The Nova Scotian Surveyor

Published Quarterly under the Auspices of

The Association of Provincial Land Surveyors of Nova Scotia Incorporated

Founded 1951 R. E. Millard, P. L. S., Managing Editor Incorporated 1955

VOLUME 9 MARCH 1959 NUMBER 18

The Eighth Annual Meeting

held in the Lord Nelson Hotel, Halifax, N. S., Monday and Tuesday, October 27th and 28, 1958.

TUESDAY'S MINUTES

The meeting was called to order by President Ball at 9:30 a.m. Tuesday, October 28th, 1958.

President Ball introduced Mr. Charles Reardon, Planning Engineer for the Municipality of the County of Halifax.

Mr. Reardon distributed a copy of the subdivision regulations for the Municipality of the County of Halifax, and asked that the members read these regulations and he would be glad to answer any questions regarding them.

SUBDIVISION REGULATIONS MUNICIPALITY OF THE COUNTY OF HALIFAX

(Made pursuant to Part III of Chapter 292 of the Revised Statutes of Nova Scotia, 1954, as amended, The Town Planning Act.)

PART I

Procedure to be adopted for the approval of tentative plans.

1. A tentative plan may at the discretion of the developer be submitted in duplicate to the Board for approval, subject to submission of the final plan for approval and registration as hereinafter set out.
2. A tentative plan shall be drawn to a scale of not more than 200 feet to 1 inch and may be based upon a deed description of the property to be subdivided whether or not the deed description is based upon a survey.
3. A tentative plan shall show the following:
   (a) The proposed name of the subdivision;
   (b) The name of the owner of the subdivision and the names of all abutting properties;
   (c) The proposed size and shape of lots and blocks;
   (d) The proposed width and location of streets;
   (e) The access or accesses to existing streets or highways;
   (f) The proposed building lines;
   (g) The north point, the scale, and the date;
   (h) The areas, if any, to be reserved for public purposes;
   (i) Key plan showing relation of proposed subdivision to adjacent lands of subdivider whether subdivided or not subdivided.
4. Approval of a tentative plan shall be conditional upon eventual survey by a certified land surveyor of the Province of Nova Scotia, and the submission of a final plan pursuant to Part II of these regulations.
5. One copy of each tentative plan submitted shall be returned to the submitter, with such comments superimposed thereon as the Board deems advisable.

PART II

Procedure to be adopted for the approval of final plans.

6. Final plans of subdivision submitted for the approval of the Board shall show the following:

   (a) The name of the subdivision;

   (b) The name of the owner and the signature of the Nova Scotia Land Surveyor who made the survey;

   (c) The boundaries of the survey, with accurate distances and bearings, as determined by survey in the field and which bearings and distances must balance and close;

   (d) The street or road boundaries on all streets or roads, proposed or existing, and the widths thereof;

(e) The accurate location and description of all monuments. Permanent monuments of natural stone, concrete, iron or steel must be set as such points as will enable any land surveyor to correctly lay out any lot in the subdivision. Trees, piles of stone and wooden stakes will not be accepted as permanent monuments.

(f) The length and bearing of the lines of all lots, roads, rights-of-way, and easements as laid out, the length of arc, the points of curvature, radii, and tangent bearings in the case of curved lines;

(g) Each lot numbered or lettered and each street tentatively named. The tentative name may be confirmed if no other street or road in the Municipality bears the same or similar name.

(h) The accurate outline of any or all property which is offered to or dedicated for public use, with the purpose indicated thereon, and the accurate outline of all property that may be reserved by covenant for the common use of the property owners in the sub-division;

(i) Each private restriction, if any;

(j) The north point, with an indication whether it is true or magnetic, the scale which shall not be more than 100 feet to the inch, and the date;

(k) The names of the owners of each abutting property;

(l) Such contours or elevations as are necessary to determine the contours of the roads and the drainage of the land, and where grades on roads exceed seven percent they shall also be shown;

(m) A clear space or binding margin of at least one inch in width along the edge first mentioned in each enumeration of plan sizes in Part III of these regulations;

(n) A clear space of at least eighteen square inches for memorials and other necessary endorsements, and

(o) Certification by a Provincial Land Surveyor of Nova Scotia in the manner following or to like effect:

"I certify that this plan accurately shows the manner in which the land included therein has been surveyed (and subdivided) by me and that the said plan is prepared in accordance with the provisions of the Registry Act."

Dated the day

A.D. 19

Provincial Land Surveyor "

SUBDIVISION REGULATIONS
MUNICIPALITY OF THE COUNTY OF HALIFAX

PART III
PLAN SIZES

7. Plan sizes shall conform to the following specifications:

Plan Size A	11 inches by 13 inches
Plan Size B	11 inches by 16 inches
Plan Size C	17 inches by 21 inches
Plan Size D	22 inches by 27 inches
Plan Size E	24 inches by 33 inches
Plan Size F	28 inches by 38 inches

PART IV
SIZE AND SHAPE OF LOTS

8. The Board shall not approve a lot having an area of less than 6,000 square feet and a width of less than 60 feet in any subdivision planned for a year-round residential use.

9. The provisions of Section 8 may be relaxed at the discretion of the Board in the case of subdivisions where piped water is available, subject to the approval of the council of the Municipality of the County of Halifax and the Minister of Municipal Affairs.

