



THE MANITOBA PROFESSIONAL ENGINEER

February, 1962

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



R. E. CHANT, P. Eng.

GILLESPIE
NAMED EDITOR
(See story inside)

THE ASSOCIATION'S
NEW PRESIDENT
(See story inside)



J. C. GILLESPIE, P. Eng.

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Which Way Is Fair?

One of the great strengths of good representative government is that while majorities govern, minorities are neither unrepresented nor ignored. In legislative councils, this is assured by dividing the area governed into ridings within each of which there is likely to be a community of interests, and a separate election is held in each riding to choose who shall represent it. In municipal councils, the area governed is so small that it is impractical to divide it into small enough wards to give a representative group. Instead, several representatives are elected at once for each ward.

It is now an almost universal practice in our society whenever more than one of a roster of candidates is to be elected, to use the proportional representation system of voting rather than the "X" system. What are the reasons?

First, under the "X" system each vote carries equal weight. If, say, four are to be elected, only those voters of the four majority interests will have four votes; those of minority interests can only exercise as many votes as they show for the four majority interests. The proportional representation system overcomes this by having the voter express his order of preference for all candidates on the roster, and by establishing a quota of votes to be elected and a minimum of votes below which the candidate is declared defeated.

By transferring ballots which lie outside these two limits to the lower choices expressed on them in turn, it is possible for a minority candidate to be elected by a combination of the first choice ballots from his own group of voters and the lower-order choices of the majority-interest and small minority-interest voters. Since the transfer of ballots continues until all ballots are shown to the credit of those elected, each voter has expressed his opinion of every successful candidate.

A second reason is that two (or more) can-

didates from the same interest are not likely to split the available vote and thus defeat them both, since one or the other will eventually lack the minimum votes and his ballots will be transferred to the next choice, which would presumably be the other candidate representing this interest.

Theory indicates that the P.R. system is fairer; does it work in practice? There can be little doubt that it has for the Association. In the last election under the "X" system, four civil engineers were elected to Council. There have been two elections under the P.R. system. In the first, three civil engineers, one mechanical and one electrical engineer were elected; in the second three civil engineers and one electrical.

Proportional representation still means that those in the majority in the Association will be represented in the majority on Council, but minorities will be represented. Under the "X" system, majority groups in the membership were sure to control Council, and minority groups were not likely to be represented at all.

It is clear that the proportional representation system is fairer. The Legislation Committee and Council are to be congratulated on recommending this change and the Association for voting so strongly for it. The system deserves the continued support of the members.—J.C.G.

♦ ♦ ♦

Annual Meeting Format

If the annual decline in attendance at the Association annual meeting continues, the necessary quorum for transaction of business will not be reached at next year's meeting. Council must now try to make the meeting more interesting for members, or resort to the old institution of the "press gang."

There are close to 150 members sufficiently

interested in Association affairs to take part in Council and Committee activities. If the annual meeting is so formidable as to discourage attendance by these men, it is unlikely to attract other members. At the past annual meeting 138 attended the luncheon, after which about 50 attended the afternoon business session. This 50 dwindled to less than 20 before the meeting ended.

Council is strongly urged to consider the suggestion that the pamphlet which is mailed to members before the meeting and which contains the Auditors' and Registrar's reports, should be enlarged to contain all committee reports. A motion at the meeting to take all of these reports as read would still provide members with opportunity to question items of their interest. This procedure would serve two purposes, in allowing members to consider the reports before the meeting and elimination of two and a half hours of report reading.

It is further suggested that the meeting be moved back to a weekday, and should consist of an afternoon business session with dinner winding up the proceedings. No doubt the move to Saturday meetings was made with what was thought to be a good reason, but we must assume that the membership is making known its objection to present arrangements by its absence. —I.W.T.



Irregular Motion?

