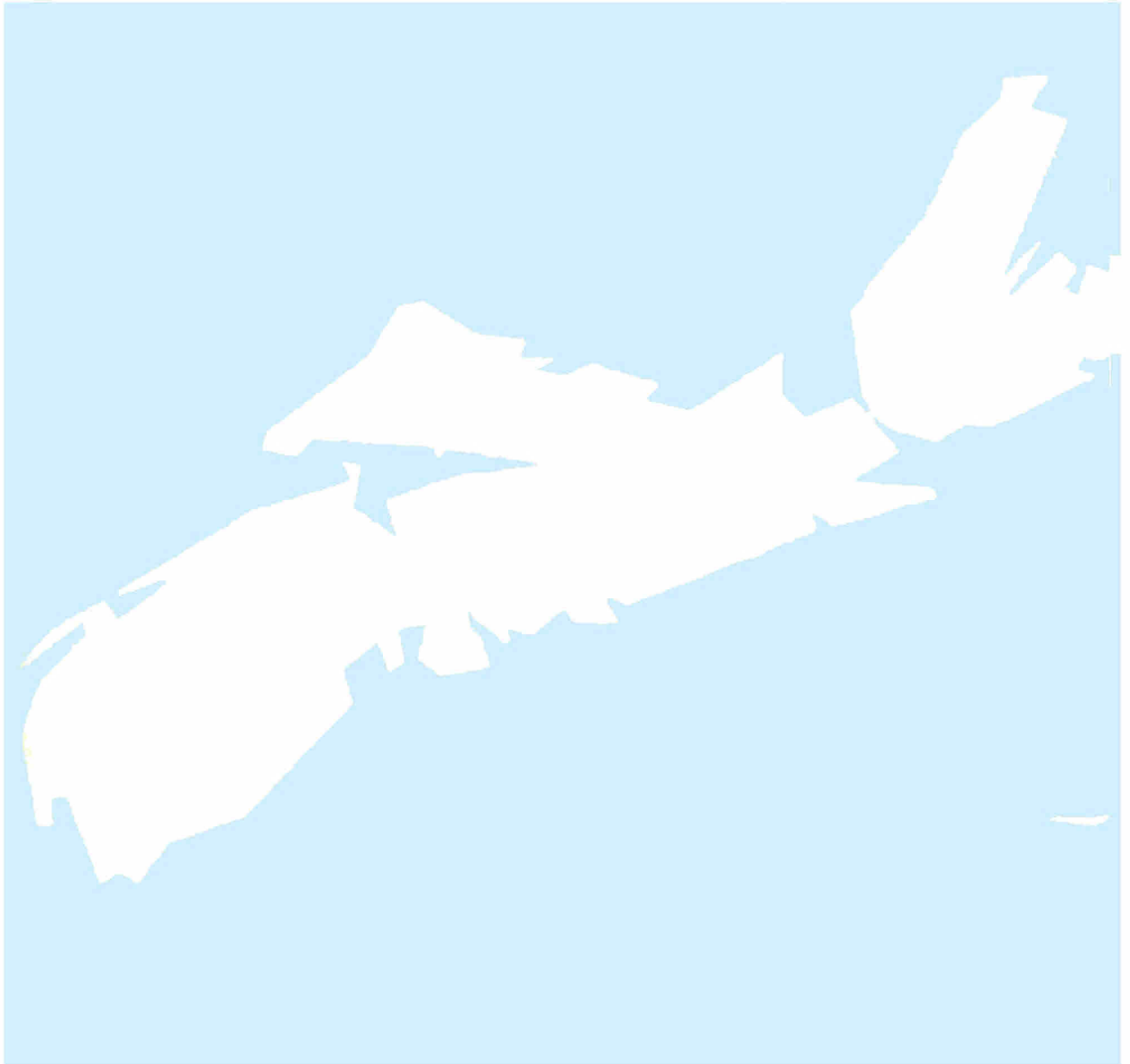
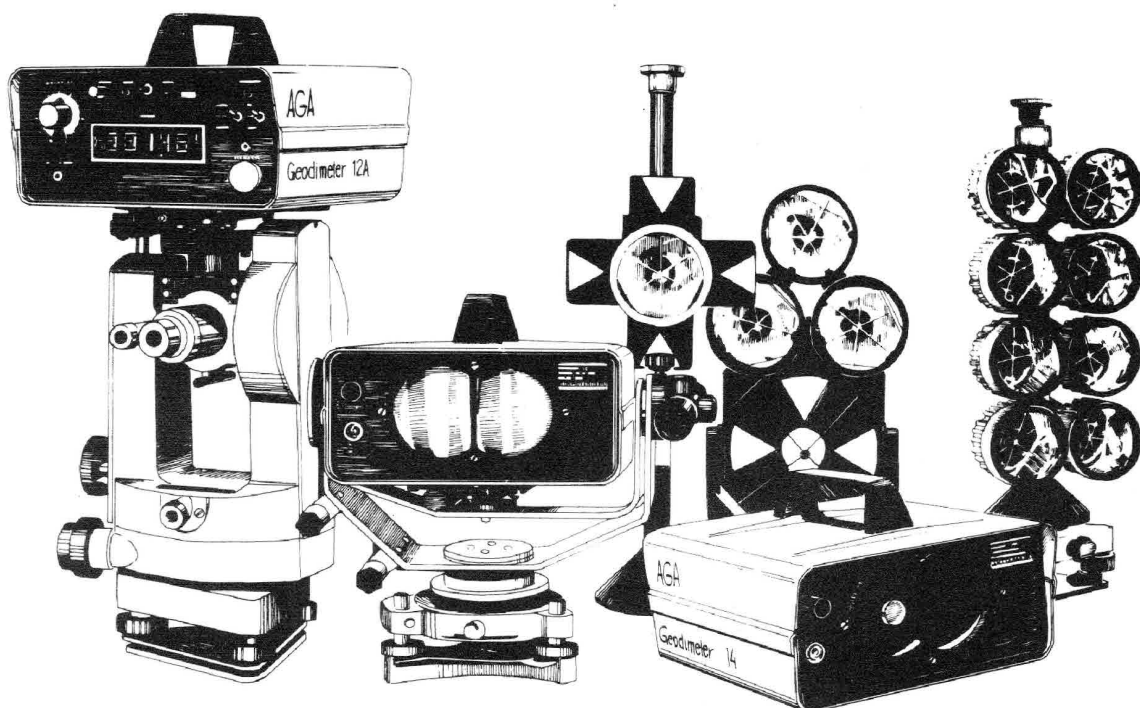


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**** C O N T E N T S ****

Views, expressed in articles appearing in this publication, are those of the authors and not necessarily those of the Association.

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**** MEAN HIGH WATER ****

"NOVA SCOTIAN STYLE"

by J. F. Doig

20 April 1979

Even when the experts all agree, they may well be wrong--Bertrand Russell

AIM

The aim of this paper is to challenge the validity of the definition of mean or ordinary high water within our current survey regulations.

DEFINITION

The regulations state:

"Ordinary high water mark" means the limit or edge of a body of water where the land has been covered by water so long as to wrest it from vegetation or as to mark a distinct character upon the vegetation where it extends into the water or upon the soil itself.

Members will recall this definition was passed by majority vote in June 1978. A few months ago it was approved by Governor-in-Council on recommendation of the Association.

CANADIAN PRACTICE

Looking at Canadian cases which have stemmed from the ebb and flow of the tide, generally,

Our courts discuss the line of mean high water, often at some length and then go on to resolve the point in dispute by other evidence without saying definitely where the line of mean high water is or specifically how it may be found.

* * *

The location of the line of mean high water in Canada depends upon local circumstances. The character of the soil or the line of changing vegetation may decide the point, or the final decision may be influenced by testimony as to accepted practice in the neighbourhood. There are no hard and fast rules. (Doig 1978)

BACKGROUND

It is probably fair to say that all Canadian Courts accept two fundamental principles laid down some years ago. The one was furnished by Lord Chief Justice Hale in the seventeenth century and the other followed about two hundred years later from a classic English case.

Private ownership holds that which is dry and maniorable, while the Crown's title is to land that is more often than not covered by the sea. (Hale 1670)

The limit indicating such land is the line of the medium high tide between the springs and the neaps. (Attorney General v. Chambers 1854).

No Canadian court has ever attempted to lay down an all embracing rule in advance or in extension of these principles.

VEGETATION LINE

There are doubtless areas in our province where the line of vegetation is as good an indication of the line of mean high water as ever would be needed for all practical purposes. Such areas might be found in the Bras D'Or lakes, though none specifically come to mind at the moment.

But manifestly there are parts of our province where this test is not at all in accord with tidal behaviour.

Some areas at Evangeline Beach, Kings County and Great Village, Colchester County may be such as to evoke comments similar to those made by the court which heard Lee v. Arthurs in New Brunswick.

