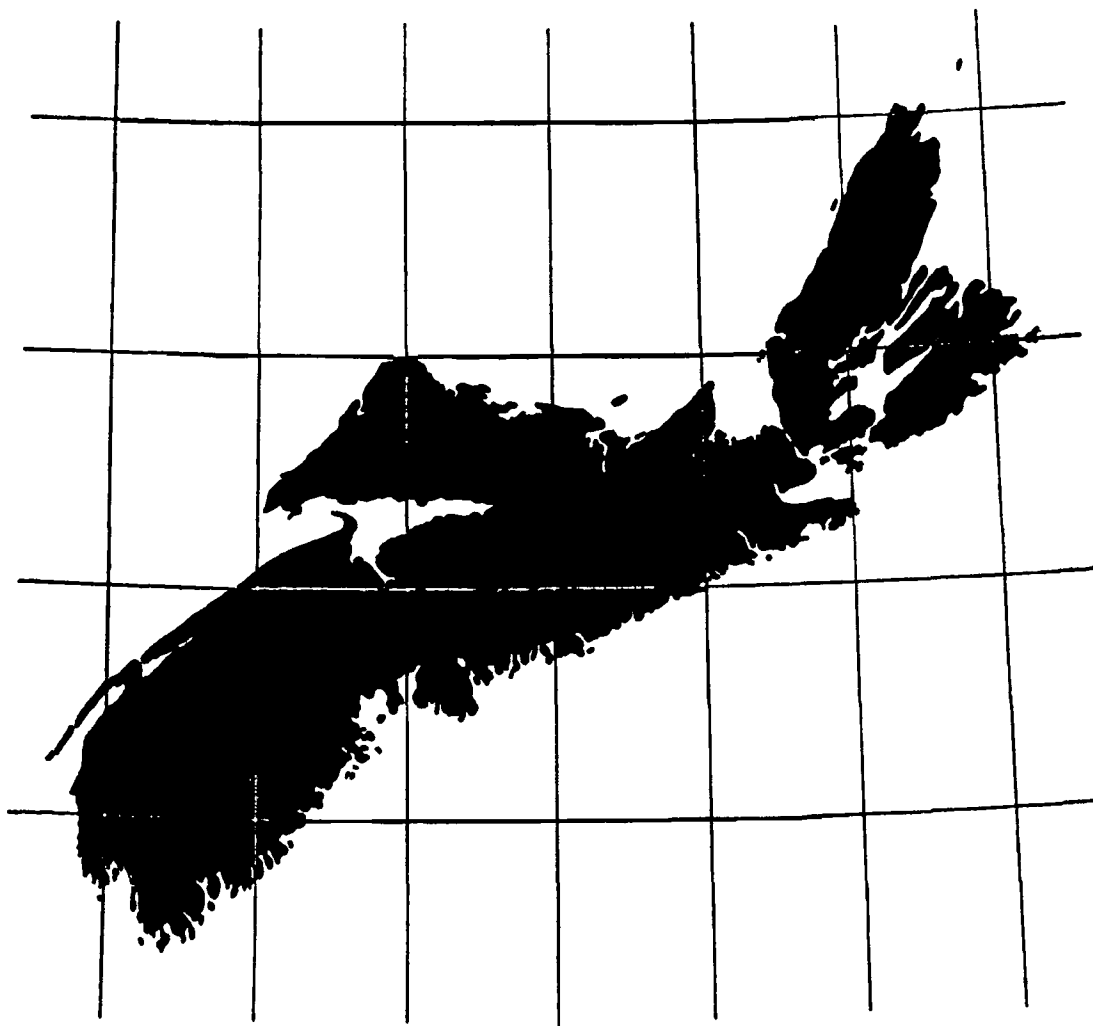


# The NOVA SCOTIAN SURVEYOR



*Published by  
The Association of Provincial Land Surveyors  
of Nova Scotia*

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Number 32

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# The NOVA SCOTIAN SURVEYOR

*Published four times a year by*

*The Association of Provincial Land Surveyors of Nova Scotia Incorporated*

A. F. CHISHOLM  
*President*

H. B. ROBERTSON  
*Secretary-Treasurer*

R. E. MILLARD  
*Editor*

*Volume 12*

*Number 32*

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

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## The Association of Provincial Land Surveyors of Nova Scotia Minutes

The eleventh annual meeting held at the Lord Nelson Hotel, Halifax, N. S., November 6th and 7th, 1961.

Members registered and present at one or more sessions: Joseph F. Archibald, Col. Spencer Ball, A. T. Barry, George T. Bates, Ernest F. Boehk, William E. Chambers, A. F. Chisholm, J. Ronald Chisholm, Major J. A. H. Church, Murray F. Cossitt, E. A. Crawley, C. S. Creighton, David L. Crooker, Seymour C. Crowell, R. E. Dickie, A. V. Digout, R. J. Donovan, Roy A. Dunbrack, Donald L. Eldridge, Norman R. Eddy, A. C. Freckleton, Robert E. Gough, F. L. Gray, Errol B. Hebb, David Hiltz, Robert L. Hunt, J. A. Ingarfield, Chester A. Keen, J. E. R. March, Roger F. Melanson, R. E. Millard, John Carl MacDonald, Millan J. MacDonald, Roderick J. MacDonald, John A. McElmon, F. W. McKeown, W. C. Phillips, Prof. E. O. Temple Piers, Kenneth V. Reardon, E. P. Rice, E. B. Ritchie, Kenneth W. Robb, H. B. Robertson, Otto P. Rosinski, Robert F. Sarty, Walter E. Servant, James C. Sherren, Lewis O. Smith, Sterling G. Snow, W. Merle Spence, George W. Swansburg, John Forbes Thompson, Freeman Tupper, Earl J. Verner, Melvyn H. Wadden, Donald E. Wagstaff, Paul Wendt, Frank D. Yates.

### Guests Registered:

Hon. E. D. Haliburton, Minister of Department of Lands and Forests.

Henry F. Muggah, Legislative Counsel, Province of Nova Scotia.

Brenton V. Schofield, President, Massachusetts Association of Land Surveyors and Civil Engineers.

Llewellyn T. Schofield, Massachusetts Association of Land Surveyors and Civil Engineers.

James E. Schofield, Massachusetts Association of Land Surveyors and Civil Engineers.

H. Furuya, Canadian Hydrographic Service, Ottawa.

Archie McLaughlin, Assistant Director of Surveys, Dept. of Lands and Mines, Fredericton, N. B.

E. R. Jamieson, Dept. of Lands and Mines, Fredericton, N. B.

Valmore Stewart, Dept. of Lands and Mines, Fredericton, N. B.