Many Association members would be surprised to learn that Confederation came under discussion at the Annual General Meeting in December. The discussion took place late in the afternoon as attendance dwindled. The President's Address contained a summary of the Confederation Commission Report issued April 22, 1961. A motion was then passed accepting the President's Address on condition that Confederation would be subsequently discussed. A considerable amount of amplification of the Confederation Commission's report was made by members well acquainted with it, after which a motion was passed indicating, in general terms, approval of the Commission Report from those present at the meeting.

The discussion held its element of comedy;

after enthusiastic comment on the report by several senior members of the Association, one member asked, not unreasonably, from what quarter the opposing gunfire might be expected. Silence filled the auditorium. The opponents, if any, had stayed away. So, rather overburdened with artillery, the proponents once again took the floor.

Confederation was not a subject on the agenda. We understand that no notice of motion had been received for the "general approval" motion. This is directly contrary to the rules of order which our by-laws bind us to follow. It hardly seems likely that if the members had expected Confederation to be discussed, they would have stayed away in such droves as they did.

Confederation is a most important issue. It may be the business of another General Meeting to approve a reply to the Commission report. The motion passed at the December meeting is, therefore, not of great importance since it was not considered by a representative group of the membership, perhaps not even by a quorum. It may be that Confederation deserves the full support of every member; its supporters should take care that the membership is informed whenever general discussion and resolutions on it are to take place. —J.C.G.



Council Meetings

November 20th, 1961

Council met with President Landon in the chair. Present were councillors Weber, Chappell, Adams, Hoogstraten, Wardrop, Flavell, Chant and Registrar Marantz.

The minutes of the October 18th, 1961, meeting were adopted. The auditors' statement for the year was given careful scrutiny and was received by council.

Next a discussion took place with regard to the information to be included with the ballot for election of council members. A suggestion was made that the short biography of persons running for office be omitted from the ballot as it was not always so accurate as might be desired. This discussion culminated

Prize: One full Bottle IMPORTED PER

Closing Date: February 29, 1962.

Address: Cartoon Contest, 838 Lansdowne

Clue: Social Committee, Note Black T

DANCE

Windsor Hotel, Skyview Ballroom

45 - 7:45

Dancing 9:00 to 1:00

in a motion to the effect that the ballot include only the name, occupation, year of graduation and branch of engineering, of the candidate. The motion carried.

Council next approved a donation of \$50.00 to the University of Manitoba Engineering Society to assist in the publication of *The Slide Rule* — this being the yearly publication of the undergraduate engineers at the University.

Committee Reports follow:

The Public Relations Committee suggested that council consider the institution of a Professional Development Award to be made to industrial firms who make suitable provision for engineers in their employ to improve their Professional Development. Council showed interest in this suggestion but felt that more information was required before a proper assessment of the proposal could be made and accordingly referred the matter back to the Public Relations Committee for a more detailed report.

The Engineer - Architect committee had prepared a report for submission to the Manitoba Association of Architects which made the following points: that architects not use suppliers' engineering, that architects not hire non-registered engineers, that architects help the A.P.E.M. in reporting on unlicensed engineers, that consulting engineers be given the opportunity to offer their full services to architects. This report will be presented at the Annual Meeting.

The Board of Examiners' Committee reported that they recommended the acceptance of the engineering course at Carleton University as qualifying a graduate, along with any other necessary requirements, for registration in the A.P.E.M. The Board also has under review the engineering course at McMaster University.

An inconclusive discussion then took place on the question of registering Honours Geology graduates as members of the A.P.E.M.

The meeting concluded with a presentation to Registrar Oscar Marantz on the occasion of his forthcoming marriage.

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January 9th, 1962

The first council meeting of the year was held in the Association Offices on January 9th and was attended by President Chant and Councillors Adams, Marantz, Flavell and Past President Landon.

In routine business 2 transfers were ap-

Important . . Fees

**Under the New By-law if the \$15.00
Fee is not paid by March 1st a \$3.00
Penalty is Added**

proved, 6 engineers in training were enrolled and 14 applications were approved. In addition, three reinstatements were made.

Since the Association is donating several hundred dollars a year to the university students, it was felt that a committee should be set up to serve as a liaison between the engineering student body and the Association. President Chant is to organize the committee which will be comprised of members and students.

