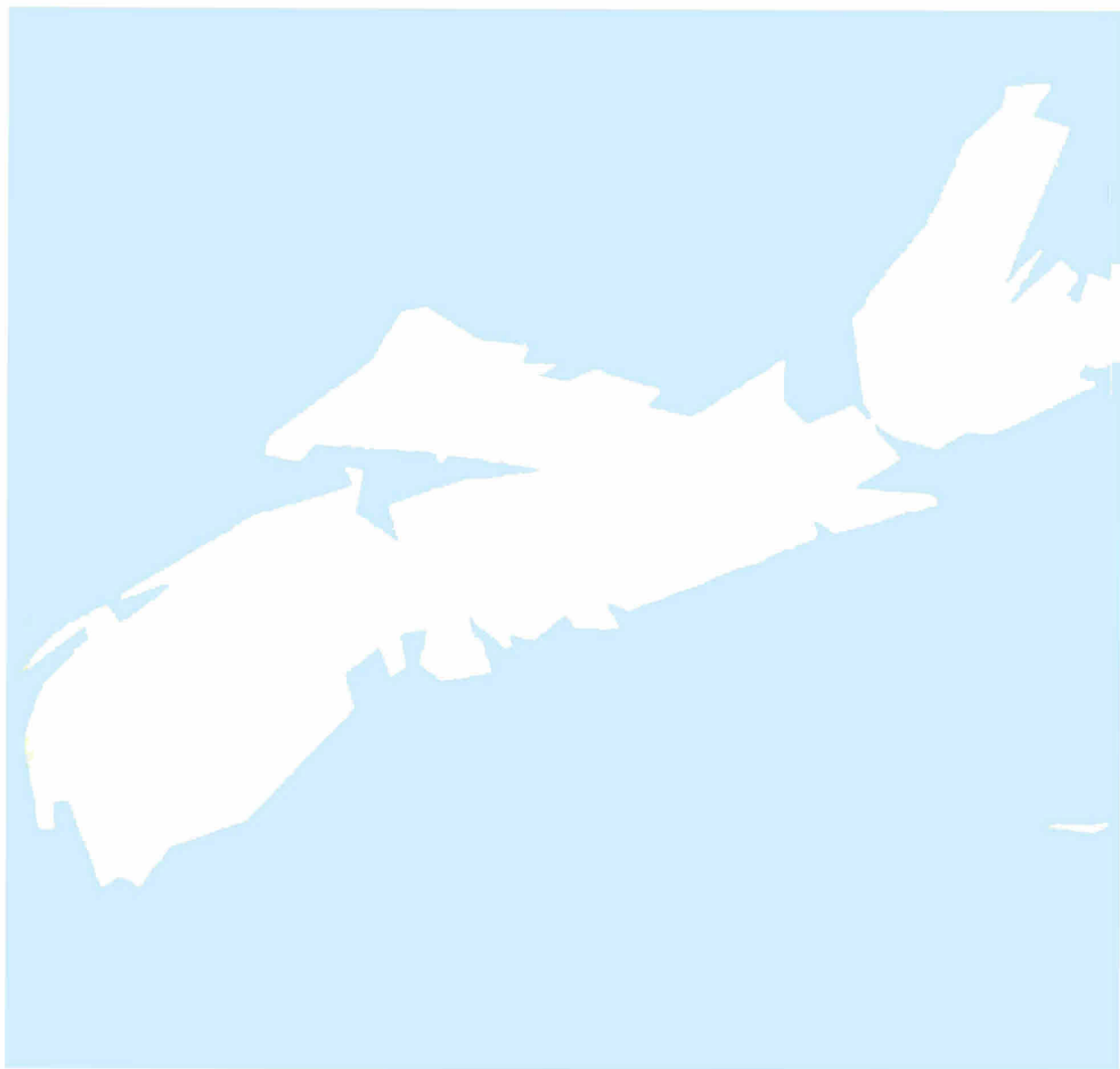
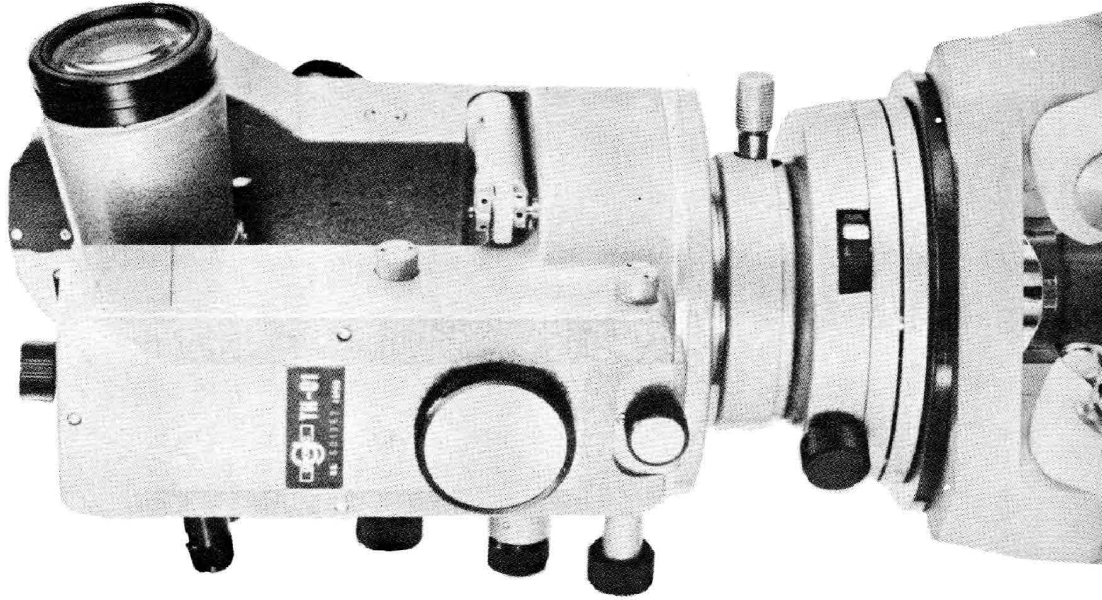


The NOVA SCOTIAN SURVEYOR



JULY 1975

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THE ASSOCIATION OF NOVA SCOTIA LAND SURVEYORS INCORPORATED

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

Founded 1951

Incorporated 1955

Vol 29

JULY 1975

No. 80



THE NOVA SCOTIA LAND SURVEY INSTITUTE NEARING COMPLETION

- 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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* * * * *

**** NOVA SCOTIA LAND SURVEY INSTITUTE CLOSING ****

The closing exercises of the Nova Scotia Land Survey Institute were held in the new school on May 16, 1975.

The official opening will take place on October 17, 1975, at which time the Hon. Peter Nicholson, Minister of Finance, will lay the cornerstone - truly a great step forward for the further improvement of the Land Survey Profession in Nova Scotia.

COL. GEORGE STREB'S ADDRESS TO THE GRADUATES OF THE NOVA SCOTIA LAND SURVEY INSTITUTE

This is a great occasion and I feel honoured and privileged to have been asked to speak at these important closing exercises. Also, I am pleased with this opportunity to visit once again the school at which I was Principal for five years, especially on this important occasion of the first graduation exercises in the new building. Everyone, I am sure, will agree it is a fine building and will wish to congratulate the Principal and his staff and advisory committee on it.

When Mr. Doig asked me to speak I was, as I have said, pleased to accept the invitation but I wasn't at all sure why he had chosen me. It certainly wasn't for my up-to-date knowledge of surveying or for my good looks. I could only conclude that it was because of the length of my teeth. After all, I am reaching the exalted age of 65 this year when the Department will cease my tenure as a Civil Servant.

At age 65 one is expected to be sage whether one is or not. They say that sagacity comes from making mistakes and I suppose, therefore, I should by now be real smart. The story comes to mind of Len MacDonald who trained and raced trotting horses, and on this particular Saturday he came on the track behind an old horse who had had her day, but there she was trotting along with the others in the warm-up period before the races. Len's friends were much surprised for they knew the horse and they said "Len, for goodness sake, what are you trying to do? That mare has been out to pasture for some time hasn't she? She doesn't belong here anymore". To which Len replied, "yes, that's true, but I just wanted to give her a chance to rattle her old bones around here once more in good company". Well, maybe Mr. Doig is giving me the opportunity to rattle my old bones around here once more in good company. In any case, it's good to be here.

First, graduates, my heartiest congratulations to you all. You have done well, and you deserve this day. What about the future? Where do you go from here? I understand that virtually all of you have jobs, therefore, all of you, except of course the graduates of 1st year surveying and 1st year photogrammetry who will be returning here in the fall, soon will be starting on your first permanent job, and that's an important and necessary first step after graduation; but how is the "stepping" going to be from here? What will your new employer expect of you and what do you expect of yourself.

There are many things I could say on this occasion, and much advice I could give you, but I expect you already have heard most of what I might say - also that it soon would be forgotten. I would like, therefore, to suggest for your consideration just three things. The first two are no-nos, the third is a yes-yes. In brief they are: - don't be smug, don't be too impatient; do develop strength of character.

I recall, very well, some 40 odd years ago when I, like you, attended a graduation. I was handed a document and I was congratulated, and I thought I was an engineer. It was in the hungry 30's and I went to Montreal where they said there were jobs, and after tramping the streets for six weeks I got a job as a mechanic's helper in a large organization. My boss was a foreman who had a grade XI or XII education. It didn't take me too long to realize that he knew more engineering than I was likely to learn in another five years. As time went on I acquired a great respect for his knowledge. Mind you, he acquired respect for my theoretical knowledge too but, his was the better knowledge for it was based on solid practical experience. So I suggest to you that you should not be too smug with what you have learned. If I may use the term, your instructors have helped you develop some very good "tools" and it is up to you to keep them sharp, but it will take time to learn how to use them effectively and to know that you are using them effectively. In other words, you are now ready to acquire some technical competency which I'm sure most of you will, some quickly, some slowly, some very slowly or not at all. Just remember that there is much to learn and for the most part you will be on your own. So keep your eyes open and your mind alert. To be effective you must become technically competent. Anyone who is smug, however, just doesn't realize how much there is yet to learn.

The second no-no - don't be too impatient. It is right and natural that you should be impatient. Youth is impatient, but try always to bear in mind that impatience has its drawbacks too. It can lead you into accepting work mainly for the amount of the dollar return when a lesser salary job at the beginning might give you much better experience and result some years from now in your being much more knowledgeable and with much better expertise. Now is the time for you to learn the fundamentals well. You will never be in as good a position again to do it, and it takes time. So take time to learn them well - they will pay big dividends later on. Don't be too impatient.