Prof. Peter Wilson, Surveying Engineering Department, University of New Brunswick.

George W. LaCroix, Canadian Hydrographic Service, Halifax, N. S.

Harvey Blanford, Canadian Hydrographic Service, Halifax, N. S.

## Exhibitors Registered:

R. K. Rosebrugh, Tellurometer Canada Limited.  
 Lieut. Commander M. Mogg, Tellurometer Canada Ltd.  
 Stuart Carver, Hughes Owens Company Limited.  
 Roy Kempt, Hughes Owens Company Limited.  
 Gordon Mitchell, Hughes Owens Company Limited.  
 Charles Stringer, Hughes Owens Company Limited.  
 S. E. Daykin, Atlantic Air Survey Company Ltd.  
 D. H. Refoy, Atlantic Air Survey Company Ltd.  
 D. H. Peden, Wild of Canada Limited.  
 David W. Smith, Norman Wade Company Limited.  
 Murdock Hattie, Eastward Industries Limited.  
 C. E. (Ted) Tuffy, Keuffel & Esser Company of Canada.

President Eldridge called the meeting to order at 10:30 a.m.

President Eldridge's Opening Address.

Immediately following the opening address, President Eldridge called for the report of the Secretary-Treasurer.

The Secretary informed the meeting that his report would be short. He said that the most of what he had intended to say has already been covered by President Eldridge. He said that he had represented the Association at the meeting of the Massachusetts Association of Land Surveyors and Civil Engineers which was held at Northampton, Mass., on December 1st and 2nd, 1960. He said that this had been a meeting well worth attending and that the hospitality of the Massachusetts Surveyors, especially the four Schofield brothers will be remembered for a long time.

He said that he had also represented the Association at the annual meeting of the Association of New Brunswick Land Surveyors, held in Fredericton in January 1961. He said that this also is a meeting well worth attending, and since Fredericton is not very far from Nova Scotia more of our surveyors should make an effort to attend these meetings.

He said that the Association should be very careful with regards to raising the fees. He said that he feels that many of the members are not actively engaged in land surveying and do not have enough interest in the profession or the Association to continue as members if the dues are raised any higher than they are at present.

President Eldridge then introduced the guests, beginning with our good friend from Massachusetts, and his hunting partner, Mr. Llewellyn T. Schofield, of the Board of Registration of Massachusetts Land Surveyors.

Mr. Schofield thanked his hunting partner President, and the members for again giving him the opportunity to attend another meeting of this association. He said that he had missed it last year, but is glad to be back again this year. He said that in the absence of Mr. Lester Higbee, he would fill in for him and bring greetings from the American Congress on Surveying and Mapping. He said that any of our members who wished are invited to attend the annual meetings in Washington in March.

President Eldridge thanked Mr. Llewellyn Schofield. He then introduced Mr. Brenton V. Schofield, President of the Massachusetts Association of Land Surveyors and Civil Engineers.

Mr. Schofield said that it is wonderful to be back again to renew old friendships, and to bring greetings from the Massachusetts Association of Land Survey-

ors and Civil Engineers. He said that their annual meeting will be held in Salem, Mass., the 1st week in December, and hoped that this Association will be represented at that meeting.

President Eldridge thanked Mr. Brenton V. Schofield and said that if possible, this Association will be represented at Salem in December. He then introduced Mr. James E. Schofield.

Mr. Schofield thanked President Eldridge and the members for the opportunity to attend this meeting. He said that this is the first time he had attended a meeting in Nova Scotia, but hoped that it will not be the last. He said that he brings greetings from the Cape Cod Society of Land Surveyors and Civil Engineers. He said that their Society will be holding their Annual Clam Bake on the Cape on the first Sunday in August, and invited any Nova Scotian surveyors who happened to be in the area at the time to be sure and attend.

President Eldridge thanked Mr. James Schofield. He then introduced Mr. G. W. Lacroix of the Canadian Hydrographic Service, Dept. of Mines and Technical Surveys, Halifax, N. S. and Chairman, Halifax Branch, Canadian Institute of Surveying.

Mr. Lacroix thanked President Eldridge and the members for the invitation to attend this meeting. He said that he wished to convey greetings from Mr. Gamble, Director of the Surveys and Mapping Branch, and Mr. Gray, Chief Hydrographer, Canadian Hydrographic Service. He said that he also brought greetings from the Halifax Branch of the Canadian Institute of Surveying. He said that they will be holding their meetings again very soon, and that he hopes to see more land surveyors present at these meetings.

President Eldridge thanked Mr. Lacroix. He then introduced Mr. Furuya of the Canadian Hydrographic Service, Department of Mines and Technical Surveys, Ottawa.

Mr. Furuya thanked President Eldridge and the members for the opportunity to attend on behalf of the Surveys and Mapping Branch, Dept. of Mines and Technical surveys. He said that Mr. Gamble was attending a meeting in Bangkok, Thailand, and that Mr. Gray had been unable to attend.

President Eldridge thanked Mr. Furuya and reminded the members that they will be hearing more from Mr. Furuya later.

President Eldridge then introduced Mr. A. W. McLaughlin, Assistant Director of Surveys, Department of Lands and Mines, Fredericton, N. B.

Mr. McLaughlin thanked President Eldridge and the members for the invitation to attend. He said that he brought greetings from the Minister and Deputy Minister of the Department of Lands and Mines. He said that Willis Roberts sent his regrets that he was not able to attend, and that Mr. Jones, President of the Association of New Brunswick Land Surveyors had asked him to express his regrets that he could not attend the meetings and had asked him to bring greetings from the New Brunswick Association. He said that he was grateful to be on the mailing list of The Nova Scotian Surveyor.

President Eldridge thanked Mr. McLaughlin. He then introduced Professor Peter Wilson of the University of New Brunswick.

Prof. Wilson thanked President Eldridge and the members. He said that all the people from the course of Surveying Engineering at the University sent their greetings, and that Dr. Konecny wished to be remembered to all his friends in Nova Scotia. He said that this is his first attendance at a Canadian Surveyors get-together.

President Eldridge thanked Prof. Wilson. He then introduced Mr. E. R. Jamieson of the Survey Branch, Department of Lands and Mines, Fredericton, N. B.

Mr. Jamieson thanked President Eldridge and the members. He said that he was happy to be here. That it was his first attendance at a meeting in Nova Scotia, and that he hoped we would have much success with our meetings.

President Eldridge thanked Mr. Jamieson. He then introduced Mr. Valmore Stewart, also of the Surveys Branch, Dept. of Lands and Mines, Fredericton, N. B.