Now that construction is going ahead on the new Technical Institute in Brooklands, council decided that this Association should be prepared to provide advice on any technical problems which may arise in setting up the institute curriculum or laboratories. The present Advisory Committee will be combined with the technicians committee to deal with this matter.

In other business, the annual membership in the Concordia Club was dropped since the Club facilities were not being used.

President Chant was delegated to attend the annual meeting of the Ontario Association on January 27th.

The highlight of the meeting was a discussion about the past and future annual meetings. Through some error on the part of the Hotel, liquor consumed at the annual meeting was not paid for and the Hotel expected the Association to pay for their mistake. It was only because of the keen business acumen of our Past President that this Association was not saddled with an exorbitant bill. Council finally decided on a method of resolving the dispute which will be fair to both sides.

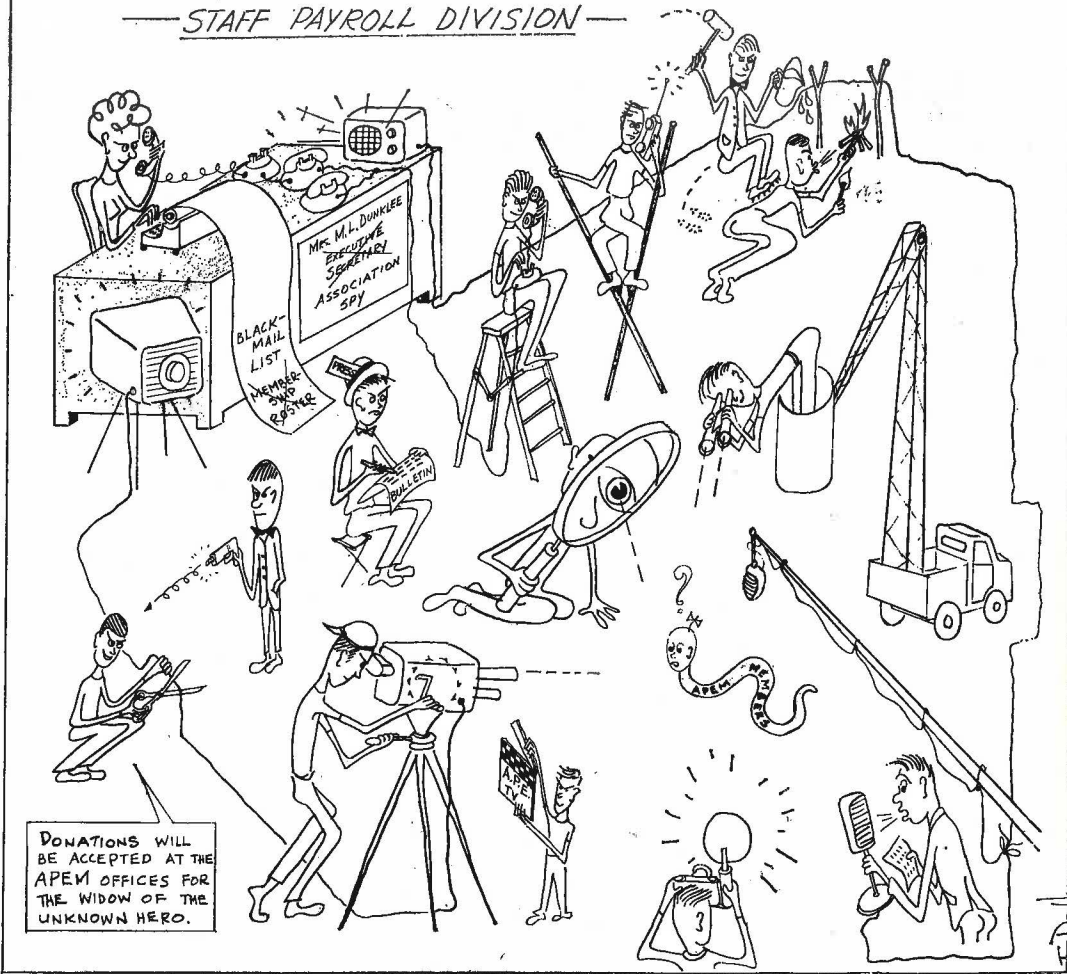
In the matter of time and day for future meetings, it is apparent that a good deal of discussion will take place before the next annual meeting. Council adjourned at 6:00 p.m. —R.C.S.

