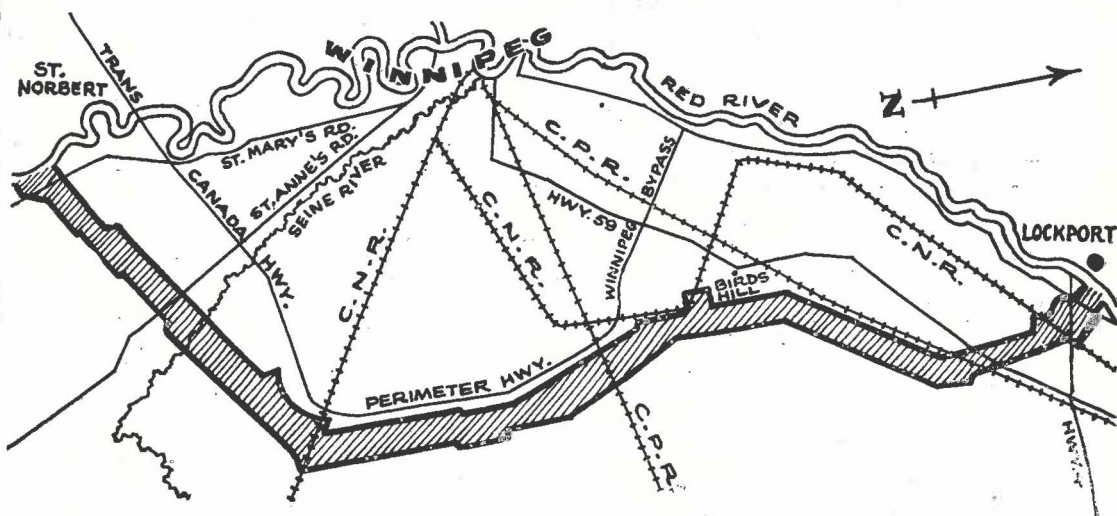




THE MANITOBA PROFESSIONAL ENGINEER

October, 1962

Bulletin of the Association of Professional Engineers of the Province of Manitoba



ROUTE OF PROPOSED FLOODWAY

FALL FROLIC

Friday, October 19th, 1962, Assiniboine Hotel

Nominations Solicited
Awards as Usual

All nominations must be in the
Association Office by
October 9, 1962

Published by the Association of Professional Engineers of the Province of Manitoba
418 — 265 Portage Avenue, Winnipeg 2, Manitoba

President — R. E. CHANT, P. Eng.

Vice-President — T. E. WEBER, P. Eng.

Secretary and Registrar — O. MARANTZ, P. Eng.

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Some Should Not Run

It won't be long before the notices of the Annual Meeting are with us again, and we will be called upon to select five of our members to sit on Council. There will be many names on the ballot; what yardstick will we use in making our selection?

It must be admitted at the outset that we are not a closely knit group. The members meet as a body only once a year, except for a light sprinkling of special meetings whose frequency is as random as the attendance at them is low. The abilities of a candidate can not be established by the way he acts at these meetings; the evidence is far too scanty. There are several social and quasi-athletic functions during the year which are deservedly more popular with the members, but it might be unwise to decide the suitability of a candidate for Council by his performance at, say, the Fall Frolic.

It becomes clear that the candidate who is well known in the general business and Engineering community will have a much greater chance of election to Council than the candidate who has worked diligently for the Association and has many talents, but who is not a public figure. This is the way of the world, of course, and not much can be done about it. But it does impose a special responsibility on well-known members of the Association when considering whether to let their names stand on the ballot as candidates for Council. Knowing that they have a considerably better chance of election than their less illustrious fellows, they should carefully consider whether they are likely to be able to make a useful contribution to the work of Council, or whether they are merely making difficulties for a more worthy candidate.

All this is leading in an oblique way to a consideration of the attendance record of the present Council. Out of 10 members of Coun-

cil, two have perfect attendance records. At the other end of the scale, one member of Council has attended only one meeting out of seven. For a total possible attendance of 70 (10 Councillors at each of seven meetings), the actual attendance was 44 — about 60 per cent. This is not so startling as the fact that four Councillors account for 26 of these 44 attendances. The remaining six Councillors attended an average of three meetings each out of seven.

This is not intended as a criticism of those Councillors who, after examination of their commitments, decide they can be of service to Council and then find that circumstances have vastly altered and they are much more frequently out of town. No one can predict his commitments with certainty for two years. Every one who allows his name to stand, however, should be sure that on past performance and past commitments, he will have time to attend virtually every meeting. Bear in mind that for some members of Council, attendance at meetings is their sole contribution to the work of the Association. They do not all sit on sub-committees. The President, Vice-President and Registrar, of course, have many additional duties, which are carried out most faithfully in addition to a near-perfect attendance at Council meetings.

Election to Council is rightly regarded as a high honour; those who seek it, especially those who are well known enough to have an unfair advantage, should be prepared to serve.

—J.C.G.

ENGINEERS AVAILABLE

Mechanical Engineer, management, sales and service. 26 years' experience. Recent business administration management training course. (P. Eng. No. 1).

There are six civils with varying degrees of experience and two electricals available. Please telephone the office for further details.

President's Report

By R. E. CHANT, P. Eng.