It was determined by the Court of Appeal that the words "high water mark" could not be construed as exceptionally high or exceptionally low (high-) water mark, but ordinary high water mark. The defendant's contention was that high water mark was the line where vegetation ceased and gravel and sand commenced, and in reference to this the Judge directed that he did not think the question of vegetation had anything to do with high water mark. "High water mark", he said, "may go clean beyond the trees along the shore. It might be 100 feet below the grass. Grass would not grow within 100 ft. of it. That does not affect where high water mark is. It may be in some conditions, on some shores, a kind of vegetation will grow up upon the land never covered with water. In some places where the land is sometimes covered with water a man may be able to say the water never rises above such a point or never recedes below such a point. To the ordinary man I do not think the question of vegetation in connection with high water mark cuts any figure at all. That is my judgment."

Also there are long stretches of rock and gravel beach along the southern shore of the Bay of Fundy from Weymouth to Morden where the line of vegetation is held well above the line of mean high water not by the tide, but by the action of wind and waves.

Marshlands, on the other hand, pose problems all their own which are of great complexity and the cause of great difficulty. (Shalowitz 1964). It would be a hardy soul, indeed, who would pronounce the edge of a marsh to be where the vegetation (which kind?) ceased.

OWNERSHIP LINE

The line of mean or ordinary high water is a boundary--it is the line that separates Crown title from titles which can be held by private persons.

My wife and I own a cottage at Phinney Cove, Annapolis County. It isn't much to look at, either inside or out. But it suits our purposes. The best things about the place are that the phone doesn't work and the lot borders on the Bay of Fundy.

The definition of mean high water found in Attorney General v. Chambers gives us title to a portion of the beach, perhaps 30 feet in advance of the line of vegetation.

The regulation the Association put before Cabinet and which has been consented to, appears to have stripped us of this title.

SURVEYOR'S AUTHORITY

It is generally accepted that the surveyor called upon to assist in boundary location or relocation can but offer an opinion. He has no power or authority to fix or lay down a line. This prerogative rests with adjoining owners (under certain circumstances) or with the courts.

If this be the case individually, how then can we (acting collectively) assume the right to define, lay down or fix authoritatively the line of ownership, as between the Crown in the shore and the private person in the upland?

DILEMMA

We seem to have placed ourselves in a bit of a box. One is reminded of the paradox enunciated by Lord Russell: the village barber must shave everyone who does not shave himself. We're damned if we do and damned if we don't.

This summer my new neighbour at the cottage is probably going to ask me to survey his lot. How to proceed?

If the regulations are followed, as by law they must be, the plot plan has to show his boundary with the Crown's title in the shore, in a position I cannot believe our courts would agree with.

One solution would be to deliver a plan showing the line of vegetation as the bordering line between Crown and individual title. Clipped to this would be a report of survey. This document would offer the opinion that our courts would not uphold the bounding line with the Crown should the owner contest the regulations.

This hardly seems a good way to do business or to engender confidence in the surveyor as one who is expected to resolve more problems than he creates.

EXPROPRIATION

If the regulation complained of is valid, it means that at the moment the Governor-in-Council approved it, title to our beach passed to the Crown. This boils down to expropriation without compensation and without notification of the purpose for which the lands were taken. Both acts are contrary to the statute law of this province. (Expropriation Act 1973). Above and beyond this, the whole approach is uncharacteristic of Nova Scotia governments. (Beck 1973)

Having received notice of this situation through the mail-out of the new regulations, the surveyor-owner must respond or accept the new rules. (The surveyor-owner is the only one who can respond so far, because the general public is not aware of what has happened). Presumably my wife and I have twenty years to decide upon what response is appropriate. (Limitation of Actions Act 1967)

PREFERABLE DEFINITION

A better definition than the one incorporated now in our regulation is:

"Ordinary high water mark" means the line of medium high tide between the springs and the neaps which line is ultimately defined through evidence at the locus.

Like most other situations in life, this approach has both advantages and disadvantages. It has the disadvantage of being not at all specific about how one actually determines the line--this is left to an assessment of the surrounding circumstances at the particular point or area in question. It corresponds to some extent, to the mathematician's "existence theorem"--a proposition which proves that a certain thing exists without saying exactly how it is found. However, the advantages seem to be the more compelling, since the above definition is in accord with the decision rendered in the classic case Attorney General v. Chambers, as well as conforming to the actual practice of Canadian courts in deciding the location of the line of mean or ordinary high water.

COUNTER CASE

There are many within our membership whose views are counter to those expressed above. In support of these views, a variety of authorities will be quoted or referred to.

Were it otherwise, the regulation complained of would not have passed by the significant majority it did.

A presentation of the counter case will be most welcome. From an exchange of opposing views, all of us will learn more about our laws as they relate to the sea and the seashore. There is no portion of the law more complex than that involving water and water rights.

NEW HORIZONS

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BIBLIOGRAPHY

Beck, J. M., The Evolution of Municipal Government in Nova Scotia, Halifax, 1973.

Doig, J. F., Mean High Water, The Canadian Surveyor, June 1978.

Hale, Lord Chief Justice, De Juris Maris, Chap. 6, C. 1670.

Expropriation Act, Chap. 7 22 Eliz II, Statutes of Nova Scotia, 1973.

Limitation of Actions Act, Chap. 168, Sec. 9, R.S.N.S. 1967.

Shalowitz, A.L., Shore and Sea Boundaries, Vol. II, U.S., Government Printing Office, 1964.

CASES CITED

Attorney General v. Chambers, 4 De G.M. & G. 206, 1854

Lee v. Arthurs, 48 D.L.R. 78, 1919

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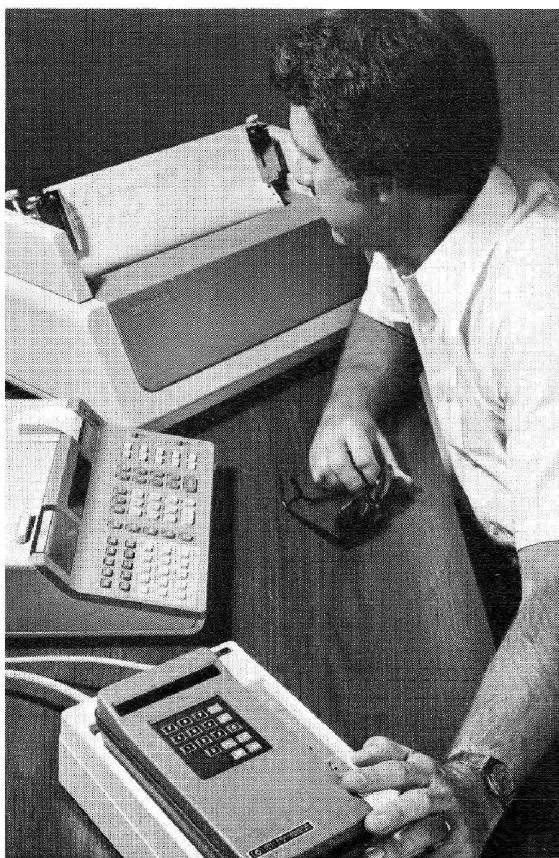
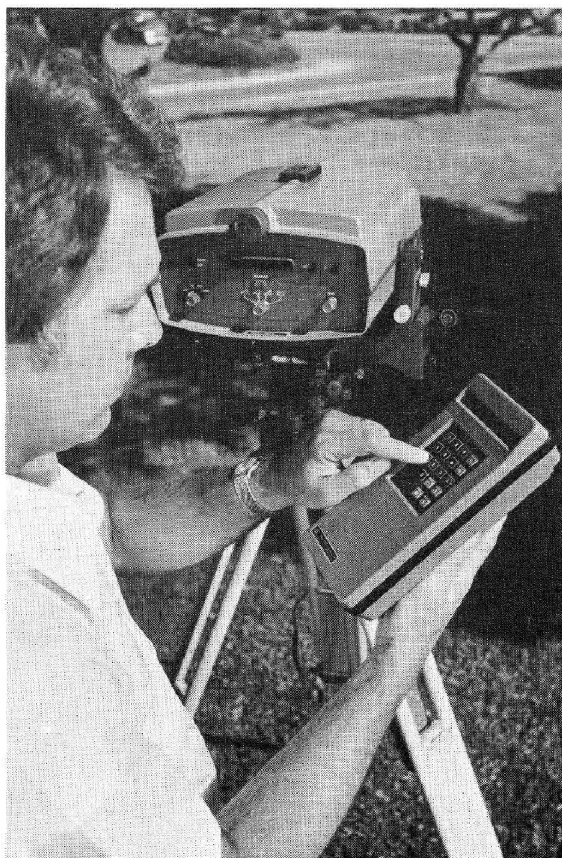
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** COMMENTS RE: J. F. DOIG'S PAPER ENTITLED **

"MEAN HIGH WATER - NOVA SCOTIA STYLE"

by Douglas K. MacDonald

September 21, 1979

It is not enough to be enjoined by the Bible to sin no more and you shall go to heaven. Sin must be defined in such a detailed and practical fashion that you can lead the exemplary life necessary to pass through those hallowed portals.