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There are close to 150 members sufficiently

ANNUAL FINANCIAL STATEMENT OF "HIDDEN-EXPENSES"
 — STAFF PAYROLL DIVISION —



QUOI?

Your Bulletin Committee, FOR A LIMITED TIME ONLY, offers a substantial prize for the best explanation of this cartoon.

Rules: All A.P.E.M. members, including Bulletin Committee, and their families may enter.

Prize: One full Bottle IMPORTED PERFUME, Donated by Cartoonist.

Closing Date: February 29, 1962.

Address: Cartoon Contest, 838 Lansdowne Avenue, Winnipeg 14.

Clue: Social Committee, Note Black Ties.

Annual Meeting

One hundred and thirty-seven engineers turned out to this year's annual meeting, most of whom were present when Hon. Walter Dinsdale addressed those gathered at the luncheon. The morning session was attended by fewer than half this number, and the afternoon session by about a quarter.

Committee reports took up most of the morning session. The Scrutineers' Report indicated the election to Council of O. Marantz, R. Noonan, B. Chappell and T. E. Weber. In the afternoon session the President's Report gave a review of the proposals of the Confederation Commission. After considerable discussion on the subject, the following resolution was passed by those present:

WHEREAS the Winnipeg Branch of the Engineering Institute of Canada and the Association of Professional Engineers of the Province of Manitoba have been operating under a co-operative agreement since 1951;

AND WHEREAS a joint report, setting out certain recommendations of Committees on Confederation appointed by the Canadian Council of Professional Engineers and the Engineering Institute of Canada, dated March 18th, 1959, including a recommendation for the implementation of the recommendations contained in the report, was subsequently approved by both groups;

AND WHEREAS an Engineers Confederation Commission, made up of representatives of the eleven Provincial Associations comprising the Canadian Council of Professional Engineers and the Engineering Institute of Canada, was subsequently appointed and presented a final report dated April 15th, 1961, including a proposed charter, by-laws and procedure for implementation of confederation;

AND DESPITE THE FACT that some amendments of a minor nature may be made at the request of both groups;

BE IT RESOLVED that the members of the Association of Professional Engineers of the Province of Manitoba, assembled here at the 42nd Annual Meeting, go on record as being in favor of the implementation of the final report of the Engineers Confederation Commission, either in its present form or as it may subsequently be amended;

AND BE IT FURTHER RESOLVED that this meeting urges the incoming Council of the Association to give earnest consideration to advising Canadian Council of the views stated above and to taking all necessary steps to assist in achieving confederation.

Greetings from other Associations were presented by Mr. Sentance (Ontario), Col. Medland (Ontario), Mr. Pardoe (Saskatchewan), and Mr. Allison (Alberta).

Dr. Landon announced that the following officers had been elected: President, R. E. Chant; Vice-President, T. E. Weber; Secretary and Registrar, O. Marantz. The gavel was turned over to the new President. Prof. Chant presented a past president's certificate to Dr. Landon, the outgoing President. Prof. Hoogstraten paid tribute to the long and valuable service rendered to the Association by Dr. Landon, in presenting him with an Honorary Life Membership, which was followed by a standing ovation for Dr. Landon. Dr. Landon presented to the Association an oil portrait of himself, which now hangs in the Association office. Dr. Landon was Registrar of the Association from 1934 to 1960 (a Canadian record) and was President in 1961.

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R. E. Chant, President 1962

The new president of the A.P.E.M. for 1962 is Professor R. E. Chant, head of the Mechanical Engineering Department at the University of Manitoba. Ray brings many fine qualifications to his new job as president — a member of the Association since 1953 his committees include Board of Examiners and Professional Development. First elected to Council in 1959 he was re-elected in 1961 and also appointed Vice-President that year. He has twice represented the Association at meetings of Canadian Council and most recently has just returned from representing us at the Ontario Association Annual Meeting.