PART V
SIZE AND SHAPE OF BLOCKS

10. Blocks of lots shall be designed so as to give right angled access at intersecting streets so far as possible;

11. A pedestrian walkway at least twelve feet wide through and near the centre of the block shall be provided in all blocks over 800 feet long;

12. The Board shall not, in general, approve a block over 1,200 feet in length.

PART VI
STREETS, ROADS AND RIGHT-OF-WAY

Width

13. The Board shall not approve any new streets or extension of an existing street or road in a subdivision plan submitted to the Board having a width of less than 66 feet, except that streets which are not through streets may be approved if they have a width of not less than 50 feet;

14. The Board shall not in general approve of private rights-of-way but may or may not approve of private rights-of-way in particular cases where it is deemed by the Board to be in the public interest.

Grades

15. When the grade of any proposed street in any subdivision plan submitted to the Board exceeds seven percent the plan will be accompanied by a letter of approval of the plan and grade from the Department of Highways for the Province of Nova Scotia attached to the plan.

Cul-de-sacs

16. Where cul-de-sacs are used to develop odd shaped remnants of the subdivision or to fit the street pattern to the topography of the tract they shall be determined by a turn-around having a minimum of 45 feet from the centre of the cul-de-sac.

17. The Board shall not approve a lot or a cul-de-sac having an area of less then 7,500 square feet and a frontage of less than 50 feet.

18. The Board shall not approve any cul-de-sac over 500 feet in length unless the reasons therefor satisfy the Board.

Intersections

19. Streets shall intersect one another at right angles or as nearly to right angles as possible.
20. The number of streets converging at one point shall be kept to a minimum.
21. The number of minor streets intersecting a major throughfare shall be kept to a minimum.

Curves

22. Where street lines deflect from each other at any given point more than 10 degrees there shall be a connecting curve, and the radius of the curve for the inner street line shall not be less than 350 feet for the major throughfare, 250 feet for local major streets and 100 feet for local minor streets.

Continuation of adjoining streets

23. The Board may require that streets be continued to the boundaries of subdivisions.
24. Where streets in adjoining subdivisions abut the boundaries of subdivisions submitted to the Board such streets shall be continued into such subdivision.

Mr. Reardon asked that the Association take an active part in improving these regulations.

Mr. Adams said that he feels that astronomic bearings should be used in preference to magnetic bearings.

Major Church said that if magnetic bearings are used, that the time and date that the bearings were read, and also the number of the compass should be recorded and shown on the plan.

Mr. Reardon said that they cannot make changes at will but that this is only a start and that subdivision regulations will be amended each year if necessary.

Mr. Reardon said that the Provincial Director of Planning will act as a consultant to assist the Municipalities in setting up their planning Boards and their regulations.

Mr. John E. MacKenzie said that plans should be contoured so that the planning of future roads and sewers may be done more easily.

Mr. Reardon said that he agreed with Mr. MacKenzie.

Mr. Adams said that he feels that the Planning Boards are weak in their composition.

Mr. MacKenzie reminded Mr. Adams that there are others who are available to serve the planning boards in an advisory capacity.

President Ball then asked Mr. Reardon if he would like to ask a few questions.

Mr. Reardon said that one thing he would like to ask is that the Association fix their fees. He said that he feels that there is too much variation in fees.

Mr. Reardon said that the planning board is often called upon to recommend a survey, but that they sometimes feel that they cannot do this unless they know what the surveyor will charge.

President Ball then read the schedule of fees as recommended by the Association.

Surveyor per day	$ 35.00
Surveyor and one assistant	$ 47.00
Surveyor and two assistants	$ 55.00
Descriptions	$ 5.00
Accident Survey (minimum charge) ..	$ 35.00
Time spent at Land Titles Office, per hour	$ 5.00
Profession Services in Court, per day	$ 50.00
Surveyors Certificate of Location ..	$ 15.00

Plans to be made on a $5.00 per hour basis with a minimum charge of $10.00 per plan.

Reports to be charged on a $5.00 per hour basis.

President Ball informed Mr. Reardon that these rates were approved by the members of the Association at a Special General Meeting, held in Halifax on the 30th day of April 1956.

Prof. Piers said that he feels that the people shop around to get the surveyor with the lower fees.

Mr. Adams said that it is our own fault, that the membership cards should have the recommended schedule of fees printed on the back.

Mr. Irwin Cameron said that he feels that some of the fees are too high for some types of work, particularly in the country areas.

President Ball then informed the meeting that he must bring this very informative period to a close as it had already run over the allotted time.

President Ball then thanked Mr. Reardon for coming to the meetings and giving so generously of his time.

President Ball then introduced Mr. Willis F. Roberts, Assistant Director of Surveys, Department of Lands and Mines, Province of New Brunswick who presented a most interesting paper in which he outlined some of the most important steps that will be required to be taken by our Association if our new Act is passed during the next session of the Legislature.

President Ball thanked Mr. Roberts for his most excellent paper, and said that we will keep in mind all the excellent advice he has given us.

President Ball then introduced the members of a panel consisting of men who are often associated with land surveyors in their business, and who would give their answer to the question "What do you expect from the Land Surveyor".

The panel consisted of:

Mr. W. J. MacInnes, Lawyer
Mr. Arthur Speed, Real Estate
Mr. Donald Bird, Planning Engineer

with Mr. Freeman Tupper as Moderator.

