

# The NOVA SCOTIAN SURVEYOR



SEPTEMBER 1968

# **NOTICE**

**TO ALL HOLDERS OF PROVINCIAL LAND SURVEYOR'S LICENSES  
OF NOVA SCOTIA**

## **The 18th Annual Meeting Of The Association**

**NOVEMBER 1 and 2, 1968**

**AT THE CITADEL INN**

**HALIFAX, NOVA SCOTIA**

**PLAN NOW TO ATTEND THIS MEETING. BY ATTENDING YOU MAY SEE  
HOW THE ASSOCIATION CAN HELP YOU TO HELP THEM.**

# The NOVA SCOTIAN SURVEYOR

*Published four times a year by*  
**THE ASSOCIATION OF NOVA SCOTIA LAND SURVEYORS INCORPORATED**

**John S. Pope**  
President

**Edward P. Rice**  
Secretary-Treasurer

**R. E. MILLARD**  
Editor

Address all communications to P. O. Box 1541, Halifax, Nova Scotia

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## **THE CANADIAN INSTITUTE OF SURVEYING 1970 CONVENTION ARTICLE**

**J. E. R. March, Chairman, 1970 Convention Committee**

The Canadian Institute of Surveying has selected Halifax for its sixty-third annual meeting to be held at the Hotel Nova Scotian during the week of April 14, 1970.

The number of members and guests attending is expected to approach and probably exceed one thousand, as well as some sixty to seventy local and national companies exhibiting the latest in survey and mapping materials and equipment. By selecting Halifax for this convention, the Canadian Institute of Surveying not only recognizes our growing importance as a convention city, it also pays tribute to the recent technical advances by the surveyors and their associates in the Atlantic Provinces.

Founded in 1882, the Canadian Institute of Surveying has until this year held its annual meetings in Ottawa, where the largest concentration of surveyors and map makers are located. In February, 1968, however, the sixty-first Annual Meeting was held in Edmonton, Alberta with over eight hundred registered delegates in attendance. The program, hospitality and social events were unsurpassed, and this meeting did much to promote interest in the C.I.S. and to instill a broader appreciation of survey problems on a Canada-wide basis. For this reason, it was agreed that the 1970 meeting should be held in Halifax to foster closer relations between surveyors all across Canada and to familiarize the Atlantic Province surveyors with the latest techniques and equipment.

The 1970 Convention Committee is headed by Mr. J. E. R. March, who recently retired as Director of Surveys for the Department of Lands and Forests in Nova Scotia. Mr. March has served as National President of the C.I.S. and as president of the Association of Nova Scotia Land Surveyors and was instrumental in the formation of the Nova Scotia Branch of the C.I.S. here in Halifax in 1960.

Some fifty members have already agreed to serve on various committees for this important convention, under the direction of an executive committee consisting of:

Mr. W. F. Roberts representing New Brunswick, Director of Surveys for N. B.

Mr. F. Shortall representing Newfoundland, a private land surveyor

Dr. Gottfried Konecny, Program Chairman, from the University of New Brunswick

Mr. S. E. Daykin, Convention Secretary, President of Atlantic Air Survey, Dartmouth

Miss E. Duncan, Committee Secretary, Department of Mines, Halifax

Mr. G. T. Bates, executive member, private land surveyor, Halifax.

Mr. L. P. Murdock, executive member, hydrographic surveyor, Bedford Institute of Oceanography.

Mr. John Pope, executive member, private land surveyor, Sydney, N. S.

Mr. H. B. Robertson, executive member, Director of Surveys, Dept. of Lands and Forests, Halifax.

Mr. W. E. Servant, executive member, private land surveyor, Halifax.

The entire facilities of the Hotel Nova Scotian will be available for surveyors and their wives for the duration of the meetings and additional accommodation will be arranged at the Lord Nelson Hotel. The Convention Committee are arranging for the best of Maritime food, entertainment and hospitality to make this one of the most memorable Annual Meetings of the Canadian Institute of Surveying ever held in Canada.



