# LEMMINGS & LOGARITHMS IN LOTUS LAND

BY ANDREW GIBSON

Ah, memories, memories. They came flooding back the other day when, burrowing in our salle de junque, I came upon a carton labelled "BCLS Examinations". Neatly separated in folders were the examination papers and notebooks from three attempts, 20 years ago, to be admitted to the survey sanctum of this supernatural Province. All were unsuccessful, and the experience was such a downer that even leafing through the memorabilia many years later chilled my spirit. So, as a form of catharsis, and even at the risk of a sour grapes dismissal, I will inflict my story upon you.

Perhaps a student of migratory patterns in mammals can explain why Canadians have this periodic lemming-like urge to go west over prairies and mountains until stopped by salt water. Two decades ago, according to my researches, many land surveyors, although secure in Upper Canada or even more exotic places, felt the call and arrived in British Columbia. So many came that a large majority of the applicants to the Corporation of Land Surveyors had come from elsewhere, with their families. They had found jobs with surveying firms, and had been furnished with a *Rules and Regulations* booklet in which they learned that they would be spared the preliminary examinations in physics, etc., but would be required to pass the finals. These consisted of 13 papers, in which they would have to get a 70% average, with no failure.

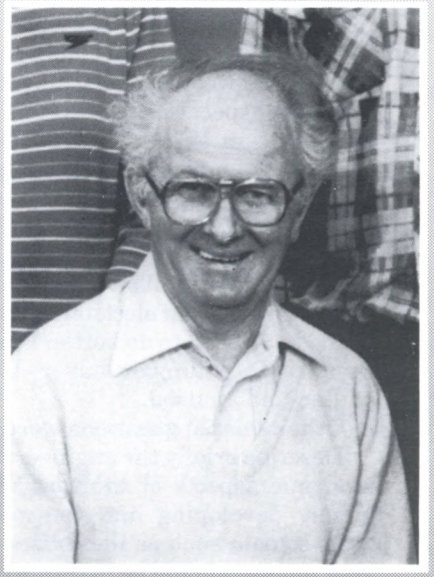
Naturally, they concluded that by hard work and with the burning of a few drums of midnight oil, diligence would bring its usual reward at last, and they would be able to hang out their shingles. So they acquired the recommended texts, among them:

- The Surveyor's Volume of Acts
- The Surveyor General's Regulations and Instructions
- The Regulations Governing the Drilling of Wells and Production and Conservation of Oil and Natural Gas
- The D.L.S. Manual
- various turn-of-the-century treatises on Descriptions
- Native Trees of Canada
- Trees, Shrubs and Flowers to Know in B.C.
- Prospecting in Canada
- Elementary Geology Applied to Prospecting
- Textbook on Hydraulics
- The Elements of Astronomy (available from Hilger and Watts, London, England)
- Neighbourhood Planning
- Transition Curves for Highways
- Breed & Hosmer's Principles and Practices of Surveying, Vol. 1 & 2.

It was a daunting collection, with so many disciplines and such an amorphous mountain of knowledge which was obvious that anybody with the smarts to absorb it all, should be Dean of Advanced Studies at Princeton. Unfortunately, there was nothing about precise electronic surveying, on which I had been engaged for several years in Ontario and California.

Given the above truckload of texts, I had no hope of success on my first attempt, shortly after arrival, but it was sobering to see that some of the 30-40 applicants were on their umpteenth try.

The papers which involved calculations were formidable enough, but they were further complicated by the requirement in the Regulations which stated, "Hand-operated calculating machines may be used in Division 2 of the finals". True, this was a concession that there had been some advances in technology since the abacus, and even since Napier, but in practice, it meant that an applicant's marks could depend not on knowledge, or even skill in calculating, but on the potential speed available from the usually antique machine he had been able to borrow,



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buy, or rent, and on his dexterity and experience in its use. In some respects it became a trial not of surveyors but machines. And we were bedeviled in another rather surprising way - I remember the profane roar that was heard, three quarters of the way through a long, difficult and essential calculation when we discovered that it had been booby-trapped. It wouldn't have taken much to have had a riot in that staid room when we were seized with the conviction (incorrect, of course) that we were being played with.

Other aspects of the examinations suggested an expansive view of what even BCLS applicants should know. On one occasion, we were each given half a dozen numbered tiny discs of dressed wood. Question - name the trees. I was forced to guess at all but red cedar, and, suspecting that an electron microscope would be needed to do better, I took the samples to a lumber buyer. He was baffled and amused.