Mr. Tupper said that he would like to call upon Mr. R. E. Dickie, Chief Surveyor, Mersey Paper Company to serve as a fourth member of the panel.

Mr. Dickie agreed to do so, but said that he would like to give warning that he had not come prepared for this.

Mr. Tupper first called on Mr. W. J. MacInness who would inform the members what the legal profession expects from the land surveyor.

Mr. MacInness thanked the members for being invited to take part in the meetings, and told them that the legal profession expects accuracy from the surveyor, and good draftsmanship, but that they are not getting it.

Mr. MacInness said that plans by different surveyors, of the same area are often different, and that they may vary by as much as 10 to 15 feet. He said that they can only assume that this is because of an error in the original survey, but that they do not know for sure.

Mr. MacInness said that they do not get enough information from the surveyors, and that he feels generally that surveyors plans cannot show too much information.

Mr. MacInness said that some survey plans only give the distance of one bound, that other distances are not given and when scaled do not check, and that new surveyors often have difficulty in making a resurvey.

Mr. MacInness said that the surveyor has the opportunity to serve the lawyer in a consulting capacity.

Mr. MacInness said that he would prefer that the client comes to the lawyer first and the lawyer could then obtain the services of the surveyor.

Mr. MacInnss said that the client often needs information on the location of, and on the lay of the land. He said that this is work for the consultant.

Mr. MacInnes said that a lawyer cannot do a trespass case without the assistance of a land surveyor. He said that the land surveyor is needed to procure evidence and to verify monuments and to assist the lawyer in the presentation of evidence. He said that the surveyor should be a good witness.

Mr. MacInness said that the legal profession does not rely on the land surveyor as much as they should.

Mr. MacInness said that the land surveyor should be able to explain his plans, and that the surveyor is needed in real property work, and in title work. The surveyor is needed to make out accurate descriptions. The surveyor should understand the older types of survey work. He said that the surveyor should keep a good filing system.

Mr. MacInness said that the lawyers can also be of service to the land surveyor.

Mr. MacInnes said that the land surveyors should set a standard rate of fees and that this could be done through the Association, and that the surveyors should stick together and not undercut to get a particular job.

Mr. MacInness said that the surveyor should tell the client why the survey should be carried out and what he expects the costs will be.

Mr. Tupper then thanked Mr. MacInness for taking part in the Annual Meetings and for his most informative answers to the question of what the legal profession expects from the land surveyor.

Mr. Tupper then explained that the most of the original land grants were granted as small individual lots and that later many of these small grants were purchased by large companies such as lumber and pulp and paper companies and now form large blocks of land.

Mr. Tupper then called on Mr. R. E. Dickie, Chief Surveyor for the Mersey Paper Company, for his views on what the large lumber and pulp and paper companies expect from the land surveyor.

Mr. Dickie said that first of all these companies require that their surveyors be expert woodsmen as well as surveyors. He said that the large companies require a surveyor who understands the woods and knows how to locate the old survey lines and corners. Mr. Dickie said that this also requires a knowledge of the peculiarities of each of the old surveyors, which will give him some idea of the type of work to be expected on the ground. Some of those old surveyors were good and others were not so good.

Mr. Dickie said that when companies such as the Mersey Paper Company purchase a number of small lots which will form a large block, only the lines forming the outside boundaries of the block are resurveyed, and each individual lot is only surveyed when it is necessary to establish evidence which will aid in the location of the outside boundaries.

Mr. Dickie said that the lumber companies expect that surveyors in their employ fully understand the problems involved in locating the old woods lines.

Mr. Dickie said that surveyors are also expected to make accurate surveys of the old grant lines, as the companies are insisting more and more that accurate maps and plans of their holdings be made available for better land management.

Mr. Dickie said that in order that these maps and plans may be compiled it is necessary that the surveyor take observations on the sun or the pole star at regular intervals in order to establish the proper magnetic declination.

Mr. Tupper then thanked Mr. Dickie for coming up at such short notice and giving us his answer to the question of "What do the Lumber and Pulp and Paper Companies expect from the Land Surveyor".

Mr. Tupper then called on Mr. Donald Bird, Director of Planning, Department of Municipal Affairs, and asked Mr. Bird to give his answer to the question "What does the planner expect from the Surveyor?"

Mr. Bird thanked Mr. Tupper and said that most of what he had to say had been covered by the previous panel members.

Mr. Bird said that it is the duty of the land surveyor to explain to his client the requirements of modern land management.

Mr. Bird said that the public must be educated in the value of having their lands surveyed. He said that at the present time, the public does not want to spend money on surveys.

Mr. Bird said that the surveyors should talk about town planning and try to create the public interest in this matter. He said that they should talk to the town councillors and other officials and try to convince them of the importance of the planning boards.

Mr. Tupper than thanked Mr. Bird for taking part in the panel and for his advise on what the planner expects from the land surveyor.

Mr. Tupper then called on Mr. Speed and asked him for his views on what the Real Estate man expects from the land surveyor.

Mr. Speed said that there is a need for the land surveyor to adopt a professional approach to his client, and to act always in the capacity as consultant as well as surveyor. He said that a land surveyor must be more than a maker of good plans and good descriptions, and must also be competent at giving good advice.