Mr. Stewart thanked President Eldridge and the members and said that he wished the Association a most successful meeting.

President Eldridge thanked Mr. Stewart. He then introduced Mr. Harvey Blanford of the Canadian Hydrographic Service, and Secretary of the Halifax Branch, of the Canadian Institute of Surveying.

Mr. Blanford thanked President Eldridge and the members. He said it was good to be back at another of our Annual Meetings.

President Eldridge thanked Mr. Blanford. He then asked if he had overlooked any visitors, and if he had, he asked if they would please stand.

President Eldridge informed the members that copies of the Minutes of the last Annual Meeting had been distributed and asked if these Minutes be read by the Secretary, or if they could be adopted as printed.

It was moved by Mr. Bates and seconded by Mr. A. F. Chisholm that the minutes be adopted as printed. Motion carried.

President Eldridge then asked the members to consider the Financial Report, copies of which had been distributed at the beginning of the meeting.

It was moved by Mr. March and seconded by Mr. Bates that the closing date of the Financial Report be changed from September 31st to September 30th. Motion carried.

Major Church said that he does not feel that students are being fairly charged. He said that the annual dues of the Association should be in line with expenses. He said that this is the first year we have been able to meet our expenses.

Mr. March reminded the meeting that the annual fees were raised to \$25.00 at the 10th annual meeting.

Major Church said that this has not been put into effect and that the dues are still \$10.00.

Col. Ball said that he would like to explain the reason behind the Board's decision to set the fees for examination. He said that the examiners must be of the University standard and that they have to be paid for their services. The number of students writing the examination was indefinite which makes it difficult to set fees and be sure that the examinations will be self-supporting. He said that last December the Board was required to set the preliminary examination, but nobody wrote these exams. However, it was necessary to pay the examiner for preparing these exams. He asked if the students do not pay for the exams then who is going to pay. He said that the last exams were very satisfactory, and were of a much higher standard than ever before.

Mr. Crawley said that it has been brought to our attention that many members are behind in the payment of their dues. He said that he feels that the registration fee of \$3.00, though small, is an additional 20 percent of the amount of the annual dues. He said that he feels that the Association should carry the cost of the Annual Meeting.

Prof. Chisholm said that the Association should try to make those members who are in arrears pay their dues before they are allowed to practice. He asked if it would be possible to have a break down of practicing and non-practicing members. He said that at present we have provisions for out of the Province members who may elect to be placed on the non-practicing list and pay the reduced annual fee of \$5.00 per year.

President Eldridge reminded the meeting that we have motion from last year with regards to raising the dues which cannot be enforced until the by-laws are amended.

Major Church moved that the Council be instructed by this meeting to amend the by-laws to raise the dues to \$25.00 per year as passed during the last Annual Meeting. Seconded by Col. Ball.

Mr. Crawley asked if this motion was necessary.

After further discussion, the motion was withdrawn.

Mr. Gray asked if the purpose for raising the dues is to cover the cost of examination.

President Eldridge said that the examinations must pay their own way, and that it is the general funds that must be built up.

Mr. Gray thanked President Eldridge, and said that he had misinterpreted the meaning of their discussion.

President Eldridge pointed out to the meeting that under the Act, the Board of Examiners are entitled to collect for their expenses. He said that this has never been done, and is one reason why there is a surplus in funds collected for the examination this year.

Mr. March moved that the by-laws be amended to provide for a revision of the fees by any Annual Meeting. Seconded by Major Church.

President Eldridge asked for an opinion from some of the younger members regarding the raising of the Annual Dues.

Mr. Rice said that he would speak for the younger members. He said that if the dues are raised too much, many of the younger members will drop out since the most of them are trying to meet many expenses. He said that this is true, especially among those who are married.

President Eldridge asked if Mr. McLaughlin could give us some information on how this matter is handled in New Brunswick.

Mr. McLaughlin said that the New Brunswick Association is in a better position to handle this matter than we are in Nova Scotia. He said that no person is allowed to practice land surveying in New Brunswick unless he is a member of the Association and is in good standing. He said that their fees are \$15.00 per year, and that the initial membership fee is \$30.00. He said that this seems to work out very well, and that the fees collected from the examination pay their own way.

President Eldridge asked Brent Schofield, President of the Massachusetts Association of Land Surveyors and Civil Engineers how this matter is handled in their State.

Brent Schofield said that he would let "older brother" Lew answer since he is more informed in this matter.

Llewellyn Schofield said that they have a different set up in Massachusetts than we have here. He said that registration of Surveyors is done by the Commonwealth separate from the Association. He said that receipts from registration have exceeded expenses by a considerable amount.

Following further discussion, the motion by Mr. March that the by-laws be amended was passed.

The meeting then adjourned for lunch.

The meeting was again called to order by President Eldridge at 2:30 p.m.

Al Daykin gave a progress report on the co-ordinate system, and what has been done to date. This was followed by a report by Mr. Archie McLaughlin, who inform-

ed the meeting on the progress of the New Brunswick co-ordinate system, and what they plan for the future.

Prof. Peter Wilson of the Survey Engineering staff of the University of New Brunswick gave a report on the progress of the new survey engineering course now being offered by the University of New Brunswick.

Col. Ball gave the report of the Board of Examiners following which the meeting adjourned so that the room could be made ready for the reception and dinner which was held at 6:30 p.m.

## Tuesday, November 7th, 1961

President Eldridge called the meeting to order at 10:00 a.m. He then introduced Mr. J. P. Dumaresq who delivered a most interesting paper dealing with the Surveyor and the Architect, which was followed by a lively discussion period.

Mr. H. Furuya, of the Department of Mines and Technical Surveys, Ottawa, gave a very interesting and informative paper on "the Canadian Hydrographic Service" which he illustrated by showing slides depicting the various phases of their work.

The final item for the morning was the period of survey problems and answers. This proved to be most interesting. Following this the meeting adjourned for lunch.

President Eldridge called the meeting to order at 2:30 p.m. and opened with the installation of officers which are as follows:

President: Prof. A. F. Chisholm.

Vice-President: J. Ronald Chisholm

Secretary-Treasurer: H. B. Robertson.

## Council Members

Halifax City: Roy Dunbrack, 1962; J. W. Byers, 1962 and 1963.

Halifax County: J. F. Archibald, 1962; Chester Keen, 1962 and 1963.

Western Nova Scotia: Donald Wagstaff, 1962; F. L. Gray, 1962 and 1963.

Eastern and Northern Nova Scotia: M. J. MacDonald, 1962; Hoyes Cameron, 1962 and 1963.