But are these the most important things? What is your employer especially looking for in you? Certainly he is hoping to have employees who are technically competent - indeed he expects it. After all you will have graduated from the Nova Scotia Land Survey Institute; any employer knows or should know what that means. He only has to look at the curriculum. But what does he not know which is really much more important? He doesn't know what kind of a guy you are and he won't really know that until he tries you out. The school marks won't tell. Only experience with you will tell him. And yet this is far more important than whether you made high or low marks in school.

I am talking about integrity, dependability, strength of character and how you get along with others. These are the facets of your make-up which ultimately will set you aside from your fellows and will be the greater measure of your worth to your employer and indeed to yourself. These attributes you must develop yourself, no one can do it for you. Indeed there are many people who will help you lose them if you don't take care. It takes gumption and judgment to develop strength of character, and yet not be too good. And it takes strength of character to gain the respect of and get along with others.

In summary, graduates, I have tried to make three points - just three things to remember. The first is that you should not be smug with your theoretical knowledge for you have a very great deal yet to learn before you will be technically competent. The second is that you should have the patience to learn the fundamentals well, and the third is that without the strength of character to be dependable, regardless of your technical competence, you will be of limited use to your employer and to society as a whole.

To be a professional, you must earn and deserve the respect of your peers and the public you serve. To be a professional you must be accepted as such by your peers and by the public you serve.

"BUSINESS IN BRIEF"

What's been happening in our Association since the printing of the January Issue of The Nova Scotian Surveyor? Rather than print edited versions of minutes the intent of this article is to summarize and point out highlights of recent Workshops and Council Meetings.

Workshops are day-long sessions which are organized by our Vice-President and can involve approximately thirty-five people who are presently working on Committees. They provide an opportunity for committees to meet individually and work on specific projects, for two or more committees to join together and discuss related projects, and for the committees to meet as a whole to coordinate projects, goals and budgets and to receive direction from the executive.

On February 1, 1975, Workshop No. 4 was held at the Citadel Inn in Halifax. At this Workshop the committees basically pursued their individual projects or interfaced with other committees as required and then reported on their progress, committee aims and revisions in their budgets to the Workshop as a whole.

On May 3, 1975, Workshop No. 5 was held at the Wandlyn Motor Inn in Bedford with twenty-six members in attendance. The Regulations Committee presented a draft set of "Regulations Respecting Land Surveying Standards" which would be made pursuant to the proposed "Nova Scotia Land Surveyors Act". These were discussed at some length and it was suggested that they evaluate the comments of the Workshop, revise the draft Regulations and distribute them to the general membership as soon as possible.

The Protection Committee advised that 10,000 copies of the pamphlet "Land Surveying..how the profession serves the public" had been distributed and that an induction ceremony and type of ring for members joining the Association was being investigated.

The Private Practice Committee reported that they had agreed on a revised schedule of minimum fees.

The Salary Review Committee reported that there was a 42% return on the salary questionnaire and that they were proceeding to compile statistics.

The Legislative Committee reported that Regional Meetings were completed and a schedule set out for their work in order that proposed Nova Scotia Land Surveyors Act be presented to a Special General Meeting on June 14, 1975.

A Council Meeting was held at the Chateau Halifax on March 14, 1975, with twelve members present and four absent.

Mr. Ivan Macdonald presented a report on the seven interviews held with applicants who were selected from the 14 replies to our ad for an Executive Manager. The interviewing committee decided to present Mr. A.C. (Tony) Krasemann to Council and it was decided he be hired on a part-time basis. Reports were presented from committees and Regional Meetings. It was decided that the 25th Annual Meeting be held on November 13, 14 and 15 at the Chateau Halifax. The implementation of an induction ceremony and an oath of office for new members was discussed. It was decided that a set of Parliamentary Procedures be prepared and adopted for the conducting of Association meetings.

On May 31 a Council Meeting was held at the Heather Motor Hotel in Stellarton with fourteen present including A.C. Krasemann and three absent. Reports from committees, Regional Meetings and Workshop No. 5 were presented. It was decided that the Publicity Committee appoint a committee of four to prepare articles related to Nova Scotia Land Surveying to be published in local papers. Three new members were accepted into the Association: G. R. Sellers, O.S. Vaughan and L. K. Taylor. Decided that members with dues in arrears three months be advised that they are not

in good standing and if payment not received within 30 days that this fact will be advertized and their name removed from the Roll. Ed Rice, Garnet Clarke and Al Wallace were appointed to the Nominating Committee.

The Council met at our Association office on 2519 Oxford Street on Friday, June 13, 1975, discussed the proposed Nova Scotia Land Surveyors Act and the procedures to be followed at the Special General Meeting the following day and passed a resolution in support of the proposed Act.

A total of fifty-three members attended the Special General Meeting on June 14, 1975, at the Citadel Inn, in Halifax. There were 14 motions to amend the Act as circulated, 6 carried and 8 defeated. The major one to Section 15 which would allow the surveyor's assistants to enter on land without being accompanied by the surveyor; however, this motion was qualified to allow the Legislative Committee to use the original wording if as amended it received strong opposition from the Legislature.

The highlights of the past six months are:

1. The hiring of a Business Manager, Mr. A. C. (Tony) Krasemann on a part-time basis.
2. The opening of an office (however humble) at 2519 Oxford Street, Halifax, Telephone No. 423-2058.
3. The approval at a Special General Meeting of the proposed new Act. The work of this Committee deserves a tremendous amount of credit.

Our apologies if your report, or committee, did not receive proper attention in this review.

Nova Scotia Land Survey Institute

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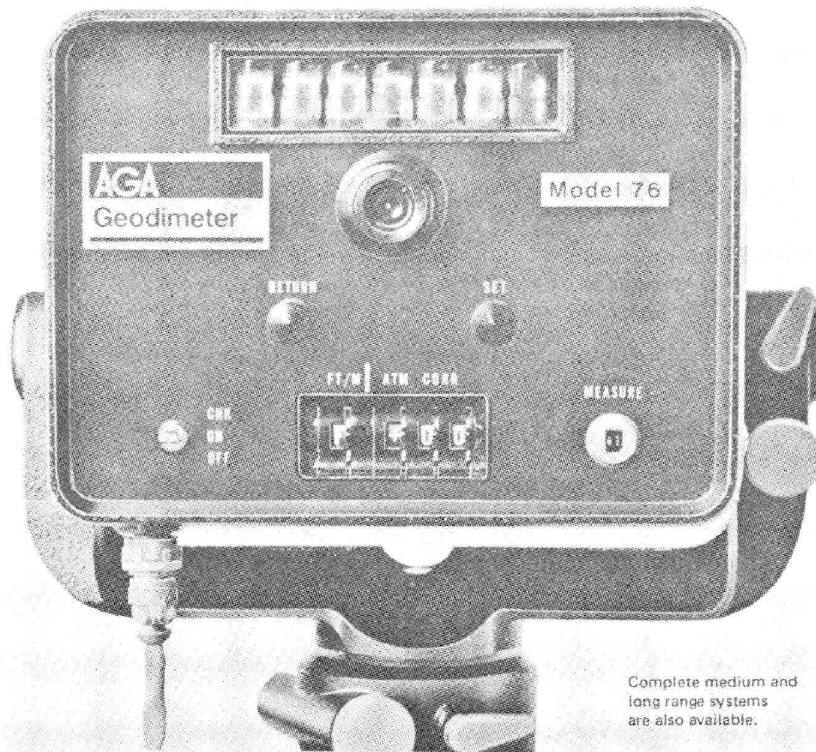
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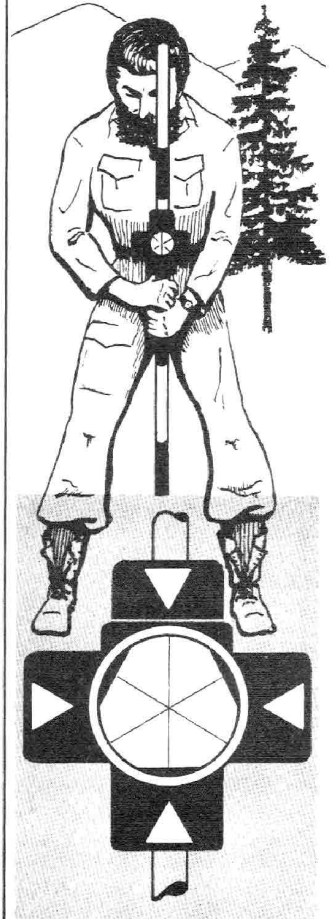
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A PROGRESS REPORT ON THE SURVEYING ENGINEERING PROGRAM AT U.N.B.

*by Angus C. Hamilton, Chairman
Department of Surveying Engineering U.N.B.
(presented at the Annual Meeting of
The Association of Nova Scotia Land Surveyors
Amherst, N. S. - November 7-9, 1974)*