Mr. Speed said that individual owners of land, especially large tracts, who call in a land surveyor to carry out a survey often are not aware themselves what they really require, therefore the land surveyor should as a preliminary to any work first carefully question his client to determine what is in his client's mind, and then from his professional knowledge should counsel his client as to the most efficient, time saving, and cost saving method of accomplishing this. That is if all that the client requires is a close approximation of how much land he has, together with his boundaries, then if the land surveyor knows that the most economical way to achieve this is through an aerial survey, he should advise accordingly, and not dash out on an extensive and possibly costly ground survey. Mr. Speed said that if it is the intention of the owners to subdivide his property and if he has not consulted with any other person regarding this, then a great responsibility falls on the land surveyor to advise his client of the pitfalls, and pros and cons of land subdivision and development, and to obtain further advice as follows:

1. Consultation with the County or Town Planning Engineer to see how such a development would be received by the planning board, and to check on Zoning, and future plans if any, for the area.

2. Consultation with the Highways Department, to see what their requirements would be, and what road widths they would allow, etc.

3. Consultation with Central Mortgage and Housing Corporation to see what their Lot requirements would be for the area and determine in advance whether such a sub-division as may be proposed would be accepted by them at that time for mortgage purposes.

4. A check also with one or two local mortgage companies to determine their feelings on the development.

5. Possibly also, consultation with a qualified realtor or appraiser to determine his views on the possible success, and selling prices which may reasonably be expected after development.

6. Title search, to confirm clear title.

Mr. Speed said that without consultation on the above lines the land surveyor should not commence a survey, and if investigation shows that a development at this time would be ill advised then the land surveyor should advise his client.

Mr. Speed said that all this stresses the need for a professional approach in the work of a surveyor, and that besides being competent practical surveyors, you should strive also to be professional consultants in your own line.

Mr. Speed said that one or two points that he would like to make before closing were as follows:

1. That is would be highly desirable from all viewpoints, if when a property is surveyed, that a certified copy of the survey plan be incorporated in the deed to the property. This would undoubtedly be of great assistance to the owner, the barrister, contractor, realtor, surveyor and any others through whose hands the Deed to the property may ultimately pass.

Mr. Speed said that he felt that this would be a beneficial idea that the Association of Provincial Land Surveyors of Nova Scotia is in an excellent position to sponsor.

2. Mr. Speed said that he would like to see all land surveyors place at least one iron stake on each and any lot that they may survey, and place at least one concrete monument in any sub-division of reasonable size. He said that he feels that the extra cost of this would be gladly born by the owner.

3. Mr. Speed said that he would also, like to see, as a matter of personal preference, curves on roads in sub-divisions drawn or rather planned as straight lines, similar to a series of cords in a circle. A road thus surveyed will naturally form a curve, and yet will be easier to survey, and easier for lay persons to follow.

Mr. Speed said that these were a few of his personal comments and an attempt in part to answer the question "What do you expect of the Provincial Land Surveyor".

Mr. Tupper then thanked Mr. Speed for his very informative reply to the question of what a Real Estate Man expects from the Land Surveyor.

Mr. Tupper said that the panel was now completed and turned the meeting back to President Ball.

President Ball then thanked the members of the panel for their most informative contribution to our Annual Meeting.

President Ball then adjourned the meeting until 2.30 p.m. and asked the members of the Council and the Legislation Committee to remain for a brief meeting with Mr. MacInness, who will represent the Association when our Bill is again presented to the Legislature.

The meeting was again called to order by President Ball at 3 p.m.

President Ball said that due to the late start of the afternoon session he would dispense with the formal installation of Officers, and would now turn the meeting over to the incoming President, Mr. Herbert Martell.

President Martell thanked the members for the honour of serving as their President, and said that he would try to carry on as ably as the Past President, Spencer Ball, and those who so ably served before him, but that he knew that he would have his hands full.

President Martell then read the list of the members of the new Council and said that if at any time the members feel that they would like to contact any of these officers that they should not hesitate to do so.

President Martell said that the land surveyors should always strive to improve their standards their relations with the public. He said that the Association will not back up poor work by any of the members.

President Martell then informed the members that the next Annual Meeting will be held in Halifax on the last Monday and Tuesday in October 1959.

Mr. Bates asked if the members will be given the opportunity to pay their dues before the close of the meeting.

The Secretary advised Mr. Bates that he would take their dues immediately following the close of the meeting.

Mr. Adams moved a vote of thanks to the Past President, Col. Spencer Ball.
Seconded by Prof. Piers. Motion carried.

President Martell then brought up the matter of amending the by-laws to permit the appointment of life members.

A discussion period followed and it was thought that it would not do to amend the by-laws just now as a complete revision will be required if our Bill is passed during the next session of the legislature.

Past President Spencer Ball made the motion that the matter of appointing life members be referred to the Council.

Seconded by John E. MacKenzie. Motion carried.

Mr. Adams said that we are falling down in the matter of publicity. He said that in 1957 we had no publicity and that we got very little again this year.

President Martell said that the publicity committee should consider this matter.

Mr. Gamble told the meeting that the Canadian Institute of Surveying has discovered that it is better to give the information to the press.

Mr. Gamble said that he would again like to thank the association for the invitation to attend, and take part in the Annual Meeting.

President Martell informed Mr. Gamble that we appreciated having him with us, and that he hoped that Mr. Gamble would return again next year.