Firstly, I would like to commend Mr. Doig for preparing the above paper. As mentioned in his paper there are at least two strongly held points of view on this subject and his paper will hopefully precipitate a continuing dialogue between proponents of the various points of view. The following remarks should be taken as the author's personal response to Mr. Doig's paper and should in no way be taken as the Association's official stance.

It might be useful at the outset to explore the reasons behind inclusion of the "offending" definition in the new regulations. During the preparation of these regulations it appeared desirable to lay down, where legally permissible, one term to be used for defining that "elusive" line between the land of the individual and that of the Crown.

If one refers to a cross-section of plans prepared over the past two hundred years in the Province of Nova Scotia you will observe that many different terms have been used to define this single line. Terms such as high water mark, high water mark ordinary spring tides, low water mark, low water mark ordinary spring tides, water's edge, shoreline, bank, top of bank, edge of bank, margin, shore, beach, coastline, plus several others which do not immediately come to mind, were all used with great frequency. Most of the above terms have a clear, distinct and unambiguous meaning in law and certainly cannot and should not be used as synonyms for "ordinary high water mark".

It is probably true that in many cases in the past, these terms were properly used to define the exact feature intended for the particular conveyance. However, one suspects that more frequently, while the intention was to define what is widely held to be the "ordinary high water mark", one of the above terms was used more or less indiscriminately.

It was with a view to bringing some degree of precision and uniformity to the execution and documentation of contemporary surveys that Regulation 27 was enshrined in Part II (Standards) of our new regulations. Regulation 27 reads as follows: "In the case of water boundaries, except where existing rights are to the contrary, ordinary high water mark shall be used as the feature defining the boundary.". Having laid down this regulation it became incumbent on the draftsmen of the regulations to go further and define the term "ordinary high water mark".

It could well have been defined as Mr. Doig suggests:

"ordinary high water mark means the line of medium high tide between the springs and the neaps, which line is ultimately defined through evidence at the locus."

Mr. Doig's definition has the virtues of being factual, and innocuous but suffers from the disadvantage of being useless to the practising surveyor in defining the feature on the ground. The surveyor, in executing the survey, must not only know what he is defining but he must know where it is. Quite manifestly, to fulfil his obligation to lay down boundaries and prepare the resultant plans showing their mathematical interrelationship, he must be able to physically identify such features during the course of his survey.

The definition contained in the regulations goes beyond a reiteration of the legal meaning of the term "boundary high water mark" and attempts to give guidance as to the physical definition of this feature on the face of the earth. The definition given is not without support from other authorities (see references 1 and 2) and certainly does not appear to the author to be unduly difficult to apply.

In some twenty-five years of surveying throughout Canada, the author has never had great difficulty in laying down the ordinary high water mark of bodies of water, great and small, tidal and non-tidal. The preponderance of these surveys and the resultant plans were subjected to scrutiny, field inspection and comparison with previous and subsequent documentation by his peers and to his knowledge and approving authorities never saw cause to challenge this component of any of these surveys. This is not to suggest any great wisdom or virtue on the part of the author but simply to point out that the definition, as enshrined in the regulations, is acceptable and does work.

Admittedly, the identification on the ground of the feature as defined by these regulations, varies in complexity and exactitude depending on the nature of the geology, geography, vegetation and body of water at the particular site in question. Where you have vertical, rock or earth cliffs confining the bed of the body of water, there is no great problem. On the other end of the scale, where you are confronted with the marsh lands of many parts of the coastline or inland waters, it requires a much greater understanding and examination of the subtleties of the vegetation gradients as one moves from land borne to marine borne vegetation. Where the physical geology (cliffs, precipitous banks, etc.) or the vegetation gradient (marsh lands) are not present to aid in your quest, it is necessary to examine the action of the water on the soil itself. The word soil being used of course in its broad meaning of bedrock, boulders, gravel, etc. as well as earth. Even on the most barren stretches of rocky shoreline, the continued presence and action of the water leaves its mark, subtle though it may be.

Unquestionably, the exactitude of the physical definition of this feature is directly proportional to the complexity of the geography, geology, vegetation and water action at the site. However, because at times the problem becomes complex and somewhat inexact, this does not preclude one from defining it to the best of his abilities within the context of the guidelines contained in these regulations.

It would appear that many people who seem to be strenuously opposed to the subject definition, have failed to read the last five words.... "or upon the soil itself".... of the description. They then interpret the definition to mean simply and exclusively the edge of the vegetation, be it 100 feet back from the ordinary high water mark or be it totally absent as may well be the case in areas such as Peggys Cove. This of course is a ludicrous and totally erroneous interpretation to place on the definition. Mr. Doig's concern of losing title to a portion of his beach "perhaps 30 feet in advance of the line of vegetation" suggests that he too has unwittingly arrived at this erroneous interpretation of the definition. Those members disposed to criticize the definition might do well to read it completely and with understanding before advancing further criticism as to its correctness and/or usefulness.

In closing, the reader is directed to contemplate excerpts from the following sources:

1. *Manual of Instructions for the Survey of Canada Lands - Second Edition - Legal Surveys Division, Surveys and Mapping Branch, Energy Mines and Resources Canada.*

In Chapter B2, under "definitions" Section 19 and 20 we read as follows:

19. The "bed" of a body of water has been defined as the land covered so long by water as to wrest it from vegetation, or as to mark a distinct character upon the vegetation where it extends into the water or upon the soil itself.

20. The "ordinary high water mark" of a body of water is the limit or edge of its bed and in the case of non-tidal waters it may be called "the bank" or "the limit of the bank".

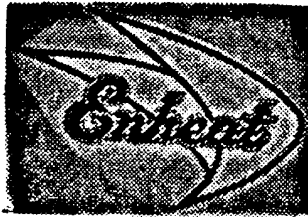
The above definitions are for all surveys performed under the Canada Lands Surveys Act.

2. *Definitions of Surveying and Associated Terms - prepared by a joint committee of the American Congress on Surveying and Mapping and the American Society of Civil Engineers, 1972.*

"High Water Line" - the place on the bank or shore up to which the presence and action of water are so usual and long continued as to impress on the bed of the stream a character distinct from that of the bank with respect to vegetation and the nature of the soil. In tidal water, the high water line is, in strictness, the intersection of the plane of the mean high water with the shore. The high water line is the boundary line between the bed and bank of a stream."

It will be noted that both of these authorities enshrine in their definitions the suggestion of a physical and distinct mark on the vegetation or soil caused by the long continued presence and action of the water.

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"THE NARRATIVE ORGANIZATION CHART"

The membership of our Association has been very active in the past year. The following general terms of references for Committees will point out all the different interests and extra activities that your Council becomes engaged in and requires the assistance of many. When you read the following Committee terms you are advised to keep the graphic organization chart (April 1979 issue of The Nova Scotian Surveyor) in view.

DIVISION DIRECTORS

Directors chair the following Divisions:

- Survey Standards
- Zone Coordinator
- Membership
- Legislation
- Special Assignments
- Communications.

GENERAL: Shall coordinate all activities of the various Committees under the jurisdiction of the Division.

- SPECIFICS:
- 1) Shall carefully select Committee Chairman who indicates an interest in the function of the Committee.
 - 2) Shall work with the Committee Chairman in the selection of other Committee members.
 - 3) Shall act in a consultative capacity on matters being dealt with by the Committees.
 - 4) Shall periodically present typed reports of Committee activities to Council through the Vice-President.
 - 5) Shall act as Division Chairman for Committee reports at Annual Meetings or at any other meeting where Committee reports are called for.

- SURVEY STANDARDS -

1. To inform and advise members of the Association and government agencies on survey standards as dictated by the regulations under the Nova Scotia Land Surveyors Act.
2. To attend Zone meetings providing interpretation and answers to questions from the membership on the regulations. Such meetings shall be coordinated by the Committee of the Zone Coordinator.
3. To periodically examine plans on public record to determine if they are prepared in accordance with the regulations under the Nova Scotia Land Surveyors Act.
 - I. To report their findings of deficiencies to the surveyor who signed the plan and encourage him to improve in the areas of concern.
 - II. To report their findings of gross deficiencies to the secretary of the Discipline Committee.
4. The Committee Chairman shall be selected by the Vice-President and will also act as a Division Director.

5. The Committee Members shall be selected by the Committee Chairman, providing representation in all areas of the province.
6. The Committee shall report to the Council through the Vice-President on a regular basis.
7. The Committee shall prepare annually an estimate of its anticipated expenses and shall not incur expenses beyond its approved budget without prior approval of Council.

NOTE: - This terms of reference will be superseded by a by-law, to be presented at the 1979 Annual Meeting.

- ZONE COORDINATOR -

The function of the Coordinator is to foster continuing dialogue within the land surveying community of Nova Scotia through close liaison activities with the Zone Councillors. The Coordinator should act as Staff Officer to the Vice-President.