Cape Breton Area: Earl J. Verner, 1962; Charles Campbell, 1962 and 1963.

Members at Large: Walter Servant, 1962 and 1963; Freeman Tupper, 1962.

President Eldridge then turned over the meeting to President elect, Prof. Chisholm.

President Chisholm thanked the members and said that he appreciated the honor of being elected President for the coming year. He advised the members of the Council that there would be a meeting of the Council immediately following the closing of this meeting.

President Chisholm said that the Secretary-Treasurer, Mr. Robertson, had agreed to stay in for one more year provided that he could have help. He asked the meeting for a motion in this matter.

Mr. Servant moved that Mr. E. P. Rice be appointed as Assistant Secretary-Treasurer. Seconded by Roy Dunbrack. Motion carried.

It was moved by George Bates and seconded by Mr. March that Mr. Rice be given an honorarium to be set by the Council for current year. Motion carried.

Major Church said that the financial report shows \$500.00 raised from special levy and \$600.00 for overcharging of examination fees.

Major Church moved that the Secretary-Treasurer be empowered to reimburse the students for last year's examinations the amount of \$24.00 per student. Seconded by Mr. F. L. Gray. Motion defeated.

President Chisholm informed the meeting that the instructions to the Board of Examiners, is that the fees shall be set to cover all costs. The figure shown in the report applies to all examinations set during the year. The rate had to be established before the examinations started. If there had been half the number writing then the Association would have had to pay out of the general funds.

Mr. Phillips said that we should not be financed by the students.

President Chisholm said that it is the intention of the new Board that the fees be such as to cover costs and the possible remuneration of the Board of Examiners.

Mr. Dunbrack asked President Chisholm if, as a member of the Board of Examiners, he feels that this may happen again in the future.

President Chisholm said that he hoped that it will not.

Mr. Keen said that if we return this money, than the next students will be expecting the same.

Mr. Crawley said that he feels that if the fees are revised then these students could be refunded the difference.

Mr. March asked if it would be possible in some way that this surplus could be set into a separate fund and incoming Council be empowered to study this matter.

Mr. March said that he would make this into a motion. Seconded by Mr. Archibald. Motion passed.

Mr. Crawley said that he would like to make a motion that the incoming Council study the amount of examination fees levied, and that if the examination fees are lowered, that the students be reimbursed the difference. Seconded by Mr. Keen.

Major Church reminded the meeting that we have no right to fix the amount of fee. They are set by the Board of Examiners and whatever they are they must be paid.

Mr. Eldridge reminded the meeting that the Board of Examiners have made no charge for their time.

President Chisholm said that the fees are set by the Board of Examiners, and that each member of the Board has the right to collect remuneration for the time spent on Board business. He said that Mr. Eldridge was put to considerable personal expense during the past year.

After some discussion on the matter, Mr. Crawley asked to withdraw his motion with the consent of the seconder. Mr. Keen said that he would withdraw.

President Chisholm then asked the meeting to consider the amount to be set for the Annual fees. He said that if permission is granted by the Governor-in-Council, we will have to set the amount of fees to be charged. He said that this must be carefully thought out. He said fees are now \$10.00 and that during the past year we collected a special levy of \$5.00 per member. He reminded the meeting that we have members practicing who are not paying. He asked for suggestions of the amount of fees to be charged for the coming year.

Mr. Servant said that he feels that for the time being we can get along with a total of \$15.00. If more is required we would have to put in another special levy. He said that if we could collect dues from the members who are not paying there would be no need at present time to raise dues.

Mr. Crawley made a motion that the dues be \$13.00. He said that the registration fee discourages many members from attending meetings. Motion was not seconded.

Mr. Servant made a motion that the dues remain at \$10.00 for the coming



year, and that another special levy of \$5.00 be charged to each member. Seconded by Mr. March. Motion carried.

President Chisholm then asked the members to give their opinions on the rates that a surveyor should charge for his services.

Mr. Servant said that we will need an expression of facts and figures. He said that the thought was to send out a questionnaire to surveyors. He asked if they would be willing to provide information on what they make, or what they would like to make.

Prof. Piers said that we have a recommended set of fees, but that they are an impracticable and unworkable set of fees.

President Chisholm said that this is a matter of vital concern to the practising land surveyor. He said that we want fees fair to the surveyor and to the client.

Mr. Reardon said that he does not agree with companies opening their books and divulging their income and expenditures. He said that we would not get an even picture, some are working on a large scale while others are small. He said that in his opinion, office fees of \$5.00 are not satisfactory. He said that this should be increased to at least \$15.00 per day. The high cost of equipment, rainy days, etc. all enter into the picture.

Mr. March reminded the meeting that the present schedule of fees is the recommended minimum. He said that the members should remember that point, and that there is no reason why they cannot be raised under the present system. He said that there is going to be a difference in the various locations.

Mr. Bates said that a crew in February will take twice as long to do a job as it will if the same job is done during the summer time. He said that the fact that one man may have more experience, and will be able to do the job in half the time than another man who does not have the experience. He said that as a man becomes more competent he will be able to charge more for his services.

Mr. Robb said that the setting of a proper survey standard has a bearing on the cost of the survey. He said that he would be glad to co-operate, even to the extent of making his books available.

Mr. McLaughlin said that this has caused a lot of trouble in New Brunswick. He said that the suggested fee should only be a guide, and that the extra effort should be put into ethics and prevent cost slashing.

Mr. Robb said that a fixed rate could be set for building certificates, and that a minimum for this should be set. If a surveyor has to carry out a higher standard of work he will charge higher fees. He said that he feels that even in the new Regulations the required accuracy is too low.

Major Church said that we could go too far if we start pricing everything.

Mr. Reardon said that he does not go along with a fixed fee unless it is a minimum fee. He said that every member of this organization should make it known if he knows of any infraction of this minimum. If there is someone doing building certificates for \$8.00 he is not doing it on his own time, and that this should be stopped.

Mr. Servant said that a committee had been formed to bring suggestions to this meeting, and that now their duties are over, and that a new committee be required.

Mr. Rice said that he has noted that the most of the discussion on this matter has been by surveyors operating in the Halifax area, and he asked if surveyors in other areas have the same problems. He said that this appears to be a Halifax metropolitan problem and as such could be dealt with by the Halifax Metropolitan Committee.

Mr. Reardon said that he doubted if the surveyors in the Halifax area should decide what the rates should be for the whole Association. He said that this problem had been raised when the Halifax Metropolitan group met a year ago, but that nothing has been done. He said that he did not want to appear to be the

main instigator for the raising of these rates. He said that all surveyors he has talked to in this area feel the need for higher rates. He said that most surveyors in the outside areas feel that they cannot in most cases charge more than they are now doing.