President Martell then asked the members for their opinions on a motion passed at the July 14th meeting of the Council, that the President of the Association be made a member of the Atlantic Provinces Economic Council.

Mr. March said that he had made the motion, and that it was his opinion that the President should be a member of A.P.E.C. He said that he did not know what it would cost and if the cost is too high then we should drop it, but if it is not too high then we should get in on the ground floor of A.P.E.C. by making the President a member.

Mr. March said that he would again make the motion that the President become a member of the Atlantic Provinces Economic Council.

Seconded by Major Church. Motion carried.

Mr. Bates said that he would make an amendment to Mr. March's motion, that the matter of the President becoming a member of A.P.E.C. be left at the discretion of the Council and subject to cost.

Seconded by Mr. Adams. Motion carried.

Mr. Adams moved a vote of thanks to Mrs. March for her work on the arrangement of the programme for the visiting ladies.

Seconded by Mr. Tupper. Motion carried.

Mr. March said that he would be glad to convey the message to Mrs. March.

Mr. R. F. Mucklestone said that on behalf of the visiting ladies that he would like to express their appreciation to Mrs. March and Mrs. Ball for their splendid programme of entertainment.

Mr. A. F. Chisholm said that he would like to thank the Association on behalf of the students from Dalhousie and other universities as well, for the invitation to visit the instrument display and the Tellurometer demonstration.

President Martell said that if there is no further business that a motion of adjournment is in order.

Mr. John E. MacKenzie made the motion that the meeting adjourn.
Seconded by Mr. Cossitt. Motion carried.

The Eighth Annual Meeting closed at 3:45 p.m.

Tellurometer Demonstration

The Tellurometer system of distance measurement was demonstrated at the Nova Scotia Land Survey Institute, Lawrencetown, Annapolis County, Nova Scotia on 30 October 1958.

The demonstration was arranged through the good offices of R. K. Rosebrugh, Esq., General Manager, Tellurometer of Canada Ltd., 1562 Carling Avenue, Ottawa.

Mr. Rosebrugh was present himself and was assisted by an impromptu though very competent "Tellurometer Team" — to wit, Messrs. W. C. McLellan, A. B. Grant and J. V. Brown all of the Department of Mines and Resources, Ottawa. These latter gentlemen had driven down to attend the official opening of the new Institute building and stayed over to help with the demonstration which took place the day following.

Prior to the operation of the equipment in the field the instruments were assembled and set up indoors. The general principles of the Tellurometer system were then explained and illustrated by Mr. Rosebrugh. This portion of the demonstration was most interesting, for the only information available to us heretofore had been by way of technical reports and general literature. These are interesting and informative, but they can never match the appeal of an opportunity of seeing the actual equipment itself.

Briefly, the Tellurometer system employs radio micro-waves in the measurement of distance much the same way as does Radar. The basis of distance measurement is then, the speed of light and the time of travel of the radio wave. Slope measurements are made between two stations; the Master set being at the observing station and the Remote set at the observed station. The operator with the Master set makes and records the observations while the controller of the Remote set switches frequencies as instructed by the Master. Barometric and hygrometric equipment, for the determination of meteorological conditions, are carried with each station. A two-way radio-telephone provides intercommunication for the operators.

The scheduled demonstration had been considered an ideal opportunity of obtaining a check on the validity of the triangulation system installed in the Lawrencetown-Middleton area by students of the Nova Scotia Land Survey School of former years.

Various checks made during the past few years had revealed an error somewhere in the system but efforts to pin the error down had been unsuccessful. The measurement of several lines with the Tellurometer might provide the necessary information upon which to base an adjustment of current figures.

As it turned out, inclement weather resulted in our remaining out long enough to obtain only one measurement and this on the shortest line in the system. The site chosen for the Master set was Hatt, a station at the foot of the South Mountain. The Remote station was first set up at BIELD, distant a little more than a mile away, north of the river near No. 1 Highway. Results were as follows:

Method	Slope Distance
Tellurometer	6666.64
Triangulation	

Slope	Horizontal Distance
01°-16'	6665.01 feet
	6666.54 feet
Difference	1.53 feet

The discrepancy noted above is about three times the error previously considered to be present with respect to the position of BIELD. Plans were being made to re-cast the whole of the triangulation system in any event; this makes such a project a necessity. Much of the existing error may be laid to faulty base line measurement. This had been done with the only equipment available at the time—an engineer's transit and ordinary 100 foot tapes. To overcome the difficulties of base line measurement it is proposed to use two existing Geodetic Survey monuments at Aylesford (some 20 miles east of Lawrencetown) and carry the network westerly. New stations will be set up and former stations shifted, as need be, to more convenient locations.

When the slope distance HATT to BIELD had been obtained in the field, the slope factor was recalled (from memory) as 0°-16' instead of 01°-16'. This was applied at the Master Station, in reducing to the horizontal, giving very nice agreement between the Tellurometer and triangulation results. Subsequently it was found that memory is a poor substitute for recorded data. This is by way of explanation to those members of the demonstration team who left Lawrencetown under the impression that the differences were practically negligible.

Mr. Rosebrugh's efforts in organizing the demonstration are very much appreciated. It was an excellent show, although cut short by the weather.