1. To assist in communicating the objectives of the Vice-President to the Zone Councillors.
2. To assist Zone Councillors in the planning of local meetings.
3. To assist Zone Councillors in formulating regional priorities and objectives for presentation to the Vice-President; in particular, those objectives and priorities which have an impact and are of common interest and concern to more than one particular Zone.
4. A Coordinator should communicate directly with Zone Councillors on both an individual and joint basis.
5. The Coordinator should hold meetings with the Councillors either immediately before and/or immediately after regular meetings of the Council.
6. The reports of activities of the Coordinator would be presented to Council by the Vice-President.
7. The Zone Coordinator shall hold office at the discretion of the President and the Vice-President.
8. Each Zone Councillor shall attempt to hold more than two Zone Meetings each year in order that the results of Council Meetings can be communicated through the Zone Councillor to the regional membership and that feedback from the membership can be brought to the attention of Council by the Zone Councillors.

- PROFESSIONAL PRACTICE COMMITTEE -

1. The primary task of the Committee is to review and submit recommendations to Council on any matter which affects surveyors and surveying, i.e. such matters that do not fall under the terms of reference of other standing committees or special committees.
2. In reviewing certain matters, the Committee shall obtain input from the membership by attending Zone meetings which will be coordinated by the Committee of the Zone Coordinator.
3. The Committee shall present its plan of activities to the Divisional Director for approval by the Executive Committee.

- PUBLIC RELATIONS COMMITTEE -

1. To be responsible for the maintenance of favourable relations between the Association of Nova Scotia Land Surveyors and the general public.
2. The Committee shall report to the Council through the Division on a regular basis.
3. To ensure that meetings of the Association are adequately covered by the media.
4. To enlist members of the Association who are available to speak to local groups or the media upon request.
5. To inform the public of the services provided by members of the Association.
6. Supervise the preparation of films, booklets or pamphlets for the information of the public.
7. To point out to the public and its representative the advantages of including members of the Association on Planning Boards, Resource Conservation Boards, Appraisal Boards, etc.
8. To be responsible for the posting in the appropriate government agencies, a complete listing of registered Nova Scotia Land Surveyors and the services available from members of the Association.

- COMMITTEE ON OFFSHORE SURVEYING -

1. To protect the interests of Nova Scotia Land Surveyors in the area of Nova Scotia's Sovereign Offshore Waters, or in submerged Canada Lands in the vicinity of the province.
2. Maintain a line of communication with the "Surveyor General and Directors" of Canada's Lands in Ottawa, who is responsible for conducting surveys under the Canada Lands Surveys Act.
3. To work towards an avenue through which Nova Scotia Land Surveyors may perform offshore surveys under the Canada Lands Surveys Act.
4. To investigate the effect that the new Canada Land Surveys Act and regulations thereunder may have on the Nova Scotia Land Surveyor.
5. To place a member of the Committee on the Interprovincial Committee on Offshore Surveying.

- BY-LAWS COMMITTEE -

1. The By-laws Committee shall develop By-laws as required by Council under Section 9 of the Act, for the administrative affairs of the Association.
2. Members of the Committee shall be selected by its Chairman. The Committee's composition shall be reviewed annually.
3. The Committee shall review existing By-laws and propose changes where necessary.
4. The Committee shall study, analyze and report upon proposed changes to By-laws, originating within the Association.
5. The Committee will present its plan of activities to the Divisional Director for approval by the Executive Committee.

- REGULATIONS COMMITTEE -

1. The Regulations Committee shall develop regulations as required by Council under Section 8 of the Act for proprietary regulation and control of the activities of the Association and its members.
2. Members of the Committee shall be selected by its Chairman. The Committee's composition shall be reviewed annually.
3. The Committee shall present its plan of activities to the Divisional Director for approval by the Executive Committee.
4. The Committee shall review existing Regulations and propose changes where necessary.
5. The Committee shall study, analyze and report upon proposed changes to regulations, originating within the Association.
6. The Committee shall submit for governmental approval any changes in regulations.
7. The Committee shall be governed by the Procedural Terms.

- STATUTES COMMITTEE -

1. The primary task of the Committee is to study proposed or existing legislation, and advise Council on any particular aspects thereof which affect surveyors and surveying, and to develop new legislation for Council, when and as required.
2. The Committee shall present its plan of activities to the Divisional Director for approval by the Executive Committee.
3. The Committee shall scrutinize proposed legislation and amendments or changes to existing legislation to ensure that all Bills relative to the land surveying industry are in its best interest and those of the public.
4. The Committee shall study, analyze and report upon any legislation originating within the Association and shall be responsible to develop new legislation as required by the Association.
5. The Committee shall submit for governmental approval any legislation initiated by the Association.

PROCEDURAL TERMS FOR
THE SCRUTINY OF BILLS BEFORE THE LEGISLATURE

1. Secure legislative program.
2. Identify areas relating to surveys and surveying.
3. Analyze consequences of legislation proposed.
4. Develop an association position relative to the proposed legislation based on Committee analysis and study.
5. Prepare a position paper in support of decision reached.
6. Obtain Council's approval of Committee's position.
7. Present arguments before Law Amendments Committee.

PROCEDURAL TERMS FOR
CHANGES IN STATUTES, REGULATIONS AND BY-LAWS

1. Receive proposal in principle from Council.
2. Study and analyse the proposal.
3. Decide to support, modify or reject proposal.
4. Submit findings of study and analysis to Council with recommended course of action.
5. Prepare brief for proposals supported and recommended.
6. Secure Council approval for recommendations.
7. Place before the membership for approval.

BY-LAW IS NOW EFFECTIVE

8. Place before Minister (Lands and Forests) for approval.

REGULATION

To Governor-in-Council
for approval.

STATUTE

To Legislative Council for approval as to form
and for analysis as to conflicts.

To House of Assembly for the first and second
readings.

To Law Amendments Committee for Public Hearing.

To House of Assembly for approval.

- SALARY REVIEW -

1. To provide to the membership an annual review of salaries for Nova Scotia Land Surveyors.
2. The Committee Chairman shall be selected by the Division Director.
3. The Committee is to prepare a classification guide based on responsibility level for Nova Scotia Land Surveyors.
4. Prepare a list and recommend salaries based on the classification.
5. Prepare a salary questionnaire to be circulated annually to the membership. Tabulate results and publish in the Nova Scotian Surveyor.

- C.S.T.T.N.S. -

1. This Committee shall assist the Certified Survey Technicians and Technologists of Nova Scotia with their organization and initial foundation.
2. The Committee Chairman shall be selected by the Division Manager.
3. The Committee shall assist C.S.T.T.N.S. where and when possible to promote a high standard of land surveying in Nova Scotia.
4. The Committee shall report to the Director and Executive as required on the activities of C.S.T.T.N.S.
5. The Committee shall prepare a written report annually for the membership to be presented at the Annual Meeting.



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- LIAISON COMMITTEE -

1. The function of the Committee is to provide for effective communication on matters of mutual concern between other associations and organized groups which are designated by Council from time to time.
2. The Committee Chairman shall be selected by the Division Director.
3. The Committee shall report to the Council through the Division Director on a regular basis.
4. The Committee shall study and designate the separate activities of engineers, lawyers and other organized groups assigned to the Committee.
5. The Committee shall deal with matters of mutual interest and concern.
6. The Committee shall inform Council on a regular basis through the Division Director of any recommendations and decisions made in concert with other jurisdictions within and without the province which affect the status and educational requirements of surveyors.

- CONTINUING EDUCATION COMMITTEE -

1. The function of the Committee is to provide to members of the Association the opportunity to upgrade their level of education on a continuing basis and equated with the needs of the profession.
2. The Committee Chairman shall be selected by the Division Director.
3. The Committee shall determine the needs and interest of the members for special workshops and seminars.
4. The Committee shall plan, organize and conduct a number of workshops or seminars each year as required.
5. The Committee shall present its plan of activities to the Division Director for approval by the Executive Committee.
6. The Committee shall plan its workshops, etc. in order to operate them on a cost recovery basis.

- THE NOVA SCOTIAN SURVEYOR COMMITTEE -

1. The function of the Committee is to publish four (4) issues annually (January, April, July, October) one of which shall be the Annual Meeting.
2. The Committee Chairman shall be selected by the Division Director.
3. Members of the Committee shall be selected by the Chairman. Committee composition shall be reviewed annually.
4. The Committee shall use the publication to inform the membership of the activities of Committees, Council, the Executive and the Secretary, and of decisions made by them of interest to the membership.
5. The Committee shall publish material of a Technical, Legal and Historical nature and contemporary events of educational benefit to our membership.
6. The Committee shall promote the use of the magazine as an advertising media for distributors of surveying and related equipment in order to defray the costs of publication.

7. The Committee shall seek to involve the membership so that they will express their views in letters to the Editor, submit material to be considered for printing and generally support the magazine.
8. The Committee shall be structured with an Editor (Chairman), Business Manager and Associated Editors as required.
9. The Committee shall, on a continuing basis, strive to improve the content and presentation of the magazine and to maintain a high standard of journalism.