The summer vacation period is over and I hope everyone was able to enjoy a few days of complete relaxation. Council have commenced their autumn activities, and as you will observe, other committees are already busy. However, I wish to take this opportunity to outline the main events that concerned Council from the Annual Meeting to the summer vacation period.

The preparation of a balanced budget honoring the policies and desires of the present and past councils was not without difficulty.

At least 10 of the 14 committees are active. The work of some of the committees is evident to you and in any case it is not possible to enumerate all their activities. However I would like to mention the Engineering Technicians Committee and the other members associated with the Advisory Committees of the Manitoba Institute of Technology. The advice sought by the Department of Education up to the present has been in the form of specifying and selecting laboratory equipment with a minimum of information on the proposed curriculum. The co-operation and the effort of the participants from the Association in this task is indeed gratifying and a true demonstration of professionalism.

Although Mr. George Flavell's transfer has been previously mentioned in the Bulletin, I wish to express Council's regrets, for George's extensive contacts with the members, and experience, were certainly a loss to Council. However, it has been a pleasure to welcome Mr. S. J. Borgford to Council to fill the vacancy for the unexpired term. Scotty brings a considerable amount of committee experience and provides valuable representation from those Engineers associated with the Architects.

It has been my pleasure to represent you at the Annual Meeting of the Association of Professional Engineers of the Province of Ontario (APEO) held in January and the 26th Annual Meeting of the Canadian Council of Professional Engineers in Quebec City on May 8-11. I will not enlarge upon the events of the Annual Meeting of APEO at this time, for you are, I trust, more interested in the Annual Meeting of Canadian Council and recent developments on Confederation.

On your behalf, I wish to preface my remarks on the proceedings of the Annual Meeting of CCPE by a very hearty offer of congratulations to Past President W. L. Wardrop for a task well done. His term of office undoubtedly involved more work than any other

of recent years, and nothing would have been more gratifying to Mr. Wardrop than to have arrived at a decision on a favorable arrangement for Confederation. He was denied this, but the deportment and dispatch which he displayed in conducting the affairs of Canadian Council were extraordinary.



You have received this year's issue of *The Canadian Professional Engineer*; this is your record of the activities of Canadian Council. You will find it contains a summary of the annual meeting and the present status of items which are of concern to registered Engineers in Canada. If you are a discerning reader you will see that there are many problems upon which there are national disagreements, in a national body which represents registered Engineers in Canada. Two prime examples are the struggle for uniform registration requirements and acceptable Engineering curricula. All Provincial Associations have agreed that 2 years of experience is the requirement for registration, yet, British Columbia requires an Engineering report with the two years experience or eight years without a report. On the subject of engineering curricula, there are 139 engineering curricula in Canada and only half of these are acceptable to all Associations. Do these items reflect unity or is it the desire of the Associations to protect their provincial autonomy and is the degree of collaboration that has been evident only due to the fact that no one will voice their desire for autonomy?

Negotiations between Canadian Council and the Engineering Institute of Canada took place on June 9, and it was very apparent that agreement could not be reached, thus the decision to submit the Final Report as published in the September, 1961, issue of the Engineering Journal to the members for a ballot. This course of action is contingent on approval being received from all the provincial Associations, but as yet I have heard of no dissent and can only assume that the balloting will be accomplished before the end of the year as planned.

If confederation is not achieved by the present proposal what is the next step? Will Canadian Council extend its activities? We are looking forward to some guidance in these matters from a Committee on Future Development of the Engineering Profession under the chairmanship of Mr. L. C. Sentance.

There are some obvious facts which will influence the future of Canadian Council. No single Canadian Engineering Society is equipped to meet and serve the complete interests of the individual Engineer; nor can the profession afford internal disorganization. The pro-

vision for registration is growing in other countries and the percentage of registered Engineers is increasing rapidly in the United States as it has in Canada. This trend is unlikely to be reversed. Among the activities south of the border it is significant to note the American Society of Mechanical Engineers has recently been successful in establishing registration as a requirement for full membership. Arguments in favour of the move were the increase in the percentage of registered Engineers and the belief that ultimately all Engineers will be required to register.

There is one other very apparent fact, that unity, whether it be unity between the constituent bodies of Canadian Council or unity between all Engineers in Canada, will only be accomplished by compromise and trust.



Meet Councillor Borgford



S. J. BORGFORD, P. Eng.

With the transfer of Councillor George Flavell to Calgary the candidate polling the next highest number of votes at the last election was recently appointed to Council. The new appointee, Mr. S. J. Borgford, is well known to most members of the Association.

Skapti, or "Scotty" as he is known to many, was born and educated in Winnipeg, attending Gordon Bell and Kelvin High Schools.

He spent three years in general contracting work on building construction with his father and also three summers while attending the University of Manitoba. On graduation in Civil Engineering in 1942 he was employed by Defence Industries Limited, Montreal.

Mr. Borgford returned to Winnipeg in 1946 and lectured at the University in "Strength of Materials" and "Structural Design." Remaining there until 1957, he left to take a position with Green Blankstein Russell Associates as "Special Projects Engineer" and is still employed by that firm.