J. F. DOIG, Provincial Land Surveyor

A COMPARISON OF RESULTS OBTAINED IN DETERMINATION OF THE MERIDIAN BY THE

Altitude and Hour Angle Methods

In July 1958 students of the Nova Scotia Survey Institute under the supervision of J. A. H. Church, P.L.S. made the control survey for the Town of Digby at the request of the Department of Mines, Province of Nova Scotia.

Preliminary reconnaissance indicated that the best methods of meridian determination was to select a position in the town from which four of the permanent monuments in the area could be seen, and use a round of angles taken at the selected position for a trigonometrical resection. This was done. However, the resection -45° method) would not compute satisfactorily. Further investigation established the fact that at least two of the permanent monuments (Victoria Beach Light House and Port Wade Light House) had been moved from the positions recorded in 1924. It was later verified that Digby Light House, another of the permanent monuments, also had been moved —some 40 feet in this case. It might be remarked here that only two permanent monuments remained available, and these were not intervisible, namely Digby Town Hall and Shaffner Point Light House. Then too at this stage, no one could be certain of Shaffner Point.

The situation noted made it imperative that meridian determination for the survey be accomplished by astronomic observations. Evening cloud conditions in early July made stellar observations impossible so recourse was had to four solar observations. It is the results of these solar observations which form the basis for this paper.

The instrument used was a K & E 6¼" horizontal circle transit. Radio time signals were available from Station WWV, Washington, D.C.

The following tabulation is a resume of the completed computations for azimuth, using Digby Light House as the R.O. The horizontal and vertical circle readings were recorded for all pointings in all observations. The hour angle results were obtained by discarding the vertical circle readings.

No. of Pointings Half RF Half LF	ALTITUDE Time Check Note (a)	Azimuth
6	02.0s	03°-14'-56"
4	01.6s	03°-15'-53"
4	01.0s	03°-16'-00"
4	02.3s	03°-14'-55"
	MEAN	03°-15'-26"

DIFFERENCE BETWEEN OBSERVED AND COMPUTED ALTITUDE OF SUN NOTE (b)	HOUR ANGLE Azimuth	OBS
21"	03°-15'-32"	J. F. Doig
14"	03°-15'-38"	A. C. Gilmore
11"	03°-15'-34"	B. P. Potter
11"	03°-15'-31"	J. F. Doig
	03°-15'-33.75"	

Notes:

(a) The time check is the difference between the value for the Local Apparent Time computed from the observed altitude of the sun and the value for Local Apparent Time obtained by the reduction of the watch (or radio) time of the observation. (See "Azimuth Determination" by E. F. Coddington, EES 2 No. 79, Ohio State University Studies, Engineering Series, 1944.)

(b) The altitude of the sun for each set of pointings was computed by Napier's Analogies, using the average watch time of observation of the set as the basis for determinifg the hour angle.

It will be noted that the maximum variation between the azimuth values of the several sets of pointings is:

(a) ALTITUDE METHOD 01'-05"
(b) HOUR ANGLE METHOD 00'-07"

Yet the average value of all the altitude pointings and all the hour angle pointings differ by only 08".

On the basis of the tabulation it is apparent that the hour angle method is the more accurate approach of the two methods for meridian determination. Much of this is due to the observer having less to do in a given period of time. The hour angle method calls for the determination of the instant of bisection of a small arc of the sun's disc. The altitude method requires the observer to determine the instant of tangency to the sun's disc of the vertical and horizontal cross-hairs. The latter is not as simple as the former. A portion of the tabulated difference between the observed and computed altitudes of the sun is accounted for by the use of a vernier reading to single minutes only. Another portion may be attributed to lack of tangency of the horizontal cross-hair. The error in tangency though is probably of a constant value for a given observer, and if consistently early or late should be cancelled out by the normal practice of obesrving the sun in opposing quadrants.

The results of the Digby observations conform to Professor Coddington's statements in "Azimuth Determination" referred to above, namely,

(a) Re the ALTITUDE Method: "If the difference between the computed and observed times exceed 5 seconds, the computed azimuth will probably be in error by at least a minute."

(b) Re the HOUR ANGLE Method: "The time method is the more accurate if the observation time may be determined with an error not to exceed one or two seconds."

These statements apparently hold true for a single set of pointings, for as seen, when a series of pointings by either method is averaged the difference in azimuth is for all ordinary purposes negligible.

The Digby observations also serve as a good illustration of the results obtainable when a series of pointings is made and these results averaged, because a check was finally obtained against work of the Topographic Survey.

The accepted astronomic azimuth for traverse computation was the mean of the hour angle results (030-15'-33.75"). Shaffner Point Light had been included in the round of angles taken at the resection station and following this round of angles, a traverse had been made to the permanent monument in the Town Hall building as part of the traverse framework for the survey of the town itself.

The rectangular coordinates of the Town Hall and Shaffner Point were computed for a common origin from the Geographic Coordinates supplied by the Topographic Survey. The rectangular coordinates of the resection station were computed from the traverse from there to the Town Hall. The grid azimuth from the resection station to Shaffner Point was computed from the coordinates so obtained and the grid convergence at the resection station applied to produce the astronomic azimuth. The angle read between Digby Light (the R.O. for solar observations) and Shaffner Point was then applied to the azimuth determined by the observations. The extent of the agreement between the two results was most fortunate, viz;

Source	Astronomic Azimuth	Distance (ft.)
Topographic Survey	45°-04'-40.88"	48,906.88
Digby Traverse & Solar Obs.	45°-04'-41.20"	48,905.53
Difference	00.48"	1.35

Linear agreement of 1 part in 36,200

In summary, then, a single set of pointings by the hour angle method is more accurate than a single set by the altitude method, but no check on the value of the azimuth can be incorporated into the hour angle computations from the field data. For all ordinary purposes either method will give results within plus or minus 01' of arc. In order to make the best use of either or both methods, all the surveyor requires is a watch of known rating and access to a radio time signal within an hour or two before and after the observation.

