them.

One of the cruisers had a bad habit of carrying his flare launcher in a pocket of his field vest, loaded for bears and cocked ready to fire. I'd warned him that it could go off if it got snagged on a branch, but he didn't believe me. He changed his mind the day it did go off accidentally. The flare hit his ear and then angled off into the air before exploding, luckily for him. As this was the same individual who'd got out of his depth in the Kinbasket river channel, it was becoming apparent that my advice fell on deaf ears.

We spent some days staying in a tent pitched beside the Cummins River while carrying out a recce cruise in that valley, part of which is now in a Provincial Park. Why anyone would want to venture into the Cummins valley for recreational purposes is beyond me, as it's a mosquito-ridden hellhole with swampy ground and buck brush that made travel slow and unpleasant. We were there in September when the river was low enough to provide dry ground for pitching a tent, but when it rained during our stay we woke up one morning to find the water had risen to the point where the tent was surrounded. I always took dry kindling into the tent with me at night, along with my boots in case it rained, but this time it didn't help, as there wasn't even enough dry land to make a fire for cooking breakfast.

I did quite a lot of flying in helicopters as it was generally the fastest way of getting to where you needed to go in the mountainous terrain. It certainly made timber cruising a lot easier when you were set down on a landing spot above the tree line in the morning since from then on it was all downhill. Sometimes the landing spot would be a clearing in the forest just large enough to accommodate the helicopter's main rotor blades with a bit to spare and a log crib on the ground to provide the machine with a reasonably level place to set down. They weren't always constructed to a high standard, as we discovered when a helicopter got one of its 'bear paws' caught on a helipad crib log that hadn't been properly trimmed as he tried to lift off again. A bear paw is a piece of plywood attached to the helicopter skid that's designed to prevent it sinking when landing on soft ground or snow, a bit like a snowshoe.

Four of us were crouched down on either side of the crib, as there was nowhere else to go. The helispot clearing had been hacked out of the forest and the undergrowth was fairly dense. (It was always safer to stay right beside the helicopter after disembarking until it lifted off again, as moving elsewhere could be fatal. You could walk back into the tail rotor and lose an arm, or walk uphill and lose your head in the main rotor). The pilot increased power in an attempt to break free and I was interested to notice how the laminations of the bear paw plywood were separating under the strain. At this point he should have set back down and moved sideways, or perhaps shut down and looked to see what the problem was, but for some reason he kept trying to lift off. All this did was cause the machine to pivot to one side as it lifted unevenly and the main rotor blade started to get closer to the ground on the side I was on. There was nothing to do except hug the dirt and hope the pilot got unhooked before the blades struck the ground and the machine became a giant Cuisinart. Finally the bear paw broke free and he took off. I don't think the pilot enjoyed the experience any more than we did.

Other helicopter touch-downs were generally less hazardous, but toe-in landings still required care on the part

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of those getting out. The pilot would set the front of one skid on a convenient rock or other solid object and maintain hover as the passengers moved from their seats one at a time and climbed out. Quick movement was not appreciated by the pilot, who would be forced to make urgent compensating adjustment with the cyclic control.

Some of the recce cruising was done in the early spring when snow conditions were suitable for travelling through the timber. It was a good time to be out in the mountains as the rivers and swamps were frozen over and best of all, the mosquitoes and other blood-sucking insects were all in hibernation. The only downside was having to traverse across avalanche slide paths, particularly in the afternoons when the frozen snow crust had thawed and progress would be slow even with snowshoes. Our goal was to get out of these danger zones as quickly and quietly as possible, as even though the company had issued us with avalanche transmitters, we usually worked in isolated pairs and there was zero possibility of being dug out by another crew who might be miles away in the same valley should we get buried in a slide. Accordingly it was decided to leave these devices back in town where there was no chance of them being damaged.

I did get rescued on one occasion after falling into a deep snow-free hole under a spruce tree. My snowshoes had caught on something so that I was hanging upside down rather like a large bat. It was dark down the hole and the snow around it deadened the sound of my cursing and calls for assistance. I was eventually rescued when the others in our party noticed my absence and back-tracked to look for me.

Everyone made it out of the mountains intact that spring - eventually. One crew had the misfortune to be left stranded at the back end of Bachelor Creek in the Selkirk Mountains when our helicopter pilot forgot to pick them up at the end of the day. This omission wasn't discovered until we were sitting with the pilot in our favorite pub discussing the day's work when it dawned on him that two individuals were missing from our gathering. He left rather abruptly to go back and retrieve them before dark, and didn't even finish his beer, as I recall.

I helped out on silviculture regeneration surveys for a brief time, very brief in fact, as it seemed I didn't have the right temperament for the job. The survey involved the counting of little conifer seedlings which had sprouted naturally in areas that had been recently logged. It could be extremely tedious when there were a large number of them growing within the radius of the sample plots. The plots were divided into four quadrants and I seem to recall that there only needed to be a minimum of four seedlings in each quadrant for the plot to be considered fully stocked. It didn't take me long to decide that there was absolutely no point in counting anything over the minimum and so I started weeding out the surplus. As I was in the lead, dragging the plastic chain along on a compass bearing in order to establish the plots centres I'd have time to do this, so by the time the silviculture surveyor caught up with me there'd be uprooted seedlings strewn all around.

Nobody had ever done anything like this on a regeneration survey before, but as I pointed out, the procedure manual didn't specifically say you couldn't weed the plots. As long as they were technically stocked, why not make the job a lot easier? It actually did get a lot easier for me, as I wasn't asked to help with these tedious surveys again. However I did spend a week doing mountain pine beetle surveys near Castlegar at the end of the first fire season with IFFS. We only found one tree that showed visible evidence of pine beetle damage, but that was back in 1977 when the epidemic was just getting started. The little pests have chewed their way through a lot of BC forest since then.