Since 1950 Scotty has been interested in co-operative housing as a method of providing lower-cost housing to more people since he feels that, technologically, housing has not kept pace with other modern developments. The first attempt to develop this type of housing locally was in the University Crescent area, which is now being developed, but not on a co-operative basis. Efforts continued until the Co-operative Housing Association of Manitoba was formed in 1960 with Mr. Borgford as Vice-President. This is a non-profit organization formed to assist municipalities and citizens in providing homes for lower income groups.

Mr. Borgford is now President of that Association. A measure of success was recently attained when the City of Winnipeg made land available to the group in the Burrows-Kee-watin area of northwest Winnipeg for the development of approximately 200 units. Construction is expected to begin later this year and will take the form of garden apartments and town houses.

Mr. Borgford is also Chairman of a Committee which was formed by the University Alumni Board to provide a positive approach to the establishment of a University Club. This might possibly take the form of clubroom facilities which would be used by graduates from all faculties of the University.

Mr. Borgford is married, has three girls and one boy. He reports that his hobbies consist of working around the house, carpentry and swimming.

—R.C.S.



ENGINEERS' WIVES

The Professional Engineers Wives Association will welcome new members. If your wife is interested she can receive further information from Mrs. R. Noonan (President) GL 2-5587 or Mrs. K. L. Philp (Membership) VE 2-4019.

Bon Voyage



J. C. GILLESPIE, P. Eng.

The departure of Chris Gillespie, Editor of the Bulletin, to the rarefied atmosphere of Boston, Mass., is a source of keen regret to the members of the Bulletin Committee. As Editor this past year, Chris initiated several changes in the Bulletin, such as the magazine type of publication and inclusion of technical articles. His genial presence and his well-written contributions to the Bulletin will be missed.

At the last committee meeting Chris was voiceless, due, it is understood, to prolonged hollering at the crew of the St. Peter. When asked why he was going to Boston, he drew a large dollar sign on his pad in reply. However, knowing Chris, it is expected that there is much more to it than that. Since he will be working in the field of electronics, and coupling this with his interest in flying, it may be that he has his eye on a berth in the nose cone of a space rocket. Unless he recovers his voice before leaving Winnipeg we may never know. It is hoped that his future contributions to Bulletin news items will explain the mystery.

We take this opportunity, Chris, on behalf of your friends in the A.P.E.M. to pass on our best wishes for your future.



ENGINEERS WANTED

Structural — Civil — Mechanical — Electrical
Contact Association office.

Council Meetings

SEPTEMBER 10, 1962

Present: President Chant, Registrar Marantz, Councillors Weber, Wardrop, Chappell, Landon, Hoogstraten, Borgford.

The minutes of the June 27 meeting were adopted and accounts totalling \$17,640.71 were studied and then passed.

Eleven Engineers in Training were enrolled, 5 temporary licences and 5 transfers were approved.

Two applications for membership were rejected on the recommendation of the Registrar, due to insufficient academic qualification.

Two members, removed from the roll for non-payment of fees, were reinstated on receipt of their fees, plus appropriate penalties.

A letter from the C.N.R. explaining engineering staff functions was received by Council.

Council then discussed a letter to be sent out to the membership with the ballots on Confederation. This letter is intended to advise members of the view of Council on the subject and to make clear to the membership which form of Confederation is being voted on.

T. E. Weber, P. Eng., was appointed Chairman of a committee to nominate candidates for next year's Council.

Discussion took place on the subject of attendance of Councillors at Council meetings, Council went on record as deploring the lack of good attendance.—I.W.T.

June 27, 1962

President Chant was in the chair and Councillors Landon, Hoogstraten, Marantz, Adams and Chappell were present.

Notable among the usual consideration of applicants for licenses, transfers, and registrations was the registration of two Engineers who qualified by passing the Association examinations, the first two to date. President Chant suggested that letters of congratulation be sent to these two new members.

In the discussion concerning the Annual General Meeting, it was generally thought that the Saturday meeting was not well received last year. It was decided that a weekday afternoon meeting would be much more suitable. By pre-issuing copies of committee reports and eliminating reading of them at the meeting it was suggested that the meeting could likely be concluded prior to cocktails and dinner. In-

identally, it was brought to attention that no one can make a motion without advising Council in sufficient time so that members can be notified twenty days prior to the meeting. As far as the invitation of a guest after-dinner speaker was concerned, several interesting personalities were discussed in relation to such subjects as the Manitoba Economic Report, Highways, the Seaway, and Transportation.

Some time was spent discussing the recent C.N.R. appointment of a Bridge and Structures Engineer. Recently, two separate departments, Bridges and Buildings were consolidated. The position in question was created with an Assistant Engineer — Bridges and an Assistant Engineer — Buildings. Concern was expressed that whereas the incumbent was well experienced and qualified in the building field, he was not registered in the Association. It was suggested that possibly this was an administrative position and that decisions on bridge design were the responsibility of the Assistant Engineer — Bridges and, that if so, only the title was questionable. It was felt that a letter to the Chief Engineer in Montreal regarding the job title, if a Professional Engineer was not required, would be appropriate.



FLIN FLON NEWS

By M. N. COLLISON, P. Eng.