J. F. DOIG, Provincial Land Surveyor

Report on 52nd Annual Meeting of the Canadian Institute of Surveying

By J. A. H. Church, Provincial Councillor, N. S.

The meeting January 28th to 30th inclusive was, in the opinion of the writer, an unqualified success. The papers presented were of so high a standard that it would be invidious to attempt any evaluation but those which had particular interest to the Nova Scotian Surveyor were, in order of presentation:

(1) "The Role of Survey in Guaranteed Titles in Ontario". Mr. W. Marsh Magwood, Q.C., Director of Titles in Ontario.

(2) "Surveying for the Oil Industry" Mr. J. W. Hill Triad Oil Company

(3) "Application of Photogrammetry to Forest Inventory in British Columbia". Mr. William Hall Dept. of Lands and Forests, Victoria.

(4) "Education in Surveying in Laval University" Professor L. Z. Rousseau, Dean of Faculty of Surveying and Forestry.

These were technical papers and the non technical paper "The Nova Scotia Land Survey Institute", Mr. W. D. Mills, Associate Director, Vocational Education Division, Nova Scotia, was a most important one from the point of view of what turned out to be the key of the 52nd Annual Meeting, i.e. education for Land Surveyors.

Mr. Mills laid down in unequivocal terms the aims of the school and that together with Professor Rousseau's paper showed that in Canada there are, at the moment, only two schools in Surveying.

1. Laval University, Quebec.
2. Nova Scotia Land Survey Institute at sub University level.

Reports from the Ontario Land Surveyors indicated that, due to the raising of standards in examination consequent upon technogolical advances in recent years, the number of students successful in the Intermediate examination was causing a grave concern

It was very evident that in the very near future a number of universities will set up facilities in Surveying patterned, in the writers opinion at least, upon that of Laval University. To quote Professor Rousseau from memory—"while not impossible the non university student will find it increasingly hard to qualify in his profession as time progresses". Just because, in the past fifty years, surveying has been somewhat neglected in universities, generally it would be unwise to expect a continuation of that attitude.

In conclusion it is urged that every reader of the Nova Scotian Surveyor qualified to do so join The Canadian Institute of Surveying, the fee for a member is $5.00 and for a Junior member $3.00 per year. The papers published in the Canadian Surveyor are well worth many times the sum, if such a man goes to the Annual Meeting in Ottawa he will be amply rewarded for the time and money expended.

THE LAND SURVEYOR IN NOVA SCOTIA

By J. A. H. Church, P.L.S. Nova Scotia

Fortunately, the writer has never depended for his living on practice as a Provincial Land Surveyor, and he has not experienced the frustrations consequent upon the inadequacies of our Land Surveyors Act, Town Planning Act, and land registration system.

It should be noted that Nova Scotia is, in effect, unsurveyed territory, except that the federal geodetic, topographic, and hydrographic services have established some permanent reference monuments in the province. For these we are indeed thankful.

This year, the writer had occasion to search for 26 of these monuments, in the vicinity of four incorporated towns, in connection with the control survey for plans to be made from aerial photographs. Only seven were found and three of these were mutilated. Such destruction (73%) of permanent monuments indicates the carelessness in survey matters that is so characteristic of the provincial attitude.

Only one traverse between permanent monuments established by the Federal Topographic Survey was possible. The provincial Department of Mines had to carry out a new geographic position determination at one town. At another, only one monument could be found and an astronomic azimuth determination had to be made. At a third town, triangulation had to be carried across a harbour. All this was due to lack of proper care by contractors who were making highway improvements.

One understands that all endangered monuments are now moved and referenced, as a matter of course, but we shall be bedeviled for many years as a result of past neglect.

As for the vexing subject of land registration, you people who enjoy the benefits of the Torrens System, or its equivalent, are really fortunate. The chaos in our Land Registry Offices has to be experienced to be realized. It is fantastic. This is no reflection on the Registrars for, in so far as one may judge, they don't like it at all. The question of finance seems to be one difficulty; in many cases staff and floor space are grossly inadequate.

Believe it or not, it is not even obligatory to furnish:

1. A deed that is not self-contradictory;

2. A description of metes and bounds referred to a permanent monument or topographical feature;

3. A plan (the Registrars are working toward this end, but there is no provision for proper filing of plans. Progress seems to be like the movement of a glacier—not very rapid);

4. Evidence that any plan or document has been checked by an independent party.

Here is a case in point—an extract from a lease:

Registry of Deeds,
A.B. ..... County,
to Book 7598 page 9754.
X.Y.Z. Date: October 1956.

" doth hereby lease to the LESSEE all that parcel of land owned by the said LESSOR situate, lying and being at in the County of having a depth of one thousand feet (1000') and a width of one hundred feet (100') being the lands on which the said LESSEE is now erecting buildings ....."