The following terms of reference are common to all Committees and are listed here to avoid repetition:

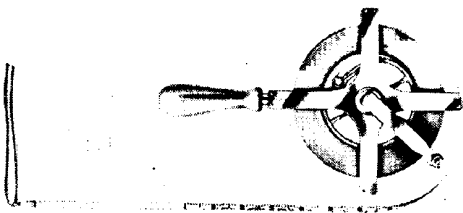
- The Committee Chairman shall be selected by the Division Director.
- Members of the Committee will be selected by its Chairman. The Committee's composition shall be reviewed annually.
- The Committee shall report to the Council through the Division Director on a regular basis.
- The Committee shall prepare an estimate of its anticipated expenditures annually, and shall not incur expenses beyond its approved budget without prior approval of Council.

The above general terms of references will give you a better insight into the specific activities of the Committees and when the annual reports are given each activity will fall in its place.

* * * * *

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TO NOVA SCOTIA AND CANADA LANDS SURVEYORS

The Legal Surveys Division, Surveys and Mapping Branch, Department of Energy, Mines and Resources has decentralized the function of Instructions for Surveys of Crown Canada Lands to their Atlantic Regional Office.

Accordingly, until further notice surveyors who plan to carry out legal surveys in Indian Reserves and National Parks in the Province of Nova Scotia should request instructions from:

Regional Surveyor, Atlantic
Legal Surveys Division
Energy, Mines and Resources, Canada
P. O. Box 368
Government of Canada Building
40 Havelock Street
Amherst, Nova Scotia
B4H 3Z5

Telephone: (902) 667-7249

* * * * *

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**** OBITUARY ****

**JOHN DOUGLAS CAMPBELL
(1907-1979)**



John Douglas Campbell, passed away suddenly on June 23, 1979 in his 72nd year. Although Doug, as he was more commonly called by his friends, lived in Halifax for many years, he was born in Sydney Mines, Cape Breton. Doug received his early schooling in such places as Ohio, Massachusetts, Truro and finally Dalhousie University in Halifax.

Doug received his commission as a Land Surveyor on February 17, 1958.

He worked with, Morrison and Parker, Warren Paving and the Department of National Defence, before joining the City of Halifax's Engineering Department in 1944. During his tenure with DND he was heavily involved in the layout and construction of the runways at the Shearwater Naval Air Station in Dartmouth, N.S. After joining the City of Halifax in 1944 he spent the next 28 years in such various capacities with the

Engineering Department as Office Engineer, Chief Draftsman and Research Assistant. From the time of his retirement in 1973 up to his passing he was actively involved in a private survey practice.

He was a very genial and likeable person with a very keen memory for survey data and dates. His wide range of acquaintances in both the surveying and legal profession would readily attest to his willing and ready response to any approach for information and assistance.

Doug is survived by his wife, "Gerry" and one son Hugh, both in Halifax, and one brother George in Dartmouth.

He was predeceased by two sons, J. Ralph and Murray Allison; and two brothers, Allison and Thomas.

Funeral service was held Tuesday, June 26, at 2:30 p.m. at the J. A. Snow Funeral Home, Rev. Boyd Bishop officiated. Burial was in Camp Hill Cemetery.

**** OBITUARY ****

**HOYES ALEXANDER CAMERON
(1907-1978)**

Hoyes A. Cameron, 71, Bridgeville, Pictou County, died Tuesday, December 5, 1978, at home.

Born in Bridgeville, he was the son of the late John and Annie (Cameron) Cameron.

He lived in Bridgeville most of his married life. He was a member of Bridgeville United Church; a member and a past president of Branch 75, Royal Canadian Legion, Eureka; and a member of the Canadian Institute of Surveying.

Hoyes worked for a number of companies in the Forest Industry in Nova Scotia and following this worked in Forest Engineering in British Columbia, engaged in mapping and other survey related duties.

During World War II he was a member of the Canadian Army, seeing service in Canada, Britain and Northwest Europe. He was discharged, as an Officer, in 1946.

Following the war he attended the "Land Survey School" and was a member of the first graduating class. Shortly thereafter, on July 15, 1947, he received his commission as a Provincial Land Surveyor and began a career as a Land Surveyor with the Nova Scotia Department of Lands and Forests which lasted 25 years. Hoyes retired in 1972.

Surviving are his wife, the former Kathleen Fraser; a daughter Katherine (Mrs. Brian Campbell), New Glasgow; a son Brian, Bridgeville; two sisters, Hilda (Mrs. A. W. MacDonald), Rhode Island; Jessie (Mrs. W. W. Battilana), Massachusetts; and two grandchildren.

He was predeceased by two sisters.

Funeral service was held Friday, December 8, at 2:00 p.m. at Bridgeville United Church, Rev. John Powell officiated. Burial was in Bridgeville cemetery.

* * * * *

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** TRAINING OF LAND SURVEYORS **

by J.A.H. Church, P.L.S., Nova Scotia
April, 1948

On the outbreak of peace, Dr. F. H. Sexton, Director of Technical Training for the Maritimes, was anxious to inaugurate a course in Land Surveying for veterans under the auspices of the Canadian Vocational Training Program. After some discussion a tentative program of training was approved, which was to be embodied in a syllabus for the approval of Dr. Sexton and for submission to the authorities concerned in each of the three Maritime Provinces, in the hope that such training, extending over a period of 12 months, might be accepted as qualification for a graduate to sit the P.L.S. examination in all or any of the Maritime Provinces. On that basis the Provincial Land Survey Course, C.V.T., was inaugurated on 1st November, 1945, in No. 6 Vocational Training School on the grounds of the Nova Scotia Technical College, Halifax. A syllabus of training was drawn up, approved by Dr. Sexton, and submitted to the authorities concerned in each of the Maritime Provinces, who agreed to accept graduates as eligible to sit the examination for P.L.S.--the Province of Prince Edward Island alone entering a caveat that they might require a graduate who passed their examination to serve three months with a P.E.I. surveyor before the issue of his certificate; this did not appear to be too exacting in view of a surveyor being required to give the corners of a property, within a statutory distance of a Geodetic Survey monument, in Rectangular Co-ordination on the Conical Orthomorphic Projection, Maritime Zone--an innovation in Provincial Land Survey procedure.

Aims of Training

The general requirements laid down after discussion with Dr. Sexton were:

- (I) The aim of the training--the development of surveyors well and truly grounded in the basic requirements of his profession in contra-distinction to the journeyman type who might become an adept instrument man but destined to remain such from lack of initiative and the faculty for critical analysis which result from a knowledge of the fundamentals of his craft.
- (II) At no time was it expected that we would turn out experts in twelve short months, but we did hope to give the student such training, both theoretical and in the field, as would permit him to learn from his own experience the limits of accuracy possible with the working tools of his profession, viz.: the level, compass and chain. Engineer's transit reading to 1 minute of arc, and also such modifications of the standard of accuracy as might be permissible on any particular type of work.
- (III) It was expected that the more thoughtful student so grounded would improve his technique, judgment and dependability, with experience largely proportionately to the class of company in which fortune might place him.

Scope and Method of Training

In that there exists in the Maritimes, no general framework of survey which covers any major portion of a province this area may be considered as unsurveyed territory in which the Geodetic Survey has established survey monuments. As a corollary to the foregoing, the surveyor should be prepared to pick up such monuments, transforming the listed co-ordinates, whether Geographical or Rectangular, on the Conical Orthomorphic Projection, Maritime Zone, or Plane Rectangular in feet based on an origin on the south west corner of the map sheet, to such units as will suit the project upon which he is working.

The necessary understanding of the principles involved in the Conical Orthomorphic Projection is illustrated by means of a wooden model. Examples of transformation of Geographical into Rectangular co-ordinates and vice versa from their own work are computed on G.S.G.S. Form No. 566. Once this has been mastered, the student has no difficulty in handling the plane rectangular co-ordinates as laid down in Appendix E of Topographical and Geographical Surveying by Sir Charles Close, third edition.

Having picked up a G. S. monument, it would appear only reasonable that the surveyor should be prepared to connect his area of survey by triangulation or traverse or both. It will be evident that a knowledge of the aids to such work, viz.:

(a) Trigonometrical Resection	G.S.G.S. Form No. 16
(b) Inaccessible Base	G.S.G.S. " " 18
(c) Satellite Station or Reduction to Centre	G.S.G.S. " " 14
(d) Semigraphic Intersection	G.S.G.S. " " 23

will be of great value to a surveyor, expediting his work and more particularly developing his initiative as well as his critical faculty.

Semigraphic Intersection has proved an excellent method of developing the analytic faculty of the student. In fact we find that when a student has proved himself capable of working this problem from rounds of angles and Rectangular Coordinates, he may be considered to have crossed the Pons Assinorum.