Ray's background includes early life at Brandon, schooling at MacGregor, attendance at Brandon College which he left for war time service with the R.C.A.F., an engineering course begun at Manitoba and completed at McGill in 1948 and a Master's Degree in 1950. Ray is married and has two children.

The Association looks forward to a busy and rewarding year under the direction of this energetic and able young man.

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Staff Appointments

It was learned today from usually reliable official sources that R. C. (Tyron) Somerville, P. Eng., Editor of the Bulletin for the past two years, has been prevailed upon to make available his experience and talents, and remain with the editorial staff as Editor Emer-

itus. The salary was not disclosed. Mr. Sommerville, well known to our members through these columns, and by his television appearances, is also Waterworks Engineer for the Metropolitan Corporation of Greater Winnipeg.

Mr. Sommerville's successor as Editor of this paper is J. C. Gillespie, P. Eng. Mr. Gillespie advanced through the ranks until he was appointed Managing Editor in 1960. He brings to his new position a wealth of experience in the field of journalism, most of which was gained during his term as Managing Editor, a position created for him to ensure that he did most of the work required to bring out the paper.

Chris graduated in Electrical Engineering in 1956 at the University of Manitoba. He was awarded an Athlone Scholarship, and spent two years in the United Kingdom, the first year at University College, London, doing research work on travelling wave tubes. The second year he spent with the British G.E.C. working on antenna systems. On his return to Winnipeg he joined the Manitoba Telephone System as Supervisory Engineer, Radio Relays, and is currently Supervising Engineer, Special Services.

As Captain of the "St. Peter", the sail boat built by the students of St. John's Cathedral Boys School, Chris was in the news when the manoeuvres necessary to take the St. Peter under the Redwood Bridge received prominence in the local papers. Not quite so well known is the fact that he serves as tutor to the boys in High School subjects and navigation.

For recreation, hunting is first on the list for Chris. He is also interested in flying, having recently qualified for his commercial pilot's licence.

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Your Future in Manitoba

Submitted by the Public Relations
Committee

Are you sure you will be here in 1970? In the past ten years Manitoba has lagged behind the Canadian average in growth of industrial employment. If present trends continue there will be 335,000 jobs in 1970 and a potential labor force of 375,000. Unless something is done this will see us in the vortex of unemployment — emigration from Manitoba — slowing down industrial expansion. Hence more unemployment, emigration, and so on.

The present annual industrial growth rate of employment is 1.1 percent. If we are to keep pace with the natural increase in the labor force this rate will have to be increased to 1.7 percent. Any way you look at it, more capital investment will be needed.

In the period 1946-1959 capital investment increased at an average annual rate of 7.3 percent. If capital investment is the only tool used to fully employ the future work force, it is estimated that the rate will have to be increased to 11.3 percent.

Faced with this prospect the Government of Manitoba has set up a "Committee on Manitoba's Economic Future." The Committee combines members of management, labor, agriculture, university and the general community. Their function will be to find out where we are now and to point out the way ahead.

The new jobs must come from the primary, secondary, tourist and service industries. Therefore, they will be studied in detail. At the same time other facets are being investigated, such as transportation, water power and labor resources; business taxes and labor laws.

The problem is so urgent that the final report is scheduled for February, 1963. More than a dozen special committees are already under way and a number of engineers are working on them. The task is so large that it requires the active assistance and participation of as wide a segment as possible of people interested in Manitoba and its future. If you are asked to help, remember it's your future.
—J.W.J.L.

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CONGRATULATIONS

To Ruth and Ralph Ferguson on the birth of a son, Douglas Keith, on January 17, 1962.