The Town Planning Act gives rise to certain particular difficulties. Under this act, and its amendments, incorporated cities and towns, as well as country municipalities, are now required to set up town planning boards under the direction of the Department of Municipal Affairs. The operation of these boards varies from good to deplorable. The act might well be said to be more evaded than observed. In the writer's opinion, even the best of the county boards has approved at least some deplorable subdivision plans as recently as 1952. The usual excuse is: "Well, you know we can't be too hard on old So-and-So; he means well." Nevertheless, it is hardly fair to the public to have to pay for such work.

The writer knows of several flagrant cases:

1. In one incorporated town, the mayor, an ex-officio member of the Board, passing on his own subdivision, approved an access road only 25 feet wide and refused to expropriate the additional width needed for access for fear of antagonizing a neighbour.
2. In the same town, the Board, although apprised of the facts, approved a subdivision (some 27 lots) surveyed by an unauthorized person.
3. In a county municipality, a man sold a lot that was surveyed subsequently as part of a subdivision. When the clerk of the municipality was approached by the surveyor with a view to obtaining approval by the Town Planning Board, he was quite unaware of any act requiring such sanction and took the plan to the Registry of Deeds Office and registered it forthwith, without benefit of the approval of the Board.

The policy in Nova Scotia seems to be laissez-faire, one that is piling up trouble at an alarming rate. One perennial headache is that of the width of provincial highways. The Department of Highways claims 66 feet, unless the width is otherwise specified in the original deed, which is, by the way, not always registered. The incorporated cities and towns claim the right to specify widths of all streets within their boundaries. Surveyors accept

either one ruling or the other, with the result that there is conflict between the various plans of city lots and blocks. One would expect city blocks and street lines to be defined by permanent monuments, but this is not so in the majority of cases.

There being no monuments in the cities and towns, one must have recourse to permanent monuments established by the Topographical Survey, if such can be found. In any case, it may entail considerable traverse if one intends to derive true azimuth from two such monuments. If only one monument be found, one must make an astronomic determination. Such a determination is not much use if made with the ordinary engineer's transit. As a result, we have extensive use of the magnetic compass without benefit of statement of the assumed magnetic declination or the index correction of the instrument used. This is certainly not conducive to accurate plans and results in reduplication of surveys and consequent extra cost to the respective clients.

Under these conditions, it is not surprising that the cost of surveying land in Nova Scotia is disproportionate to the land values involved. When a competent surveyor, determined to do a decent job, undertakes a survey he has to do what, to the client at least, is a good deal of unnecessary work.

While the standard of work done is often lamentably low, there are a considerable number of Nova Scotian surveyors who could pull their weight in any company. Theirs is a much more exacting job than that of surveyors working in a province where there is to be found what may be called the "Township Grid." With us it is a vicious circle, a laissez-faire act, enforcement left to the individual (if anyone), low land values and consequent indifferent survey practice.

To do a decent job, the surveyor's charges must be unreasonably high because of the past neglect in matters of survey and land registration generally.

The foregoing may read like a prolonged complaint but that is not the intention. The terms of reference for this parep were "a picture of the conditions under which the Nova Scotia Land Surveyor works", and there it is as the writer sees it.

No reference has been intended or made to the survey organizations of the Departments of Lands and Forests or Highways. As far as these organizations are concerned, the writer is convinced they are doing an adequate job under their own terms of reference. Our particular concern here is the lot of the private practitioner in Nova Scotia.

There are three gleams of light on the dark horizon:

1. Requirements in respect to claims and mining tracts imposed by the Mines Act, 1956, administered by the Department of Mines.
2. Aerial survey of incorporated cities and towns, a joint effort of the Departments of Municipal Affairs and Mines.
3. The Nova Scotia Land Survey School, Division of Vocational Educational, Department of Education. Admittedly this is inadequate in regard to duration of the course and syllabus, but still it is a start in the right direction. Not much is to be gained by getting too far in advance of the existing legislation.

Notice To Alumni

The first meeting to organize an alumni for graduates of the NOVA SCOTIA LAND SURVEY INSTITUTE was held February 2, 1959, at the home of Mr. Max Rafuse of Halifax, N. S. Eleven graduates attended this meeting, they are all from the Halifax area and an alumni was formed.

The officers elected were Mr. Ed Rice, president and Mr. Ted Hollingum, secretary.

Mr. Ed Rice gave the newly formed group a lengthy talk on his ideas about the function of an alumni and pointed out many interesting facts and policies for this new organization to consider.

One part of his talk was that we all work for a GRAND RE-UNION to be held at Lawrencetown, N. S. and that immediate action should be taken to set up a committee so that a definite program could get underway. It has been suggested that this GRAND RE-UNION should take place October 24-25, or preceding the annual surveyors meeting in Halifax.

To date a definite meeting place has not been selected, but it has been decided that an evening meeting is to be held on the first Monday of each month.

Signed by Ted Hollingum, Secretary,
37 Deacon Street,
Halifax, Nova Scotia

NOTICE: On going to press we have learned that our Surveyor's Act Bill No. 16 has been passed by the Provincial Legislature.

ASSOCIATION MEMBERS— 1959 DUES ARE NOW OVERDUE

SEND MONEY ORDER, addressed to Secretary-Treasurer, The Association of Provincial Land Surveyors of Nova Scotia, P. O. Box 1541, Halifax, N. S.