## **WHAT THE CANADIAN INSTITUTE OF SURVEYING ANNUAL MEETING IS ALL ABOUT**

**by Al Daykin**

As many of you no doubt already know, the 1970 Annual Meeting of the Canadian Institute of Surveying will be held in Halifax Wednesday, April 15 to Friday, April 17, 1970, at the Nova Scotian Hotel.

This event will bring surveyors from all across Canada, the United States, and possibly even Europe to Nova Scotia, many of them for the first time. In addition, some 60 to 70 exhibitors will display the latest in survey equipment and supplies, from pencils and field books to electronic survey instruments and sophisticated photogrammetric plotters. We are anticipating a total registration of approximately 1,000 persons, using the entire facilities of the Hotel Nova Scotian and overflowing to the Lord Nelson Hotel.

A Convention Executive Committee has been set up here in Halifax comprising the following members:

J. E. R. (Rusty) March — as Convention Director will be responsible for the overall convention organization;

Al Daykin — as Convention Secretary will assist the Director and look after administrative details.

Dr. Gottfried Konecny, head of the Survey Engineering Department of the University of New Brunswick, has agreed to chair the Papers Committee the most important phase of the Convention. He has already prepared a tentative program which you will find outlined further in this issue.

Miss Eva Duncan of the Department of Mines acts as recording secretary;  
Bert Robertson, Director of Surveys, will handle registration;  
Walter Servant will arrange for printing and exhibits;  
Lary Murdock of the Bedford Institute of Oceanography — Special Projects and Communications;

George Bates is responsible for entertainment and publicity arrangements;  
John Pope, our only bachelor, will take charge of the Ladies Program.

A total of eight sub-committees have been set up with four or more members on each committee. In addition, representatives have been appointed to act on behalf of the other three Atlantic Provinces, for a total organizational group of 46 persons to date. Five executive meetings have so far been held and the frequency of these meetings will increase as the convention date draws nearer. Sub-committees are already holding meetings to formulate plans for the various events and to arrange for the many details involved.

Our first function will take place at the 1969 Annual Meeting in Ottawa. One hour has been set aside between 9:30 a. m. and 10:30 a. m. on Wednesday, February 5th, the opening morning, for the Nova Scotia Branch to sponsor some event to promote our 1970 meeting. Whatever we do here will want to have a truly Maritime flavour and generate sufficient excitement and enthusiasm to make them want to come visit Nova Scotia and participate in the program we organize for them. This is one of the reasons why we have requested a change in date for the Convention — the first time in 63 years this has not been held in January or February. Hopefully, the weather will not cause delays in arrivals or departures and will be more pleasant for visiting generally in the Maritimes.

We would like to have as many members as possible attend the Ottawa meeting next year to help us publicize the 1970 meeting. This event will be held February 5th, 6th and 7th, 1969, at the Chateau Laurier Hotel. Why not plan now to attend? Last year in Edmonton we had several new faces from Nova Scotia attending a C.I.S. Annual Meeting for the first time — Roy Dunbrack, John Pop, and Ed Rice. In addition, Ron Chisholm, Walter Servant, George Bates and myself enjoyed the Alberta hospitality. Any of these members will attest to the value of attending such a meeting, in terms of the knowledge gained and the papers and exhibits, to the many conversations and experiences shared with the other surveyors across Canada, and of course the pleasure derived from the excellent social events. Any members who think they may be able to attend the Ottawa meeting next year might advise Rusty March or myself.

Why hold the C.I.S. meeting here in Halifax in 1970 someone may ask. Firstly, to give surveyors and others in allied fields here in the Maritimes the opportunity to attend such a meeting; to hear about all aspects of surveying; and, to see the latest in equipment and supplies. Secondly, the publicity before, during and after the Convention will do much to make the public aware of the importance of our profession and perhaps give a lift to the status of surveying here in the Maritimes. Thirdly, to strengthen the bond between surveyors across Canada by letting others see and hear what we are doing here in the Maritimes. And finally, to promote your interest and, we hope, membership in the Canadian Institute of Surveying.