I had no further involvement with beetles until several years later when I was invited to join a field trip with Evans and Forest Service staff to see what could be done to halt mountain pine beetle spread in the Golden Forest District. The key attendee was a forest pathologist from the FS and I'd been included because I had a blasting licence. The pathologist had an idea that it might be feasible to wrap detonating cord around the trunks of infested pine trees and kill any beetles living under the bark with the resulting explosion. This seemed to be a rather drastic treatment, as it would have killed the trees along with the bugs. Not surprisingly the proposal was rejected after a very brief discussion.

In 1980 I was put in charge of woodlands fire protection for Evans Products and had no further involvement in timber surveys. This might have come as a relief for those unfortunate individuals who'd been forced to wade behind me through the swamps …

English Proverbs & Sayings

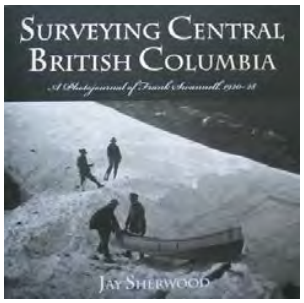
A cat has nine lives ... (1) Cats can survive many accidents because they land on their feet without injury. (2) Nine lives = 3 years to play, 3 years to stray, 3 years to stay.

FINANCIAL CONTRIBUTIONS TO THE BC LAND SURVEYORS FOUNDATION

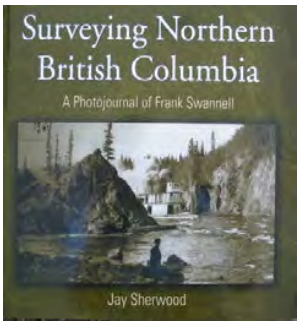
The two primary objectives of the BC Land Surveyors Foundation are to:

- create and maintain a library that houses historical and current reference material related to the surveying industry in British Columbia; and
- financially assist students who wish to pursue careers in surveying by providing scholarships and bursaries.

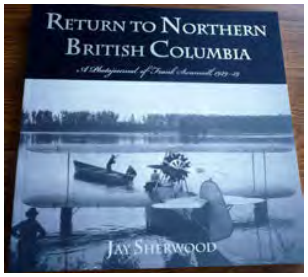
The Foundation has a number of books for sale - consider purchasing them for members of your staff, local schools, or libraries. They will make a wonderful gift and at the same time, your contributions will help support the Foundation. The following books are available from the ABCLS office:



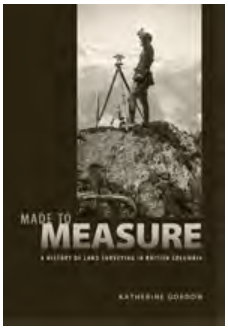
Surveying Central Canada
$42.00 (taxes included, shipping extra)
Author: Jay Sherwood



Surveying Northern British Columbia
$30.00 (taxes included, shipping extra)
Author: Jay Sherwood

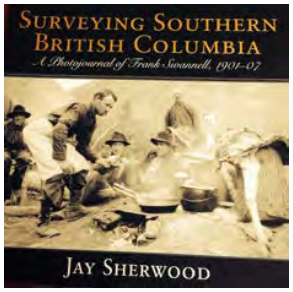


Return to Northern British Columbia
$42.00 (taxes included, shipping extra)
Author: Jay Sherwood



Made to Measure
$32.00 (taxes included, shipping extra)
Author: Katherine Gordon

Furrows in the Sky
The Adventures of Gerry Andrews
$21.00 (taxes included, shipping extra)
Author: Jay Sherwood



Surveying Southern British Columbia
$42.00 (taxes included, shipping extra)
Author: Jay Sherwood

Additional information on these books can be found on the Foundation/Books for Sale page of the ABCLS website.

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An Upset Cadastre: The Earthquakes That Distorted Canterbury, New Zealand

By Brad Cooper, LST, EIT, ANZIS

There were four significant earthquakes that shook the Canterbury, New Zealand region between the 4th of September 2010 and the 23rd of December 2011. The first earthquake resulted in a significant surface rupture forming what is now known as the Greendale Fault. The latter three were centred close to the City of Christchurch resulting in widespread damage and 185 human lives lost.

I moved to Christchurch, New Zealand in October 2014, having previously heard of the earthquakes on the news. I expected there to be various rebuilding projects underway, but nothing on this large of a scale. It had been almost four years since the most recent large earthquake and the infrastructure rebuild had not hit the halfway mark.

It turned out that I arrived in Christchurch at a very interesting time with regard to land tenure issues and land development. Licensed Cadastral Surveyors (LCS) had, and are continuing to have, difficulties redefining boundaries in this post-quake era. Much of the land around Christchurch suffered various degrees of deformation as a result of the earthquakes. The commonly used term is 'shallow surface movement' which is different than 'deep-seated movement' as a result of plate tectonic movement. Parts of New Zealand experience absolute movements of up to five centimetres per year due to deep-seated movement.

Multiple forms of survey rules and guidance have been created by Land Information New Zealand (LINZ). The main documents used to direct cadastral surveyors on matters of land movement and disturbed monuments are:

- Rules for Cadastral Survey (Canterbury Earthquake) 2010 - LINZS65001
- Guideline for Rules for Cadastral Survey (Canterbury Earthquake) 2010 - LINZG65702
- Rules for Cadastral Survey 2010 - LINZR65003
- Interim guide to the amended Rules for Cadastral Survey 2010 - LINZG65704

Some important definitions published in LINZR65003 are:

Block shift: … deep-seated movement that has consistent horizontal and/or vertical translation and rotation in a manner that maintains shape, but not necessarily position or orientation.

Deep-seated movement: … ground movement caused by the deformation of bedrock which may be sudden, or slow and imperceptible and excludes shallow movement that is limited to surface layers (e.g., flow caused by liquefaction of soils, slumping, or landslip).

Disturbed: … in relation to an old survey mark, means that the mark is in a position different from that originally placed and does not include a change of position due to deep-seated movement.