Experience both in the Army class of Surveyors Topographical and on his course has shown us that the best method of training an instrument man is to start him off early on reading rounds of angles by six repetitions, i.e., six repetitions Right Face Right Swing and six Left Face Left Swing, giving a permissible error of $10'' \sqrt{N}$ where N is the number of angles in the complete round. This practice has been followed in our triangulation scheme covering an area of some 14 miles by 4 miles. The accuracy of our data as determined by Resection has been of the order of 08 seconds of arc, 14 miles from the beginning.

To teach confidence in their work, two points in Middleton, N.S.--the Baptist Church spire and a brick chimney--were fixed by semigraphic intersection; these with two trig stations on our triangulation were used to resect a new station. The bearing of Bloomington Resection point from the new resection was computed and subsequently a beacon erected at Bloomington was found to be on the vertical cross hair though not exactly centred, the vertical member of the beacon being 4" x 4" we felt sure that students actually engaged in such a test have confidence in their work. We had hoped to base a cadastral survey of Middleton on the triangulation and semigraphic Intersection points, but unfortunately the city fathers would not countenance such modern innovations, although there was no charge involved.

A Transit and Tape Traverse was run down the old Lunenburg Road from Bloomington Resection Point to Birch Bark Lake, a distance of 9 miles--4 miles under forest conditions--the entire distance was double chained, once with a 100 ft. and once with a 100-link tape, agreement exacted being .01 foot per tape length. Bloomington Resection Point's Rectangular Coordinates on the Conical Orthomorphic Projection were transformed to Geographical Coordinates, these in turn transposed into Plane Rectangular Coordinates using W. $65^{\circ} 00' 00''$ and N. $44^{\circ} 45' 00''$ as the point of origin--the correction having been applied to the Azimuth, the Traverse was then carried on. Azimuths being checked by solar observations by the Altitude method, both for time and Azimuth the time computed from the Azimuth observation being required to check with that of the purely time observations in 9 miles was eight, the time checks on observations varying from 4.4 seconds to 0.6 seconds, so that one may assume the computed Azimuth to have been of the order of less than $01'$ of arc.

At only one Azimuth check did the difference between traverse Azimuth and the Astronomic exceed $01' \sqrt{N}$ (N = the number of set-ups)-transportation difficulties and the complications of the deer hunting season prevented our rectifying this, but it may be accepted as probable that the 9 mile traverse is accurate to 1/3000 or better.

Field Astronomy:

This subject appears the chief stumbling block to the run of the mine surveyor, but experience gained with the Army class Surveyors Topographical and confirmed in two years' experience in the Provincial Land Survey Course, has proved that once the student has grasped the principles involved in the transition from plane to

spherical trigonometry and acquired the technique of making solar and stellar observations with reasonable accuracy, his self reliance is enhanced to a remarkable degree and he begins to take hold.

The transition from plane to spherical trigonometry is based entirely on the method so lucidly set out in Mathematics for Million by Lancelot Hogben and more simply explained by the use of models. The Cosine Law is the first to be demonstrated, then the Sine Law and from these the $\tan 1/2A$ and $\tan 1/2T$ are deduced, a rather tedious process to reduce to the units used in the G.S.G.S. forms 29, 30, and 31, but these forms are our standard. Great stress is laid upon a thorough understanding of Standard, Local, Apparent, Mean and Sidereal Time, Local Hour Angle and Greenwich Hour Angle--students are required to illustrate relationships by means of sketches and problems are demonstrated on the Armillary Sphere--a device (described in Astrographics by Frank Debenham, Professor of Geography, University of Cambridge) of the utmost value susceptible of being used to illustrate most of the problems encountered in the study of Field Astronomy, and indeed to check by experiment a large number of problems to a surprising degree of accuracy.

As an additional aid to the study of the limiting shapes in which the P.Z.S. triangle may present itself, a glass model of the celestial and terrestrial spheres has proved itself of great value. The student is encouraged to draw and study on the sphere the P.Z.S. triangle resulting from the observation he proposes to make.

The ephemeris in use are the Surveyor General's Astronomic Tables, the American Nautical Almanac, and such ephemeris as are published by the various instrument makers. Students are well versed in computing the instant of culmination and elongation of Polaris, the altitude and azimuth at such times as well as at any hour angle of Polaris.

The method of Azimuth determination is conditioned by the accuracy of the time keeper available, and it would appear reasonable to habituate the student to the use of such methods as are suited to the employment of such time keepers as he may be reasonably expected to possess or obtain, i.e. a good wrist watch with a sweep second hand, or any watch used in conjunction with a stop watch. Such equipment limits Azimuth determination to the following methods:

- (1) By altitude of sun or star on or near the Prime Vertical
- (2) By equal altitudes of sun or star
- (3) By observation of Polaris

The characteristics of these methods being:

(I) Requires an observation for time by the altitude method, time check between the time observation and the Azimuth observation to be less than 08 seconds. Such agreement validating the accuracy of the Azimuth observation within 01' of arc. The time/altitude ratio of the observation approaching a constant is a rough field check on the accuracy of the observation. In Lat. N45 this method is not applicable for Solar observations between 30th October and 12th February, due to the southerly declination of the sun being in excess of 140° . (Using as limits--L.H.A. must not be less than 2 hours, altitude not less than 250°).

(II) Applicable in the closed season for solar observations. By the Altitude method students are able to get results with 02' of arc for solar and 01' for stellar observations. Time of course is hardly a factor; the computation is a minimum and the drawbacks are the two set ups and a second observation is the only check available.

(III) Observations on Polaris, except at Elongation, require two time observations for a check on the time keeper. We have not had much luck with observations on Polaris at any hour Angle, whereas our Elongation observations have been good.

Our astronomical observations, both Solar and Stellar, at nearly every beacon on the triangulation scheme have agreed to within 30" of arc--and that is probably due in a great measure to good luck when one considers our experience and instruments. Any program of altitude observations on or near the Prime Vertical must

entail ability on the student's part to recognize the stars listed in his Ephemeris, to meet this requirement a start chart, showing altitude and azimuth as at 15th of the month, is prepared and issued monthly.

Latterly, with a view to improving the standards of levelling, the Assistant Instructor, J. J. Kisway, P.L.S., Nova Scotia, inaugurated a levelling scheme, using a 16-inch Dumpy, from the Geodetic Bench Mark, Middleton, 6 miles to Lawrence-town, and back. Every student had a hand in this scheme, with the result:

Distance covered	12.10 miles
Discrepancy	0.072 feet
Discrepancy after balancing	0.030 feet

These results indicate accuracy of the order
 $\pm 0.02 \sqrt{M} = 0.6969$ feet. (Where M is the level circuit in miles).

Training in Professional Practice

This phase of the training aims at being as realistic as possible, and is based on the general considerations:

- (a) The client is entitled to the best that can be given him.
- (b) The function of the surveyor is not a judicial one, but merely that of a collector and compiler of evidence.
- (c) The surveyor must at all times endeavor to be "unbiased by friends and uninfluenced by mercenary motives".

The field work is naturally divisible into two categories:

- (I) Retracing old boundary lines run originally with the magnetic compass.
- (II) General PLS practice in the area which may include anything from a town lot to a timber berth.

(I) Retracing old boundaries consisted of retracing the boundaries of CROWN LANDS in the Bloomington area; re-establishment of two small "Base Lines".

Parties are thoroughly briefed, then turned out with experienced axe men to make and subsequently rectify their own mistakes. It must be borne in mind we are a lodge of instruction and not commercial surveyors, so the disproportional time spent by green men searching for old monuments and blazes was not lost. Each area constituted a closed traverse, the lines being trial lines and no blazing or monument building being done with the closed traverse had been computed and found to be within the permitted limit. A reasonable precaution, for the Department of Lands and Forests would not welcome a maze of conflicting blazes if an error were made. All these Crown Land parcels were tied into the Bloomington Birch Bark Lake traverse and the rectangular coordinates in chains from the bottom left hand corner of the map sheet shown on the plan.

In addition to the Crown Lands work, the class established 3 Meridian Reference Posts for the checking of the Magnetic Declination in Kings and Annapolis Counties.

(II) General PLS practice. When a job cropped up, the students assigned were taken to the Land Registry office to make a search and abstract of the titles; they made the survey, computing the closure and area (checking with the planimeter), the description of the property was written and rewritten until acceptable. Generally surveys were made with the transit, a solar observation for Azimuth being required; if there was an excessive amount of brush to be cut, recourse was had to the magnetic compass. In every case the point of beginning of every survey was tied into some topographical feature.

CONCLUSION

That is the story gentlemen, if results as gauged by PLS Examinations in Nova Scotia and New Brunswick be any criterion, our training has not been useless.

Examined	Passed		Failed
	1st attempt	2nd attempt	
20	15	4	1
Per cent	75%	40%	05%

Most of the failures on the first attempt are considered to be attributable to nerves. Our students are not habituated to formal public examinations.

One bright spot in the gloom is the very apparent value of the Army classes in surveying, both R.C.E. and R.C.A. We have had 5 Army survey men; each one sat his exam at the end of 9 months and passed.