## **THE CANADIAN INSTITUTE OF SURVEYING**

### **1970 CONVENTION ARTICLE**

#### **Dr. G. Konecny, Program Chairman for 1970 Convention**

Dr. G. Konecny, Professor and Head of the Department of Surveying Engineering at the University of New Brunswick announced recently the tentative program for the 1970 C.I.S. Convention in Halifax. The theme of the three-day meeting will be concerned with the integrated survey and mapping program presently being initiated in the four Atlantic Provinces with the assistance of the Atlantic Development Board.

Late in March, the Hon. A. J. MacEachen announced A.D.B. grants of nearly four million dollars over two years to aid the Atlantic provinces with a surveying, mapping and land registration program to facilitate economic development of the Atlantic region. The complete program will extend over ten to fifteen years at an estimated cost of up to twenty million dollars, with further assistance beyond the initial two-year period to be considered on a cost-sharing basis with the provinces.

By 1970 sufficient progress will have been made in the four Atlantic provinces to provide the basis for four sessions covering basic aspects of the overall program. Papers on control surveys will cover the latest methods of providing a fundamental world reference network by satellite triangulation, the implications on coordinate control systems of the Provinces and particular problems in establishment, survey and adjustment of control networks. Mapping sessions will cover the problem areas of aerial surveying as a basis for the description of land and its resources. New methods of automation in mapping, such as experiences with orthophotos and auto-

mated cartography will be reviewed. Land titles sessions will discuss the implications of the advancements in surveying and mapping on a meaningful land titles system. Possible revisions of the legal means to record land will be discussed. The fourth aspect will be concerned with the ultimate use of all survey data in a data bank system. Meaningful descriptions of land are of primary importance because all records of statistical nature pertaining to land, its ownership, value, natural and human resource potential must be based on it. In this computer age such information is best stored in a form readily accessible to processing by digital computers, which the new A.D.B. sponsored program will ultimately provide.

Dr. Konecny, from U.N.B., heads one of the best recognized survey engineering departments in Canada and is a recognized expert in surveying and photogrammetry throughout the world. During 1966 - 67 he was awarded a senior National Research Council fellowship to work on moon mapping problems for Orbitor space photographs at the NASA Manned Spacecraft Centre at Houston, Texas. He has also participated in glacial survey research in the Canadian arctic and in the National Geographic Society's Mt. Kennedy expedition in 1965. His appointments and experience in recent years will enable him to arrange one of the best papers ever presented at a C.I.S. Annual Meeting.

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Office of the University Engineer  
Editor — Nova Scotian Surveyor  
P. O. Box 1541  
Halifax, N. S.

Dalhousie University  
Halifax, N. S.  
July 19, 1968

Dear Sir:

May I express my thoughts regarding the March issue of the magazine?

I found more of personal interest in this issue than in any I have read for a very long time.

Of particular interest were the reports on the annual C.I.S. meeting in Edmonton and the description of the C.I.S. by Messrs. Rice and Lapkin, but the best article was the editorial by R. E. Millard NSLS No. 6.

I also attended the 1967 Ottawa meeting and of all the men and women who were there, I believe that our Eric received more enjoyment, learned more and contributed as much as anyone. Read his editorial again, and then again, and then join C.I.S., and work on the 1970 Convention. You will be the better for it.

Yours truly,

A. F. Chisholm, P. Eng.

University Engineer.





**THE CANADIAN INSTITUTE OF SURVEYING  
1970 CONVENTION ARTICLE**

**L. P. Murdock, Chairman, Nova Scotia Branch, C.I.S.**

We in the Nova Scotia Branch of the C.I.S. are extremely proud and pleased that the 1970 Annual Meeting will be held here in Halifax in April, 1970.

The Canadian Institute of Surveying is a voluntary association of professional and technical people who are united by a common interest in the professions of surveying and mapping.

Since its beginning in 1882 the C.I.S. has grown and now has about 1,800 members throughout Canada, the U.S.A., and some twenty countries around the world. Founded originally as an association of Dominion Land Surveyors, the Institute has gradually expanded to include all surveyors, including land, sea and aerial surveyors, as well as cartographers, photo interpreters, and others interested in or allied to the fields of surveying and mapping.