Ground movement: … means both deep-seated movement and/or shallow surface movement resulting from a natural event including landslip, earthquake, slumping, or surface flow.

Another definition from LINZS65001:

Shallow surface movement: … movement that is shallow and limited to surface layers, such as that caused by liquefaction of soils or landslip.

Shallow surface movement occurred all over the Christchurch. It was more pronounced near watercourses which were termed as areas of 'topographical weakness'. The 'red zone' is land that has been deemed unsuitable for supporting permanent dwellings. See the map for the section of the red zone surrounding the Avon River. Many surveyors are cautious when they receive a request for a survey near the red zone due to the increased amount of unreliable survey marks in the area. Typical horizontal deformations in these areas range from 0.1 metre to 0.5 metre and up to 1.0 metre in extreme cases. Significant vertical deformation from liquefaction also occurred, resulting in major flooding and drainage problems.

One of the major land surveying difficulties results from the guarantee of titles in New Zealand where, as in British Columbia, the Torrens Title System is used. The New Zealand land titles system interpret the word 'guaranteed' much differently than BC and guarantees the dimensions as stated on the registered title plan. They abide by the same hierarchy of survey evidence, but more weight is given to the title/plan dimensions rather than the wooden boundary pegs. (Yes they still place wooden boundary marks! I thought they were joking around with me when I first arrived). Current NZ re-establishment methods don't allow for pro rata best-fitting of boundaries for guaranteed title (lot) dimensions. It is like buying a puzzle piece of a guaranteed size that will never legally change. This results in many boundary issues when land surface deformation occurs. The puzzle pieces no longer fit together!

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Another difficulty arises from the fact that the highest weighted cadastral survey marks are non-boundary (witness/traverse) marks. They are usually offset parallel to boundaries or arbitrarily placed relative to the boundary vertices. Many times these non-boundary marks are in the roadway which can make mark searching exceedingly dangerous! These non-boundary marks are given higher weight than the boundary marks when resolving boundaries. The wooden peg boundary marks are easily disturbed because they are highly visible and usually protrude about 5-10 centimetres above the ground surface. Boundary pegs are often removed during fence construction and fences are abundant in New Zealand. This system of non-boundary and boundary marks works reasonably well (aside from the dangerous traffic issue) when there is no shallow surface deformation/movement. The deformation from the earthquakes resulted in twisting, turning and block shifts of the land. Error in a slightly disturbed non-boundary mark can potentially propagate into a greater error at the boundary mark location. Plan images (DP 60391), included with this article, are from the pre-Landonline era. Landonline is New Zealand's current online cadastral system. Plans DP 60391-S & DP 60391-T were included to illustrate the difference between non-boundary and boundary marks. Two separate plans are required for subdivisions. One plan is the 'survey plan' which shows the traverse marks and connections to the boundary vertices. The second plan is the 'title plan' which is very similar to a standard BC plan showing the dimensions along the boundaries. This information is all compiled into a Cadastral Survey Dataset (CSD) for submission through Land Information New Zealand's (LINZ) Landonline service. A simple two lot subdivision Landonline plan CSD normally ranges from 7-12 letter-sized pages. For example, a nine page CSD consists of a title page, three pages of 'mark and vector' information tables, one 'schedule/memorandum of easements' page, two pages of hand drawn occupation diagrams, one survey plan page and one title plan page. I have come across a 53 lot subdivision at 41 pages and a 122 lot subdivision coming in at a whopping 92 pages.

When asked about the concept of earthquakes and the corresponding disturbance of boundary marks, many cadastral surveyors bring up the concept of avulsion. Avulsion is commonly known as a rapid event of erosion or deposition caused by water (usually flooding). According to document LINZG65704, a sudden change of water boundary as a result of ground movement (other than distortion or block shift) is avulsion and must be dealt with in accordance with common law principles. In this case, avulsion is applied differently than what we would expect. Avulsion usually occurs when the water erodes/deposits on the land, not when the land moves relative to the water. Christchurch surveyors have been surveying to the best of their abilities and in similar manners to the pre-earthquake state of the cadastre. They have been dealing with the problems of guaranteed (fixed) title dimensions as well as dealing with complexities of non-uniform land deformation. There was a meeting on February 19th, 2015 notifying the Canterbury branch of LCSs of the Proposed guidance for surveyors locating boundaries in areas affected by shallow surface movement caused by the Canterbury earthquakes. There were many ground-breaking (excuse the pun) statements in this proposed guidance. In summary:

- Cadastral boundaries do not move with shallow surface movement.
- Marks affected by shallow surface movement are disturbed (i.e. earthquakes disturb monuments and boundaries do not move with earthquake caused land deformation).
- Boundary marks deemed disturbed are to be removed.
- Occupation affected by shallow surface movement is disturbed.
- Survey-accurate digital cadastre (SDC) coordinates supplied by LINZ can be used to define boundary points in disturbed areas (i.e. boundaries can be re-established by coordinates).

This was not well received by the LCSs as there were great concerns of additional liability upon the use of the SDC coordinates. There was also the concern about existing buildings with zero lot lines that may now be shown as encroaching on neighbouring land. This concern was due to the fact that original survey marks and occupation would be deemed disturbed and ignored in the boundary re-establishment. There was no consultation with LCSs prior to the release of this proposed guidance. It was a complete surprise when released at the meeting. A backlash ensued and the proposed guidance was rescinded.

The next step taken was to consult with all Canterbury LCSs to bring to light any concerns and/or potential solutions. A working group of LCSs was created and has been consulting with stakeholders across New Zealand to ensure the interests of every affected party are taken into account. The Office of the Surveyor-General within LINZ, the Minister for Land Information, and the NZ Institute of Surveyors (NZIS) are all involved. As a result, a bill has been drafted by the Minister called the Canterbury Property Boundaries and Related Matters Bill. Highlights of the proposed bill are:

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- Boundaries moved when land moved by Canterbury earthquakes (except landslip).
- Land surveys completed between the first major earthquake and the commencement of the Bill are validated if conducted in good faith and without negligence.
- Surveyors are absolved of liability from disagreements of future conflicting surveys with earthquake affected boundaries.