Mr. Eldridge said that this is the only group that can establish minimum rates. He said that the Halifax Metropolitan Committee is a committee formed within this Association and that they are required to report to this Association.

Mr. Wagstaff said that \$35.00 per day seems to be satisfactory for surveyors in this area.

Mr. Servant said that there are too few practising land surveyors here at the meeting to attempt to set a schedule of fees at this time.

Mr. March moved that the present committee carry on as before.

Mr. Servant said that he would be willing to serve, but for various reasons he cannot continue as chairman of the committee.

Mr. March then withdrew his motion.

Mr. Rice nominated Ken Robb to serve on the committee to look into the matter of surveyors fees.

Mr. March nominated Walter Servant.

Mr. Rice moved nominations cease. Seconded by Mr. Bates. Motion carried.

Mr. Robb is to be chairman of the committee to make recommendation for the best method of determining rates to be charged for surveyors services.

Mr. March informed the meeting the Council have received information during the past year of persons other than qualified Provincial Land Surveyors doing land surveying and running boundary lines. He said that because of a clause in the Act which now stands no action could be taken.

President Chisholm informed the meeting of the contents of Section 23, Clause (2) which states that no action or prosecution shall be commenced after six months from the time of the commission of the alleged offence.

It was moved by Mr. March that we request the Legislature to amend Section 23, Clause (2) to allow a longer period of time after the commission of an offence in which action may be taken against the offender, and that if possible this to be done at the next sitting of the legislature.

Seconded by Mr. Wagstaff. Motion carried.

Mr. Bates moved that the Council be empowered to collect delinquent dues. Seconded by Mr. March. Motion passed.

Mr. Bates made a motion of a vote of thanks to all responsible for this eleventh Annual Meeting. Seconded by Mr. Wagstaff. Motion carried.

The eleventh Annual Meeting closed at 4:30 p.m.

H. B. ROBERTSON, Secretary-Treasurer

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# Surveyor or Planner: Team or Rivals?

By NOEL DANT, Director of Planning, Province of Alberta

*In subdivision planning the surveyor's responsibility is directed solely toward the good of the individual owner, while that of the planner relates to the land use and growth patterns of the surrounding community. Both of these points of view are necessary. There is therefore no conflict of interests between the surveyor and the planner: ideally they function as members of a team.*

Historically the surveying profession is old and the planning profession relatively new, although both surveyors and planners have been known since before Biblical times. In this country, up to about ten years ago, subdivision plans were prepared almost entirely by registered land surveyors. Since the general acceptance of urban and rural planning in this last decade, the surveyor has sometimes taken a dubious view of the increasing number of subdivision plans designed by planners, to the partial exclusion of the traditional surveyor's work. (I say partial because in every province in this country the final plan of subdivision must, by statute, be prepared and submitted by the registered land surveyor.) At the same time, the professional planner takes an equally dubious view of the subdivision plans that are still designed by the professional surveyor.

Does the professional surveyor feel that the professional planner is encroaching on his field of work, and is the planner in fact doing so? When the whole situation is viewed dispassionately I think the general answer is no. I know that many professional surveyors will agree with me, as I also know that some will disagree. Let us first take a really close look at the two professions and see whether there really is a conflict over subdivision.

It is a peculiar fact in this country that the great majority of registered land surveyors are employed in private practice and the equally great majority of professional planners are employed in official positions of one or other of the three levels of government, and the minorities include a very small number of professionals. The surveyor, dealing more directly with the owners therefore, has for decades held to his position that his subdivision has eventually to have the unqualified approval of his client, the man who owns the land. This owner, in the great majority of cases wishes his land to be divided for practical and monetary reasons only. His land is an asset to be capitalized, and his right to capitalize it is inviolable under common law. He generally has little or no interest in how the subdivision of his land affects the adjoining property, or how it affects the rational expansion of the municipality itself, either in relation to the immediate area or to the over-all growth policies that the municipality may have adopted by virtue of a master or general development plan for the whole community. The surveyor, in the main and naturally, is not greatly concerned about land use existing or future, or about zoning. He is concerned most about the security that his work will bring to his client.

On the other hand, the professional planner, whether he is retained by a private land owner or developer, or by a municipality, is mainly concerned with the effects of his subdivision plan on the evolving pattern of land uses of the municipality as a whole. This is not to say that he is not equally concerned, when the client is a private owner or developer, with his client's wishes and desires in the matter. One can assume that by his specialized training and experience the professional planner is best equipped to take the overall viewpoint into consideration.

This difference in outlook between the professional surveyor and the planner may be exemplified by reference to the "Theory of the Bundle of Rights." This theory states that land itself embraces everything attached to it, under it, and over it. The private rights to land are therefore comprehensive. Such multiplicity of rights is commonly known as the "Bundle of Rights." In theory only does the own-

ership of land entitle the owner to unrestricted exercise of the entire bundle of rights. In any organized society, an owner cannot avail himself of all these rights without qualification, and in practice the separate rights in the bundle are liable to restrictions, such as through the powers of zoning, eminent domain, taxation, and escheat to state. In other words, to use this analogy in terms of the difference in attitude of the surveyor and the planner, one might say that the surveyor tends to look upon a client's rights in the theoretical sense, that is, without restrictive qualifications, and the planner in the more restrictive sense, that is, with mental qualifications, feeling constrained to judge whether the particular subdivision is for the good of the whole rather than for the sole good of the individual owner.

In his training the surveyor learns, among other things, the mechanics of subdivision, both in the field and on the drawing board. He learns the legal procedures to implement this subdivision work. He is a master with the surveyor's field tools, the attainment of proper accuracy in surveys, and the filing of registered plans, exquisitely drawn on linen. He learns, through experience, to translate an owner's wishes into lots and parcels and access to these lots and parcels, and to provide a plan that will satisfy the owner. He is not well trained to assess the trends in changing land uses and in modern land design, and for these he must depend on what he picks up in the course of his professional practice.

The training of the planner, on the other hand, skirts only very elementarily over the art and methods of physical surveying. Certainly the planner undergoes the surveying discipline, but only to a very rudimentary degree. His basic training has long since become a matter of controversy, as seems natural for a newly developed profession in modern times. To be able to even conceive a master plan for a community and to point the way that growth would logically follow, and to forecast the kind of growth according to area, the planner must learn the principles of surveying, architecture, engineering, geology, agriculture, law, geography, economics, valuation, demography, and the structure of government. The ability to recognize the essential "one-ness" of things, and in particular the relatedness of the above skills, is the only ability that qualifies the professional to deal with such eventually interdependent, far-reaching, and responsible activities as those involved in subdivision design, which affects the lives, physical assets, and future of our people.

