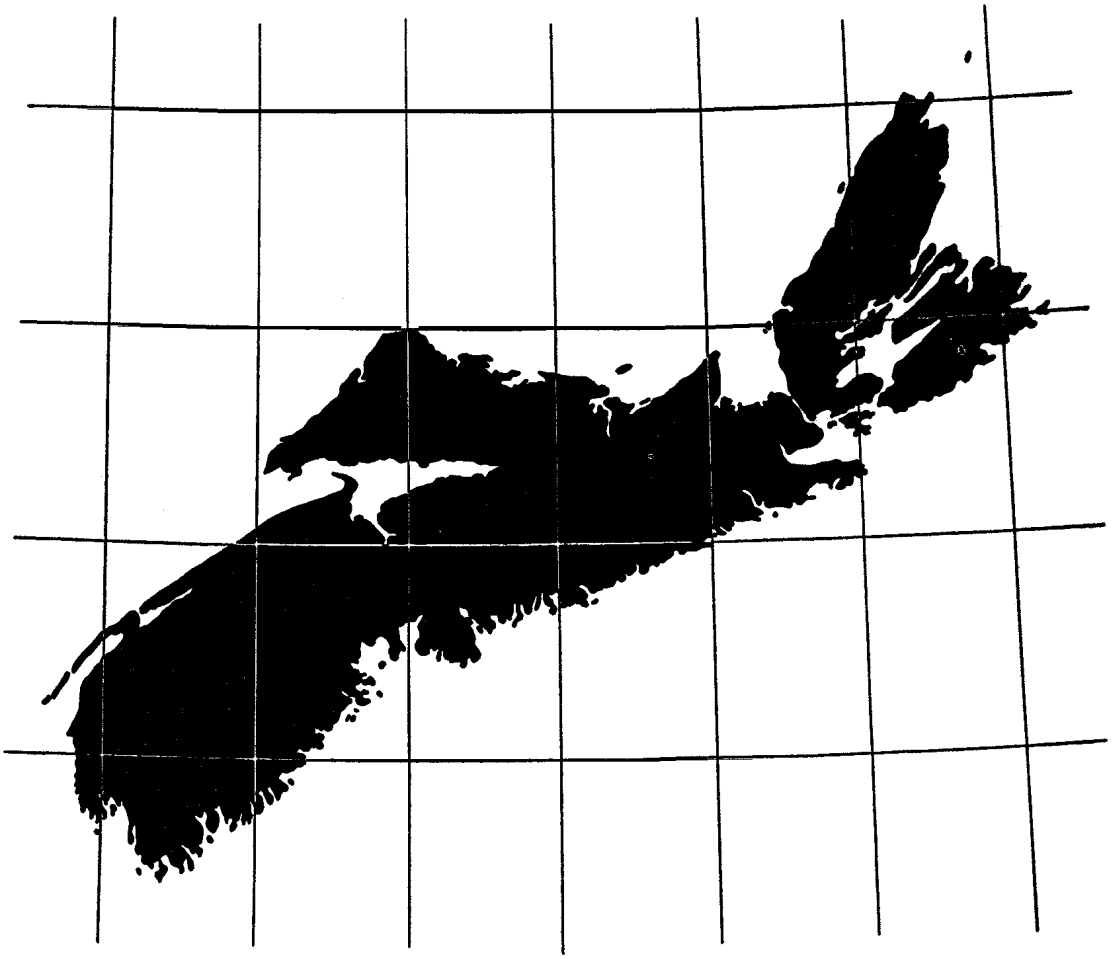
The NOVA SCOTIAN SURVEYOR



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THE DAY'S DEMAND

God give us men! A time like this demands
Strong minds, great hearts, true faith and ready hand,
Men whom the lust of office does not kill;
Men who possess opinions and a will;
Men who have honor — men who will not lie;
Men who can stand before a demagogue
And damn his treacherous flatteries without winking;
Tall men, sun-crowned, who live above the fog
In public duty and in private thinking;
For while the rabble, with their thumb-worn creeds,
Their large professions and their little deeds,
Mingle in selfish strife, lo! Freedom weeps,
Wrong rules the land, and waiting Justice sleeps.

Josiah Gilbert Holland.

The NOVA SCOTIAN SURVEYOR

Published four times a year by
The Association of Provincial Land Surveyors of Nova Scotia Incorporated

GEORGE BATES
President

EDWARD P. RICE
Secretary-Treasurer

R. E. MILLARD
Editor

Volume 19

Number 51

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REPORT ON 14th ANNUAL MEETING, NEW BRUNSWICK LAND SURVEYORS

At Lord Beaverbrook Hotel, In Fredericton, N.B., Jan. 18 and 19, 1967.

On behalf of our own Association, I accepted the invitation of the Association of New Brunswick Land Surveyors to represent our Association at their 14th Annual Meeting in Fredericton, N.B. on January 17th and 18th, 1967. Having made the necessary reservations, I arrived in Fredericton via Air Canada on Monday evening, January 16th, to the Lord Beaverbrook Hotel, and returned to Halifax on Wednesday evening, January 18th after the close of the conference. I attended the various sessions, and took part in their discussions.

The Nova Scotia Association was well represented, other members in attendance being Messrs. J.E.R. March and Mrs. March, Al Daykin, H.B. Robertson, W.E. Servant and G.E. Streb. There were also representatives from Quebec, Ontario, Saskatchewan and the C.I.S. and from Massachusetts were Mr. and Mrs. Mert Smith.

Small presentations from the Nova Scotia delegation were made as follows:

To: President N.L. Doucet, N.S. Tartan bow tie.
Mrs. Doucet (in hospital) N. S. Tartan earrings and thistle brooch.
Sec'y. Treas. Charles Mersereau, N.S. Tartan shirt and tie.
Mrs. Mersereau, N. S. Tartan earrings and thistle brooch.
President-elect Hollie Green, N.S. Tartan bow tie.
Mrs. Green, thistle brooch.

In evidence at all of the sessions was a 6-foot Nova Scotia flag, and the Baffin bell was used to conduct the meetings.

The programme throughout was both varied and interesting, and the most spirited discussion was perhaps that on Wednesday morning, on Minimum Standard Tariffs and revision to their By-laws. The results of their deliberations will not be effective until after their next Annual Meeting, so that we shall probably have from them a report which combines all of the motions passed on the matter before too long.

The Nova Scotia delegation was well and cordially treated, for which thanks were extended both to the Association and to the individual members who saw to it that we were.

George T. Bates, President.

Edward P. Rice, P.L.S.,
Secretary-Treasurer,
Association of Provincial Land Surveyors of Nova Scotia,
39 Laurie Drive,
Rockingham, N.S.

Dear Ed:

Last week I returned from two very successful conventions, the first in Ottawa, the C.I.S. 60th Annual Meeting, and the second was the 75th Annual meeting of the Ontario Land Surveyors in Toronto. Attending the Ottawa conference were Messrs. H.B. Robertson, W.E. Servant, G.E. Streb, R.E. Millard, A.F. Chisholm, Al Daykin and Jeanine, and myself. Copies of all the available papers were obtained for your

file, and will be delivered to you at the first opportunity. In attendance at the Ottawa conference were about 24 delegates from Edmonton, dressed in 1867 costumes, and accompanied by Klondike Kate as "official" hostess. Besides the Kilt, which was worn by the Nova Scotia delegation, we also had Jolly Tar and the Press Gang, and we presented 12 Jolly Tar certificates and 6 hats, at the Annual Luncheon. To the outgoing president we presented a scroll of honour, signed by all attendees who wished. President Willis F. Roberts was presented with a kilt of the dress tartan of Nova Scotia. A number of smaller presentations, or gifts were given, including ties, change purses, earrings, flags, etc. All of the presentation pieces were bought and paid for by the delegation themselves. The Baffin Bell, which always has accompanied us on these trips, was 'borrowed' without permission by the Edmonton delegation, and apparently awaits us there, for the 1968 conference.