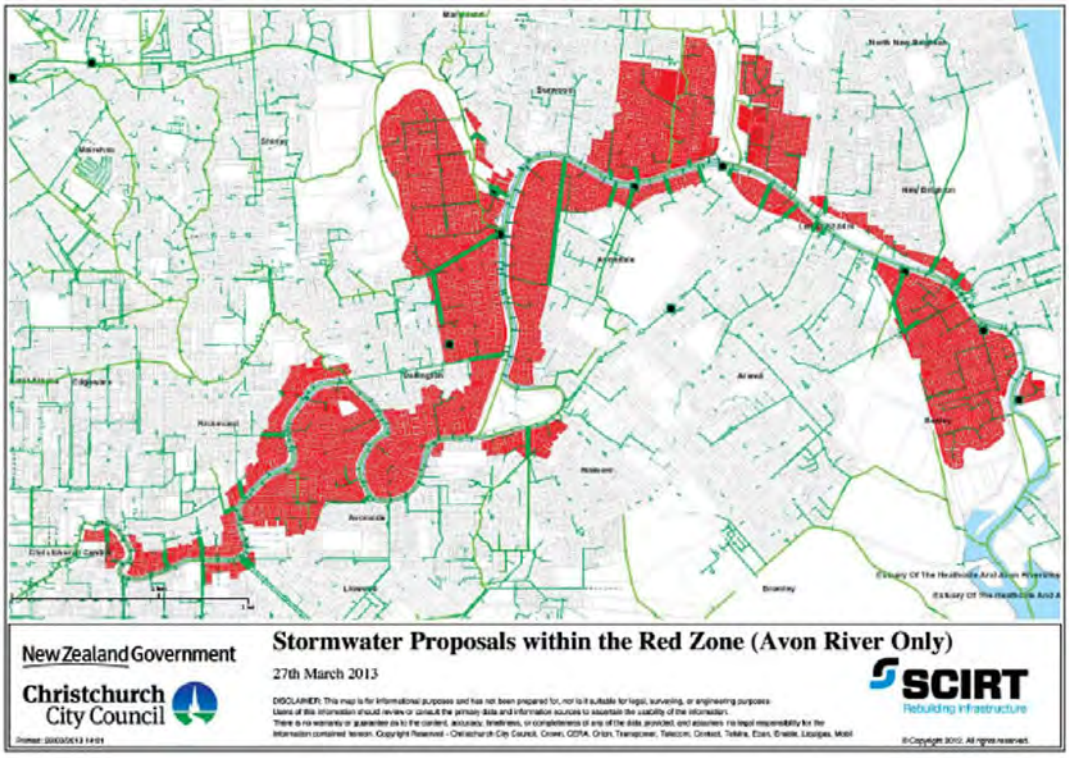
This bill has not been passed as of November 15th, 2015 but has had unanimous support at its first reading in NZ parliament.

BC's cadastral system is somewhat resilient to potential earthquakes due to the allowance of best-fitting (pro rata) and not having fixed boundary dimensions as in the New Zealand guaranteed titles. It is also beneficial that we place marks on boundaries and/or on projections of boundaries. In New Zealand, errors in arbitrarily placed non-boundary marks have the potential to propagate into larger errors at the boundary position(s).

I am hoping to get BC land surveyors thinking about these potential issues that may arise from an earthquake. Land is our most valuable resource and security of tenure gives land its value. Earthquakes have the potential to undermine the security of land tenure, the public confidence in the cadastre and also the surveyors who uphold it. I will leave you with some questions to ponder:

- What defines a disturbed monument? There hasn't been a significant earthquake in recent BC history and yet monuments are still found disturbed for unknown reasons. How do you define what is disturbed and what is not after an earthquake?
- Will BC Land Surveyors be ready to deal with the potential additional errors associated with earthquake caused land movement?
- Do boundaries move with shallow surface land deformation caused by earthquakes?
- Who will pay for the additional land surveys required to resolve boundary issues after an earthquake? Is this a case by case basis paid for by landowners? Do the government and/or insurance companies pay for resolution surveys?

These are the types of questions that have been discussed and argued about since the first significant Canterbury earthquake. I don't like seeing history repeat itself so this is why I am bringing this to your attention. I would be happy to hear any questions or comments as this is a matter of great interest to me. My personal email is bradleygcooper@gmail.com.