It is rare, however, for the planner to know intimately all the difficulties of surveying and posting in the field the subdivision plan he has prepared. He has to fall back on the surveyor's explicit knowledge of these pitfalls, and if he is wise he will modify his plan at the suggestion of the surveyor and will leave entirely to him the detailed intricacies of working out exact bearings, correctly trying to existing surveys, and the sometimes laborious process of getting the plans approved by all the proper authorities.

One further point should be mentioned. Owing to the relative newness of the planning profession, there is a great dearth of well qualified and practically acceptable planners in this country. This can be set against a 'glut' of surveyors. The result is that a situation is evolving in which many sub-division plans must be designed by professional surveyors. Many surveyors have told me quite emphatically that they would be glad to be relieved of this particular creative work if it were possible. The very framework in which such subdivision plans should be prepared is outside the knowledge, or desire for knowledge, of the surveyor, and he can become unwantedly involved in it. Only in time will the complete solution evolve.

It would seem from my experience that if, indeed, the surveyor's traditional work can be said to be encroached upon by another profession to the disadvantage of the surveyor, it can also be said that far too many transfers of land are being handled entirely by the legal profession—at least in Alberta. Such transfers, to my mind, are strictly the prerogative of the professional surveyor, to be exercised if need be under the watchful eye of the owner's legal adviser.

I have tried to clarify the dilemma that possibly exists in the minds of some professionals regarding the logical relationship between the surveyor and the planner. In matters of subdivision of land, the surveyor and the planner actually complement each other, in a team sense; neither is actually encroaching on the prerogatives or precisely defined field work of the other. The work of the planner and of the surveyor are not independent of each other; they are interdependent. In the formation of a subdivision plan, its creation, and its implementation on the ground, and in the keeping of records, the ideal situation is one where the planner and the surveyor assist each other.

## The Development Of A Standard Measure Of Length

By A. C. McEwen, D.L.S.

*Scientific bodies of the eighteenth and nineteenth centuries set up standards of length related to natural quantities such as the length of the seconds pendulum or of a meridional arc. Finding the determinations of these natural quantities to be inaccurate, they later redefined the standards by reference to fine rulings on metal bars. But these bars were found to undergo small secular changes, and scientists of the twentieth century have returned to natural quantities and have now (1960) defined a standard of length by reference to a wavelength of light that is believed to be constant and to be measurable in national laboratories.*

In early times our ancestors expressed linear measurement in two ways: portable articles and short distances were described in terms of limbs of the body and for longer distances and areas use was made of "time-labour" units. Expressions of measurement such as "hand" and "foot" are obvious applications, but "cubit" and "ell", among others, were also terms taken from a man's limbs, and the noun "fathom", as also the French "toise", have root words meaning "the outstretched arms".

When the use of the foot or ell became inconvenient recourse was had to a measuring rod. "Rod, pole or perch", the French "gaulette" and the Spanish "vara" were originally expressions designating units of measurement in terms of a particular staff whose length, in the days when standard measures were considered impracticable or unnecessary, would vary considerably from district to district.

The time-labour units, such as a day's walking or ploughing, were widely used by a simple agrarian community to describe land in what was felt to be common-sense terms. Even had it been possible to do so, no great need was felt to devise a precise mathematical description of land, since economic importance, not area, was the true measure. The Great Domesday Survey (1086-7), although it listed the areas of all lands contained in the conquered kingdom of William I, was primarily designed for fiscal purposes. It has been suggested that the wide discrepancies between the "customary" acres in different parts of England may have been due, at least in part, to the fact that taxation was based on economic value and that, instead of adjusting the tribute, the tax assessors "increased" the area of forest or unproductive land to provide a more equitable assessment.

Progress towards an actual physical standard remained slow. We are told that Henry I of England fixed a yard by the outstretch of an arm and that King David of Scotland in 1150 ruled that a Scottish inch should be the mean of the thumbs of three men, measured at the root of the nail. In Germany a standard perch of fifteen feet is said to have been constructed by the contribution of a foot from each of the first fifteen people to come out of church. The needs of commerce resulted in earlier standards than those that were eventually adopted for land. Custom, encouraged by authority, developed rude equations such as "twelve thumbs equal one foot" and in searching for units less variable than human digits chose the

barleycorn to represent one third of an inch. Standard measures for wine, beer and corn were soon recognized as essential and were one of the issues resolved by Magna Carta in 1215. The clothyard of 36 inches was one of the earliest standards to be fixed by statute, and a connection between cloth and land measure was made when  $5\frac{1}{2}$  cloth yards were held equal to one royal perch. The term "yard" itself has had many meanings in reference to measurement and area, and it is only in comparatively recent times that the word, as we now understand it, has been applied to land.

In 1574 Queen Elizabeth I ordered a jury to examine standard measures, but the main influence in England came from the Royal Society, acting under whose recommendation a committee in 1743 made comparison between the Exchequer standard of Elizabeth and five other "standards" and found differences ranging from  $-0.021$  inch to  $+0.0434$  inch. Two standard bars based on the Royal Society's findings were made, one in 1758 and one in 1760, but were not legally adopted.

Meanwhile in France, in accordance with instructions to the Academy of science by the Constituent Assembly, a recommendation for the adoption of a terrestrial meridian as a basis was put forward. The proposed unit, the metre, was intended to represent one ten-millionth part of a meridional quadrant, and a metal bar, known as the "metre des archives," was constructed as a standard. The metric system was introduced in France in 1795 and, after initial unpopularity, including, it is said, the opposition of Napoleon, became effective law from 1 January, 1840.

A committee in England was appointed in 1818 to investigate the length of the seconds pendulum and the relationship of the metre to the inch. A Bill giving effect to the conclusions of the committee, one of which was the recommendation for the adoption of the 1760 bar as a standard, was presented to Parliament and became law in 1826. It was enacted that "the straight line or distance between the centre of the two points in the gold studs in the straight brass rod now in the custody of the Clerk to the House of Commons, whereon the words and figures Standard Yard, 1760 are engraved shall be and the same is hereby declared to be the original and genuine standard measure of length or line therein called a yard." The distance between the studs when the rod was at a temperature of 62 degrees fahrenheit was designated the Imperial Standard Yard, and all other measures of length were to be expressed in multiples or sub-multiples of the standard. The standard, if lost, was to be recovered from the length of the seconds pendulum, which, when vibrating in a vacuum at sea level in the latitude of London, was stated to be 39.1393 inches.