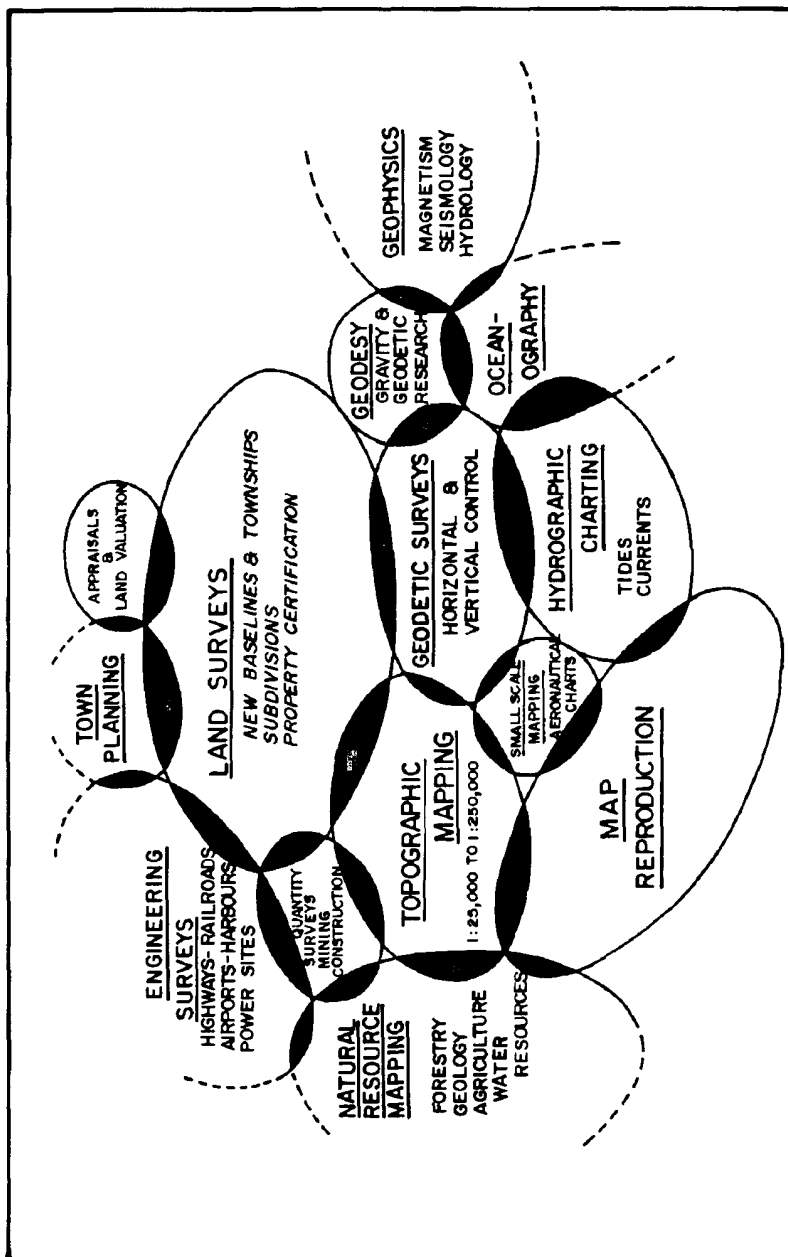
It's an honor and a pleasure to have the opportunity to speak to you today; as you know I have been at several meetings of your Association starting, I think, in 1967, and I have always found them enjoyable, well organized and useful. You have developed the habit of candid but full and friendly discussion of problems and, of course, this is the only way to get anywhere in an Association such as this. Although I am not a connoisseur of provincial association meetings, I have attended a few and I can say that the overall tone of the Nova Scotia meeting is second to none. You know how to be informal and at the appropriate time you know how to be formal. You've developed a certain amount of ritual - and ritual is an important element in our life. What I am trying to say is that I think in Nova Scotia the Association has something good going and I hope it continues.

Now to Surveying Engineering: As you know the program started at U.N.B. in 1960, as a division of the Civil Engineering Department. The first class graduated in 1962, and in 1965, the Department of Surveying Engineering was recognized as a separate department within the Faculty of Engineering. The Master's program was initiated in 1961, and the Doctor's program in 1963. A little later I am going to describe the current program but before I do that, I want to indicate some of the objectives of the Department and, before I do that, I want to indicate some of the assumptions upon which the objectives are based.

Let's go back 15 years to the time that the first colloquium on education was held in Ottawa. At that time Major Church was the only educator in Canada who was making any progress on surveying education. What were land surveyors doing? Essentially they were doing subdivisions and property boundaries and occasionally some engineering surveys. There was no control surveying being done and mapping was being done by the air survey industry which was at that time almost completely dissociated from surveying. At that time as one of the planners for the colloquium I put together what became known as my bubble chart (fig. 1) which was an attempt to show the inter-relationship of the different survey activities; please bear in mind that this was as seen by a civil servant who had only worked on geodetic surveys up until that time. Although there was some overlap one could not say there was integration. In other words there was no place, either in the federal government, or in the provincial agencies where an individual or a group of individuals were concerned with and able to function in several areas of surveying. In general, government agencies were carefully partitioned so that geodetic surveyors did geodetic surveying and absolutely nothing else; topographic surveyors did topographic surveying or mapping and nothing else; legal surveyors did legal surveying only; hydrographic surveyors used the time-honoured methods that hadn't changed significantly from the time of Captain Cook. Most private practitioners did property boundary surveys and very little else. There were a few large consultants such as Marshall, Macklin and Monaghan who were doing some control surveys and engineering surveys as well as property surveys or legal surveys.

THE FOUNDING OF THE DEPARTMENT OF SURVEYING ENGINEERING

I presume that most of you have heard at least one version of how the Department of Surveying Engineering was conceived. On the return trip from the colloquium in 1959, Ira Beattie, head of the Civil Engineering Department at U.N.B., Bill Hilborn, Professor in the Forestry Faculty, Gottfried Konecny who had just been appointed as a lecturer in surveying and Willis Roberts, who at that time was fairly recently appointed Director of the Lands Branch in New Brunswick were travelling together on the train. The exact amount of rum that was consumed in their



CLASSIFICATION & INTERRELATION OF SURVEYS

FIGURE 1

compartment on the C.P.R. between Montreal and Fredericton Junction cannot be reliably established, however, what can be established is that the format of the Department of Surveying Engineering was roughed out at that time. It was agreed that Civil Engineering which heretofore had been the home for surveying education at university was no longer suitable and that surveying, if it was to survive at all, had to stand on its own feet. To do this there was no point in trying to specialize in any one of these bubbles in the bubble chart, in other words, if surveying was to move into a position of equality with civil engineering, forestry and the other recognized disciplines, then it had to encompass a wide range of activity with significant scientific, mathematical and general intellectual content. This was not entirely a new concept, in continental Europe this had been the tradition for a great many years but it was new in the North American Context.

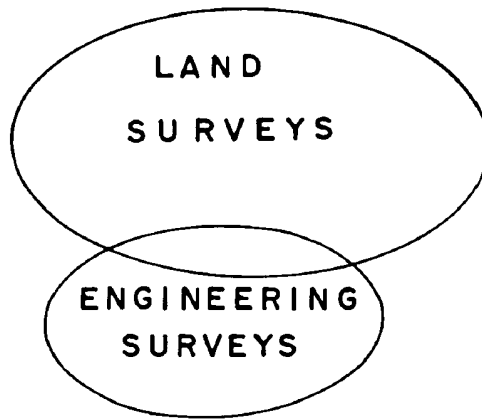
The problem with this concept is that society in Canada was not yet ready for it and the first graduates had a hard time winning acceptance. There was a time in the mid 60's when the future of the Department was in doubt and a special closed conference was called to review the concepts and to take the decision as to whether or not the concept was sound and the prospects for the Department becoming viable were realistic and promising. It is a credit to Dr. Jim Dineen at that time Dean of Engineering, later President of U.N.B., that he was not only willing to allow the Department to continue, but that he was willing to increase the establishment for staff so that it could develop its capabilities even though the student input and the graduate demand had not yet fully materialized.

THE PRACTICE OF SURVEYING

Now let us take another look at surveying activities. Here in Figure 2 is an estimate of what constitutes the bulk of private practice today. There is quite a lot of legal surveys or land surveying in the traditional North American sense; there is quite a large amount of engineering surveying; i.e. surveys for various construction and development projects in which the definition of boundaries is not involved. Most of the firms that I know of who are expanding and - presumably - prospering are doing so in the non-legal areas; some of them are already doing some geodetic and control surveys, some are doing offshore surveys and some are now getting into mapping - large scale mapping - starting to use photogrammetry as a standard surveying tool. The new fields of activity are shown in Figure 3. For example, land management is one where some of the private practitioners are developing a new role in guiding a subdivision plan from concept stage through the bureaucratic jungle of community planning acts and other hurdles that any land development must now go through.

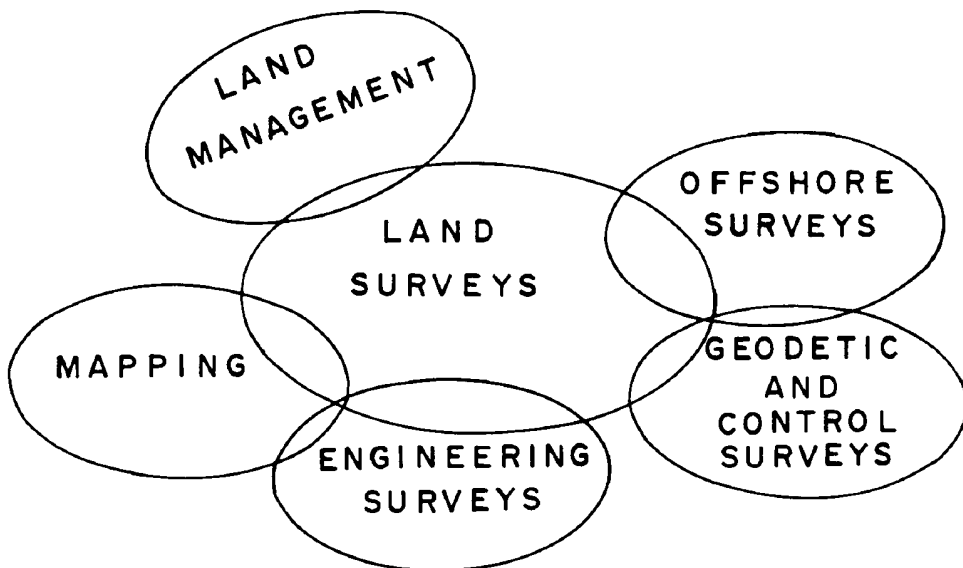
THE OBJECTIVE OF THE DEPARTMENT OF SURVEYING ENGINEERING

Now after this bit of history and of speculation, I come back to the objective of the Department of Surveying Engineering. It is to educate the persons for a new expanded profession of surveying. We don't quibble about what it may be called, whether it be professional surveyor, surveying engineer, or simply land surveyor where a new definition is given to this term. In a moment I'll comment further about how we are trying to do this, but first, I would like to comment briefly on this objective. I don't want to belabour the much debated definition of a profession but I'd like to say that a viable profession as it's currently accepted implies a certain body of knowledge that no other profession lays claim to; this must be a significant body of knowledge which cannot be readily assimilated on a casual part-time basis. Is there such a body of knowledge in or underlying the surveying profession? Yes, we believe there is. We are experiencing an explosion in technology which is bringing about a complete change in our methodology.



PRIVATE PRACTICE: PRESENT

FIG. 2



PRIVATE PRACTICE: PRESENT AND FUTURE

FIG. 3

THE QUIET EVOLUTION IN SURVEYING

Most of the basic theoretical concepts for the design and analysis of surveys were conceived by Gauss and others over a century ago.

Because of the extensive amount of computations involved, however, it was not possible to apply these concepts to individual projects. From the basic concepts our predecessors developed simplified rule-of-procedures that we have all been relying on. With low-cost computer facilities we can now apply these concepts to the design and analysis of each project. The full exploitation of this technique does call for a significant body of knowledge distinct from that of any other profession.