In Toronto, Nova Scotia was represented by Messrs. W.E. Servant, Al Daykin and Jeanine, and myself. Brent Schofield and Bea, of Mass. were active participants in most if not all of the Nova Scotia high jinks. This meeting was held at the Park Plaza Hotel, and it is safe to say that the Nova Scotia delegation were treated royally. Copies of several papers were also obtained for your file and will be delivered with the others. Various presentations were also made at this meeting on behalf of our Association, in somewhat lesser degree than at Ottawa. We wish to acknowledge the kind cooperation of a number of people in the preparations for our trips, including the Nova Scotia Department of Tourist and Industry, The Tartan Shop, Kelvin-Hughes, the Halifax Board of Trade, Atlantic Air Survey (1963) Ltd. the delegates who contributed out of their own pockets etc.

Yours very truly,
George T. Bates,
President.

FORGOTTEN SURVEYOR

We know of explorers David Thompson and Alexander MacKenzie.

But who was Peter Fidler?

J.G. MacGregor tells us in **Peter Fidler: Canada's Forgotten Surveyor 1769 — 1822,)** (McClelland and Stewart).

Fidler was a contemporary of Thompson and MacKenzie who roamed Northwestern Ontario and the western plains south to Montana and north to Great Slave Lake.

He travelled 48,000 miles by canoe, horseback and snowshoe and surveyed 7,300 miles. He lived with and recorded the ways of the Plains, Woodland and Barren Ground Indians.

In his journals and notes, Fidler recorded some marvelous sights. He stood on a hill one day in what is now southern Alberta and saw the prairie black with buffalo for 10 miles in every direction. Not an inch of ground could be seen.

This is no narrow biography of Fidler. It encompasses the decades-long fur feud between the Hudson's Bay Co. and North West Co., Indian wars and the Selkirk settlers.

Fidler died at Fort Dauphin at the age of 53 after 33 years in the service of the Hudson's Bay Co. He was the father of 14 children by his Indian wife, Mary, and hundreds of his descendants — all Metis — live on the prairies today.

THE SURVEYORS' QUEST FOR INFORMATION

By *Reginald Dickie*

As a prelude to the "Surveyors' Quest For Information," it would seem appropriate to present some of the historical facts leading up to and the granting of lands in the Province of Nova Scotia.

Port Royal, now Annapolis Royal, was captured from the French in 1710, and by the Treaty of Utrecht in 1713 the whole of the Province of Nova Scotia, including a large part of New Brunswick, was ceded to the British. Conditions, however, during the succeeding years were in a very unstable condition due to the fact that the French had large settlements in the province, particularly along the Bay of Fundy shore, and also strong fortifications at Beausejour on the New Brunswick side; Louisburg on the

Island of Cape Breton; and Quebec in Lower Canada.

By the middle of the century, although these unsettled conditions still persisted, the British realized the necessity of colonies and thus in 1749 founded Halifax. In 1755, the Expulsion of the Acadians took place, as well as the capture of Fort Beausejour on the New Brunswick Coast; Louisburg fell in 1758, and finally in 1759, Quebec was also captured by the British.

Although Canada as a whole was not ceded to the British by the French until the Treaty of Paris in 1763, yet after the fall of the French strongholds and realizing the necessity of further colonization of the Country, they began in earnest to do so. Thus, in 1759 and 1760, many areas throughout the Province were granted for settlement purposes and known as townships, such as, Onslow, Truro, Cornwallis, Liverpool, etc. These usually consisted of areas of approximately one hundred thousand acres situate along the seashore or along strategic rivers and streams, as at this time there were no roads in the Country and therefore, water formed the only means of transportation for these earlier settlers.

Following these earlier settlements, the next great influx of immigration was during the American War of Independence in the early 1780's at which time large numbers emigrated from the New England colonies to Nova Scotia. At this time the settlements of Guysborough Township, Shelburne, etc. took place.

Up until this time the trend was towards the collective unit but following this period the individual grant began to assert itself.

Up until about the years 1820 to 1830 the most of our lands were granted to the settler for colonization purposes, although even in these early days lumbering was an important consideration, and naturally these lands were granted near the settlements, leaving the interior of the Province still ungranted.

From this time on, lumbering became of primary interest and thus the lumberman went further afield for his grants. This reached a climax in the period from 1860 to 1880, when in that twenty year period over eight thousand grants were given.

The granting of lands continued until the start of the present century when approximately twenty-one thousand grants had been issued, and as of today there are slightly over twenty-two thousand. At that time the Province began to realize the value of their Crown Lands and instigated in the place of the Grant the Lease, which was generally given for a period of twenty years with an option of renewal for a further twenty.

It may be noted here that the above number of grants is based on those issued after 1835, as previous to that date there were several methods of indexing and these grants were not always numbered. This would account for two or three thousand additional grants.

By about 1927 the Crown again changed its policy and instituted in the place of the grant and the lease the cutting license, whereby the licensee paid a certain stumpage value for the wood standing on the said licensed area.

Although the granting and leasing of land is not the policy of the Government of today, yet, in extenuating circumstances, both a grant or lease may still be obtained.

From this historical sketch leading up to the granting of lands, we now pass to the conveyancing of these lands, which may be listed as follows:

The Grant, the Allotment, the Lease, the Bequest or will, the Deed, etc.

The various deeds referred to above present three distinct questions or problems which, in short, are "What," "Where," and "How;" that is, "What" meaning "What is it?" or "What have you?" or, in other words, "Is the land described in the deed legally yours?" The next question is "Where is it?" which, of course, is essentially the question to be determined by the Land Surveyor. And thirdly "How" or "How much is it worth?", etc. This, of course, in one sense is of no interest to the land surveyor, but is rather a question for the forester or the appraiser to determine.

These three questions are all closely inter-related and would appear to be of value in the order in which they are given.

It may be argued that the land surveyor has no interest in the "What" or legal aspect of this Deed, but in the "Where." My contention is that he is deeply interested in both, particularly as the first may be a great source of information.

After all, the lawyer is only interested in the title of the lot and not at all interested in the survey information which may well be of the utmost importance.

We have now examined the conveyances and the questions emanating therefrom. The next step is the gathering and preparation of information before going to the field.

It is considered by most people that the surveyor has a sixth sense and that all he has to do is to go to the locale of the survey, set up his instrument, and Presto! the position of the line is established. Such, however, is not the case, and generally there is more time-consuming effort in the preparation for a survey than in the actual survey itself.

I would now like to present some of the means whereby the surveyor gleans this information which, as I have already said, may well be of the utmost importance. I am now speaking, of course, primarily of the survey of forest and rural lands, although practically the same procedure will apply to the surveys of urban areas as well.

Be it the survey of a grant or the subdivision thereof, the first requisite of course is the grant sketch and description of the grant or lot involved, as well as all surrounding grants. These should then be plotted as a working plan, and thus the surveyor will have a graphic picture of the lot itself, as well as the land surrounding it. He should, of course, at the same time obtain the name of the original surveyor whose idiosyncrasies, to some extent, may be divulged in the plotting of these various grants.

The next approach may be the investigation of the Return of Survey accompanying said grants, as in many instances the oldtime land surveyor gave topographic as well as other ties, which may not have been included in the grant sketch itself.

From here we progress to the Petition files wherein the original petition is filed, as well as all subsequent matter or correspondence relative to the grant in question. This is often of great importance and as a follow up it may be well to go through the correspondence of James H. Austen, who was Commissioner of Crown Lands for many years and who kept a carbon copy of all his correspondence, which is now bound and on file in the Crown Lands Office in Halifax. I must say that I have often found this very helpful as it so often reveals the Crown Land Department's attitude in answer to correspondence in the said petition files.

Another great source of information is the Public Archives in Halifax. Here many of our old original plans are filed as well as much of the early correspondence relative to land matters and, for some reason, many of the first petitions and returns of survey are on file here and not in the Crown Lands Office.

As already stated, the search of title is of prime importance, both as to title and information relative to surveys. Many people, and that includes some surveyors as well, argue that this is the prerogative of the lawyer alone, but in this I do not agree. His objective, of course, is solely the title to that particular lot and therefore quite often overlooks vital information helpful to the surveyor. As, for instance, there might be vital changes in the description, not affecting its generality as a whole, but which may be misleading when laying the lot upon the ground.