Red Zone Surrounding the Avon River

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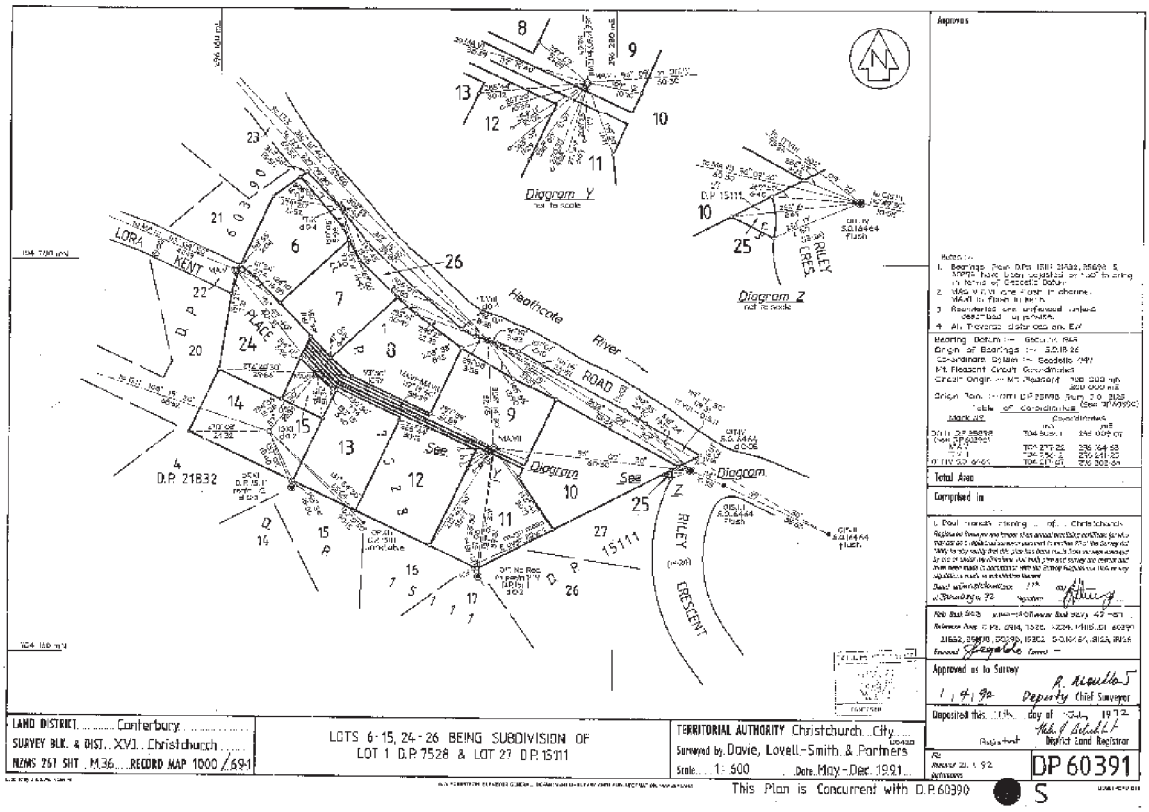
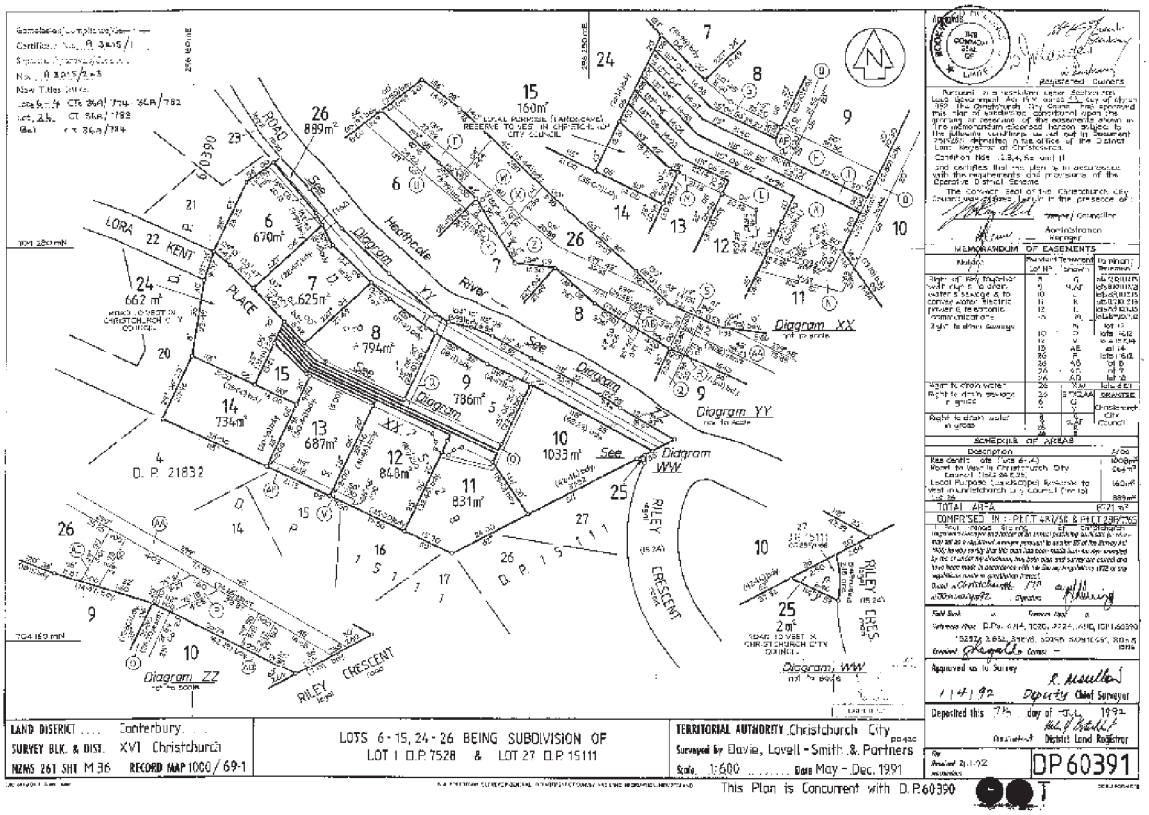


DP 60391 (Survey Plan)



DP 60391 (Title Plan)

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Aerial View of a Portion of the Greendale Fault

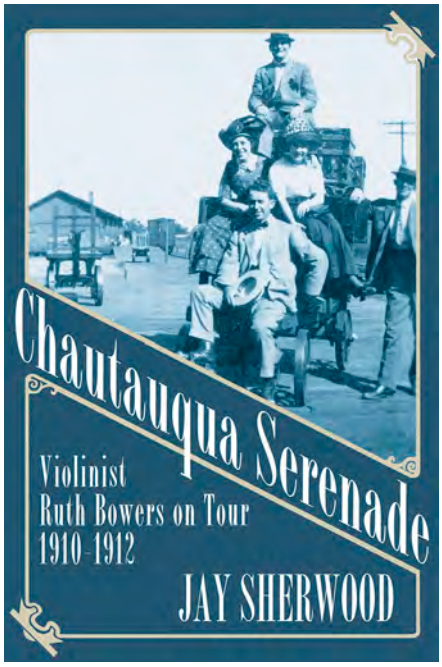
Book Review

Chautauqua Serenade ... Violinist Ruth Bowers on Tour 1910-1912.