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ENGINEERS AVAILABLE

There are several members registered with the Association office for employment, including:

- P. Eng. No. 1—B.Sc. M.E. 1957.
- P. Eng. No. 2—B.Sc. C.E. 1959.
- P. Eng. No. 3—B.A.Sc. Elec. 1948.
- P. Eng. No. 4—B.Sc. C.E. 1958.
- P. Eng. No. 5—B.Sc. M.E. 1958.
- EIT No. 1—B.Sc. C.E. 1961.

STUDENTS AVAILABLE FOR SUMMER EMPLOYMENT

- Eng. Pupil No. 1—3rd year mechanical.
- Eng. Pupil No. 2—2nd year.

FLIN FLON NEWS

By M. N. COLLISON, P. Eng.

Effective November 1st, E. S. Austin, P. Eng., General Manager of the Hudson Bay Mining and Smelting Co., Limited, was named director and vice-president in addition to his duties as general manager. Such a promotion could not have been more merited by a finer gentleman.

At the same time, W. A. Morrice, P. Eng., was promoted from general superintendent to assistant general manager.

Also effective at the same time, L. W. Ogryzlo, P. Eng., was made director of exploration and development. This is the first opportunity to report on Larry. Although he has been around Flin Flon for a good many years, he has only been registered as an engineer since last fall. Larry has a B.Sc. in civil engineering from the University of Manitoba, earned in 1933. He also is a graduate of Michigan College of Mining and Technology, with a B.Sc. in mining engineering in 1940. He is married and has two teen-age boys. Prior to his becoming director of exploration and development, he was technical assistant to the general manager for several years.

A. A. Koffman, P. Eng., is still in Florida. What with the weather the way it has been, many of the fellows have been commenting, "Why can't they find a mine in Florida?"

D. F. Whalley, P. Eng., has been transferred from Flin Flon to Snow Lake, where Doug is now equipment and ventilation engineer for the various mines in that area.

I noticed in the last issue of *The Manitoba Professional Engineer* that R. C. Brewer, who has been acting town engineer for Flin Flon for the past few months, has been raised to full membership from his previous status of engineer in training.

A poll of various additional members shows that they are either hibernating or those of the more rugged type are curling.

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Summer Employment Requirements

Students from The University of Manitoba who are Engineering Pupils with this Association, are registered with the office for summer employment. Employers are asked to contact the office with their anticipated requirements and an effort will be made to satisfy both employers and students.

ENGINEERS WANTED

No. 1—Senior municipal engineer for consulting engineering firm.

No. 2—Civil engineer with 4-5 years experience.

No. 3—Civil Structural, 3-5 years experience in concrete and steel design.

No. 4—Recent graduate interested in public relations and structural design.

No. 5—Electrical, 5-10 years experience on radar or communications, microwave.

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Shielding Analysis

By J. E. Whenham, P. Eng.

The need for protection from sources of radioactivity is not new as scientists have been working with radioactive materials for a number of years. However, the application to be discussed here is quite new and its importance increases as the possibility of nuclear attack increases.

Some experts estimate that in the event of a nuclear war more people will lose their lives as a result of exposure to fallout than those exposed directly to the blast or the heat from the blast. For this reason the Canadian Government has published considerable material to make the public aware of methods of protecting itself from exposure to radio active fallout. Protection of yourself and family is quite simple if a little advance preparation is made in the form of a basement fallout shelter, a backyard shelter, a municipal or community shelter. Fallout shelters are designed to protect those who are fortunate enough to be outside the blast area, and unless specifically designed to resist blast should be considered as useful only as protection from radiation.

To understand better the protection that may be afforded by a shelter it is well to know what fallout is and how it acts. Fallout is the sand or clay that is sucked up from the bomb crater after the blast. The materials of course reach a very high temperature in the fireball and are mixed with fission products and other residue of the bomb to become carriers of very highly active materials. The particles rise with the cloud and spread out many miles above the earth where they are picked up by the wind and begin to drop back to earth in a path down wind from the blast. These particles are of varying sizes, the heaviest ones dropping first while the smaller ones may not come down for a day or two possibly many miles away. It is estimated that several thousand square miles may be contaminated by the fallout from a 5 megaton bomb. The quantity of fallout depends of course on the distance

of the bomb detonation from ground level. A blast at or near the ground produces the greatest quantity of fallout and the largest crater.