In the Province of Nova Scotia, there are twenty-two Registry of Deeds Offices, or rather was, as several years ago the office in Parrsboro was closed and amalgamated with that of Amherst. Besides this, there are eighteen Probate Offices — one for each County. I have at one time or another worked in all of these Offices, with the exception of the Probate Office in Guysborough as well as several in New Brunswick.

There are generally two approaches to a search of title; namely, working from the present grantee back towards the grant, or from the grant up to the present grantee. The most satisfactory way is working from the grant up as in this way you have a check on the mortgages, judgements, or other liens against the property, which may be overlooked by searching backwards. It may often be advisable to use one method and then check by the other. A search of title besides revealing alternations or discrepancies in the description may well uncover plans relative to the property that otherwise would never be found.

In many cases, there are seemingly breaks in title which may well be corrected

by a further search in the Probate Office. This applies particularly where a testator devises his property in trust to his Executors or to married daughters of his family. Here again, by perusing the estate papers which are on file with the will, there is often to be found plans of the property so devised, or again in the inventory there may well be a reference to particular lots in which you are interested.

In your search a reference to past histories is very often of importance. Nearly every Country has had, in the past, its own historian and quite often a very important part of that history is genealogy and in that way you can quite often connect an earlier grantee to that of a later grantor.

Another source of information is the church records, the old family Bibles, or the records of births, marriages and deaths. Some, if not all, of these mediums are generally available in every locality.

Another great source of information is the oldtime local resident. And here again, in nearly every locality, you will find some of the older people that have always taken a great interest in family matters or genealogy.

Our cemeteries also play quite a role in search of title, as in this way you pin-point a man's death and the name of his wife, which is often a determining factor in proving continuity of title.

Added to these is the old wooden box, bran bag, or some other receptacle, quite often found in the attics of old homes, wherein people in much earlier days had deposited old deeds, plans and correspondence. This source of information is rapidly fading away, as in so many cases people now-a-days are disposing of the so-called "trash" without any investigation as to its probable worth.

Another factor, which I cannot stress too highly, is a close study of the idiosyncrasies of the past or old-time surveyor as generally the work of the present day surveyor is the retracement of work done by others in the past. This, of course, comes from long-time experience, principally in the field, or from information gleaned from other surveyors who have had that necessary experience.

Generally, the most of our Counties were blessed by the good and cursed by the poor as, for instance, amongst the good is Crawley of Cape Breton, Fairbanks (I am not sure of that name) of Guysborough, H.R. MacKenzie, W.B. MacKenzie and James Davison of Halifax, Kerr of Annapolis, Alpheus Jones of Digby and Peter Lent Hatfield, of Yarmouth, etc. Of the poor and that can often be spelled with a capital "P" is Armstrong of Kings, the worst of them all, Moore, Freeman and Harlow of Queens, Hamilton of Shelburne and J.S.M. Jones of Digby, W.A. Hendry of Halifax, etc. Armstrong and Harlow finally lost their Commissions, but alas, at much too late a date.

Armed with this information, the surveyor is prepared to apply it to his survey on the ground and here again he is beset by many problems that are not evident during this period of preparation. This is a lengthy subject in itself and can best be shown by actual experiences.

FIRST FEMALE SURVEYING STUDENT CAPE BRETONER

By Our Ottawa Bureau Copyright

Canadian womanhood is invading another profession which, over its 5,000 — year history, has been regarded as strictly a man's world.

Miss Helen MacPhail of Marble Mountain, Cape Breton, has entered Nova Scotia's Lawrencetown Survey Institute as the nation's first female surveying student.

News of the enrolment was brought to the recent 60th annual meeting of the Canadian Institute of Surveying here by the Maritime school's director, Col. C. E. Streb.

And, he told newsmen in an interview, she is doing so well on her two-year course of combined theory and practical work that he is ready to predict an "excellent" future for her — and for all others of her sex who follow — in the cartographic, drafting and photogrammetry.

The Lawrencetown course turns out almost the only professionals who do not need a university degree. They earn the title and position of technicians.

Those who seek actual degrees as surveyors have to complete a four year university course, given at the universities of New Brunswick, Laval, Toronto and British Columbia at the moment.

Canada's need for surveyor's is increasing steadily, Col. Streb explained.

While natural features change slowly, man-made ones are on the move all the time. The resulting demand for large-scale maps is on a steady upswing for road building and big urban developments such as apartment buildings and shopping centres.

Continuous Job

H.B. Robertson, director of surveys for the department of lands and forests, was one of Nova Scotia's six delegates to national conference of the profession here.

"You are never finished mapping," he said. "The ground changes all the time." His department checks the work done by the parties in the field, compiles the information and prepares maps, used alike by government and private interests.

Delegates to the conference streamed in from all parts of Canada and from as far away as France, the United Kingdom, Sweden, East and West Germany and the United States. Exhibitors represented 32 different countries.

In the words of A. Zwicky, formerly of Zurich, who was showing geodimeters such as those used to train Lawrencetown students: "The new instruments give far greater accuracy and cut time enormously." He is enthusiastic about the conferences which he feels are the best way for the various manufacturers to present their latest products in a competitive way to as many surveyors as possible.

The Maritime provinces sent two delegates from Prince Edward Island, five from Newfoundland, ten from New Brunswick and six from Nova Scotia.

George T. Bates, a land surveyor of Halifax headed the Nova Scotia contingent, which, in addition to Col. Streb and Mr. Robertson, included Prof. A. F. Chisholm, university engineer of Dalhousie; S.E. Daykin, president of Atlantic Air Survey, of Dartmouth; and Eric Millard, town surveyor for Liverpool.

SURVEYORS IN REBELLION

T. N. H. Crump
President
Saskatchewan Land Surveyors' Association
presented at the
Sixtieth Annual Meeting of the
Canadian Institute of Surveying
February 8, 9, 10, 1967
Ottawa

When asked to present a paper here today, among the suggested titles was "Surveyors in Rebellion". My imagination soared to the prospect of all the rebellious things said , thought, and done by this illustrious fraternity both in the present and past eras and I have accepted without too much consideration of possible alternative subjects. Later I realized that in the spirit of our Centennial, and to facilitate brevity, I ought to confine myself to a certain period of our history which involved all the basic ingredients one likes to find in a James Bond thriller — mystery, intrigue, power-plays, politics, murder, good-guys and bad, combines and sex.

I think the story of our surveyors' involvement in the Riel Rebellions contain most of these necessities to a greater or lesser degree, although I am very short of information on one ingredient and I leave it to you to decide what that may be.

We all know that surveyors during this period of interest, 1869 to 1885, were just as busy as Riel was in running his rebellion, as the government and the Hudson Bay Company were making deals, or as the settlers were in moving west. In fact, the surveyors were so busy that few took the time to document their ordeals. This, of course, is typical of surveyor modesty. It has been like looking for the proverbial needle, searching through the few histories, documents and maps of the times, to glean the following information. I do not ask for sympathy; it has been most rewarding. It has solved my own personal project for Centennial and has been infinitely more satisfying to me than say, climbing Mount Rundle, or diving into a swimming pool of Maple Syrup.

It was during this time, 1869 - 1885, that the Canadian Prairies as we know them today, first became the area of concern by our profession, and which were to be accurately measured not only by chain and transit, but also as to flora and fauna; agricultural and forest potential, water resources and all that minute detail so necessary for the opening up of new territories for human habitation and development.

When Canada became a self-governing Dominion on July 1st, 1867, it was soon realized that to continue as a nation, the vast territory of the Canadian Northwest between Upper Canada and the colony of British Columbia would have to be controlled and developed, not only for the nations strength, but to prevent possible annexation of part or all of the territories by the youthful republic to the south. To this end, the territories controlled by the Hudson Bay Company for over 200 years previous to Confederation were acquired by the Federal government for the surprising sum of 300,000 pounds, and preparations were made to connect Upper and Lower Canada to the west coast with a railroad and to promote orderly settlement.