Author: Jay Sherwood

Book Review by Robert Allen, BCLS (Life Member), CLS, Canadian Institute of Geomatics (Life Member)

When most of us hear the name, Jay Sherwood, we quickly think of the books he has done on British Columbia history and, in particular, about Frank Swannell or maybe Hart and Milligan or maybe the Bedeaux Expedition. See previous issues of *The Link* for book reviews on most of these books.



In Jay's latest book, published in mid-2015, he changes course and writes about his grandmother who was a very accomplished violinist in the very early 1900s. In those days, women were either housewives or went into traditional professional careers like nursing or teaching. His grandmother, Ruth Bowers, however chose to follow her musical career and joined the Chautauqua and lyceum tour circuits and performed mainly in the American mid-west. There were also performances on the American eastern seaboard and the Pacific North West, including stops in Nanaimo and Vancouver.

The book starts out with "*Its Chautauqua week* [July 17 to July 23, 1911] *in Forest City* [Iowa}, *the town's biggest event of the year. There will be over thirty programs from a variety of traveling performers who will provide education and entertainment.*" A Chautauqua did just that. It provided education and entertainment, and there was plenty of it!

Ms. Bowers sent postcards, letters, and sometimes photographs to her mother, her brother, and boyfriend on a near daily basis and those postcards, letters, and photographs are mostly extant. Jay was able to draw out a story from them and put it into an easy readable format that gives an excellent socioeconomic overview of that era. Some points of interest were Ms. Bowers' descriptions of the people they met, the various towns they visited, their travels from one town to the next, and the countryside in between. It is also interesting to note that in the first year, 1910, most in the audience either walked or rode horses and/or wagons to the performances while in her last year, only two years later in 1912, a lot of the audience

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arrived in cars. That was a substantial change in just that short time period.

In Jay's early youth he used to spend a week with his grandmother each summer and had the opportunity to go through the boxes and trunks in her attic and was fascinated by what he saw about her musical career. Much later in life, he decided to prepare this book for his own mother's ninetieth birthday and put into print all of this information for the first time.

Thank you, Jay, for another interesting history book.

Through an Unknown Country

The Jarvis-Hanington Winter Expedition through the Northern Rockies, 1874-1875

By Mike Murtha and Charles Helm

Book review by Robert Allen, BCLS (Life Member), CLS, Canadian Institute of Geomatics (Life Member)

Edward Worrell Jarvis and Charles Francis (Frank) Hanington were two surveyor/engineers under the employ of the Canadian Pacific Railway and were tasked with finding out if a suitable pass for a railroad went from the west side of the Rockies through to connect with the Smoky River on the east side of the Rockies. They were also to explore the country east of the Rockies and to make their way to Fort Garry (Winnipeg), their final destination. Hanington's journal entry of February 16th, 1875 says: "We are travelling **through an unknown country** without a guide and take things as they come". (The emphasis is mine.) That says it all, as well as providing the title for the book. Charles Francis (Frank) Hanington was a pioneer Land Surveyor in British Columbia and a member of the LS Group and there is a write-up about him in the Association of British Columbia Land Surveyor's book: *The L.S. Group, British Columbia's First Land Surveyors*.

They left Quesnelle (Quesnel) on December 9th, 1874 and finally arrived in Fort Garry (Winnipeg) on May 23rd, 1875. Their first part of their journey was to Fort George (Prince George) where they waited for more supplies, food, and additional help. They left there on January 14th, 1875 in extremely cold weather. Their first week out, the low temperatures ranged from -31° F to -53 ° F. They were directed to check out all possible routes up the north fork of the Fraser River which today is known as the McGregor River, named after Captain James Herrick McGregor, Provincial Land Surveyor #1, who lost his life during World War One. In further commemorating McGregor, Captain Creek flows into Herrick Creek just below James Creek which also flows into Herrick Creek. James Creek was named the "Bad River" by Sir Alexander Mackenzie as he travelled down it and Herrick Creek and the McGregor River on his push to the west coast of Canada in 1793. Jarvis and Hanington first scouted the north branch which is now Herrick Creek but nothing up that way proved feasible for a railroad and so they went back to the south branch of the McGregor River and followed it eastward.

Robert Allen Photo (September 30th, 2012)
Robert Allen on bridge over McGregor River (N 54° 13.116' W 121° 54.170')

Their journey was made extremely difficult due to extreme weather, snow, poor ice on the rivers, etc., but eventually they found a pass through the Rockies that is now known as Jarvis Pass. When they reached the height of land, they realized that a railroad would not be feasible through that route and they had the choice to carry on or return to Fort George. On February 23rd, Jarvis made the decision to carry on eastward at whatever cost. Hanington was pleased with that decision as he says in his journal: " … I'd sooner be found in the mountains than give up the ship."