Acknowledgements: I would wish to acknowledge our indebtedness to Dr. F. H. Sexton for his kind help and encouragement, to the faculty of the Nova Scotia Technical College in the Departments of Civil Engineering and Mechanical, to the late Professor Copp of Dalhousie University, and very particularly to my three assistants in the past four years.--J.A.H. Church.

The Canadian Surveyor for this Historic Paper presented by J.A.H. Church and first printed April 1948.

The next evolutionary development of "Major Church's Survey School" appears in the Department of Education Annual Report for the year ending 31 July 1949.

LAND SURVEY SCHOOL

by E. K. Ford

Representation was made that a need existed in the province for a school devoted to the training of young men for the vocation of land surveying. The request was investigated largely by interviewing a number of people who were familiar with the occupation with especial reference to the opportunities for employment. A report was prepared and presented to the Council of Public Instruction. It is appropriate to observe that, insofar as the facts were known, there was not anywhere in Canada a special school devoted to land surveying but the training traditionally has been a part of the civil engineering courses in various engineering schools and colleges.

Specifically the group to be served here in Nova Scotia seemed to be young men approximately 18 to 25 years of age who, ordinarily, had no previous employment record, who could produce evidence of completion of Grade XI with Grade XII preferred, who had shown special interest in and aptitude for mathematics and science and who looked upon land surveying as a desirable vocational objective. The need for such a course arises out of a current scarcity of land surveyors, partly because no specific facilities for training are available other than in the engineering colleges mentioned above and to certain changes within the occupation itself. The average age of provincial land surveyors is now estimated at between 45 and 50 and land surveyors currently give considerable time to the investigation of highway accidents. There is some opportunity in the local field for land surveying in the traditional sense but over the past ten or more years other demands have been made upon people in the occupation largely by the increasing activities of provincial departments of Lands and Forests and by the Federal Topographic and Hydrographic Surveys.

The program of Canadian Vocational Training developed at the conclusion of the last war included a course in land surveying given at Middleton, but this was discontinued during the year covered by this report, perhaps for the chief reason that it seemed difficult to secure applicants with the necessary educational background. The placement record of the C.V.T. School was exceptionally good and all the

indications are that if a suitable type of training can be provided there need be no unplaced applicants for the next five to ten years.

The report, prepared and placed before the Council, recommended that a Land Survey School be established at Lawrencetown, Annapolis County, with provision for one class of not less than 10 or more than 15 students. Lawrencetown was selected because the sites were set up there and motor transportation was not required. The course to be offered would be practically the same as that used for the C.V.T. School and the same equipment could be used. The local supervision of the School would be passed over to the Division's local administrator in the Middleton area and the instructor recommended was Mr. J.A.H. Church, P.L.S.

The year was well advanced before all was in readiness to proceed with the organization of the School, but the prospects appear good for the enrolment of at least 10 students who will begin their studies on the first of September. The class will meet at the Canadian Legion Hall, to which an addition is under construction for the special purpose of the classroom.

Tentative plans have been made for the appointment of an Advisory Committee, which would give advice on policy and other matters related to the School to the end that the offering may be kept in line with the requirements of the occupation. On such a committee there should be a representative of employers of land surveyors, of provincial land surveyors, who should himself be a P.L.S., a representative of the Department of Lands and Forests and one from the Division of Vocational Education. The instructor presumably would act as secretary to the Committee. Next year it is also planned to enter the field earlier with advertising material distributed to the high schools and the pre-engineering schools of the colleges in the province and it is hoped that in such a way a larger group will be provided, from which applicants may be selected.

* * * * *

** NOVA SCOTIA ASSESSMENT ACT **

*(This is a reminder to all surveyors
who are researching that next job)*

SECTION 178 -

Such deed shall be conclusive evidence that all the provisions of this Act with reference to the sale of the land therein described have been fully complied with, and every act and thing necessary for the legal perfection of such sale has been duly performed, and shall have the effect of vesting the said land in the grantee, his heirs or assigns, in fee simple, free and discharged from all encumbrances whatsoever. 1966, c. 3, s. 179.

*Effect of
tax deed.*

SECTION 179 -

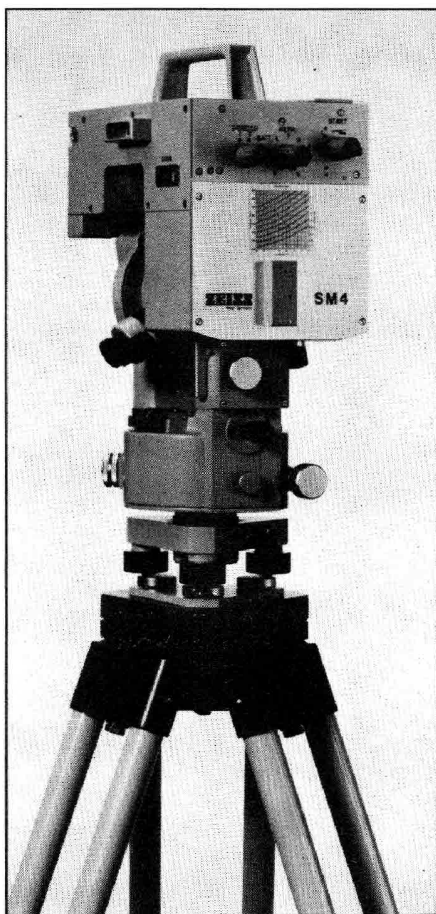
Notwithstanding Section 178, if a tax deed is not registered in the office of the Registrar of Deeds within fifteen months after the sale, the grantee and other persons claiming under it shall lose their priority as against a bona fide purchaser for value without notice who has registered his deed prior to the registration of the tax deed. 1966, c. 3, s. 180.

*Delay in
registration
of tax deed.*

* * *

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BOOK REVIEW**** NOTHING BUT THE TRUTH *****by John A. F. Watson, CBE*

published by

The Estate Gazette Limited
 151 Wardour Street, London, W1V 4BN
 (1971, 111 pages, hard cover)

This book about expert evidence was written by a valuer (assessor) who later took up a judicial position. The author, therefore, writes as one who has seen affairs from two aspects; he has both offered and weighed evidence of this kind.

The book is written primarily for the valuer (assessor). Topics and illustrations relate to property valuations. But since the author's principal stress is upon objectivity, logic, orderly presentation, and careful preparation, most of the points dealt with can be considered profitably by those who are not assessors or valuers.

A good deal of the book is the development of a single hypothetical case from the time an estate owner seeks expert assistance to the point where the expert places his opinions on the valuation of the estate before a court. A number of actual cases are referred to in part from time to time as examples, but they are all disguised. Only those directly involved would recognize them. The single actual case cited has nothing to do with the giving of expert evidence.

To start things off, the author gives a brief explanation of how expert evidence differs from that given by an ordinary witness and how the functions of the expert witness differ from those of the lawyer.

The development of the hypothetical property valuation begins with suggestions about how preliminary enquiries might best be handled. Early in the encounter, the prospective client must be told about costs. Then, after an examination of the property (or problem), the client must be told very briefly what the expert's opinion is--whether he can support the client's position or not.

Some of the procedural information that follows in the next ten or twelve pages is applicable only to situations in England. Much, though, is as relevant here as there; the material concerning admissibility of documents and the general principles of cross-examination, for example, is quite helpful.

In the next section which deals with the preparation of a case, the author observes that there is usually one weak point. He recommends that it be identified and that the expert witness reveal it and deal with it at the earliest possible moment and so dispose of it. Warning is given about exaggerating one's evidence--aside from such being unethical. If an exaggerated assessment is offered which the court for this reason later sets aside, the only remaining evidence is that put in by the other party.

Agreed upon facts, maps, plans, and photographs come in for attention. The author suggests valuable time can be saved if the parties involved can agree upon as many facts as possible before the hearing. Maps and plans tend to be too large, and there are usually too many of them at different scales and lacking standard orientation. He rightly complains about having received in evidence from one party a map with one orientation, only to receive a map with a directly opposite orientation from the other party.

Several helpful suggestions are offered by way of identifying maps, plans, and photographs. Speaking generally of the latter, the author observes "there should be one set of agreed and numbered photographs." He also observes:

The average tribunal is not as dim as some litigants and their professional advisors seem to think. For example, it is unlikely to accept as mere coincidence that the properties favoured by the claimant were photographed by him in high summer and all the others in winter or in a fog; and by the respondent the other way round.

Fourteen pages of the book are devoted to what the author calls a proof of evidence.

A proof of evidence is a written statement prepared by a witness in advance of the hearing, for the information of the advocate who is to call him, of what he intends to say. It is far from verbatim; he will have an opportunity of elaborating it later in the witness box. But it should contain the whole of the substance of his intended evidence, first on the facts and the opinions he has founded on them; secondly if the witness knows or can guess what evidence is to be given for the other side, where he disagrees and why he does so.

He follows up this general description and some other observations with an example--namely, the document which supports his hypothetical estate valuation.