With the acquisition of Ruperts Land and the Northwest Territories, the most immediate need of the government was to explore in detail and subdivide this vast area into manageable divisions, suitable to the requirements of the anticipated stream of settlers which were soon to arrive in great numbers. To this end the then Minister of Public Works, the Hon. William McDougall instructed Lt-Col. John Stoughton Dennis, a Provincial Land Surveyor from Weston, Ontario, to proceed to Fort Garry, a settlement on the Red River in the District of Assiniboia, and there to devise and institute a system of survey suitable for settlement purposes. McDougall proposed that such a system include townships of 64 sections, each section containing 800 acres, out of which an allowance of 40 acres was to be made for highways. Dennis was instructed to institute this survey and to make a report on the proposed method and proceed with the survey until such report was accepted or modified by the government. Mr. Dennis was accompanied on his journey to Fort Garry by two assistants, Mr. M. Hart and a Major Webb, both provincial land surveyors.

A base line of operations was required, on which would hang all subsequent lines of survey, and after a preparatory exploration of the area it was decided to run this line or initial meridian northward from the 49th parallel, near Pembina, in such a position as to avoid the timber belt and valley of the Red River, but near enough to Fort Garry to facilitate surveys of that area. On this line was to be based all ensuing surveys and it became known as the Winnipeg or principal Meridian, located approximately 10 miles west of Pembina or about West longitude 97 degrees 27' 28''. On August 28th, 1869, Mr. Dennis forwarded to Ottawa the description of the proposed system for approval, and the survey was commenced northward. At this point it is interesting to note that the Canadian surveyors calculated point of commencement on the 49th parallel was some 200 feet north of that determined by General Pope, of the United States Army some years previously. A report was made of this fact to the government and their attention drawn to the necessity for a joint commission to settle the position of the International Boundary, west of the Lake of the Woods.

By September 23rd the proposed method of survey had been officially adopted, and by the 28th the Principal Meridian had been completed up to the Assiniboine River. Mr. Hart then proceeded on the further production of the line northerly, while Mr. Webb proceeded easterly on the base line between townships 6 and 7 towards Oak Point, where a small tract was to be subdivided. Hart continued his survey up to township 11 and then turned west on the base between townships 10 and 11 with the object of proceeding west to Portage la Prairie. Webb surveyed easterly toward the Red River until, on the 11th of October, he was prevented from continuing further by a party of Metis lead by one Louis Riel. In mentioning the name Riel I would like to return briefly to the year 1867, and the ensuing events which caused this man to oppose the will of the federal government.

At the time of Confederation there existed in the Northwest Territories, and under the control and jurisdiction of the Hudson's Bay Company, several settlements on the Red and Assiniboine Rivers. These settlements were composed of a few French and English settlers, some remnants of Selkirk's colony, Trading Company employees, English half-breeds and French half-breeds or Metis, of whom the later were in the majority. Apart from a small effort at land cultivation their chief occupation

and source of livelihood was the fur trade, the buffalo hunt, and the operation of boat brigades and carts used in transporting furs and supplies for the Trading Company north and west into the territories, and southward to the United States. Their small holdings abutted on to the Assiniboine and Red Rivers, surveyed in a manner similar to their original counterparts in Lower Canada, that is, long narrow lots having access to water transportation. The Metis were knit together under the loose but effective rule and discipline of the buffalo hunters, and confined themselves fairly peaceably under the regulations of the Governor and Council of the Territory.

In the acquisition of the Territories by the Federal government, the wants and desires of these people were ignored. No one thought to inform the people of the Red River Settlement how the Canadians were going to take over the colony; or what was going to be done to extinguish the aboriginal title to the soil; or what would happen to the old land patents; or to those who had no patents at all; or what was to be the nature of the institutions the colony was to receive; no word of their political rights, schools, and religion or the many things that agitated the minds of these people. The fears over possible loss of their lands and livelihood grew as new settlers started appearing from the east. The disruption of their mode of life was seen to be imminent and the loss of their chief means of existence, fur and buffalo, threatened by the onrush of settlement and civilization. Louis Riel emerged as the leader of these people, and in him was entrusted the protection of all their hopes and aspirations. By 1869 the Company rule over the Territory was being challenged, and newcomers were not overly impressd by the Council of the Territory. To the Metis, the settlers and newcomers were the object of suspicion and distrust, being Canadians from Upper Canada, protestant and unilingual, Dennis, the government surveyor, was also painted by the same brush, and was not trusted.

Mr. Dennis reported to his Minister that there was a considerable degree of irritation existing among the native population in view of the surveys and settlements being made, particularly amongst the Metis. And this in spite of the fact that existing settlement boundaries were not to be disturbed by the new system of survey. These warnings were apparently ignored and he was ordered to proceed with the survey on the plan proposed. Using discretion Dennis withdrew from the Oak Point area where he had been working, and moved his crews south to the unoccupied areas with the object of proceeding north from Pembina. This incident, as reported by G. F. G. Stanley in his book "Riel" appears to be another reason why the Pembina area was chosen for the commencement point of survey. However, when Webb finally proceeded easterly with his party from the Principal Meredian toward Oak Point, his line started running across the "hay privilege", a strip of land to the rear of the river lots on which each owner cut his hay. A group of Metis lead by Riel stopped operations, without violence, simply by standing on the chain, while Riel declared that territory south of the Assiniboine belonged to the people of Red River and not to Canada, and that the Metis would not allow the survey to proceed any further. This was on October 11th, 1869.

The crews withdrew to areas east of the Meridian and north of the Assiniboine until December 1st when field work finally ceased. At this time it was proposed that the surveyors and several members of their parties be enrolled in a military force, with which an attempt was to be made to restore order in the country. The attempt to raise a force of local recruits failed and on December 11th the force was disbanded, no further surveys were attempted, and Mr. Dennis and his men returned to Canada. Thus Riel was, for the time being, successful in his attempt to halt the proposed federal surveys of what he regarded as Metis lands.

During the ensuing eighteen months events moved rapidly, Riel and his followers took over control of the district and formed a Provisional Government, preventing the entry of the Lieutenant Governor designate William McDougall to the area. They decided on terms of union with Canada and elected delegates to represent their views to Ottawa. The federal government decided to combine the reality of conciliation with a show of force. A contingent of British Regulars and Canadian Militia was sent to the area under the command of Colonel Garnet Wolsley, not to attack the settlement but to take control of the situation. At about the same time, on May 20th. 1870, the district was formed into the Province of Manitoba, with Adams G. Archibald as its first Lieutenant Governor. Louis Riel, uncertain of his future and fearing for his life, fled the country on the approach of the troops to Fort Garry.

Archibald had very definite ideas on how the lands were to be subdivided and eventually he was successful in changing the proposed system of survey from the 800 acre section to those of 640 acres with road allowances additional to and without the sections. In general the reasons for doing so were these — that the smaller sections would increase the number of new farm holdings available to the province for disposal, and that the proposed system was one that had been in use in the United States for years, and which had become known and acceptable to all potential immigrants the world over as the most ideal and economical for settlement. These were matters political. On matters technical Mr. Dennis' methods of survey procedure were not changed and the first system of Dominion Land Surveys, instituted by him on May 1st, 1871, is familiar to most of us either from practice or from technical papers. In general the events of the next fourteen years were of prime importance in the field of surveying.

The publication of the first Manual of Instructions for the guidance of Deputy Surveyors unleashed a force which was not to be halted for many years. Meridians and Block Outlines were established westward; Townships' were subdivided in ever increasing numbers, Indian and Hudson Bay Reserves were located and most existing settlements were surveyed. The westerly extending lines of the surveyors were matched only by the advancing steel of the Canadian Pacific Railway. By 1879 the 5th Meridian West had been established and the advance parties were approaching the Rocky Mountains. In November of 1885 the Canadian Pacific Railway as a Transcontinental Railway was a reality. Following closely on the heels of the surveyors were the secondary waves of expansion westward, those of the immigrant, settler and land developers. During these years the volume of both surveying and settlement ebbed and flowed with the political economic and land requirements of the time. The survey crews varied in strength from the 21 deputy surveyors of 1871, to the peak year of 1883 when 119 Dominion Land Surveyors and their crews encompassed over 27,000,000 acres with chain and transit. Between 1871 and 1885 over 70,000,000 acres had come under the survey system instituted by Mr. Dennis. This system, subject to revised manuals and regulations, remains in force up to this day.