Through great hardship, near starvation, loss of many of their dogs, but with some help from various indigenous peoples along the way, they first started down the Kakwa River and eventually made their way south to Jasper House,

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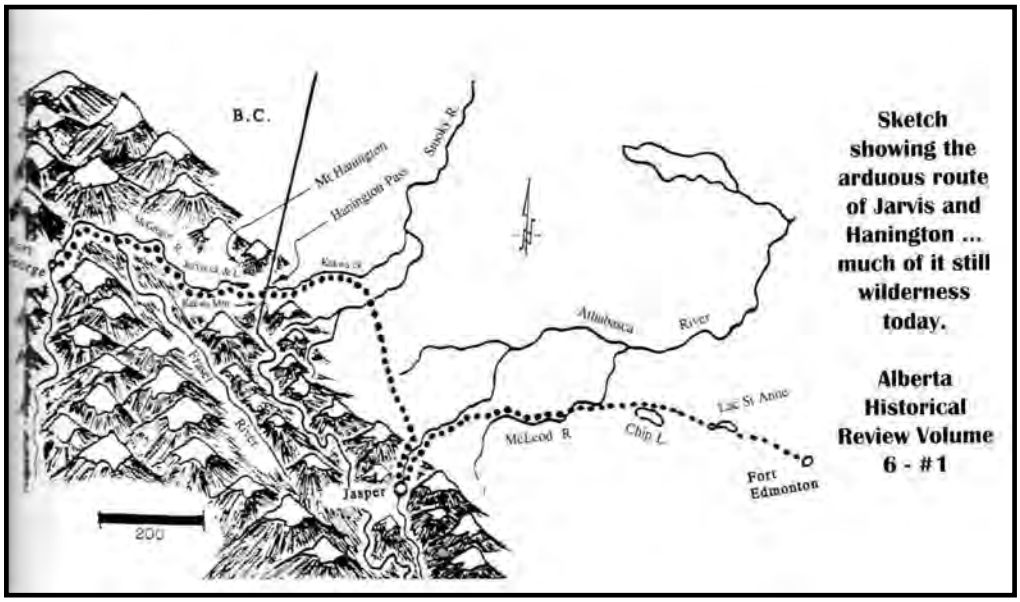
Charles Helm Photo
Kakwa Falls (N 54º 06.651' W 119º 55.705')
Located in Kakwa Wildland Park and reputed to be the highest waterfall in Alberta

and then east to Lac Ste, Anne, Fort Edmonton and finally on to Fort Garry where they arrived on May 23rd, 1875. They had travelled 3,000 km over 165 days with about half that distance on snow shoes. Their determination and commitment to the task under the most extreme conditions, even to the point of counting all their paces for an accurate survey, is a tribute to their personal dedication and also a reflection on the values and achievements of the pioneer surveyors who helped map this great country of ours.

The book reproduces Jarvis' Report and Narrative and Hanington's Journal in their entirety in Chapters 1 and 2 so that their incredible story can be told in their own words. These had been previously published in obscure government reports eleven years apart (1877 and 1888) and were known only to a few people. Jarvis' diary, as well as Hanington's Reminiscences, have never before been published and relevant sections from them are now published for the first time in Chapters 3 and 4. In Chapter 5, Murtha and Helm put the "Expedition in Perspective" and in Chapter 6, they put together the "Biographies" of the expedition members. There are eight appendices and some end notes, all of which add even more facts about this incredible arduous journey in the dead of winter.

The book is well laid out in an easy to read fashion and it further contains 52 maps and photographs, some old, some new, and some in colour. For those interested in winter travelling in extreme conditions or wanting to know more of the history and geography of this part of British Columbia and Alberta, this is a must-have book. Murtha and Helm, near the end of the book say: "Truly an epic. Jarvis and Hanington had written themselves into the annals of Canadian history as the leaders of one of the most remarkable expeditions in the young country's evolution."

In 1926, Hanington wrote to a colleague and in part said: "I won't bother you with a lot of stuff, which might interest you perhaps, or it might not; but it is of little value to modern people, who don't give a Damn for what has happened in the past." Robert William Sandford, in his Foreword in the book says: "As this book attests, Canadians like Mike Murtha and Charles Helm certainly care, and now because of this book, so will many, many others". And I couldn't agree more!



Sketch showing the arduous route of Jarvis and Hanington ... much of it still wilderness today.

Alberta Historical Review Volume 6 - #1

Reproduced from the book: The L.S. Group, British Columbia's First Land Surveyors, page 117

Rollie and the Porcupine

By Bill Brookes, CLS

Every field surveyor probably has a story of some sort of an encounter with wildlife. Bears are a favourite subject, but it can be the smaller of creatures that can sometimes grab the surveyor's immediate attention. A former colleague, Grant Fraser, related the following yarn to me some years ago.

As I recall, Grant was in charge of a party conducting triangulation operations north of Lake Superior in the early 1950s. The network extended across Lake Nipigon and one of the stations was located atop Paupuskeese Mountain, which is located on Shakespeare Island in the southern end of the lake.

In measuring the angles of a first-order triangulation system the observations were generally taken at night on lights placed on the surrounding stations. Occasionally the observations were made in the daytime, in which case heliotropes were used to reflect the sun's rays to distant stations and provide the necessary points on which to observe.

Lightkeepers were commonly employed to set and tend these lights and heliotropes. The electric signal lamps powered by dry-cell batteries were, in certain situations, connected to key-wound automatic timers, which allowed the lamps to be turned on and off at pre-set times and could be left to function unattended for up to forty days.

In those days, field people did not have cell phones, and radio transceivers were not all that portable and were a luxury not usually found on most field parties. Lightkeepers and surveyors had to be able to communicate in Morse code using the signal lights and heliotropes.

During Grant Fraser's survey, the station named PAUP on Shakespeare Island in Lake Nipigon was initially the site of an automatic clock-controlled signal light. Access to the island was by boat and involved a hike of some distance to the station, so it was deemed satisfactory to use an unattended timing device to eliminate repeated trips to and from the island site.

Things went well for a while until one night the signal lamp on the island failed to come on at the scheduled time. The next day, Grant sent two of his crew to the island to investigate the problem, one chap named Rollie and another whose name now escapes me. As chief of party, you are responsible for the safety and wellbeing of those in your charge, so sending two lightkeepers to such a remote site was the prudent thing to do.

Not knowing what to expect, they carried with them extra signal equipment and camping gear, preparing to stay

out on the island if necessary. Unfortunately Rollie and his buddy were late in departing for their station by boat. Darkness fell and lights came on from various adjacent shore stations as the observers prepared for another night of angle turning. But no signal from the island could be seen. Grant waited patiently, albeit with some growing concern.