First of all, may I express my sincere thanks to the Association for seeing fit to nominate me to attend the Engineers and Architects Course, No. 614, at the Canadian Civil Defence College at Arnprior, Ontario, last July. The course was extremely interesting and was attended by a total of twenty-five engineers and architects from seven provinces. There were nine 40-minute lectures daily, for four days, and seven on the fifth, as well as three evening sessions.

These lectures covered nuclear weapons, their design and characteristics; the nature, effects of and protection from radio activity from nuclear fallout; the effects of and protection from nuclear blasts, the design of anti-blast structures; as well as further lectures concerning civil emergency planning, climatic tests in fallout shelters, health aspects, casualty effects, organization of emergency measures and the Army's role in civil defence.

Not having sat in a classroom since 1945, I found it amazingly easy to go back to school. I also found the instruction I received in chemistry and physics is very much out of date, especially in view of the nuclear physics which was presented to us in the various lectures.

The prime objective of the course was one

of education, to which end I believe it was successful.

About twelve Flin Flon members of A.P.E.M. had the pleasure of having a dinner and gab session with Professor R. E. Chant, our president, on the evening of July 30th. We had a very pleasant evening and I believe Professor Chant has a souvenir of this visit to Flin Flon with the disposal of which he is experiencing difficulty. Since Professor Chant had come to Flin Flon primarily to do some fishing, it seemed only fitting that he take home positive proof of what these waters contain. While his own efforts may have provided personal satisfaction, we, here, were not quite so happy with the size of his catch. Therefore, he was presented with a 32-pound lake trout.

M. A. Roche, P. Eng., has retired from the employ of the Hudson Bay Mining and Smelting Co., Limited and is now living in Napa, California. From his many friends here go best wishes for a continued useful and happy life.

W. A. Green, P. Eng., last April was elected to the presidency of the Hudson Bay Mining and Smelting Co., Limited. Our congratulations! This is a fitting climax to a long and distinguished career in mining and engineering. We had the pleasure of a visit from Mr. and Mrs. Green for several weeks during July.

Thanks to the committee of the June Golf Tournament for their astute recognition of the one good hole I shot. Actually, it was a very enjoyable day, and I would like to extend a cordial invitation to any of the "par busters" in Winnipeg, or elsewhere, to come up and we will give them a real work-out on our nine-hole layout.

A. L. Parres, P. Eng., one of Flin Flon's notorious golfers, has had a terrific summer on the course; in fact, several fellows have hoped Lew would play ahead of them more frequently so that they could replenish their ball supply.

We note the registration of M. A. "Tony" De Vette. Tony is presently an Engineer in our electrical department. He was born in Rotterdam, Netherlands, in 1937, and came to Canada in 1950, residing in Alberta and receiving a degree in Electrical Engineering from the University of Alberta. Tony is still single and enjoys many active sports, including tennis, golf, swimming, etc., and is one of the leading lights of Flin Flon's Little Theatre Group.



CONGRATULATIONS

To Mr. and Mrs. J. N. Warrenner on the birth of a son, Donald Ralph, on June 5 1962.

75th Anniversary

Nineteen-Sixty-Two is the 75th Anniversary of organized Engineering in Canada.

This is a time to look back on past achievement with pride. It is a time to examine critically the history of engineering in Canada. It is time to plan for a better, fuller Engineering life in the coming 25 years.

Engineering had its start in Canada in the 17th Century with the French Military Engineers. These men were concerned primarily with the construction of roads and military fortifications. In time, they were replaced by their British counterparts. Gradually the emphasis passed from Military Engineering to Civil Engineering. Thus the Engineers concerned with the building up of the nation became known as Civil Engineers.

In 1887, by act of the Dominion Government, the Canadian Society of Civil Engineers was incorporated.

In 1918, by Bill 22, the structure of this learned society was changed in recognition of the increasing diversification of the work of the Engineer in Canada. This new society was named the Engineering Institute of Canada. New By-Laws were enacted, providing for more complete branch organization, and publication of "The Journal", and appointment of a full time secretary.

One year later, at the 1919 Annual General Meeting, a committee was appointed by Council to draw up a model act for consideration in the proposal of Provincial Enactments for the practice of Engineering. In 1920, Provincial Acts were obtained, based on this model in the provinces of British Columbia, Quebec, Manitoba, Alberta, New Brunswick and Nova Scotia. By 1923, all the Provinces, except Prince Edward Island and Saskatchewan, had similar legislation. Finally, in 1930, an Act was obtained in Saskatchewan.

In the years 1927 and 1931, the first discussions towards establishment of uniform entrance requirements for the Provincial Associations and the Engineering Institute were begun. Between 1940 and 1957, joint agreements were entered into, between the Engineering Institute and the different Provincial Associations.

It was not until 1950 however, that interest began to be generated in a workable form of co-operation between the Engineering Institute, its branches and the Provincial Associations. Four years later, Dominion Council requested Council of the Engineering Institute to form a committee to study "A Plan of Unity". From

this followed a long series of conferences and a great deal of hard work towards the formation of a confederation of the two groups representing Engineering in Canada.

Now, seventy-five years after the formation of the first engineering group in Canada, there appears little hope of an early confederation of the learned society, the Engineering Institute of Canada, with the provincial groups responsible for the administration of the Engineering Profession Acts.