The role of the Institute is to enhance the usefulness of the profession to the public, and to further the professional knowledge of its members. This is done through The Canadian Surveyor, a technical publication which has won world wide acclaim, and is

published five times annually. The Canadian Surveyor has 333 subscribers in 44 countries around the world. Through Branches established across Canada, at the C.I.S. Annual Meetings, and by means of symposiums at different locations in Canada, many technical papers are presented on a variety of survey subjects to help keep surveyors abreast of current developments.

The second role of the Institute is to represent Canada at National and International Meetings. The Institute is affiliated with the International Society of Photogrammetry and has representatives attending the Pan American Institute of Geography and History.

Presently in Nova Scotia we have some fifty members but no doubt by holding the C.I.S. Annual Meeting here in 1970 this will stimulate more interest and increase membership in the local branch. Enquiries concerning application for membership in the C.I.S. are invited and should be directed to any member of the local executive, who are: Chairman — L. P. Murdock; Vice Chairman — J. H. Ryan; Secretary - Treasurer — Miss Eva Duncan; Provincial Councillor — S. E. Daykin.

Written enquiries should be directed to P. O. Box 187, Dartmouth, Nova Scotia.

#### NOTES FROM THE SECRETARY'S DESK

As you have noticed by now, this issue of our Surveyor features the Canadian Institute of Surveying. We hope that this issue will stir up much interest in our Surveyors for the Institute and the Annual Meeting which will be held here in Halifax in 1970. As I mentioned in the March Issue, one can only comprehend the magnitude of the C. I.S. by attending their Annual Meetings. Start planning now to attend.

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Congratulations go out to Mr. S. E. Daykin on the opening of his new office in Fredericton, New Brunswick. In charge of the new office will be Mr. Peter Fenwick. Both Mr. Daykin and Mr. Fenwick are Associate members of our Association.

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During the summer, Mr. Leonard Telfer, N.S.L.S. was appointed to the teaching staff of the Nova Scotia Land Survey Institute.

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During the past year Councillors from the various areas have called group meetings which have been very successful. Meetings have been held in Sydney, Liverpool and Truro with one scheduled to be held shortly in Halifax City and County Area. The interest shown is very encouraging to the executive. The Councillors will be reporting on these meetings at the Annual Meeting. The executive ask that the members give their full support to these projects.

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It has been learned that Mr. Robert Hunt of Liverpool has left the Bowater Mersey Paper Company and entered private practise in Liverpool. All the best to Bob.

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We are still receiving letters from foreigners desiring to immigrate to Canada and are looking for employment as surveyors. Their education varies from Technical School to University degrees. The letters come from the Phillipines, England and Continental Europe. All applicants are at least required to become British Subjects, serve apprenticeship time and write exams as prescribed by the Board. Anyone that might be interested in employing such persons, please contact me at our regular address.

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In our last issue, I mentioned that Mr. H. B. Robertson was sick and in Hospital. I am now happy to say that he is well again and back to work.

Before our next issue is published our 18th Annual Meeting will be over. I am looking forward to seeing many of you again at the meeting this year and trust that you will have an enjoyable and rewarding time. We would also like to see new faces. Every year the meeting becomes bigger and better — let's see you at the Citadel Inn, November 1st and 2nd.

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#### NOTICE

From. Dr. T. J. Blachut we have the following:

#### NORTH AMERICAN SYMPOSIUM ON URBAN SURVEYING AND MAPPING

The Pan American Institute of Geography and History is organizing the Symposium on Urban Surveying and Mapping in Mexico City, from January 13 through 17, 1969. The meetings will be held at the Centro Cultural del Instituto Politecnico Nacional (Zacatenco). The program will include the following topics:

- Economic, technical and social aspects of urbanization
- Necessity and organization of urban surveying and mapping
- Detailed surveying and mapping of cities
- Establishment of horizontal and vertical control in urban areas
- Use of photogrammetry in various aspects of urban surveying and mapping
- Cadastral surveying and mapping in urban areas
- Technical tours
- Technical exhibits

The speakers at the symposium will be leading experts from Mexico, the U.S.A. and Canada and there will be ample time for floor discussions.