In 1834 the Houses of Parliament were destroyed by fire, under circumstances which are both curious and ironical. For centuries previously wooden sticks known as tallies had been used to provide receipts. Notches were cut across the width of the tally as a means of reckoning, and the stick was then split lengthwise into two identical portions, known as the stock and the foil, which were held by the parties to the transaction. This primitive system survived, in certain forms, until the early nineteenth century, by which time a vast store of tallies had cluttered the Royal Treasury. It was decided in 1834 to dispose of this unwanted accumulation, and the sticks were burned in the furnaces that heated the House of Lords. The combustibility of the tallies was evidently underestimated, for the furnaces overheated, causing a fire that destroyed both Houses. Included in the loss was the standard yard, one of whose gold studs melted, so that the precise determination of its centre was no longer possible. Thus it can be said that one form of measurement played a part in the destruction of another.

A committee appointed in 1838 to investigate the replacement of the standard yard found that the determination of the length of the seconds pendulum was in error and recommended the construction of a new standard that should be defined by reference to the distance between two lines engraved on a metal bar but should not be related to any natural quantity such as a meridional arc or the length of a

pendulum. Following Government adoption of this recommendation, a new bar was constructed and, by an Act of 1855, the legal yard was once again defined. An Act of 1864 legalized the use of the metric system in England and in 1897 one metre was recognized to be the equivalent of 39.370147 inches.

By 1875 a number of countries had adopted the metric system and in this year the International Bureau of Weights and Measures was formed at Sevres and placed under the supervision of an international committee. Believing the old metre des archives, which was an end standard, to have undergone change since its construction, the Committee in 1889 completed a new platinum-iridium bar and, abandoning any reference to a meridional quadrant, changed the definition of the metre from a natural to an arbitrary quantity. It was resolved that the metric unit of length should be determined by the distance between two fine rulings on the platinum-iridium bar at the temperature of melting ice. This was the debut of the International Metre, which has become the standard unit for geodetic operations.

Standards constructed of metal or other material have been found to undergo small secular changes in length, and proposals were put forward in the nineteenth century to relate the standard metre to the wavelength of light. The work of Michelson, Benoit and other physicists showed that, in air at 15 degrees C. and at normal atmospheric pressure, the standard metre equalled 1,553,164.13 wavelengths of the light emitted by the red line of cadmium vapour, and in 1927 the General Conference on Weights and Measures adopted this relationship as a secondary definition. Further investigation showed that other sources of light might be more suitable than the red cadmium line but it was not until 1960 that the General Conference on Weights and Measures replaced the platinum-iridium bar as the standard and redefined the metre as 1,650,763.73 wave-lengths of the orange-red line of krypton 86.

The development of a standard measure of length represents a marked change of attitude. The need for uniformity arose from the confusing and inadequate comparisons offered by the arm and the barleycorn, and a material object, such as a bar, was sought, but with little regard to its precise replacement in the event of loss. In a later period scientists strove to establish an exact relationship between a perishable standard and a natural quantity such as the seconds pendulum, but the difficulty of precisely defining these quantities in physical terms influenced the return to a material standard. The recent adoption of a wavelength of light as a standard has again brought us to a natural quantity, but this quantity, however, is believed to be constant and can be reproduced nationally, without reference to the old standard at Sevres.

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# The Chronicles Of Bill

## Episode 3: THE MONUMENT

We had removed the forms, and there before us stood a concrete monument, that, we hoped, would mark for all time the location of Station X of the Geodetic Survey. Bill, who had laboured like a Trojan packing in the necessary gravel, cement and water, gazed at his handiwork with pride and, with that mischievous grin that always warned of a story in the offing, remarked, "That reminds me."

It was a hot day, we were eight miles from camp, we were overdue for a smoke, and the nearby trees cast a pleasant shade that was just right for lying in while listening to a good story-teller, so none of us objected. This was Bill's story.

It was the year that we ran the triangulation along the Batiscan. I had made my first camp at a little place called Linton and started observing from a fair-sized hill about twelve miles up the Jeanette River. All went well. We finished in two nights, placed a bronze tablet in solid rock to mark the spot, and on the third morning we were paddling down stream, heading for camp.

It was a still morning, and as we floated along on the placid current, with little effort in our paddling, my thoughts were of food that I wouldn't have to cook myself and the possibility of getting a mess of brook trout in a likely looking stream that I had spotted when we first arrived. In the bow was Joe, a quiet sort of chap but given to such violent chuckling when amused that the whole canoe vibrated as if it were sitting on a young earth-quake. Packed in the centre of the canoe, facing forward and surrounded by equipment, was Jack, a new lad on his first trip. There had been little conversation until Joe casually asked, "Do you think we'll have to build any monuments this year, Bill?"

This brought an immediate stir of interest from Jack. "Monuments? Surely you don't have to build monuments on a survey party," came from him in an amazed voice.

Not getting the drift, I answered, "Sure. Sometimes we have to. Why not?"

"But do people get killed on this kind of work?"

The light broke. I suddenly realized that to my uninitiated friend the word "monument" was connected with cemeteries and the sole function of such an object was to commemorate the dear departed. Clearly, here was an opportunity that no self-respecting surveyor should miss. Jack was so wedged in with equipment that he could not turn around and see my face, and the only danger of exposure was that Joe should start to vibrate and give the show away. It was certainly worth a try.

"Well, I said, giving myself time to get the pieces in place, "We have a job to do that takes us into pretty rough country, we have to travel by canoe, climb mountains, and frequently work at night on high towers. None of it is necessarily fatal, there is provision in the survey regulations for the construction of a nice cement monument where the body is buried, and the station is always named after the deceased."

Jack was obviously concentrating. "Why, that explains something," he said. "I was looking at some of the old maps and I saw a station named Alex. Was that the reason?"

I felt a very slight tremor from the bow of the canoe and thought that Joe might be better able to control his dangerous desire for laughter if he could take part in the conversation. Besides, he had had more time than I had to get his facts organized, so I passed the ball to him. "Seems to me Alex was quite a guy. I was away on reconnaissance at the time and am a little hazy on the details. What actually happened?"

Joe reacted magnificently to the situation. "Well, it was this way. We were erecting an eighty foot tripod and Alex had climbed to the top to nail on the cross members. You know how it is. Some of these poles have knots and if you hit one with



a nail the nail doesn't go in; it just bends inside the bar. Alex thought he was safe and stepped on one of these bars. Seconds later we were picking him up off the ground, smashed to a pulp. But he was a man if ever there was one. He knew that in that rocky country we couldn't find six feet of dirt in fifteen miles, and he weighed a hundred and eighty pounds. He didn't last long, just a couple of minutes, and his last words were, 'O.K., boys. Just leave me here, and be sure it's a good monument. We were grateful for his thoughtfulness, and we laid him out under the trees and covered him with one of the finest rock cairns you ever saw. As to the monument, we put his name on it with little chips of granite. No tombstone maker ever did a better job, and it didn't cost his family a cent."