The Canadian Council of Professional Engineers can only act as a national voice of the Professional Engineer after consultation with all the member associations. This procedure involves considerable delay.

The E.I.C. has representatives of fifty-five bodies participating in, or contributing to technical and related activities. It cannot however, in its present form, take the part of a spokesman for the Professional Associations.

The Engineering Institute of Canada has done a splendid job in facilitating the acquirement and interchange of professional knowledge among its members and more particularly promoting the acquisition of that species of knowledge which has special reference to engineering.

By its branches and their sections, it has been the means of day to day communications between the Engineers of this country. Through its headquarter's representation, the Institute has represented the Canadian Engineer, both nationally and internationally, and in technical associations and in governmental agencies.

The Association of Professional Engineers of the Province of Manitoba has grown into an active healthy organization. Of recent years, an all-out effort has been made to enlist the full participation of Engineers in Manitoba. The Administration of the Engineering Profession Act is being taken as a serious duty. Both the public and the profession will benefit from a conscientious, objective, application of the principles embodied in the Engineering Profession Act.

Much more must be done. In one Province, progress is being made to identify the word Engineer with what we now call the Professional Engineer. If this aim is to be achieved in the eyes of the public, we must identify the Engineer with a learned technical society, as well as with a group entrusted with the enforcement of the Professional Act.

How often have you heard the embarrassing question "With which engineering organization am I dealing?" If we are to achieve professional status in the eyes of the public, and

if we are to carry on the fine engineering tradition established for us by our predecessors, we must have only one criterion for action: Is it good for Engineering in Canada?

If each of us in Manitoba, as individuals, as committee members, as officers, think and act in this manner, confederation will be achieved in fact. Formal confederation will then follow as a matter of course.

I. B. HENDERSON, Chairman,
75th Anniversary Committee,
Winnipeg Branch,
Engineering Institute of Canada.



Post Graduate Courses

Announcement has been received in the Association office of two post graduate courses. The Ontario Association is sponsoring in co-operation with the University of Toronto Extension Division a series of twenty correspondence courses for Engineers. These courses will be made available to members of all the Provincial Associations. Bell Telephone and Queens University will be conducting an "on campus" course for Communications Engineers commencing in September, 1963.

The Toronto series consists of thirteen business courses and seven technical courses. The business courses include English Composition, English Literature, Introductory Economics, Economic Geography, Political Science, Accounting, Marketing, Transportation Law, Transportation Economics, Business Statistics, Business Organization and Psychology. Technical courses are Mathematics II and III, Numerical Analysis, Computer Programming for Engineers, Transistor Electronics, Vibration Analysis and Theory of Elasticity. Fees are \$50.00 per subject except for Computer Programming \$125.00. Examinations will be held in May 1963, and a certificate will be granted for each subject passed. Re-enrolment is permitted for subjects not completed.

The Bell-Queens courses will provide instruction approximating that of a university academic year and will be available to Engineers selected from their staffs by telephone companies across Canada. Five major subjects will be taught:

- Background Theory on statistics and probability, number systems and coding.
- Modern electronics with particular reference to solid state physics.
- Transmission with emphasis on masers, lasers and communications satellites.
- Switching including electronic switching.

—Engineering economics.

Further information on these courses is available from the Association Office.—K.H.



OFFICERS WANTED FOR R.C.E.M.E.

(Royal Canadian Electrical & Mechanical Engineers)

Put some of your evenings and week-ends to good use and get paid for it. Professional Engineers can qualify for the rank of Second Lieutenant on entry.

• Interesting and important training in survival, use of radiation monitoring equipment, etc.

• Call at the Minto Armouries on TUESDAYS or THURSDAYS or Phone Lt. Col. A. W. Fia, P. Eng., at SP 5-8331, Local 230.



Operation Golf Day

By A. W. BELL, P. Eng.

THE TIME — 12:00 p.m. — June 1, 1962.

THE PLACE — Pine Ridge Golf Course.

THE EXERCISE — To bat 109 balls (more or less) around 6439 yards of golf course (more or less) in the smallest possible number of strokes. Par for course 109 x 71—7739 *Strokes*.

THE TASK FORCE — 109 stalwart, eager engineers.

THE ENEMY — 50 million mosquitoes, 10 thousand wood ticks, sundry poison ivy plants and old man par.

THE STORY — At 8 p.m. a truce was declared and of the 109 starters nearly all made it back to the staging area, although many casualties were suffered (none fatal). While some claimed only limited success it was generally conceded that the engineers had carried the day again. The total number of strokes was slightly higher than had been anticipated (total strokes recorded for the day 11,445).

The battle raged over a broad front with the going getting much tougher in some sectors than in others. Mike Green appeared to have relatively easy going and carded the low gross of the day for which he received some sort of tribute donated by Underwood McLellan. Gord Crabtree chased Mike right down to the wire but couldn't quite overtake him. George Minaker and Kenny Jardine vied for low net score, while H. E. Martell and Doug Murdoch were one two for low gross among our guests.

High hidden holes were picked up by Doug Honeyman on the 15th hole, George Durnin on the 5th and J. Tude on the 4th.

Low hidden holes were picked up by S. Goodbrandson, Mac Collison from Flin Flon, and Reg Blackman from Brandon.