In 1885 surveyors were again affected by political events similar to those of the Red River Rebellion. During this year trouble broke out again in the Settlements of Batoche and St. Laurent, near Prince Albert on the South Saskatchewan River. Louis Riel had, the previous year, been called upon by the Metis of this district to return from exile in Montana, to aid them in their struggle for recognition of what they believed to be the rights. Their old way of life had disappeared, the buffalo herds were gone, the fur trade was considerably reduced and they were forced to turn to the land for their livelihood. The advance of the settlers into newly subdivided lands to the south gave them cause for alarm. Surveys of the Prince Albert and neighbouring settlements had been started by Mr. Lindsay Russell in 1877, but the settlers remained unsatisfied both with their river lot surveys and lack of free lands such as were given to the Metis and old white settlers in Manitoba. In 1878 Montague Aldous, Dominion Land Surveyor, continued with the special survey in this area, laying out base lines, river lots and roads. Following the surveys the granting of land patents was delayed and caused much hard feeling among the inhabitants. These frustrations continued and Riel arrived amidst this discontent. He was, however, a changed man. In Manitoba he had had the full support of the Metis, the English half-breeds, and many of the Canadian settlers, and most important, he had the full strength of his church behind him. Duuring his exile and absence from the Canadian scene Riel had suffered hardship and privation. His health was poor and for a time he appeared deranged. Always a religious man he developed messianic tendencies during this illness, but for a period hereafter contained them. On his return to the northwest he was lacking the decisive and resolute qualities he had had in Manitoba. His actions were sporadic and not tempered with good judgement His thoughts for the first time turned toward self-gain. Thus he gradually lost the support of all those settlers who were looking for a focal point of leadership, and finally ended with only the Metis of the St. Laurent and Batoche settlements behind him, together with a few Indian tribes to the west whom he was using only as an added lever to his demands on the federal government. Of prime importance too, the priests of the Roman Catholic Church were implacable

in their opposition to his religious divergencies, agitations and acts of rebellion. His ill advised attack on a small Mounted Police detachment at Duke Lake on March 25th, 1885, was his point of no return and eventual downfall.

It is following this outbreak of hostilities at Duck Lake that we are again concerned with the actions of the Dominion Land Surveyors. In 1885, because of an ebb in land development activity the number of survey crews in the west had been considerably reduced. In the east a force of Canadian Militia was being organized to proceed under the command of General Middleton, to the Northwest Territories, to oppose the Metis and Indians supporting Riel.

On April 1st a meeting was held in Ottawa amongst the surveyors for the purpose of forming a Corps of Surveyors to give support to the military operations. It was proposed to form the force with 10 Dominion Land Surveyors experienced in Territory surveys, and each surveyor to supply four of his best assistants, and thus form a corps of 50 men. Its duties would be to provide information on trails and routes, act as intelligence men, scouts or mounted rifles as may be required. This proposal was favourably received by the Minister of Militia and the formation was officially named the Dominion Land Surveyors Intelligence Corps, under the command of Captain J.S. Dennis Jr. All other surveyors were given the rank of Lieutenant and the assistants were made Sergeants. I am sure that the roll of the Corps will be familiar with those of you who are acquainted with the DLS system township plans - names such as Burrows, Wheeler ,Small, Barbazon, Ord, Denny, Maddock, Gore, Kippen, Fawcett, Gardner, Saunders, Beatty, Driscoll, to name a few. Quite a bit of jealousy was created amongst the other military unit by the high ranks of the surveyors, and they were referred to as the "49 Officers' and the Scout". To make matters worse the Corps was responsible only to the Commanding General of the expedition. Even their uniforms did not help military relations; slouch felt hat with a red flannel band, black leather jackets, white canvas bandoliers and haversack, cord riding breeches, top boots and quite imaginative spurs. To add insult to injury the Corps was transported to Winnipeg via the United States in a special pullman, thus saving themselves the usual forced march over a gap in the Canadian Pacific Railway just west of Fort William.

They arrived in Qu'Appelle on the 14th of April and commenced their military training, obtaining their horses from Regina on the 18th. By the 20th they had reported to General Laurier at Swift Current and next day orders were received for the Corps to split in two, one half to proceed to Battleford and the other by steamer on the South Saskatchewan River to Clarkes Crossing, not far from the rebel headquarters at Batoche, and to serve as a land escort. However, on the 23rd new orders were received for the Corps to reunite and to patrol the prairie between Swift Current and Long Lake, with headquarters at Elbow, a point on the South Saskatchewan River about midway between Swift Current and Saskatoon. Picket camps and riders between these points kept in close touch with General Laurie at Swift Current and also the progress of the steamer proceeding to Clarkes Crossing. On May 6th they were ordered to proceed to the Crossing, reaching Saskatoon on the 8th, the Crossing on the 9th and Batoche on the 10th where General Middleton's forces were encamped. On April 1st the Survey Corps was only an idea, but by the 10th of May, into the battle area half a continent away.

It is of interest to note at this point that a travelling companion from the south was a Captain Howard of the U.S. Cavalry, who operated the one Gatling gun available to the military. Gatling Howard as he was known, took much pride in his gun and seemingly carried out his duties with zest and pleasure. He and A.O. Wheeler became good friends and it is from Wheeler's account of the Corps that I quote extensively. His is the only available source of information that I have been able to find on the subject.

On the afternoon of the 10th Wheeler and Louis Ord were inspecting the field of battle when the former received a flesh wound in the arm, the bullet passing over Ord's head as he was lying on the ground.

On the 11th of May the troop was sent on a skirmish on the enemy's left accompanied by Boulton's Mounted Infantry and Gatling Howard and his gun. On the following day the skirmish was repeated, drawing heavy fire from the Metis in the settlement of Batoche. It was in this action that the Corps suffered their only fatality. A W. Kippen the Corps historian was killed instantly by a shot in the head. To quote Mr.

Wheeler, "it brought home to us the reality of the game we were playing." I gain the impression that most members of the Corps had, up to this point, treated the whole expedition as an adventurous lark. They were young, healthy and full of enthusiam. They enjoyed their travels, their horses, their patrols and manoeuvres, and their nights around the campfire. But now the battle had caught up to them.

On May 12th the battle of Batoche occurred, commencing with a successful but unauthorized skirmish and developing into a full scale onslaught against the village. Gatling Howard was in the midst of it, gun blazing, doing little damage but giving fine moral support. The day was won after a sharp fight, the rebel headquarters captured and Riel put to flight. The Corps only other casualties were Fawcett with buckshot in the chest, and Jim Garden with his left arm badly broken by a bullet. By May 15th Riel had been captured and on the 19th General Middleton's command made a triumphal entry into Prince Albert. They then proceeded by trail to Battleford and then to Fort Pitt, 90 miles distant, arriving there on June 2nd. On the following day General Middleton's forces started the memorable chase after the Indian Chief, Big Bear, who was retreating into the forest wilderness to the north.

On June 5th the Corp's experience came into its own once more by their knowledge of road construction through bush and forest and over streams and muskeg. The chase ended at the north end of Loon Lake when it became apparent that Big Bear could not be overtaken. The force returned to Fort Pitt on June 12th, and on the 28th they were authorized to return home, disbanding in Moose Jaw on the 12th July, 1885.

The part played by the Dominion Land Surveyors Corps in the battles of the Northwest was unspectacular, but they performed the duties for which they were recruited, guides in territory unknown to the military, mounted scouts and advisors by experience on how to live, travel and transport over prairie, through bush and forest. They had every right to be proud of the part they played and were, I believe, officially commended by General Middleton in his final report of the expedition.

I have made mention of the occurences of 1869 and 1885, by necessity rather lightly, but, I hope, giving you some idea of the events which were directly related to the surveyors of the period. The intervening years I have treated in like manner. These years, however, being the most important as far as the history of surveying in the Canadian West is concerned. By the efforts of a very few men the vast Northwest Territories changed from a great expanse of unknown area into an accurately plotted grid system of known lines and acreage. From the time when J.S. Dennis became the first Surveyor General of Dominion Lands, and the first system of survey was devised and approved, to the end of the uprisings in the northwest the demand for subdivision was maintained and surpassed by men dedicated to their work.