There is another major fact contributing to the revolution in surveying. This is the population explosion, which has put a premium on land - a premium on space - both as a base for natural resources and simply as space on which to live. The days when kings traded colonies back and forth and granted seigneuries to favourite friends and whole counties were given as spot prizes at social functions are long gone. Now even the Arctic Islands are valuable. One effect of this appreciation in land values is an insatiable demand for information. The politicians, planners and the administrators must have this information collected, gathered, analyzed, summarized and presented in countless different forms so that the allocation, the transfer and the use of the land can be fought over in a civilized fashion. In Europe where land has long been a precious commodity it's not surprising that they've recognized that the surveying profession has many, many more responsibilities than putting boundary marks on the ground to define the limits of ownership.

THE EDUCATION OF THE SURVEYOR

In planning a university program we're not doing any great service if we only provide for what is needed today. Our product is in the pipeline for several years so if needs are changing and we are only to produce what is needed today, we are sure to be producing an obsolete product. Students are at least four years in the program and they are anywhere from two to five years in training after graduation so that we have to be thinking of and providing a program for 10 years or more in the future.

Now, I'd like to discuss our program briefly. We have just completed an extensive curriculum revision. Our faculty took the decision a year ago that the program should be reduced from what has been a lockstep five year program to what is called a "180 credit hour" program. It can be done in four academic years although the credit system implies that it can be extended over a longer period if the student so chooses.

The education of the surveyor can be grouped under three main headings:

- (i) Fundamentals in basic sciences, in mathematics, statistics, analysis and adjustments plus at least an introduction to some of the humanities and social sciences.
- (ii) An introduction to the activities of surveying and survey science (see Fig. 4).
- (iii) Experience and training on the job.

Most of the fundamentals in science and mathematics can be obtained at any university offering a science and engineering program but only a surveying department can give the elements of design, adjustment and analysis applicable to surveying. Similarly only a surveying department with a faculty of specialists can keep abreast of research and development and present in some depth those activities that constitute surveying. The inter-relationship of these activities as illustrated in figure 4 is discussed briefly.

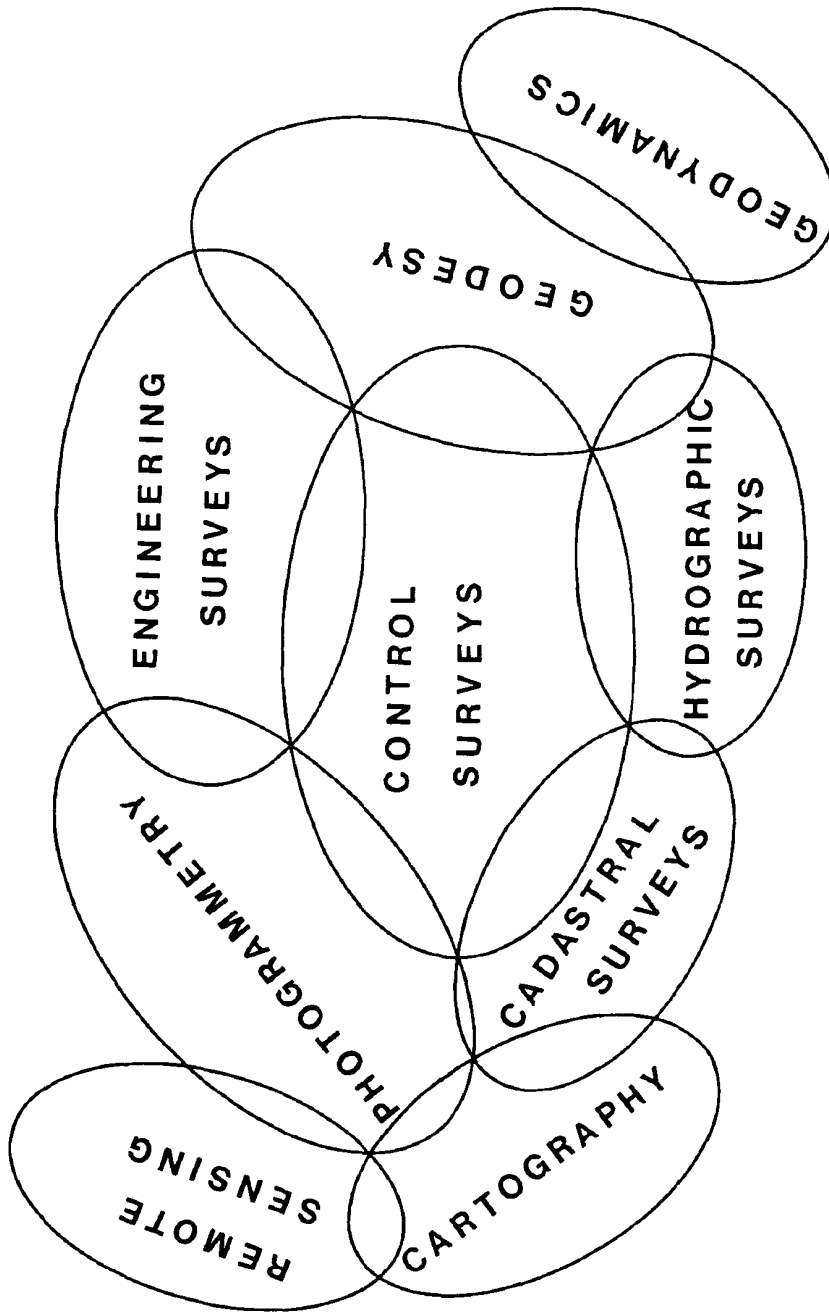


Fig.4. The Main Activity Elements in the Program of
the Department of Surveying Engineering

The central theme is shown by the bubble in the centre labelled "control surveys"; as we see it control surveys is the element that links the components of the professional surveying activity together. Geodesy is the science that tells us about the shape of the earth that we are working on and lays the foundation for our control survey system. Then associated with the control survey system there is the application to engineering surveys, there is the application to hydrographic surveys and there is the whole mapping activity. Photogrammetry is also a method of extending control surveys so that photogrammetry becomes a contributor to as well as a user of control surveys. Cartography is an important element in this activity in that this is the presentation - this is the marketing - of the survey product and is one in which the next stage of the surveying revolution is likely to be most dramatic. As a professional group we are the best data gatherers in the world and we are the worst marketers. There will be, with the advent of the automatic plotter and improved printing and color processing a revolution in data presentation within the next decade. Coming back to our chart we have such things as remote sensing which really is just an extension of aerial photography; on the other side there is geodynamics which is the study of the rather wobbly planet on which we live. Although cadastral surveying is shown on this chart as a relatively small bubble, this is not to say that it will not change, it will be doubled next year when John McLaughlin returns if plans that John and I have proceed, it will double again very shortly after that. We recognize that there is a lot to be done in cadastral education but the educational resources necessary to do it are scarce.

The point I want to make, and I think it is the important point, is that the full professional surveyor of the future is going to need a good understanding of all these bubbles before he can really specialize in the practice of any one of them. For example, a good geodesist must know photogrammetry because photogrammetry is one of the ways of extending geodetic control. A good photogrammetrist must know geodesy because geodesy is the basis for the control that he is using. The hydrographer must know geodesy because his positioning in the offshore is by geodetic methods.

The cadastral or legal surveyor of the future will certainly be assessing evidence as far into the future as any one can see but he will also be establishing the position of that evidence by control surveys and as indicated above control surveys overlap with geodesy and photogrammetry.

The surveyor of the future may be using Doppler positioning for remote, inaccessible points or he may be using photogrammetry. Anyone who reflects a moment on the responsibility one would take in signing a plan for boundaries that are made photogrammetrically will realize that he must know and understand the process that is involved. Both geodesy and photogrammetry are going to be necessary for the fully qualified professional land surveyor of the future. The other part of the revolution that I spoke of earlier is the electronic computer and the data files that are being stored on some form of memory in the electronic computer. Much of the surveying of the future will consist of extracting the appropriate information from these files, verifying it and presenting it in the form in which it is needed. One might say that this is a computer scientist's job; I challenge that point, there will be a computer science element, computer systems people will be involved but I have maintained for a long time that this is primarily the role of the surveyor and the decision on what to extract and how to present it is going to and should always be made by the person who understands the information that is in the file and who understands the need for it and who understands the options for presentations that are available. For this reason our students spend as much time working with the computer as they spend working with optical or electronic instruments. This is because we feel that the profession now has plenty of people competent with optical and electronic instruments and that they can teach our graduates how to use these instruments on the job; but for the most part they cannot teach them how to make a computer do what they want it to do and we feel that our graduates in their junior years will earn their salt by wrestling with the computer and making it do what the surveyor wants.

We have "junior" students and "senior" students. The junior students have just had a short introduction to surveying; they will benefit from almost any job that a surveyor can offer, where they can get familiar with at least some aspects of survey work - obviously the more challenging the better. For our senior students we are asking and we are going to insist on a challenge - on something to make them realize that they still have something to learn. We recognize that your job must be done but we hope that for either a few hours a week or for a few weeks towards the end of their employment that you will toss them a hot potato; if they are on a party as an assistant that some day you will pull the party chief off and say, "look, young fellow, take over and get this job done" and make him feel the weight of responsibility on his shoulders. On our side we are stressing the fact that they should be prepared to take responsibility, they should be training themselves for it and we hope that they won't let you down.

ENROLMENT

Finally, just a word on the number of students in our program. We now have 112 students in the undergraduate program, and 16 in the graduate programs: 85 of these are Canadian and they come from every province and from the territories. We have students right out of grade 12, we have students with degrees from other universities in engineering and science, we have a significant number of students who have completed a technician program, we have students who have worked for several years, we have scholarship students, we have some that are just scraping along. We have a large group of good students. The tide has turned, the dilemma of the 60's is past; the students have accepted the broad role of the surveyor. Quebec accepted it many years ago, Ontario is debating the acceptance of it; the question is "Are the Maritimes ready to accept it?"

PLEASE PLAN TO ATTEND OUR
25TH ANNUAL MEETING
AT THE CHATEAU HALIFAX
NOVEMBER 13, 14 AND 15, 1975

The Convention Committee is at work preparing for the meeting which will mark a quarter century of activity for our Association. The continued hard work of our executive and standing committees, combined with the preparation of the Convention Committee should result in a very rewarding Convention to mark our 25th.