SIDE NOTES:

One of the reasons for the hold-up on the first tee was that members like Flatt, Blackery and Minaker played the first hole to the first green down the first fairway and the second hole to the second green back down the first fairway. There were times when we needed traffic lights on the first fairway to ease the congestion and when needed Bill Finboggason was on the 6th hole just golfing.

Prizes were donated by Underwood McLellan, Haddin Davis & Brown, Canadian Johns-Manville, Honeywell Controls, Canada Wire & Cable, Manitoba Telephone System.



LOST?

Mail sent to G. R. Drummond, S. T. Flett, and R. N. Sexsmith has been returned to the office. If you know of their whereabouts please telephone the office at WH 3-6745.



UNIVERSITY OPEN HOUSE

The Engineering Departments of The University of Manitoba are holding Open House on the afternoons and evenings of Thursday and Friday, November 1st and 2nd. The main feature of the Thursday evening will be an address by President F. Lawton of The Engineering Institute of Canada on The Engineering Profession. Members of the Association of Professional Engineers of the Province of Manitoba are cordially invited to be guests of the University on this occasion.



Sullivan Cup to Al Mattick

By C. R. MCBAIN, P. Eng.

Tall, quiet Al Mattick put together his birdies and bogies in proper fashion to win the Sullivan Cup at the Association Fall Golf Tournament held at Rossmere Golf and Country Club, East Kildonan. Using the Calloway handicap system, Al finished with a net 61 to outdistance the field. The best gross score of the day was turned in by Gord Crabtree, with a fine 82. Close on his heels was Sigi Goodbrandson with an 84.

Bright, cool, Fall weather was the order of the day as 70 Engineers and guests exchanged slide rules for golf clubs and threshed their

several ways around the pretty but tough Rossmere course. Everyone seemed to have put a large amount of effort into their play, judging by the popularity of the refreshment shop as the weary, thirsty foursomes sought to revive themselves at the close of play.

Fifty stayed to enjoy a fine steak dinner served in the upstairs dining room at the Club. The festivities were under the capable direction of Sports Committeemen Bob Gottfred and Bob Byers. Chairman Mike Green was unfortunately absent through illness.

The Sullivan Cup was presented to Al Mattick by Tom Weber, Vice-President of the Association. Tom congratulated Al on his success and also noted that three former winners of the Cup in the persons of R. W. Hutchinson, R. E. Gottfred and D. J. Sampson, were present.

Gord Crabtree received the prize for low gross for his 82. John Duerksen was high net with 76 and Al Burrows showed how not to do it for a high gross of 149.

Prizes for low and high out of town were easily decided, there being only two who qualified. Fortunately for the busy committee, they didn't tie! The low out of town went to Eric Thrun, from Saskatoon, and the high out of town went to Reg Blackman of Brandon.

High hole prize went to Lou Marrin in recognition of his honesty in recording difficulties on the 16th, low hidden hole went to Ben Fast for his par on the 8th.

A special award went to Mac Coutts for his courage and perseverance in the face of great personal danger. Mac sustained a bad gash on his chin while killing rattlesnakes in the bush, but fortunately a liberal application of snake bite medicine brought him around.

Prizes for birdies went to Reg Blackman, Bob Gottfred, Eric Thrun and Don Sampson. Gottfred got his bird with the most spectacular shot of the day, by canning a ninety-yard 9-iron shot.

Saddest individual was Pete Abel who watched 7 golf balls vanish into the blue. Pete was so discouraged (and broke) that he didn't stay for dinner.

The Committee wishes to thank the Canadian Johns-Manville Co., Supercrete Ltd., Anthes-Imperial Ltd., Underwood McLellan & Associates and Dominion Bridge for donating prizes.

The day concluded with the boys exchanging a few stories over their after-dinner drinks. The Committee wishes to thank Mrs. Dunklee for her assistance in looking after the many details and arrangements.

The Red River Floodway

By C. R. MCBAIN, P. Eng.

This fall will see the start of one of the great construction projects in the history of the Province of Manitoba — the building of the Red River Floodway around Metropolitan Winnipeg. Manitoba has had its share of notable engineering and construction works — projects such as the building of the Canadian Pacific Railway, the Canadian Northern Railway, the Grand Trunk Pacific, the Hudson Bay Railway among railways, the early Hydro Electric Plants of the City of Winnipeg and the Winnipeg Electric Company together with their transmission lines, the tremendous Shoal Lake Aqueduct, and the great marshalling yards and shops of the two major railways are some of the early projects that come to mind. In more recent years the building of the Trans-Canada Highway, the mining-smelting complexes of Flin Flon and Thompson and currently the construction of the Atomic Energy facilities at Pinawa are projects that have attracted national and international attention. Now with the start of construction on the \$63 million "big ditch" engineering and construction in Manitoba is again in the news — for this project will rank as one of the great earth moving jobs of all time with some 100 million cubic yards of dirt to move. This is a greater yardage than was moved in the construction of the St. Lawrence Seaway and is approximately half the yardage moved in the construction of the Panama Canal. It is also interesting to note that construction of the floodway will affect in one way or another many of the projects mentioned above, for it will cross many of them, thus alterations or additions to these earlier works will be necessary.