In conclusion, I would like to return to the heading of this paper, "Surveyors in Rebellion," and say "Yes." That nearly one hundred years after Mr. Dennis made his first field trip to Fort Garry there does seem to be a few surveyors in revolt and they have the support of many of their profession. The object of their concern is the destruction of the professional modesty which seems to cover us like a mantle. After so many years the general public is finally to learn, from the fine publications coming from or being instituted by this association, of the efforts and exploits of this profession both in present time and the early days when our country had need of their unique services. I think we all can take pride in the achievements of our professional ancestors and their successors, and I hope that some of us will continue to be "in Rebellion."

"A LETTER TO THE EDITOR"

February 13th, 1967

Mr. R.E. Millard, P.L.S.,
P.O. Box 337,
Liverpool, Nova Scotia

I would like at this time to bring to the Nova Scotia Surveyor my views on the "Spare Time Surveyor" and the problems he causes those Surveyors who are in full time practice. This problem is of course not unique to our fair province but has been somewhat controlled in most other provinces of Canada.

I have been in full time practice as a Surveyor for about eleven years and I am finding this problem more and more difficult to cope with. In most cases I have been

absolutely unable to compete 'price wise' with these Surveyors. It is high time that our Association made a move to correct and control this situation. It can be done in a number of ways. I would like to suggest the following:
(1) Students graduating from the Nova Scotia Land Survey Institute not be given a Surveyor's Commission until he has completed at least two years practice employed with a 'full time' Land Surveyor, engaged in legal Survey (private practice).
(2) Our Association write to the Federal, Provincial, Civic and Municipal Governments advising them that Land Surveyors presently on their staff, who are engaged in "spare time surveying," cannot do so without using their regular working time on such surveys. (I can qualify this statement quite clearly.)

A proper survey for subdivision or legal purposes requires research. This means a trip to the Registry of Deeds Office to search for deeds and plans. This research takes time. It is often necessary to check with the Department of Highways for road widths before starting a survey. In Halifax County or in any County that has a Planning Board their records have to be searched for plans of previous surveys and the Planner consulted for layout technique. (He eats dinner too). Quite often Lawyers must be consulted before or after the survey is completed. When the plans are drawn, they must be printed, so off we go again to the printing machine. (If the Government has one, it would do) to get our plans printed. The part time Surveyor will argue that he can do all of this during his noon hour break, if he happens to be near a Registry Office or other Regional Office. What if he's not?? He can simply combine this work with that of his employers' and fit it in. This is dishonest and constitutes outright theft from his employer. We know this is being done, but to prove it is another problem.
(3) Our Association should set up a bonding and classification arrangement to further protect the public and private Surveyors.
(4) Our survey standards should be immediately up-graded and instruments and chains be certified for legal survey purposes.
This to be compulsory.
(5) Association dues for those in private practice be increased.
(6) A full time qualified Land Surveyor be employed by our Association to carry out necessary supervision.

Another vexing problem with the "spare time Surveyor" is that it is unfair to the private Land Surveyor in the matter of taxation, Canada pension contributions, group insurance, unemployment insurance and workmen's compensation. As you are aware all of the above are required for full time employers. For example as an employer I have five men on my payroll, I must pay ½ of unemployment insurance, I must match my men's contributions to the Canada Pension plan. I must pay for all of the workmen's compensation. I must pay ½ the cost of a group insurance plan. I am responsible for keeping proper records for all these things and my books are periodically examined by Government agents. I must keep my men fully employed, give them paid holidays and vacations. "Spare Time Surveyors" can hire someone to help them do a job, pay them for their hours worked and that's that. No wonder their prices are low. I feel the time is at hand for our Association to stop this unfair competition and for the various levels of Government to take steps to control "moon lighting" in general.

Yours truly,
K. W. Robb,
Provincial Land Surveyor

THE CONTRIBUTION OF CANADIANS TO OVERSEAS SURVEYS

S. G. Gamble
Director, Surveys and Mapping Branch
Department of Energy, Mines and Resources
presented at the
Sixtieth Annual Meeting of the
Canadian Institute of Surveying
February 8, 9, 10, 1967
Ottawa

Those who have studied the early exploration of Canada and the first few centuries of surveying and mapping activity that followed will know that by far the greater part of the work was undertaken by agencies and persons who came from abroad, particularly from Portugal, France. the British Isles and we must include the redoubtable Dutchman, Samuel Holland. To those who are not familiar with the story, I would commend the reading of Don Thomson's "Men and Meridians" which, in my opinion, is a must in every Canadian surveyor's library.

Up to the time of Confederation a comparatively small role was played by native born sons. I shall not attempt to explain this phenomenon but there has been a marked reversal of it in the closing years of our first century as a self governing country. A surprising amount of assistance in various forms has been given by Canada and Canadians in the mapping and surveying of the so-called 'developing countries'. It is a story in which we can take great pride and I hope that some one such as Don Thomson will take sufficient interest to document Canada's overall contribution in our field in the manner it deserves.

A group such as ours does not need to be told the value, and in fact, the need for good basic information about a country as a prerequisite to the orderly development of economic resources whatever such resources may be. Thus, we may assume that assistance in surveying and mapping, whether it be a direct contribution to the survey fabric or mapping of a developing country, or the training of staff in private or governmental agencies or the instruction of students in our universities or technical school, or the assignment of expert advisers to a foreign government, is all good work. The public appeal may not be very great and, in consequence, this type of assistance will not give rise to newspaper headlines such as other forms of more glamorous assistance tend to attract, but nevertheless, it is solid assistance built on a good foundation - in fact the basic foundation.

As previously indicated, the Canadian assistance has taken several forms and the one that is probably best known is the actual undertaking of surveying and mapping operations by Canadian firms. In such operations the country receiving assistance is called to make a substantial contribution in the form of local costs and their facilities, information and staff are used as much as possible to achieve the objective.

A few weeks ago, before having the opportunity to visit the Caribbean, I would have rated this type of assistance in relation to training somewhat higher than I now do. Certainly in order to pave the way for investment in the economy, reliable maps are a necessity. From a long-term point of view, the training of staff and any effort made towards making a country self sufficient in surveys so that it can add to its surveys, keep its basic survey fabric in good order, meet its own mapping needs and maintain maps in a reasonably current condition, is at least equally important.

Besides the foregoing, surveyors of the Mapping and Charting Establishment, formerly the Army Survey Establishment, have been active in foreign surveys engaging in such activities as the demarcation of the boundary between Israel and Egypt the Gaza Strip - and there has been an exchange of personnel between our Military Survey and the Military Survey of the United Kingdom. We have benefitted greatly from our close liaison and visits with our friends in the U.S.A.

I previously touched upon projects which use Canadian personnel and facilities to provide control surveys and mapping and would like to emphasize that it is the type of assistance most welcomed by the country's economic planners, not because it is the most costly but rather because it meets a specific, urgent need. Fortunately it has not been difficult to persuade the authorities concerned that such aid should not

be given in a vacuum but that it should be accompanied by a training plan to strengthen and broaden the competence of the survey organization in the country concerned. It frequently transpires that the two can be worked together and it is particularly advantageous when the staff of the country receiving the assistance can actively participate and contribute towards the project.

I think it worth saying again that the ultimate object must always be the making of a country self-sustaining in the matters of surveying and mapping within a reasonable time. This includes the proper maintance and care of maps and the records of the same undertaken in their interest, and this extends to the photo film. This brings to my mind the story of one lot of film that was turned over to a country which had inadequate storage facilities. When the rolls were opened for the purpose of running off some prints, the photo production officer found, to his horror, that the emulsion was all in a big lump at the bottom of the tin. It is difficult to comprehend the wastage of this invaluable information.

I have stressed the aid given to others but I would like to point out that we benefit indirectly as well. In one of the early Colombo Plan projects in Pakistan, the Surveys and Mapping Branch was called to give support by printing the geological maps involved. Some difficulties were encountered in matching color, due, as I recollect, to last minute changes without full discussion between all parties concerned. At any rate several maps had to be printed a second time. A by-product of this difficult colour matching project was in the introduction of more exacting colour control procedures in our own printing plant and points up to the fact that in helping others we invariably learn something to our own advantage.