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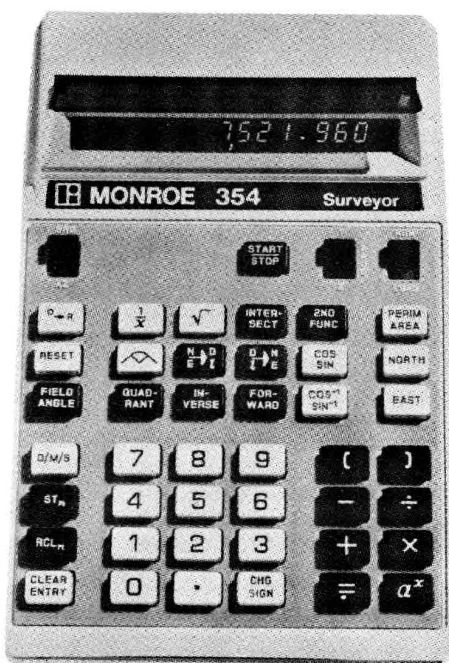


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You're looking at the Monroe Micro Surveyor—the very first hand-held, battery-powered programmable micro computer specifically designed for the surveying professional.

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The display is big and bright. It tells you about angles in degrees, minutes, and second—in quadrants or azimuths.

And on those rainy days? The Micro Surveyor is a draftsman's dream. Helping with subdivision layouts, cut and fill, and every other type of calculation you could get into. And, because it's so compact, the Micro Surveyor is right at your fingertips on the drafting table.

LEGAL IMPLICATIONS INVOLVED IN THE ESTABLISHMENT
OF A NEW LAND REGISTRATION SYSTEM FOR
THE MARITIME PROVINCES

*Presented to the Nova Scotia Branch of the
Canadian Institute of Surveying
on February 25, 1975
- by Charles W. MacIntosh, Q. C. -*

A new Land Titles System is an integral part of the law reform package proposed under Phases I, II and III of the L.R.I.S. program. This program is set out in an Agreement between the Government of Canada and the Council of Maritime Premiers dated July 12, 1973, whereby the participating governments undertake to share costs on an agreed formula for the purpose of carrying out a system of monumentation and mapping and the eventual introduction of a computer-based land titles system tied to a plane co-ordinate grid system.

To implement such a system legislation will be necessary to give legality and force to the grid system and to bring into being a Land Titles Act.

PRESENT LAW

At the present time the three Maritime Provinces each have a system of deed registration. Under such a system deeds are received by the Registrar so long as they are in proper form for registration, without any inquiry being made as to the effect of such documents. The state of title can only be determined by research through a series of documents going back a long number of years. This is called a chain of title.

The advantage of this system is that a deed has an immediate effect upon registration, whatever that effect may be. The disadvantages are numerous and well known to the surveying profession. Some of the prime ones are deserving of mention:

1. In many cases descriptions are obscure and there is uncertainty as to the quantity of land conveyed. Reference need only be made to the description... "all the property owned by John Smith at the time of his death..." There is really no way of knowing for sure that properties are covered by such a deed, as John Smith may have been holding an unrecorded deed to some property and some person may have purchased a portion of a property to which John Smith was registered as owner and may have never recorded the deed.

2. Even after having completed a title search there may be doubt as to the effect of the facts revealed. Under our present system there are a number of overriding interests which take priority over recorded documents. For example, tax liens, statutory rights-of-way, airport zoning to mention a few. In addition there may be rights-of-way attached to and running over the property by reason of recorded documents which do not appear in a chain of title.

3. A perfect search, under our present system, is no guarantee of perfect title. A tax deed pursuant to an assessment against a previous owner of a property might wipe out title completely. The land involved might be ungranted and subject to being taken back by the Crown at any time.

4. There is no guarantee of boundaries or location. In many cases people contract to buy one property and by reason of ambiguous descriptions contained in a deed, they end up getting a deed to the property next door or in the next block. This exchange may not come to light for a number of years until someone is looking for a survey certificate, and sometimes not even then.

5. Perhaps the most serious criticism of our present system is the waste of time, in that information is difficult to retrieve and titles are now being searched that have been searched 20 times before and will be searched 20 times again in the future because that is the way it is done now.



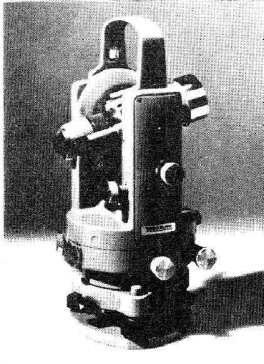
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THE TORRENS SYSTEMS

The Torrens Systems, or systems of registered land, were developed with a view to overcoming some of these difficulties.

The main features of a Torrens System are:

1. Changes in title are made by the Master of Titles rather than by private contract between the parties. Until the Master of Titles gives effect to a transfer on his records, the previous owner is legal owner of the property for all purposes.

2. Property interests are recorded on a parcel basis and all instruments relating to a particular piece of property can be found in the same place.

3. Superseded entries are deleted and if, for instance, a mortgage is paid off, it is deleted from the register and need no longer be considered.

The three Torrens' principles are:

CURTAIN PRINCIPLE: which states that one need not go back of the record to review previous transactions.

MIRROR PRINCIPLE: which states that the record is a true reflection of the state of title.

ASSURANCE PRINCIPLE: which states if any person suffers loss or damage by reason of fault of the system, he may make a claim for compensation.

The advantages of a Torrens System are:

1. All descriptions are related to the plan.
2. All or most instruments appear on a single record.
3. Guarantee of title arising from the assurance feature.
4. Searches can be made speedily.

The disadvantages of the present Torrens Statutes are:

1. Registration process is slow since every document must be checked and descriptions compared.

2. There is uncertainty as to location, since some of the plans are of dubious accuracy.

3. Boundaries are not guaranteed.

These defects in the system arise from the fact that the Torrens System is over 100 years old and proper use has not been made of modern technology.

PROPOSED LEGISLATION

It should be emphasized that the following are *SUGGESTIONS ONLY AND DO NOT HAVE OFFICIAL APPROVAL OR BLESSING* of the Legislatures or Governments involved.

The following statutory changes are seen as indicated:

A new Maritime Land Titles Act.

A Short Form of Mortgages Act and a
Short Form of Leases Act.

Boundaries and Encroachment Act.

Amendments to the Probate Act.

Incidental amendments to the Registry
Act and other Statutes relating to land.

SCHEME OF AN IDEAL LAND TITLES SYSTEM

With the technology now presently available, it is possible for a land titles system to provide the following features:

1. Guarantee of title, location of the property, integrity of boundaries and hence a guarantee of transferability. This would all be backed up by an assurance scheme.

2. A reliable register with each property owner being provided with a certificate of guarantee. Such a certificate should carry title to the property and the issuing of it would cut out any pre-existing equities or property interest inconsistent with that of the owner as shown on the certificate.

3. Deletion of superseded entries so that a person making an enquiry would only have to consider matters presently affecting the state of the property.

4. Efficiency. With the present state of technological development there is no reason why a property transfer should take more than 20 minutes to complete. This compares with the two or three days minimum time limit now obtaining in some of our western provinces, where difficult matters can take as long as several weeks.

SUGGESTED FORM OF IMPLEMENTATION

It is again repeated that these are *SUGGESTIONS ONLY AND DO NOT REPRESENT OFFICIAL POLICY*:

1. Legal descriptions should be abolished completely. Using a parcel index number tied into a cadastral map, each property will be brought under the system only after having been surveyed and tied into the co-ordinate grid and the title searched. This process would generate a survey plan for the property which should contain certain minimum information sufficient to identify the property.

Subsequent transfers and, mortgages of the property, could take place by reference to the parcel index number and have attached a photocopy of the original survey plan of the lot by way of further identification so a layman would be able to tell what he was getting at a glance.

2. Modern technology should be used to support this system. All title information should eventually be stored on a computer, filed under the parcel index number of the property. This information could be retrieved by punching in the code number and parcel index number of the property whereupon the computer would print out the title information. The survey information would be stored on microfilm under the same parcel number so that the two could be easily matched.

3. Initially whether or not a property should be brought under the system should be the choice of the property owner, but it may be necessary at some stage to offer incentives.

4. Legal documents would be shortened and standardized. Transfer could be by a two page document; the first page consisting of the parties and the legally effective words - and the second page a photocopy of the property plan.

All mortgage and lease clauses would be given individual numbers. For instance, mere use of the word mortgage on a document would import into that document some sixteen or so standard mortgage covenants. The parties would not be bound to accept all statutory covenants and if they wished to delete any they could, by adding a clause to their mortgage to read: "....."Clauses 14 and 16 shall not apply....."

Any other additional clauses they wished to use could be filed with the system and given a number, the use of which would mean that particular clause would apply to the document without the necessity of being copied in full. A similar system would be used for leases.

5. Caveats would be used to protect equitable interests and claims to property which might not be in the form of recordable documents. This system is in use in all of the Torrens Systems. When such a document is filed against a title, a copy would be mailed to the registered owner so he could object if it was improper.

6. Prescriptive Rights would be abolished with respect to registered land. In order to deal with cases of injustice which might arise by reason of this measure, the system would have the power to adjust boundaries in a suitable case, and a person who inadvertently built on his neighbour's property could apply to the proper official, and in an appropriate case obtain an order for conveyance to him of the property which he had encroached on, subject to the payment of adequate compensation.

7. Easements and restrictive covenants would be treated as a part of the property description and filed with the plan of the property. In the case of a substantial easement a new plan would have to be generated.

IMPACT UPON THE SURVEYING PROFESSION

If these suggestions are implemented, the surveying profession would be involved in change. Survey plans would have to be prepared in accordance with certain prescribed forms, and the standard to which a survey was carried out would be subject to review by officers charged with administration of the system.

The old rule that monuments govern over the measured distance would no longer be the case to the same effect that it is today. The system would demand near perfection on the part of the surveyor in the preparation of the plan for bringing the property under the statute for the first time, any mistake at that time giving rise for a claim for damages which would be the subject for compensation by the assurance fund.

In order to ensure a continuing high level of professional competence, the system would reserve the right to claim against a solicitor or surveyor who was negligent in the preparation of documentation to support a claim for first registration, if such negligence results in payment of compensation out of the fund to a property owner who has suffered loss.

All plans would, of course, be checked by surveyors employed in the system but heavy reliance would fall on the accuracy of the surveyor in the field. Like the legal profession, the surveyors will soon have to consider some form of insurance against damage claims. This is one of the additional burdens of carrying on a profession in today's world.