Other sample questions were:

Describe briefly the engineering and economic aspects of the task of completely developing and controlling a large stream such as the Fraser River. Your answer should be in the form of an outline with major headings and subheadings with important details listed under each section.

Name seven of the Biotic or Life Zones into which B.C. can be divided. List one tree, one shrub and one flower that are common to the Zones you have named. Do not repeat any tree, shrub or flower...

A resort owner requires 40 K.W. of electricity to operate his facilities. His turbine and generator are 60% efficient. A head of 89.5 feet is available between intake and nozzle. Ignoring friction and other losses, what volume of water must be diverted in the system to operate the unit. Use 1 Hp= 0.746 K.W.

Illustrate with a sketch only (a) Syncline; (b) Shape of a Cippolitti Weir; and, (c) Leaf of the Vine Maple.

In a plan to permit tidal flushing of Portage Inlet in Victoria, it would be necessary to let out 1650 acre-feet of water in an intertidal period of 8 hours. Would a canal 8 feet deep by 40 feet wide discharge this much water at a velocity of less than five miles per hour? What should be the difference in water elevation at the ends of a canal 2000 feet long in order to maintain this flow? Use the Chezy formula V=cVRS and derive C from Manning's formula

$$C = \frac{1.482R^{1/6}}{n}$$

where the coefficient of roughness is .010.

What is one identifying feature of Arbutus, Western Larch, Western Hemlock, Pseudotsuga Taxifolia?

Lay out in tabular form the calendar of geologic history, naming the divisions of time and giving the duration. Identify the places in the time scale when major geologic events took place in the area of this Province.

It has been decided to divert the Fraser River (average flow 90,000 cfs) southward to serve the megacity of Los Franseattle (the Columbia has already been delivered into the Mississippi systems). Because 35% of the Fraser water enters west of Hope, only 65% will probably be available. At 100 gallons per person per day, how many people will be supplied? If the maximum flow is 4 fps in order to prevent abrasion of the channel, what will be the optimum dimensions of the rectangular channel? If the channel is 1100 miles long, at what height above sea-level should the river be intercepted in order to deliver water to storage at 100 feet ASL. Use C=90 in the flow formula.

The "proper officer" is a very busy man. Who is he?

How many discovery claims would be allowed to a party of 4 Free Miners when their discovery is along a creek? What would be the dimension of these claims?

I think all of us felt ourselves fortunate that we weren't required to give the identifying features, vocalizations, and distribution in the biotic life zones of migratory warblers. In the absence of any formal instruction in the botanical, geological and hydraulic engineering disciplines, we walked in the woods at weekends, counting pine needles or petals, or perhaps we gazed at the mighty Fraser, the better to prepare a thesis for harnessing it.

For my second and third attempts I took several months off, to study. I came very close on the former, close enough, perhaps, that a lapse of memory about the sequence of the periods in the early Tertiary, or a wrist too tired to whirl the calculator handle at top speed might have made the difference. But when, on the third try my marks were down I accepted the verdict, went back to Ontario, requalified as an OLS, and later CLS, and began a survey practice in Arnprior, from which base I had the honour to be the editor for ten years of this magazine. To quote Ms. Hathaway's husband, "sweet are the uses of adversity".

It was all very interesting, and certainly taught a lot of us humility; pride is a sin, isn't it? Of course, such setbacks can be overdone - I recall one of the perennial applicants who, while running a survey office, made 8 attempts before his wife gave him an ultimatum. And there was some consolation in the rumour that a Surveyor General of Canada fared no better. Besides, however slim the chances for Canadian surveyors, they seemed nonexistent for those who had the additional shocks of culture, language and method. I remember an Indian (from India) surveyor, thoroughly competent in the advanced system his country had inherited from Britain, but bewildered here. He should have been spared the futility - and the expense.

Land survey bodies have the right, and indeed the duty, to limit their memberships to the numbers needed for the most efficient service to the public. But in the years since the above daunting experiences, land surveying has not only come into its own as a skilled and many-faceted profession, but has become less provincial, in both senses of the word. It is now conceded that just as a rose is a rose is a rose, so a land surveyor in Canada is just that, and his - or her - basic skills aren't eroded by a change in the longitude.

Perhaps the day will come when Canadian land surveyors will all be CLS's first, with added endorsements for the jurisdictions in whose laws and methods they have become qualified.

Let us pray.