I can understand Grant's uneasiness. When you are a party chief your crew is an extended family over which you cannot help but worry and fret. I remember on one project realizing that many of the nineteen student assistants in my charge were younger than my own four sons … and I was handing them responsibilities that I might hesitate to give my own kids. That was scary!

Finally, after what seemed like a long time, there came a series of short and long flashes of light from the island. The boys were signalling. Grant got out a pencil and paper and started to jot down the coded communication. Transcribing

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the string of dots and dashes to the paper took a bit of time, and then a knot tightened in Grant's stomach as the individual letters gradually took the form of a message: "… R-O-L-L-I-E…K-I-L-L-E-D …"

What? No! Grant's mind reeled. Rollie killed! No, it couldn't be! What happened? Was it a drowning accident or had he fallen over a cliff in the dark? There are many ways to die on a field survey and Grant went through the mental inventory of accidents in a split second, just as more dots and dashes followed and more of the message slowly unveiled itself: "… T-H-E…P-O-R-C-U-P-I-N-E… "

Relief swept over Grant as he realized that it was a porcupine, and not Rollie, that was the victim of whatever had occurred on the island.

When humans handle objects, we leave behind traces of salt on those objects from our hands, especially when hands are sweaty from working. Porcupines love salt and they like nothing better than to chew on soft, pliable salty surfaces. It seems that one of these spiny residents of Shakespeare Island had found the signal lamp wiring much to its liking and had proceeded to chew right through it, causing the light not to illuminate.

Arriving late at the station, Rollie and his companion caught the creature as it was returning for another midnight snack and quickly dispatched the culprit. Once the wiring was replaced, the lamp was again set and the survey continued without further incident.

Postscript. I can attest to the porcupine's fondness for salty things. On a helicopter party in the Rockies the surveyors would often leave their equipment under a tarp on the hill overnight. One time it was a few days before I got back to my hill because of the weather. In the meantime a porcupine had paid a visit and chewed off all of the leather straps from my backpack, tripod and instrument cases.

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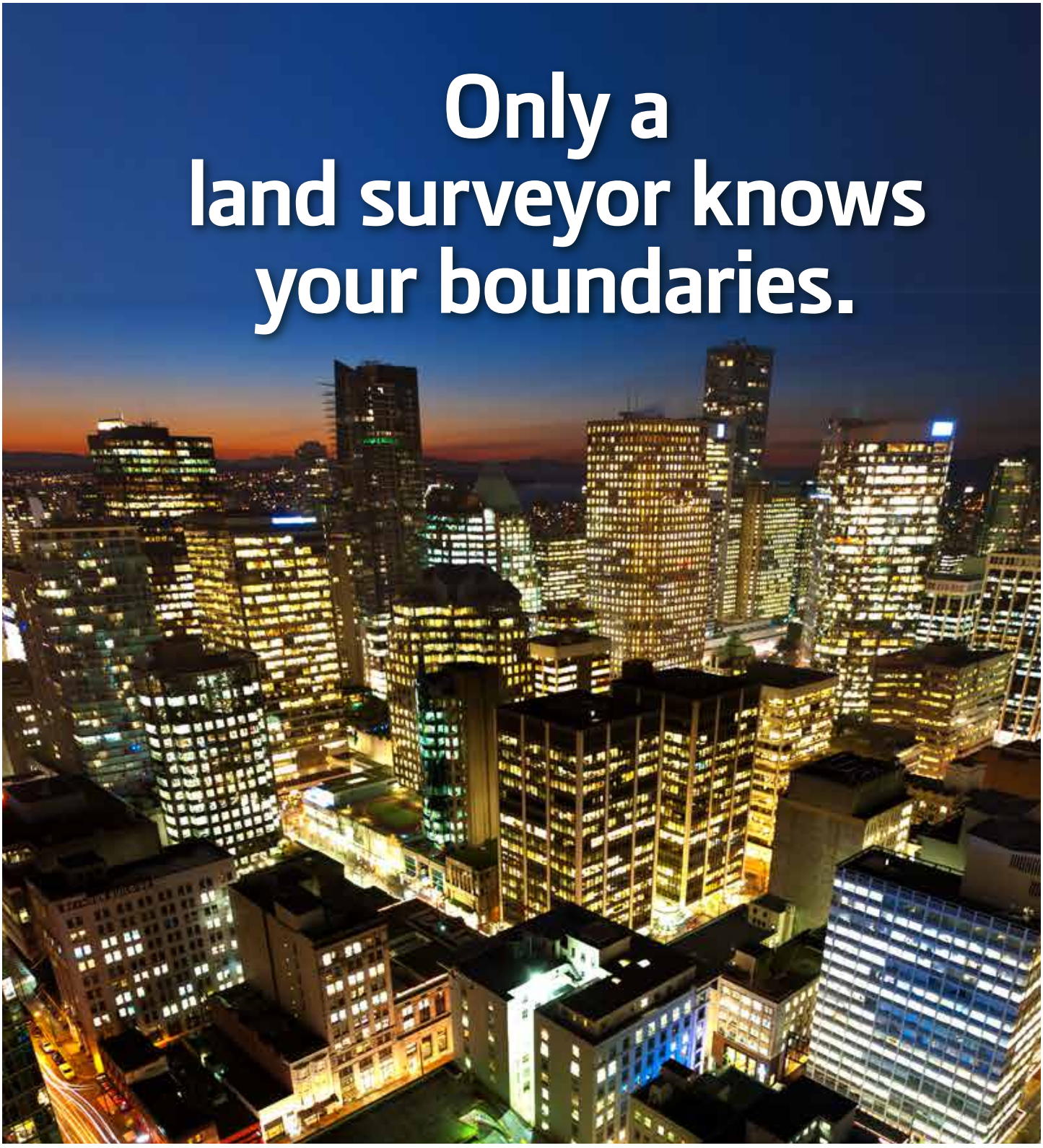

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