Every property to be brought under the system would have to be surveyed and tied into the co-ordinate grid system. The volume of work for the surveying profession would, therefore, show a marked increase. In order to accommodate this increased work load, surveyors would have to make use of the most modern equipment and employ para-professional help to a much greater extent than at present.

There would be a temptation, upon the introduction of such a system, to employ an army of surveyors within the land titles office and have them do all survey work necessary to bring properties under the system. Such a scheme would not necessarily be in the best interests of the profession or the public, and it is hoped that the private sector will be equal to the task so that the surveyor in private practice could continue to serve the public in all aspects of surveying.

These recommendations, if approved, would present the greatest challenge the surveying profession, in these provinces, has yet had to deal with. Knowing the calibre of men we are dealing with, we are confident that they are equal to the challenge.

* * * *



The new survey marker consisting of a corrosion resistant aluminum head threaded to a sharpened carbon steel rod and ribbed for better holding characteristics.

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Further information from

Chairman

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Fredericton, N.B.

Mr. Robert G. Donovan
Director of Education
I.C.S. Canadian Limited
Montreal, Quebec

Dear Sir:

In reference to your recent letter containing information about your Career Guidance Booklets, please be advised that as I have been retired for many years, and in fact am not far removed from the status of octogenarian, I therefore suggest, with some regret that you remove my name from your mailing list.

With further reference to your letter, I note one item described as Surveying and Mapping - ideal stepping-stone to a career as Civil Engineer. This description is of course just as true as it was when I took your excellent course more than fifty years ago; however, may I comment as follows:

First, the engineering profession has now become so diversified that surveying and mapping have been relegated to a very minor position in most university courses in civil engineering.

Second, because of the great advances in recent years in the science of surveying, mapping, photogrammetry and cartography, a degree course for the Survey Engineer is now available. The qualificational requirements, and in fact in all professional aspects this course is at least equal to that for the Civil Engineer.

May I therefore suggest for your consideration that a better description for the above item would be - Surveying and Mapping - ideal stepping-stone to a career as Survey Engineer or Civil Engineer?

Yours sincerely,

(Sgd.) J.E.R. March.

Past President and Honorary Member - The Canadian Institute of
Surveying.
" " " " " Association of Nova Scotia
Land Surveyors.

WORK OVERSEAS

S U R V E Y O R S

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NOVA SCOTIA LAND SURVEY INSTITUTE

- by J. F. Doig, Principal -

The aim of this paper is to tell something of the origins, growth and operation of the Institute.

While this may be commendable in itself (though to a limited number of people), it has relevance to the CARISED Conference in only two ways. It is relevant to the extent that it serves as a useful example of what can be done; and it is relevant to the degree that it is considered worthy of emulation in whole or, more probably and more usefully, in part.

In looking to the performance of others for guidance or suggestions as to the solutions of one's own problems, care should be taken to avoid mistaking the form for the substance. One should always keep in mind the story of the man who was urged to pattern his actions after those of the busy bumblebee: henceforth he went about anointing his thighs with pollen; but he got no results in any way comparable to those achieved by the bee.

An Institution such as ours which has proved useful in Nova Scotia, does not qualify ipso facto as the perfect solution to the problems in other places and in other circumstances.

ORIGINS AND EARLY GROWTH

Our Institute really began during World War II when the late Major J. A. H. Church, DSO MC, was hired by the Department of National Defence, as a civilian instructor, to train topographical surveyors for the Royal Canadian Artillery. Church began this venture at the age of 59. At the end of the war his current class had worked its way to about the mid-point of the course. Instructions were received to close down as a consequence of demobilization. Church resisted: "Why stop when this sort of training fitted men for useful civilian careers?"¹

For the next two years Major Church operated his 'school', a single class, under the aegis of the Federal Department of Veterans' Affairs. His task was to train veterans for employment in surveying. By 1948 he had begun to run out of veterans. He then convinced the provincial Department of Education in Halifax of the benefits to be derived from offering his course to the general public.

The beginnings were rather modest even for that day and age. Arrangements were made with the Lawrencetown Branch, Canadian Legion for:

a room approximately 40' x 40' on the first floor
of the Legion Hall . . . available by September 1,
1949, at a rental of \$40 per month including heat,
water and janitor services.²

Little wonder, perhaps, that members of the Department of Education who were more experienced and knowledgeable about such things gave the fledgling school a life expectancy of 'two years, at the most'.³

From 1949 until 1958, Major Church operated his school as a one-man one-class affair. Courses began in January of each year and finished in early December; but this was really just part of the story - the visible part. Another part of his work was in organizing an advisory committee and in promoting employment opportunities for his graduates. Often the two affairs went hand in hand. For several years R. E. Dickie served as chairman of the advisory committee. Mr. Dickie was also chief surveyor with what is now Bowaters Mersey Paper Company - one of the largest pulp and paper concerns in our province. Either by instinct or by deliberate analysis, Church early recognized that a technical course needs current advice from industry to keep it relevant, and it needs reasonable prospects of employment for its students upon graduation.

While all of this was in hand, Major Church had another project on the go. He had become aware that in 1929, J. B. Hall, Ph.D., a native of Lawrencetown, and a former professor of English at our Provincial Teachers' College, had left monies in his testamentary bequest for the establishment of a vocational school in Annapolis County. The fund by now had been accumulating interest for over twenty years and Church thought it was time it was put to use.

In 1958 a new two-storey building having 8,000 square feet of floor space was built with the \$100,000 capital funds available from the Hall estate. We received then, and have every year since, the sum of \$3,400 from a separate trust fund which Dr. Hall had left for maintenance of the building.

Previous to this, there was little or no opportunity for technical training in the field of photogrammetry or cartography. The subjects were not a part of the curriculum of the Canadian education system and those firms or mapping agencies who used these skills had to arrange their own training programs on the job. A number of survey graduates from the Institute were employed with the Surveys and Mapping Branch of the Federal Government. Major Church took the opportunity to press for training in surveying, photogrammetry and cartography under one roof. He negotiated to bring together officials of the Nova Scotia Vocational Education Division and of the Surveys and Mapping Branch of the Federal Department of Mines and Technical Surveys, now the Department of Energy, Mines and Resources, to discuss a revised curriculum.

In a paper presented at Ottawa in January 1958, to the Canadian Institute of Surveying, Mr. Darrell Mills of the Nova Scotia Vocational Education Division, outlined a proposed program to extend Major Church's school from a one-year technical course in surveying to a program to include surveying, photogrammetry and cartography. Subsequently, consultation between the Vocational Education Division and the Federal mapping agency established the rudiments for the new courses including entrance requirements, course content, instructor qualification and the loan of highly technical equipment to launch the two-year pilot course proposed for the fall of 1958. Since 1961 the Federal Government has made considerable sums of money available to the Maritime Provinces for educational programs.

The survey course now became a two-year affair. Space was available to offer new courses and within a year or two the photogrammetry and the cartography course were organized and underway. A new Land Surveyors Act was passed by our provincial legislature in 1959. This raised the standards of surveying and strengthened our apprenticeship training period.

The purpose of Major Church's school - up until 1958 - was to train land surveyors for the Province of Nova Scotia. For all practical purposes, all of his graduates wrote and passed the certification examinations. Schooling with him had been looked upon as equivalent to, or better than the statutory period of apprenticeship required by provincial law.

On the restructuring of the Land Surveyors Act and the re-organization of the survey course, room for a different emphasis was opened up. This did not become immediately apparent because past practices carried on - graduates of the survey course continued for the most part to acquire certification as land surveyors. The only apparent change on casual inspection was that a year's field experience as an apprentice was required after one had graduated. The period of apprenticeship was now three years but time spent on course at NSLSI counted against this.

TRAINING POLICIES

Our basic theme over the years has been that one learns by doing. We believe that the essential strength of any training program is that people be given the means and the opportunities of putting theory into practice. We continually try to place our emphasis upon doing, as well as upon understanding.

In our cartography class, for example, the final project of the year for each student is a five-colour topographic map of an area of his choice. It's not a very big affair, as far as size goes, and its symbolization is not usually too complex, but it demands all of the drafting and darkroom skills necessary for the production of a regular topographic sheet in our national series. In our photogrammetry course students do barometric levelling and differential levelling; they calculate traverse closures and do large-scale and small-scale mapping. In the survey course we demand closed level circuits and closed traverses, by tape, stadia and subtense bar; we require cross-section work for the determination of quantities and we demand a specific schedule of solar and stellar observations for azimuth and latitude as part of our work in astronomy. Perhaps additional comment is appropriate concerning our requirements for astronomic observations.

As our co-ordinate system is extended to cover the whole of our Maritime Provinces so the necessity diminishes for the surveyor to determine azimuth by sun or star; but the taking of astronomic observations is almost the only area wherein the individual is wholly on his own. This is not the co-operative effort of chaining. The observer must develop and depend upon his own personal skills in the use of a theodolite in order to produce a successful schedule of observations. We know of a number of individuals whose self-confidence and capacity significantly improved as a result of having to complete this schedule satisfactorily. We suspect there have been at least as many more whom we haven't so clearly identified. For this reason we propose to continue the program of required astronomic observations even though the demand for field observing is diminishing.

At one stage in our development we laid great stress upon the need to perform calculations in standard ways and upon standard forms. This approach has much to commend it - providing one guards against the inherent danger which is always present. This is that one may well be able to derive results using someone else's well-thought-out format without in the least understanding what has gone on. The pocket electronic calculator has reduced dependency upon forms for long calculations though the latter surely have some place in the scheme of things.

Always in a school atmosphere or setting there seems a great tendency to get away from doing things. It is very easy to get into the habit of thinking that knowing a thing and being able to do it are one and the same. There seems to be a persistent inclination to substitute a discussion of the theory of a task for a practical exercise in the performance of one. That we are not alone in this seems attested to in the following excerpt from the graduate studies calendar of Acadia University:

The underlying philosophy of the Geology Department is that Nature itself is the proper sphere of investigation As a result these will normally be based upon field studies.⁴

As a matter of fact reports from other technical institutes in Nova Scotia confirm the tendency to stray from the practical. Recognition of this problem plays a large part in correcting it.

CONTROL OF THE INSTITUTE

Our Institute is controlled and operated by the Department of Education, Province of Nova Scotia. Members of the Institute staff are provincial civil servants.