Full credit is due Mr. Douglas Kendall, this year's president of the Canadian Association of Aerial Surveyors who, in 1957 brought to the attention of the Canadian Government the desirability of Canada's participation in the MeKong development and proposed that Canada undertake the mapping. At the time the aerial survey industry was in a somewhat depressed condition and was in a good position to undertake the extra work. Mr. G. S. Andrews, Surveyor General and Director, of Surveys and Mapping for British Columbia, agreed to undertake the task of ascertaining the need for mapping, investigating the local facilities in the four countries concerned and obtain such other information as would be helpful to the Canadian Government in assessing the proposed project. As such operations take time to implement, it is not surprising that local home conditions should have changed considerably before a consortium of aerial survey companies was called upon to participate in this important mapping job. This job turned out to be somewhat of a mixed blessing but, under the able management of Bob Brocklebank, the field work went exceptionally well. However, there was a lack of uniformity in the cartographic experience and hence competence within the six companies participating and it fell upon Photographic Surveys, Mr. Kendall's own company, to try to ensure uniformity and acceptable standards of workmanship. This was by no means an easy task and I am sure that Mr. Wilkinson would be the first to admit it was a frustrating and thankless responsibility. On the credit side, though, the project was brought to a successful conclusion and I am sure that it had considerable impact on improving photogrammetric and cartographic standards within the private sector of the field of Canadian aerial surveying as well as providing personnel of my branch with invaluable experience in the technical aspects of the administration of a large contract.

Other map projects are in progress in Nigeria, Tanzania, Malaysia, Trinidad and Tobago and most recently, in Guyana. The first Nigerian contract which was directed entirely to 1:50,000 mapping was completed in 1964, but the more recent work has been expanded to include the large scale mapping of two of the more important cities, Ibadan and Benin City.

In Tanzania 1:50,000 resource mapping again was the principal product but large scalescale mapping of an important development project in the Kilombero Valley has also been added. In Malaysia high altitude photography has beeen provided to allow the Survey Department to complete its mapping program while lower altitude coverage of the country has been flown to permit full resource inventory studies. Trinidad and Tobago has a much different requirement because of the necessity to plan for the optimum use of its limited area by its dense and rapidly increasing population; here the large scale mapping of selected areas is the principal

product. Guyana's requirement includes a major expansion of its primary network by the Aerodist method in addition to the compilation of 1:50,000 topographical mapping in a densely wooded jungle area which is extremely difficult of access.

Messrs. Tuttle, Thompson and myself were privileged to visit Lagos to see something of the Nigerian work although, in my instance the arrangements for the visit were somewhat upsetting owing to the sudden and unexpected change of Government. Both Mr. Thompson and I have visited Dar es Salaam and we were pleased to note the high regard in which the Canadian surveyors, air crew etc., were held in both countries. In fact it was apparent that the local representatives had made a strenous and very successful effort to gain the confidence and enlist the whole hearted co-operation of the local authorities. A somewhat unique aspect of the extended Nigerian contract and the Tanzanian contract is that the Surveys and Mapping Branch supplied aerodist equipment and two staff members, Messrs. V. V. Spence and R. Colwell of the Topographical Survey Division, went to Africa in November 1964 and remained until March 1965 to assist the contractors in establishing horizontal control for the mapping. Due to the sparsity of control and difficult terrain, without such assistance the projects would have been seriously delayed.

One of the most exacting assignments is that of being an advisor to a foreign government. It requires a multiplicity of virtues quite apart from a good fund of technical knowledge about the subjects upon which the appointee is intended to advise. Such people are indeed rare even amongst surveyors despite the fact that our ranks include many outstanding characters. There may be others but those whom I can call to mind are Mr. Phil Palmer who served in Burma, Lt. Col. S. F. Dadson in Nigeria, and now in East Pakistan, Mr. J. M. Hill in British Honduras, Mr. Louis Lecompte in Kenya, Mr. Leslie Aldridge in Nigeria, Messrs. Peter Mosby and Errol Kenmuir in Malawi. Mr. Alex McEwan who is in charge of the survey school in Dar-es Salaam, Tanzania and Mr. Hans Kilinkenberg who recently returned from Saudi Arabia.

Now we turn to the really important contribution, that of training. This takes two forms (1) - training on the job, both in the field and in offices and laboratories, (2) - training in technical institutes and universities. As our first exposure was to the former type of training, I shall commence with it and, as I recall, we had two Turkish gentlemen attached to our Topographical Survey Division for about a year in 1947 for elementary photogrammetric training. These were indeed most interesting and charming trainees and inadvertently contributed much to our subsequent efforts.

Up to the present time we have had over 50 from 15 countries attached to us for various intervals lasting from a period of two months to a year and studying in the fields of geodesy, topographical surveying, photogrammetry, cartography, photomechanical and lithography.

Some of the most interesting trainees were six ladies from Port-of-Spain who were with us from October 1965 to February 1966. Our task was to instruct them in scribing and elementary photogrammetry so that they could keep up to date the large scale maps being produced of the settled areas of Trinidad and Tobago. Admittedly, one spent most of her time in the hospital and one missed considerable training for one reason or another. Nevertheless, they did seem to derive a lot of benefit from the attachment or so at least I have been given to understand by senior survey officials in Port-of-Spain. Some may argue that it may have been more efficient to send an instructor to Port-of-Spain but then, there is more value in these exchanges than the mere acquisition of technical know-how.

In the training of university students. the Surveys and Mapping Branch agreed to take on a number for practical training during the summer survey season. Our experience during the seasons of 1965 to 1966 has shown that, in the main, this has been by no means an unqualified success. The reasons for this can be traced to the difference in the objectives of the party chief and trainees. The party chief is anxious to complete his assignment as efficiently as possible whereas the students want plenty of practice on all the instruments and various assignments and the two are not compatible. Furthermore, the hours and work methods may seem a bit strange and at times comes as a bit of a shock to a young man whose background and customs are completely different from ours. There is always the problem of working on holidays,

getting the students back on time, particularly if they have to write supplementary examinations.

In an effort to provide better summer training, the External Aid Office has agreed to support a survey and mapping summer course. With the co-operation of the Emergency Measures office the school will be established at Arnprior this summer and will accomodate about thirty students. Mr. W. L. MacLellan will be in charge and will be joined by a professor from the University of Saskatchewan and an instructor from the Nova Scotia Land Survey Institute as well as an instructor from the Mapping and Charting Establishment Department of National Defence, and from the Surveys and Mapping Branch. Plenty of instrument practice will be given on this course and we hope to have students attend it for two summers. Following this training they should have acquired adequate practical experience as well as being in the right frame of mind to gain from the experience of being with and contributing to the progress of one of our regular projects. Time will prove whether or not this approach is the correct one.

Conditions vary widely from country to country and a procedure which might be ideal for Canada might prove to be most ineffective elsewhere. Thus in training it is better to concentrate on basics and to expose students to a wide variety of procedures, rather than to concentrate their efforts on what we feel is the ideal. With the varied background trainees are in a much better position to determine the course which is best suited to their own country.

You will appreciate that the foregoing takes a certain amount of staff time on the part of the Surveys and Mapping Branch. I suppose that about 15 per cent of my time and 60 per cent of Mr. Thompson's time is taken up with non-Canadian surveying and mapping activities. To this can be added the full time commitment of from four to six staff members under the supervision of Mr. E. D. Lawson plus the occasional time of others in assisting in the drawing up of specifications and provision of technical advice. This will give you a sort of picture of the support my Branch supplies to the External Aid Office. You will undoubtedly agree that Canadian surveyors are doing something towards helping their brother surveyors.

Nor has the welfare of foreign trainees been overlooked. Under the able chairmanship of Mrs. J. I. Thompson we have a very efficient Hospitality Committee consisting of the wives of staff members and ladies of the branch. We receive many letters from our former students expressing their appreciation.

As previously mentioned, the increased tempo of foreign aid surveys has placed quite an additional workload on many of our staff but it can be most rewarding work particuularly once the contract is under way and the new maps start to roll through. A number of things that we learn in discussions with others when considering their problems are, not surprisingly, applicable to our own situation. Our own approach to surveying and mapping is being influenced to quite a degree as a direct result of our work with developing countries.