Let us look at some of the history of this area that has made this work necessary, glance at the scope of the work and see what had been done to date:

HISTORY—

Following the major Flood of 1950 it was realized that with such a large percentage of the population of Manitoba located in the Greater Winnipeg Area that floods of this or greater magnitude could disrupt the whole economy of the Province. The Federal Government undertook the investigations into measures for the reduction of the flood hazard in the Greater Winnipeg Area. These investigations covered various possibilities including: diversions, dams, improvements to the existing river channel, dyking, etc., and each of these possibilities was examined in several sizes and shapes to give different degrees of protection. The full report of these investigations was submitted in 1953.

The report submitted dealt primarily with engineering matters and although cost estimates for the various proposals were given, the whole scope of economics and costs benefit ratios was not covered. The Provincial Government therefore appointed a Royal Commission in December of 1956 to look into the whole problem of Cost-Benefits on the schemes previously proposed and to recommend those works which should be carried out to accomplish the purpose of flood protection. The Royal Commission on Flood Cost-Benefit reported its findings to the Government in December of 1958 and recommended that three projects be undertaken to provide protection to the Greater Winnipeg Area. These projects included (1) a diversion of the Red River Easterly from St. Norbert to Lockport, (2) Diversion of the Assiniboine River at Portage la Prairie and (3) Construction of a control dam at Russell, Manitoba, on the Assiniboine River.

Following receipt of this report, the Provincial Government requested the assistance of the Federal Government in undertaking the flood protection program on both watersheds. At the same time preliminary surveys were begun on the Floodway route and were continued through 1959 into 1960. In 1960 the Floodway Property Committee was created to acquire and manage the land required for construction of the Floodway. Also appointed was the Floodway Advisory Board consisting of two senior officials each, of the Federal and Provincial Governments with one alternate for each. All members of the Advisory Board are registered Engineers. In January, 1961, the Floodway Division was created within the Provincial Water Control and Conservation Branch of the Department of Agriculture and Conservation to look after the details of design and construction of the Floodway.

SCOPE OF WORK—

A look at any map of the Province of Manitoba will show that traffic whether by road or rail funnels into Winnipeg from the East and also that a line drawn East of the Greater Winnipeg Area from St. Norbert to Lockport intersects all highways, railways, power lines and the Metro Winnipeg aqueducts supplying water to the Greater Winnipeg Area. All of these facilities require crossings over or under the Floodway and this creates a problem in scheduling construction.

The floodway itself is some 30 miles in length and with base widths in the order of 500 feet, involves the excavation of some 100,000,000 cubic yards of material.

The depth of cut varies from approximately 25 feet to 65 feet through the Birds Hill Ridge. There are 7 railway bridges and 7 highway bridges to be constructed along with several miscellaneous crossings either over or under the Floodway to be provided for hydro, telephones, oil pipe line and probably most difficult, the aqueducts bringing water into the city. Two major hydraulic structures are necessary. The first is a control structure at the inlet near St. Norbert to control the amount of water let down the Red River through the city and to divert the remainder into the Floodway channel. The second is required at the outlet of the Floodway where it re-enters the Red River. This structure is necessary as the Floodway grade arrives at Lockport above the normal water elevation of the River and water coming down the Floodway must be dropped down and its energy dissipated as much as possible before it is allowed to join with water in the River proper. Serious erosion problems could result on the west bank of the river if this structure does not function properly.

PROGRESS TO DATE—

In late 1960 and early 1961, Expropriation Plans were filed by the Department covering the principal land requirements for the Floodway Channel. Then the Property Committee commenced the task of appraising the individual holdings in order to set a basis for the payment of compensation to the people who would be displaced by the project.

Control and construction surveys were undertaken on a scale sufficient to ensure proper control of the project. Thirty-five deep bench marks have been established along the route of the Floodway, so that level crews will never be more than one mile from their nearest bench mark. A 100 foot grid survey of the whole Floodway length with widths ranging from 2600 feet to 4400 feet has been completed. From this grid the excavation and placing of waste material will be calculated and controlled.

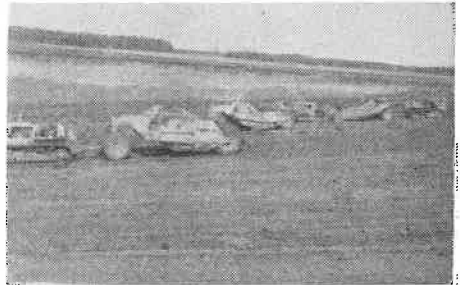
The majority of the excavation for the Floodway will be in the Red River Valley Clays. Accordingly it became very important to study the behaviour of these clays to understand how they would affect the design and construction of the Floodway. Therefore extensive soil borings and laboratory soil mechanics tests were made in order to understand the properties of the material.

In conjunction with the soils field work a large size test pit was dug in the fall of 1961. Over 200,000 cubic yards of material was removed from the pit and from information gained in the test the soils engineers were able to determine stable side slope designs for the

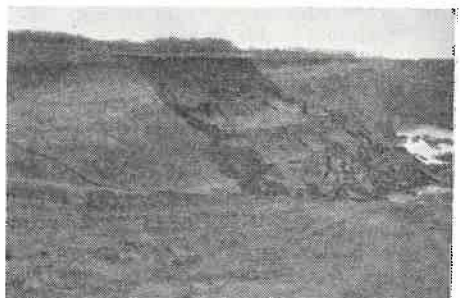
channel. The digging of the test pit also gave contractors and other interested parties an opportunity to have a first hand look at a large scale excavation in the general area of the Floodway.