Our annual budget is part of the educational budget for the province. Our pay records are maintained and personnel administration is done within the Departments of Education and Finance. Equipment and supplies are obtained on our behalf by the provincial Purchasing Agent. Our pay scales are determined by the Civil Service Commission and we must abide by province-wide civil service regulations.

As part of a large and diverse organization (some 7,000 people) which is paid out of the public purse, we cannot react quickly to change. Also, we find it difficult to deal with major personnel problems unless they fit an already predetermined pattern. For instance, we have no sabbatical leave program at the Institute because such a thing has not been provided for as yet within the civil service as a whole.

But by and large, except for the ability to act quickly when new courses are required, the restrictions we have to live with are administrative or, more specifically, financial. Major items of equipment or new courses require a lead-time of at least two years.

If all this sounds as though we are unhappy because the Institute is controlled by the Department of Education, let me say definitely and clearly that this is not the case.

Our provincial government, through the Department of Education, has been very generous in its support of our activities. There has never been an occasion where a piece of equipment was needed and not supplied. There have been times when we have had to wait a bit for things; there have been instances where purchases have had to be deferred from one year to the year following; but this is all. We have been given good financial and administrative support. In return we have tried to be reasonable, prudent and economical in our requests.

Furthermore, the Department has never attempted to tell us what we do or what not to do in so far as curriculum content and emphasis has been concerned. The Department, quite rightly, is very much concerned with the results of our work at the Institute; but there has never been that over-control and laboured instruction upon minute points of detail for which government departments are proverbially renowned. Our Department of Education is concerned that our students obtain employment upon graduation and that their employers are reasonably satisfied with the student's capacity. In great measure, the details of how this is done is left to the Institute staff. Our Department encourages but does not inhibit.

Considerable discussion is going on at the moment about the future control of the Institute. There are some thoughts of placing us under a Board of Governors. This might have one great advantage - that of allowing us to act more quickly in response to change. It would not solve all of the problems which crop up from time to time.

The central point in all of this - and there is a lesson here for every school and every school system - is that of responsibility. We at the Institute accept full responsibility for the methods we employ and for the decisions we make; and we are willing (as we must be) to be judged upon the merits of the results which they produce.

Many teachers in our public school system complain of over-control by their school boards, by supervisors, by the Department of Education. Much of what they say is true; but much of the over-control has come about because many teachers and even principal teachers have shied away from taking personal responsibility for their methods and decisions. They thus have become simply mechanisms through which decisions of others, more distant from the classroom, are put into effect. I believe we have it now within our grasp to change a good deal of this.⁵

INSTRUCTIONAL STAFF

It goes without saying that instructional staff should be well trained and efficient; but how is this accomplished? There are a number of devices that are helpful. Teacher training courses are one obvious approach, while good reading habits to keep up with professional goings-on, participation in professional organizations, short courses and periodic attachment to industrial projects are some other means of accomplishing these desirable ends.

But the most fundamental requirement of all for a good instructor is that he have substantial and relevant experience in industry. If he lacks this then he just does not know what he is talking about when it comes to helping others learn how to do the things industry will demand of them.

One of the very great strengths of the instructional staff at the Land Survey Institute (and at the other technical institutes in our province) is the fact that all were successful in making a living before becoming instructors. Each has a set of skills for which industry was willing to pay. I am inclined to think that we might be better off if the same statement could be made of more of our secondary school teachers. How many of our teachers of English ever sold a short story or ever worked as a newspaper reporter or for a trade or professional journal? How many of our mathematics teachers have ever used applied mathematics in making a living? Indeed, some turn their noses up at the thought. How many of our chemistry teachers ever worked in an industrial laboratory?

One of the biggest problems a technical institute faces is that of keeping its staff up-to-date and knowledgeable with respect to current industrial practices. I mentioned earlier that we had no regular sabbatical leave program. This is usually considered a 'must' for teaching institutions; but this need not be the only solution to the difficulty. Term appointments for both administrative and teaching staff are becoming more common. We could probably make good use of inter-departmental transfers within our own Civil Service. Assuming both parties were willing and capable, why should we not be able, for example, to interchange one of our survey instructors with a regional surveyor who is a member of our Department of Lands and Forests staff?

At the moment in our Institution one of our photogrammetry instructors is with us on loan from the Land Registration and Information Service, Council of Maritime Premiers. This past summer, one of our survey instructors worked as a senior instrumentman for six weeks on the construction of an oil refinery at Saint John, New Brunswick. He came back with a whole array of new ideas as a result of experience he had never had before.

Continual thought must be given to the question of keeping technical staff refreshed and every possible avenue must be explored.

Instructional staff, as well, must be oriented to doing things with students rather than talking about things to students. I have touched upon this problem earlier and in another context. The situation tends to arise because many are inclined to emulate university teaching practices because they are themselves university graduates. Except for isolated situations, the lecture is a most effective way of communicating information and skills.

RELATION TO PROFESSIONAL ASSOCIATION

The Institute has been connected with only one professional organization - The Association of Nova Scotia Land Surveyors (ANSLS). This has been the only body of its kind which has had direct concern with what we do. When other professional bodies develop for the photogrammetrist, or for the cartographer, we will endeavour to relate to them as well; but I should emphasize that the connection between NSLSI and ANSLS has been through concern for mutual interests. There is no formal link between the two.

This fact is not well understood by the general public and, indeed, it is not well understood by many land surveyors; both organizations have separate roles to play, but their close association over the years has tended to obscure this. Particularly difficult for some to understand in recent years is the gap between the syllabus of training in our survey course, and the requirements which must be met for certification as a land surveyor.

The aim of the Institute's survey course is to train survey technicians. The standards for certification of land surveyors are determined by the Board of Examiners for Nova Scotia Land Surveyors. No member of the Institute staff is a member of the Board.

If one keeps these things in mind there should be no problem understanding why the survey course does not lead directly to certification; but more importantly, there is much less chance of confusing both issues. Certification standards should be set independently of any specific courses. By the same token, the training of the survey technicians should be an end in itself. If a technician wishes to pursue the question of certification, this should be a matter between him and the Board of Examiners. It is up to him to cover the gap between the standards reached as a technician and those required for certification as a land surveyor.

It has not been possible in Nova Scotia, over the last 25 years, always to perceive a clear distinction between the aim of our survey course and the certification standards. This has been because both the course aim and the certification standards have changed though not necessarily at the same times.

When J.A.H. Church first began his work in 1947, the syllabus of training he devised and the standards he set for his one-year course were far in advance of the legal minimum needed for certification. There is no need to go into details - a single illustration will do. In that day and age one was eligible for certification as a land surveyor in Nova Scotia providing one had a Grade X education, six months' experience as an instrumentman with a railway company and wrote some examinations. Church's training was far in advance of certification requirements and it remained this way for some time, even though new standards were set on the formation of ANSLs in 1951. The initial aim of his course was to train land surveyors, and for all practical purposes 100% of his graduates obtained their commission as such.

It perhaps should be noted at this point that certification as a land surveyor could be achieved by three different routes. One could apprentice to a practicing surveyor and write the necessary examinations, one could attend Church's course and write the same examinations or, as a graduate in civil engineering one needed only to write an examination in legal principles of boundaries.

The expansion of Institute facilities and the lengthening of the survey course to two years in 1958 coincided with a revision in the Land Surveyors' Act. Standards of certification were again raised. At this stage the course requirements very closely approached the certification standards. Basically, the requirement for a one-year period of field experience beyond graduation from the course accounted for most of the difference.

Over the next ten or twelve years not all graduates of the survey course obtained certification - but the figure was still close to 100%. This period of time coincided to some extent with that in which surveying was disappearing from the university engineering curriculum. Accordingly the number of civil engineers who became certified land surveyors diminished. Thus graduates of the Land Survey Institute furnished the bulk of the new membership of the Surveyors' Association during the course to bring this about; but from casual inspection it would certainly appear that it was. It was during this stretch that the aim of the survey technicians - many of whom, it was recognized, would go on for certification.

In 1972, and 1973, additional examinations were added to the schedule of those required for certification. At this point, it became quite a bit clearer that certification standards were in advance of course standards. It is probable they will remain so barring an extension of the course from two years to three - an unlikely event.

A technical institute must set its goals independently of the requirements for admittance to any professional association. Similarly, a Board of Examiners should determine certification standards without regard for what the institutes may

be doing. If it turns out that there is an equivalency (and for twelve years such was the case in Nova Scotia) then this is fine, but such should not be deliberately structured. This is not to say that there cannot be co-operation, discussion, mutual assistance and understanding between the two bodies, but their independent roles ought to be clearly in mind when decisions are made. If this is not done it may turn out that an institute teaches subjects that the Board examines upon, while the Board ends up examining upon subjects just because the institute teaches them.

The role of the NSLSI is to train technicians in the field of surveying and mapping; hence the principal aim of our courses must be to produce technicians. To the extent that we adjust our courses to lead to university credit, for example, we do an injustice to the bulk of our students.

As has been said of the training program at the College of Arts, Science and Technology in Jamaica: The technician program is a valid one in its own right.⁶

STUDENTS

Schools are for students. A school should help and not hinder. We often appear to forget this. There are times we act as though schools exist in order to give employment to their staff.

The bulk of our students come to us from secondary school and thus fit reasonably neatly into the scheme of things as far as admittance rules and regulations are concerned, but any school or institute ought always to give earnest consideration to applicants who do not fit neatly against formal entrance requirements. There should always be room for the so-called mature student - one who has not all the formal education that perhaps he ought to have, but one who has experience in the ways of the world. Practically without exception we have found the mature student to be highly motivated and thus capable of doing very well.

Care should always be taken to avoid the raising of artificial barriers in front of applicants. We are inclined to do this from time to time to the extent that we believe certain courses of instruction at the secondary level are absolutely necessary before work at our level is undertaken. We are not as sure of this necessity as we once were. Physics and mathematics are two areas to which we have always given special attention, believing them to be fundamental to much of the work done by technicians in surveying and mapping. This is true, of course, but not all physics is needed and not all mathematics is relevant. So before one rejects an applicant because of lack of some kind of formal instruction, one should be very sure that the deficiency is, in fact, a real and valid matter for concern. One very good test to apply is whether the deficiency will place the student in a position wherein he cannot possibly succeed.

Quite frequently we find ourselves confronting just this sort of problem with an applicant. In every such case we suggest some means of improving himself while continuing his present employment. Correspondence or evening courses are offered in a wide range of subjects; if one is determined to get ahead, then these methods offer the way. Applicants who undertake this extra work before enrolment demonstrate pretty clearly that they are seriously committed to what we have to offer them.