The organizers hope that this symposium will become an important international event which will define the most advanced procedures to be used in city surveying and mapping and will suggest a most needed organizational scheme in this field.

Information on the symposium can be obtained from:

Ing. J. Alberto Villasana,  
Secretario del Symposium,  
Ex-Arzobispado No. 29,  
Mexico, D.F.,  
Mexico.

A short note on an easy way to convert the known hypotenuse of a small angle right angled triangle to the long side when the short side is known.

All textbooks on surveying give the procedure when discussing corrections to taped distances and also apply the method when illustrating to the student what happens if a level rod is held off plumb by a known amount.

The theory behind this procedure as it is developed in the textbooks is the Pythagorean theorem using an approximation, and as long as the errors introduced by this approximation are within the allowable limit, there is every reason to use the method if you are, as most of us are, essentially a lazy person, looking for the easy way to perform calculations.

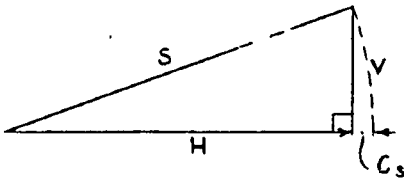


Figure illustrates usual case. Measure distance on slope, determine difference in elevations, need to find horizontal equivalent.

From geometry  $S^2 = H^2 + V^2$

Problem demands that H or alternatively  $S - H$  or  $C_s$  be found.

Transposing:  $S^2 - H^2 = V^2$

Factoring:  $(S + H)(S - H) = V^2$  but  $S - H = C_s$

therefore:  $C_s = \frac{V^2}{S + H}$

Approximation:  $S + H$  is very nearly equal to  $2S$  and the rule as stated in the textbooks becomes  $C_s = \frac{V^2}{2S}$

What sort of errors are introduced by the approximation that  $S + H$  is equal to  $2S$ ?

Doing some calculations on the theorem from geometry and comparing with the approximate formula we find with  $S = 100.000$  and with various values of H that the formula is quite accurate.

H	Geometry ( $H^2 = S^2 - V^2$ )	Formula ( $H = S - \frac{V^2}{2S}$ )
1	99.995	99.995
2	99.980	99.980
3	99.955	99.955
4	99.920	99.920
5	99.875	99.875

6	99.820	99.820
7	99.755	99.755
8	99.679	99.680
9	99.594	99.595
10	99.499	99.500
11	99.393	99.395
12	99.277	99.280
13	99.151	99.155
15	98.869	98.875
18	98.367	98.380
20	97.980	98.000
25	96.825	96.875

Obviously these calculations could be carried on until the differences in the two procedures became much larger. The extraction of square roots is a function that is to be avoided, using most methods, if at all possible; while the other calculations can be made in one's head or at the worst on a small scrap of paper.

The formula  $C = \frac{V^2}{2S}$  can be improved upon by using an expansion of the formula:  $C = \frac{V^2}{2S} + \frac{V^4}{8S^3}$

This will give more accurate values, for instance for  $H = 20$ , the two factors calculated are 2.000 and 0.020 or 2.020 which gives  $H = 97.980$  or the same value, to three places of decimal, as the exact method. For usual values of  $H$  of up to 10 the error does not exceed 0.001', quite negligible for the usual survey.

Obviously there are other applications, such as calculation of an obstructed distance where an intermediate offset point is used, and no doubt many others that may occur to you, as you use this "approximate" formula.



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CANADA TELEPHONE

July 8, 1968.

Mr. E.P. Rice, Secretary-Treasurer,  
Association of Provincial Land Surveyors  
of Nova Scotia,  
P.O. Box 1541,  
Halifax, Nova Scotia.