The attached pictures show the digging of the test pit; of particular interest to the soils engineers was the failure of the bank as anticipated, at one location — this can be seen in the picture.

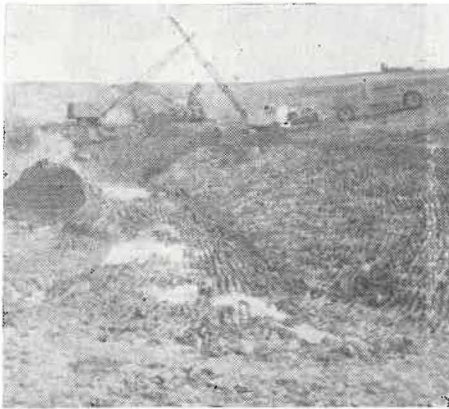
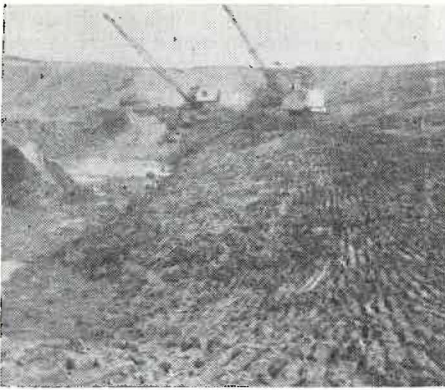
All of the agencies who own or operate services and utilities which will be affected by the construction of the Floodway have been contacted and studies have been undertaken in how to inconvenience them the least while providing them with the necessary crossings of the channel. Each of the affected agencies has been asked to take on the supervision of the design and construction of their own crossings, i.e., The Province of Manitoba Highways Branch to build Highway Bridges, the Railways to build Railway Bridges, etc., but in each case subject to the approval and coordination of Water Control and Conservation. In some cases design of these crossing structures is being done by the engineering staffs of the agencies concerned, in other cases consulting engineers have been retained to look after the work.



September 25, 1961, Cats and Scrapers working on Floodway Test Pit



October 8, 1961, showing bank failure in Floodway Test Pit



October 29, 1961, draglines excavating near bottom of Floodway Test Pit

As of the middle of September, 1962, tenders have been called and closed on the first excavation contract and tenders have been called on the second contract. As yet no award has been made. Tenders are to be called in such a way that the quantities involved are of such a size as to enable Manitoba contractors to bid on them. The competitive bidding by local firms on the first tender would seem to indicate the wisdom of this decision.

MODEL STUDIES—

One of the most fascinating aspects of the engineering work done in connection with the Floodway has been the hydraulic model study of the inlet, outlet and diversion areas of the Floodway.

Under the direction of the H. G. Acres Co. of Niagara Falls who are consulting engineers to the Manitoba Government on the project the University of Manitoba has undertaken the task of constructing and testing hydraulic

models covering the areas in which the inlet and outlet structures will be built as well as the structures themselves.

The models have been constructed in a large area in the basement of the Animal Science Building on the Fort Garry Campus of the University of Manitoba. Work began in December, 1961, and all model studies are expected to be completed by October 15, 1962.

The basic operation of the model consists of building a channel configuration to scale, passing water through the channel at a rate that will simulate a flood of a certain magnitude, then examining the scour and erosion, if any, that has occurred in the channel. Based on these results a new design is made and more tests run. From the information obtained from these model studies final channel configuration was made. The design flood for the completed Floodway is a flow of 72,000 C.F.S. in the river and a flow of 60,000 C.F.S. in the Floodway.

FINANCE—The cost of the project is being shared between the Federal and Provincial Governments. Ottawa has agreed to pay approximately 58.5 percent of the total cost or about \$36.9 million out of a total of \$63.2 million. The agreement on this was reached this past summer after prolonged negotiations.

ADMINISTRATION—

Work on the Floodway is being handled by the Water Control & Conservation Branch of the Department of Agriculture and Conservation of the Manitoba Government, headed by the Minister, the Hon. George Hutton; J. A. Griffiths, P. Eng., is the Director and T. E. Weber, P. Eng., Chief Engineer. Mr. Weber is well known as the Vice President of the A.P.E.M. A. G. Mensforth, P. Eng., is the Chief, Floodway Division with W. A. Cook, P. Eng., as Project Engineer for Hydraulic Design, and C. J. Love, P. Eng., in charge of field surveys.

On the Floodway Advisory Board, G. L. MacKenzie, P. Eng., and R. H. Clark, P. Eng., with P. W. Strilaeff, P. Eng., as alternate, represent the Federal Government while J. A. Griffiths, P. Eng., and T. E. Weber, P. Eng., and W. D. Hurst, P. Eng., as alternate, represent the Province.

SUMMARY—In one brief article we have tried to give a general description of the background and present status of one of today's great engineering and construction ventures. Over the course of the next five years as the project proceeds to completion, we will all, no doubt, watch with great interest and no little pride the progress of Manitoba's "Big Ditch".