CURRICULUM

Curriculum has to be continually reviewed to ensure it is relevant to the industrial situation in which graduates will find themselves. All, of course, will agree that it is important to do this, but it is even more important to make sure that a curriculum is relevant to begin with. This is not always done well.

In the educational world we have a great tendency to believe that once we have 'covered' a 'subject' a student has learned what it is all about. Occasionally, though, we admit to difficulties in this area. This is often reflected in teacher's complaint: "I taught him that lesson but he didn't learn it."

We believe the key to good and effective curriculum development and to good and effective instruction lies in one and the same device. This is to ask quite simply: "What must the graduate of a particular course be able to do?" Once this question has been answered, it is relatively easy to decide how to achieve the aim.

When new courses of training are developed at the technician level in Nova Scotia, we employ this technique⁷ to evolve curriculum. If, for example, a course was to be set up to train newspaper reporters, a group of reporters (not editors or supervisors) would be assembled. Over a period of a day or two their statements of what a reporter has to be able to do would be recorded and sorted out by them into half a dozen groups each with a common theme. Thus we would have our course curriculum. When the student has learned to master all or nearly all these "things to be done", then he has successfully completed the course.

One subject usually a casualty of this approach to curriculum analysis is mathematics. One normally finds specific mathematical techniques included implicitly as parts of a specific problem to be solved. For instance in order to adjust the angles at a point one must set up and solve the normal equations which result from the original observation equations. I am inclined to believe that immeasurable ill will towards mathematics and a great misunderstanding of mathematics has been the result of handling mathematics as a subject rather than as a tool. Unless one has reasonable prospects of encountering quadratic equations, for example, there seems nothing more irrelevant than trying to remember how to solve one.

The curriculum for a course must be relevant. This does not mean that it has to be easy or trivial.

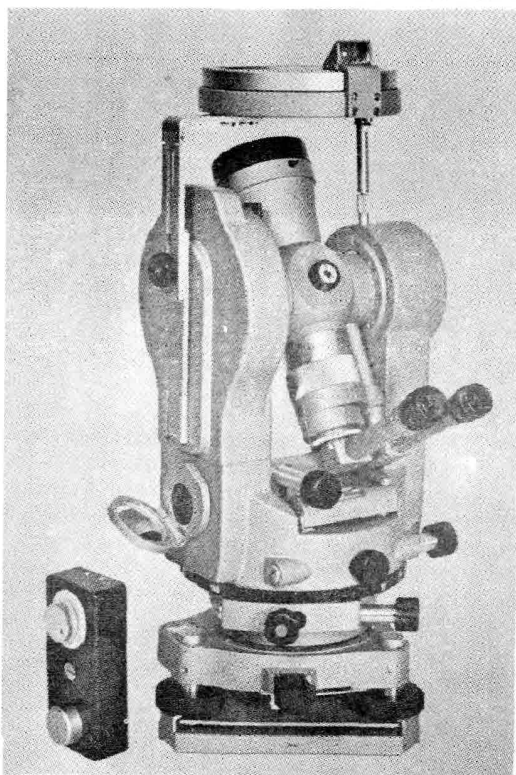
CONCLUSION

Hopefully, some of what I have recorded above will be helpful in furthering discussions and in arriving at decisions about the future of surveying in the Caribbean. No one has a monopoly on new ideas or on the refinement of existing ones. All of us can learn at least as much from others as we can come up with on our own. This is one of the reasons Nova Scotia Land Survey Institute is so pleased to have a part in the CARISED Conference.

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(* mark for 400 g)

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image:	erect
objective aperture:	40 mm (1.6 inches)
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resolving power:	3"
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minimum focus:	1.3 m (4¼ feet)
stadia ratio:	1:100
stadia constant:	0

HORIZONTAL CIRCLE

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micro reading:	20"	50 cc

VERTICAL CIRCLE

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micro scale, 1 div.:	10'	20 c
micro reading:	20"	50 cc
vertical compensating range:	± 5'	

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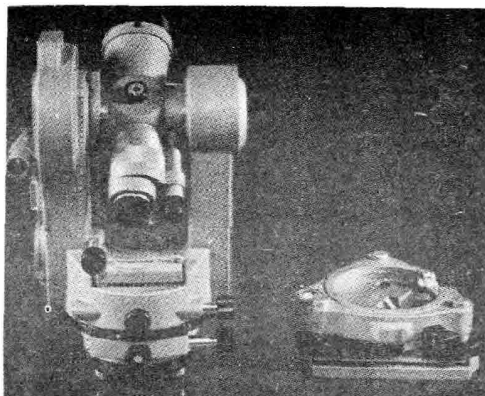
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CERTIFICATION PROCESS AND OCCUPATIONAL LICENSING

- by A. F. Chisholm -

I have been asked to do a review of a portion of the report of the Graham Royal Commission and the possible implications that section could have for this Association and Nova Scotia Land Surveyors.

It deals with the advantages to the community and to individuals of occupational licensing, meaning the requirement that an individual must have a permit to practice, a license if you like, in many instances also has to have a membership in an association and most such associations are also enabled by legislation to be self-regulatory or self-governing.

The Commission approaches this section by analyzing the effects on income to the individual and the social rate of return on educational costs as a result of the certification and a most interesting statement reads "up to half of the net earnings differential can be attributed to certification".

The report quotes extensively from another report prepared by David Dodge, who considers that most of the earnings differential which is now attributed to differences in schooling, in education, is in fact attributable to differences in occupation, it continues: "Occupational differentials in his view are not primarily attributable to schooling, but to artificial barriers to entry to high paying occupations and particularly to occupational licensing".

Further he considers that "educational certificates are used as a simple method of screening potential employees and also as a means of rationing the number of entrants to many job categories", increasing the importance of the effects of occupational licensing on earning differentials for skilled and high level manpower.

So Mr. Dodge is saying in effect that because we are members of a somewhat exclusive group or association we as surveyors earn more money and that advantage over others who may have a corresponding amount of education is created largely by the fact we are enabled to practice because of our membership in the Association and the license issued by the Association.

We are told, via the report, that our licensing is often said to be justifiable because it ensures that the client has a competent surveyor, that the licensing prevents sub-standard service to the client, but Mr. Dodge doubts that these justifications are valid.

Our licensing was originally set up as a section of government then transferred to the Association when we were in a position to be responsible, so we have persuaded the government to grant us the power to grant licenses. Mr. Dodge suggests that educational standards are intentionally set higher than is actually required in order to restrict entry to the group, enabling higher rates of return to those persons in the Association. We could argue that licensing has produced a higher educational standard but let's not lose sight of the fact that the licensing came first, not the higher educational standards.

He argues that there are great advantages for the withdrawing of the self-regulating powers from all trades and professions and the substitution of government certification in its place. The assumption would be that under such governmental direction there would not be excessive reliance on educational certificates and that no effort would be made to restrict entry.

(One could comment that there are serious obstacles preventing new entries to certain trades severely limiting the number of apprentices and by other methods, thus controlling the number of practitioners, very effectively maintaining high employment levels as well as high wage packages).

The Graham Commission Report states that "without necessarily supporting Dodge's solution, our purpose has been to show that emphasis on economic benefits from education may be based on seriously inaccurate measures".

The meaning of the above? It seems to me that legislators may well tend not to strengthen the self-regulatory and governing powers of professional associations, a trend that is already seen in other Provinces. I personally would doubt that Dodge's solution (purely governmental certification) will come soon or all at once, there could be a gradual eroding away of the self-regulatory powers perhaps by insertion of more individuals in such Associations as governmental appointees as has happened in one of our sister Provinces.

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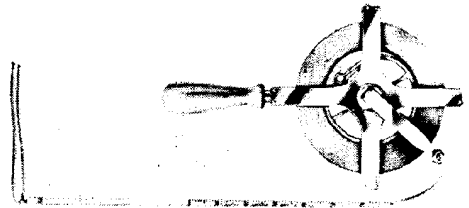
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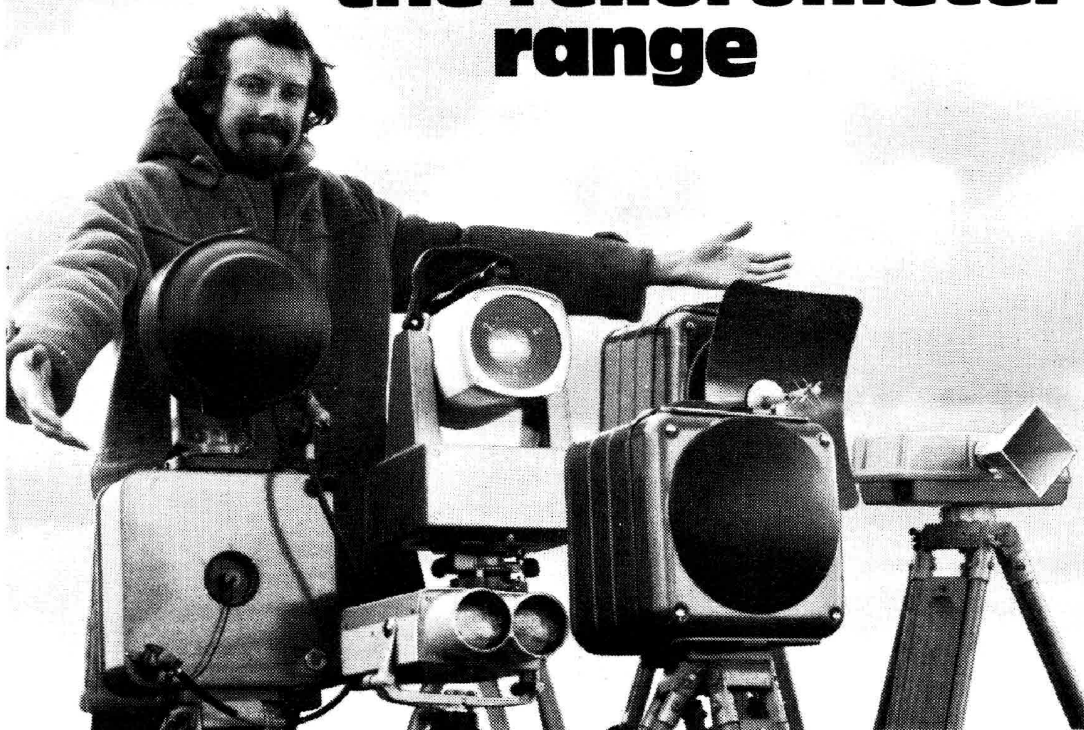
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