Dear Ed:

During my travels I met a large number of persons expressing interest in our popular Tellurometer Training Courses. The main objection is usually the expenses involved in coming to Ottawa. In order to overcome this problem, we have decided to hold courses throughout the country provided we have enough participants at a certain location. I know that a number of your members have indicated their interest in this and we would appreciate it if you could let your membership and/or local branches know of this opportunity. The courses certainly serve their purpose in furthering the education and widening the scope of operation of the surveyor in general.

In order to put on a course anywhere in Nova Scotia, we need an attendance of a minimum of ten and a maximum of fourteen persons. The price will be \$60.00 per person for a one week's course. All literature, etc. will be provided and a certificate of proficiency will be issued upon successful completion. The date is adjustable and will have to be arranged to suit everyone involved.

Your cooperation in this matter would be greatly appreciated and please do not hesitate to call on us if we can be of any assistance.

Best regards.

Yours very truly,

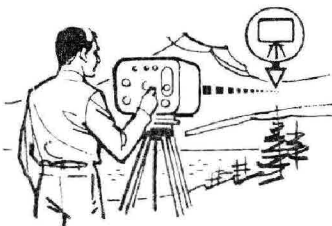
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Technical Manager.

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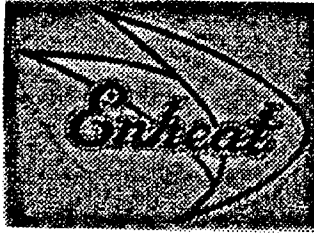
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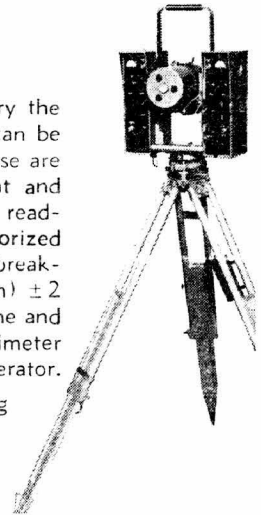


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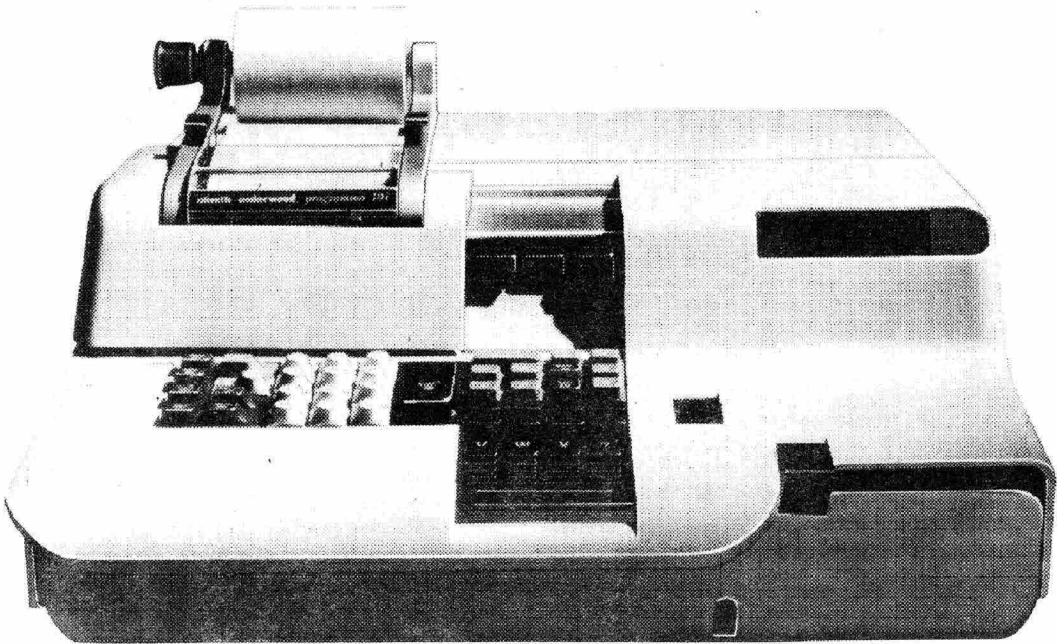
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