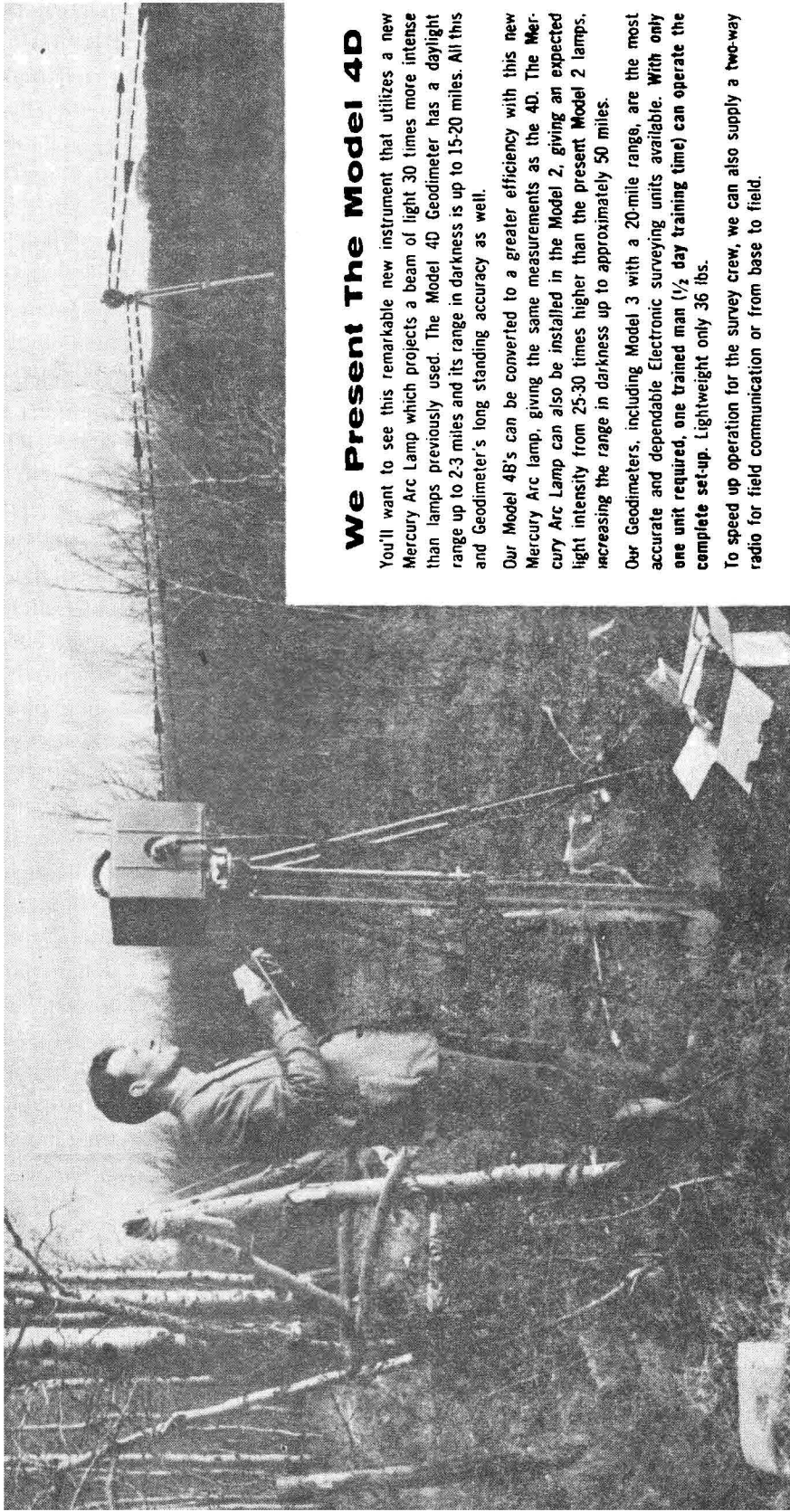
But don't you ever bury them?" Jack's voice was filled with a mixture of awe and consternation. Fortunately, I was expecting this one. "That's up to the individual, providing he doesn't pass out too quickly to state a preference. Alex was a thoughtful sort of chap who realized the difficulties of transportation, but they weren't all like that. I remember another time when we were working up in the Saguenay. It was dirty country, with heavy climbing and no roads or trails. We had just packed up the instrument and were climbing down a rocky face, trying to get out before dark, when it happened. Jimmy was on ahead. We didn't see him, and we can only guess that his foot slipped or a stone on which he was standing gave away. Anyway, we heard a shout and a crash, and it was a good half hour before we got down to the ledge where he was lying. We saw immediately that there was nothing we could do for him except to make him as comfortable as possible and wait for the end.

"That night I shall never forget. It started to rain about the time we reached Jimmy, we were forced to use all our coats in an effort to keep him dry, and there was not enough wood on the ledge to build a fire. Unfortunately, Jimmy was not as considerate as Alex. He lasted until nearly dawn, and before he passed away he insisted that he be decently buried. That meant cutting a trail, making a stretcher, and packing the body out to the shore where we could find either sand or soil that we could dig into.

"Morning broke to a clear day after the rain, and the higher the sun rose the hotter it got. I sent one of the boys ahead to bring food from the camp while the rest of us cut trail and transported our grisly load. We'd advance a mile, bring the body up, and start over again. It took us five days to reach the shore, and during that time the thermometer never went below 88, even at night. Each day we carefully placed Jimmy about one hundred yards down wind and each day we made the poles on the stretcher longer. You know how it is.

"Well, when we finally reached the shore we did everything strictly in accordance with regulations, and Jimmy had the decent burial he wanted. But that was not the end of the affair. I had already named that station, and now I had to change the name to 'Jimmy', which meant extra work for someone in the records section at Head Office. The Chief took a rather dim view of the whole affair, seeming to think that I was to blame".

There was silence for the rest of the trip, until I finally swung the canoe in to shore. Joe jumped out and held her steady while we unloaded, and Jack with a very sober face picked up his pack and headed for camp. I rather think that he was considering very carefully whether he had chosen the right profession. He went back to university in the fall, and I think higher education must have done something for him, because he came back on the job next spring, and when I met him at the train his greeting was, "Bill, you're a damn liar."



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