I hope I have not been too disappointing to any who were anxious to learn how to go about getting a contract for foreign work. In the first instance, it is not my job to state Government policy but only to record what has been done and, in the second place, I would be more inclined to tell you what not to do - but this is not the forum in which to expound on such matters.

I shall complete this paper without reminding you of your close associations with a number of international scientific organizations such as the Pan American Institute of Geography and History, and we are pleased to have the Secretary-General, Eng. Forray Rojas, participating in our annual meeting; the I.U.G.G. and we hope to have several of our geodesists in attendance at the International Society of Geodesy section at their meeting in Switzerland next fall; the International Society of Photogrammetry and the Institute Federation Geometrique. Meetings of these latter two organizations, plus committees of the Pan American Institute of Geography and History will be held in Ottawa in September of this year. Mr. E. D. Baldock will be attending the meeting of the International Cartographic Association this spring and, finally, the Commonwealth Survey Officers Conference will be held in Cambridge, England, in August, which I hope to attend along with several other Canadian representatives. In March, Mr. A. C. Tuttle will be attending the United Nations Regional Cartographic Conference for South East Asia and the Far East which is being held in Canberra,

Australia in March. This is the fifth meeting, the first having been held in Mysore, India, the second in Tokyo, Japan, both of which were attended by the late Mr. W. H. Miller. The third meeting was held in Bangkok, Thailand, at which I was present and Mr. F. A. Lambert attended the fourth meeting in Manilla.

Little did I think when I rejoined the Topographical Survey in 1946 that I would see so much of the world at the tax payers' expense. I guess, though, we surveyors are not exactly stay-at-home types so it is not surprising that we take to foreign assignments like ducks to water. I wonder if we should not borrow the motto of the senior arm of our defence forces "Join the surveyors and see the world."

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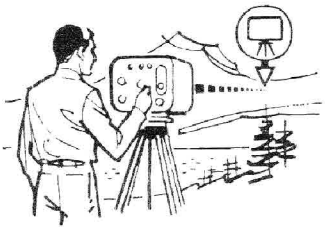

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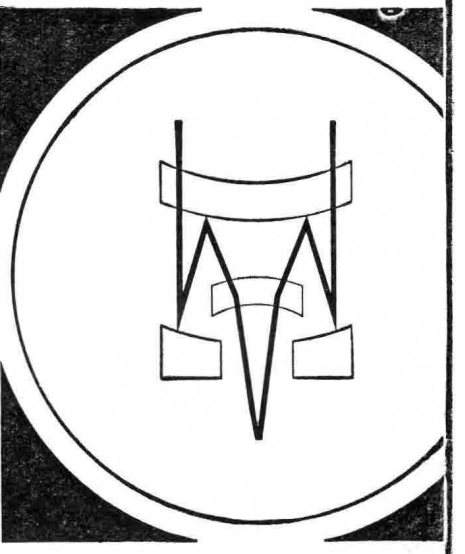
CARL ZEISS/JENA V.E.B.

THEO "010"

for absolute accuracy
combined with economy...efficiency
and simplicity of manipulation...



Important features of this new instrument include a one-second direct reading, an elongated mirror-lens telescope, internal focussing with a negative sliding lens, graduated glass circles with engraved divisions of extreme sharpness and great contrast. The arrangement of controls in the Theo 010 affords the operator real efficiency of the reading sequence and great certainty of results.

JENA

For complete data on the full line of CARL ZEISS/JENA surveying and photo-grammetry equipment, contact:

JENA SCIENTIFIC INSTRUMENTS LTD.

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Don Mills, Ont.
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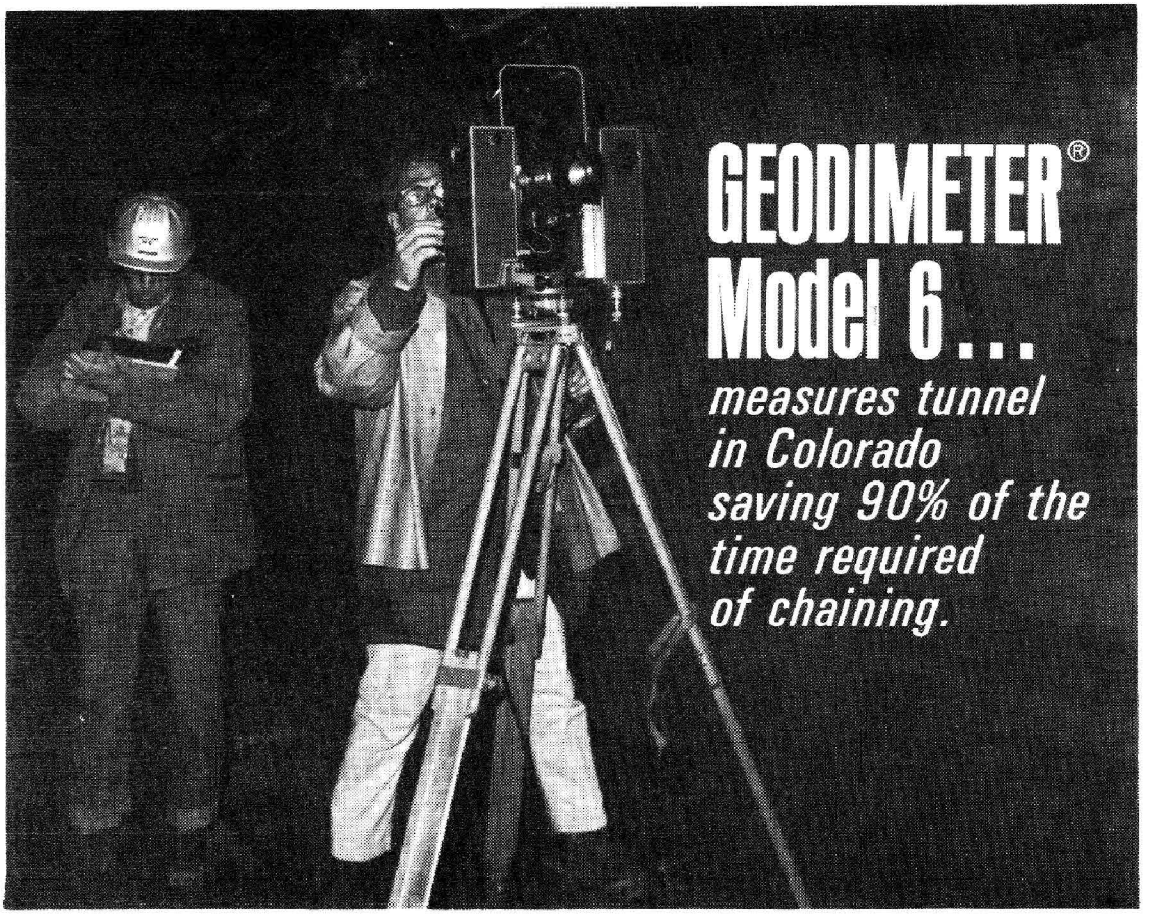
J16



GEODIMETER® Model 6...

measures tunnel in Colorado saving 90% of the time required of chaining.

Photo by R. C. Hopper, Resident Engineer, Colorado Department of Highways.

Recently we asked an employee of the Colorado Department of Highways for his comments and the results of the Geodimeter Model 6 in measuring the "Straight Creek Tunnel" through the Continental Divide.

"This measurement made for us was a great help and certainly was to an accuracy which would have been difficult if not impossible to do by the conventional methods of chaining. ☐ My estimate is that the measurements made in the tunnel were accomplished in 10% of the time that would be required in chaining."

Remember, underground, over water, in cities, in fact anywhere . . . the Geodimeter Model 6 does the job—*Faster* (10% of the time in this case), *Cheaper* (only one trained operator required and AGA's slave reflectors stationed anywhere) and *Better* (greatest accuracy available from any instrument − 0.03 ft. + 2 millionths of the distance) and it all can be yours . . . easily.

For further information call or write to:

AGAtronics, Ltd. 178A Queen St., E., Brampton, Ontario

U. S. SALES OFFICE: AGA Corporation of America, 151 New World Way, So. Plainfield, N. J.
Also represented in key cities in the United States.

"Geodimeter" is a registered trademark