A frequent complaint heard from land surveyors who are called as expert witnesses is to the effect that there is not enough liaison or communication between themselves and the solicitors who retain them. The delivery of a good proof of evidence--or even just a first draft of such a document--might improve things considerably.

Chapters on examination-in-chief and on cross-examination and re-examination follow. The suggestions are helpful and the illustrations are enough to the point so that once in the witness box and the center of attention for the moment (or the hour), one may possibly remember some of them.

The book concludes with a four page chapter entitled The Queen's English. It is a plea for the use of plain language rather than jargon: "An ability to think clearly is of little value unless accompanied by an ability to speak clearly. And to speak clearly is to speak simply."

The foreward to Mr. Watson's little book was written by the Lord Chief Justice of England. This, in itself, is no small commendation and may be taken, if all else fails, as a guarantee of value for money expended. In commenting upon another author's work Watson describes his own to perfection: it "overflows with sound advice, and is delightfully written".

Having travelled through the book from foreward to finish, though not in that order, it is instructive to go to the introduction where the author remarks:

The charter of the Royal Institute of Chartered Surveyors defines the functions of its members. It is a comprehensive definition; but nowhere does it recognize, expressly or by implication, that not infrequently surveyors are called upon to accept the grave responsibility of giving expert evidence in the cause of justice. Nor does the syllabus of the Institution's examinations prescribe any training under this head.

This same comment might possibly be made about some of our licensing associations or corporations in Canada. If so, some of us ought to be doing something about it.

by - James F. Doig, N.S.L.S.

** REAL PROPERTY CASE REPORT **

The matter at issue is one of some substance, I think we would all agree. But very few case reports bring the short court room scene--with its lively, witty and somewhat testy exchanges--as alive as this one does. - J. F. Doig.

ANTIKNAP v. SCOTT
16 D.L.R. 20
British Columbia Supreme Court
MacDonald, C.J.A., Irving and Gallier, J.J.A.
22 January 1914

The trial judge based his decision upon inadmissible evidence. This made for a mistrial.

A boundary line was in dispute. A survey was made to determine the line. The surveyors were called to give evidence.

Their testimony was determined to be hearsay since they had not shown that at least one of them had actually made the survey. They were judged to be speaking from the notes of and about the work done by "their articulated clerks".

The parting remark of Irving, J. A. seems to have been taken to heart by the parties concerned. No subsequent trial involving this case appears in the reports.

APPEAL by the defendant from the judgment of Barker, County Court Judge, based on the reception of alleged hearsay evidence constituting a mistrial.

The appeal was allowed and new trial granted.

Bray, for appellant.

V. B. Harrison, for respondent.

MacDONALD, C.J.A.: - The Court at the present moment is of opinion that there has been a mistrial. Though it is quite possible that the learned Judge was right, on the other hand it is quite as possible that he was wrong; he has given weight to evidence which may be hearsay or may not, so uncertain is the record.

Strictly, the Court might allow the appeal and dismiss the action, but I am not in favour of doing this, because I am convinced there may have been a mistrial. The plaintiffs should have made it clear by a survey and by putting the surveyor who made it into the witness-box, so that the Court could be satisfied where the true line is.

Mr. Harrison: - I should like your Lordships to examine Mr. Green's evidence.

MacDONALD, C.J.A.: - Can you show me anywhere in this evidence that this witness says, "I ran the lines myself?"

What has apparently been lost sight of by counsel and probably by the Judge was that there might be an appeal, and evidence quite intelligible to local people might be unintelligible to those removed from the locus in quo.

We think there has been a mistrial, Mr. Harrison, and we are rather giving you the indulgence of a new trial, whereas we might dismiss the action altogether.

Mr. Harrison: - I am quite sure the statement made by Mr. King was given in evidence, although not here.

GALLIHER, J.A.: - That is unfortunate. You see that might have all been present to the Court below and to the counsel below, and it is not present to us, and we are asked to draw inferences, which I am not myself prepared to do.

IRVING, J.A.: - Are you satisfied that the point of commencement should be 22 feet or links from the post - 22 feet or links?

Mr. Harrison: - The trial Judge ascertained that it was 22 links.

IRVING, J.A.: - I am inclined to think he is right, but if there is to be a new trial I will not express any opinion. I cannot make up my mind on this appeal book one way or the other. The questions are asked and answered in such a way that no one reading the evidence can understand it. It is very badly taken down and there are also clerical errors in the transcribing.

Mr. Harrison: - This was an action over a boundary line.

IRVING, J.A.: - You have to show what your position is.

Mr. Harrison: - Yes, but in the surveys that they did actually make we still have trespass.

MacDONALD, C.J.A.: - I don't think that you will be able to convince the Court, Mr. Harrison, and I think we have said practically all that is to be said on that point.

An additional difficulty about this case is the evidence of King and Green. To my mind these two men have not shown that they or either of them made the survey of the line, and were not merely speaking from the notes and from the survey of their articulated clerks, who, they say, did run the lines. If they had run the lines themselves there would not be much difficulty about the case.

But he bases his judgment upon the evidence of these two witnesses. He assumes that these two witnesses either made the survey originally, or were able to speak from surveys made by them. But it does not seem to me that these witnesses did make a survey so as to be able to speak authoritatively. If that be so their evidence was inadmissible. Their evidence, apparently, has influenced the learned Judge's mind. He himself took a view, but since evidence was admitted which appears to have been inadmissible and which undoubtedly affected his mind, then the only thing we can do is either to set aside judgment and dismiss the action, or hold, as I think we ought to hold, that there has been a mistrial and send it back.

It is simply a matter of having a surveyor run a line and give evidence as to whether this fence was or was not on the plaintiff's land.

Instead of this, a very clumsy and ineffective way was adopted to prove what could have been made certain by a survey.

IRVING, J.A.: - I concur.

GALLIHER, J.A.: - I concur.

MacDONALD, C.J.A.: - The appeal will be allowed and a new trial ordered. The costs will, of course, follow the event, and I think the rule we generally adopt is that the costs of the first trial shall abide the result of the second.

Mr. Bray: - As well as the costs of this appeal, my Lord?

MacDonald, C.J.A.: - You will get the costs of the appeal.

IRVING, J.A.: - I should think, if you got a good surveyor, there would not be necessity for a new trial at all.

APPEAL ALLOWED.

**** UNREPORTED DECISIONS ******REAL PROPERTY****QUIETING TITLE -**

Gillis v. Gillis, S.C.A. 00259, Macdonald, J.A., March 23, 1979. S93/22.

The appellant and respondent were adjoining landowners both claiming title to a portion of meadowland described as "interval". Both held their property by deeds obtained at tax sales. *Held*, dismissing the appeal, that the respondent was entitled to a certificate of title to the land and a permanent injunction restraining the appellant from using said lands. The meaning of the word "interval" in describing lands in North America was discussed.

QUIETING TITLE -

Taylor v. Willigar et al., S.C.A. 00258, Cooper, J.A., March 13, 1979. S93/15.

The appellant had brought an action under Quieting Titles Act and had been found entitled to a certificate of title to certain lands subject to the rights of the defendants; the defendants were found to be entitled to their cottages and land adjoining the appellant's property which they had acquired by adverse possession. It was *held*, dismissing the appeal, that respondents' possession was sufficient to extinguish the title of the true owner; one property was used as a summer camp, the other was used in summer for fishing and other purposes. The fact that the cottages were not occupied in the winter did not mean that the possession was not continuous. They were occupied in the manner that was suitable to them.

Also *held*, that the respondents had correctly been granted leave to amend their pleadings to request certificates of title under the Quieting Titles Act, placing them in the position of counterclaimants and enabling the trial judge to deal with the matter on that basis pursuant to s.10(4).

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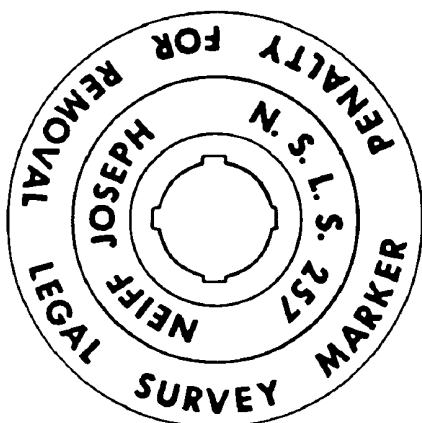
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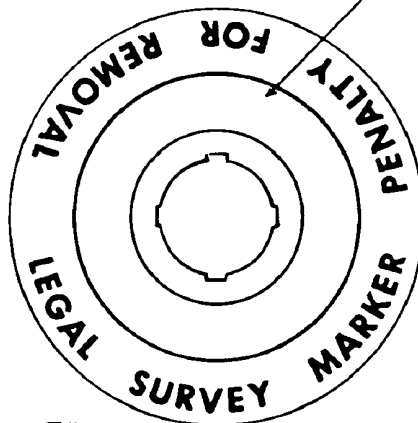
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