The fallout in the affected area downwind will fall on all surfaces as any dust particles would do. As most people will take refuge in a building of one type or another it is the analysis of structures with which I shall deal. There are in general two major locations which must be considered; namely, the fallout on the roof and the fallout on the ground outside the building.

There are two methods to protect oneself from radiation. The first, called "barrier shielding", consists of placing a barrier between the source of radiation and the persons to be protected. The amount of protection depends upon the density of the barrier; that is, the more dense the barrier the more radiation that is attenuated by it. The second form of protection is called "geometry shielding" which simply means that an increase of distance between the source and the person to be protected will reduce the intensity of radiation. A combination of these two forms of protection is used in the analysis of any given space as a shelter.

Particles of radioactive material on the ground outside a building emit rays in all directions. From our refuge within a building we are only concerned with those rays which travel towards us. This radiation will pass through the outside walls with a reduction of intensity dependent upon the density of the protecting material. The concrete of the basement wall is good protection compared with possibly a wood stud wall with wood sheathing and siding and maybe a plaster finish on the interior. Windows are of little shielding value and must be filled in with a dense material in adapting a space to fallout shelter use.

Fallout on the roof acts very similarly. For occupants of the building, radiation downward is the only direction of concern and again the intensity depends upon the density of the roof, ceiling, floors, etc., overhead.

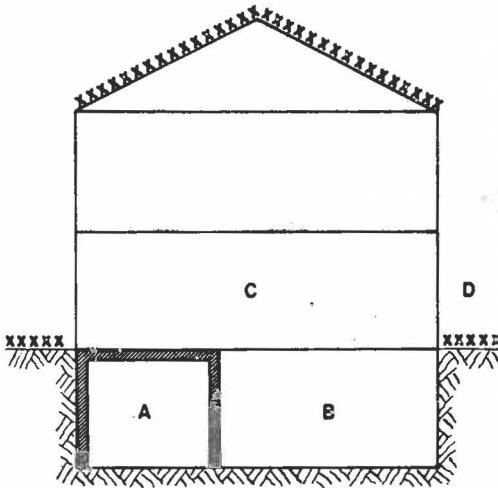
Let us consider an ordinary one-storey home with a basement and assess the adequacy of the basement as a shelter and find out what extra protection must be added to give it a protection factor of 100. The Federal Government's Panel on Research has stated that a Class B fallout shelter requires a minimum protection factor of 100. Protection factor or P.F. is the reciprocal of the reduction factor and may be calculated for every condition of barrier, location of source, etc. In most homes there is a foot or two or more between grade and ground floor. This projection above grade is the only area of basement wall that need be

considered, as the part below grade is shielded by the mass of the earth which provides good protection. The exposed basement wall must have no windows, or have the windows filled in with a material of equal density to the walls, to attain a P.F. of 100. It will be found that most home basement walls are not sufficiently thick and must be increased to 16 inches.

Another path of radiation which must be considered is that which passes through the outside wall above the ground floor, a portion of which is deflected through the ground floor into the basement. The density of both floor and wall contribute to the resistance factor. In most homes neither is adequate. There is considerable cost advantage to apply shielding to the basement ceiling only, as it will also protect the basement occupants from fallout on the roof.

The third source that must be checked is that which passes through the roof, ceiling and floor into the basement. It is a combination of these three calculations that makes up the resistance factor and thus the protection factor. These calculations indicate that about 8 inches of concrete overhead just below the first floor joists, considered in conjunction with the 16 inches of protection in the basement walls, as well as the contribution of the normal materials of the roof and floor are adequate for a P.F. of 100. This means that the amount of radiation absorbed by a person protected in this shelter would be 1/100 of that if he were unprotected outside the building. It is interesting to note that considerably less shielding material is required overhead, because in the case of a basement shelter, the roof structure separates the occupant from the source of activity, providing geometry shielding. A copy of Blueprint for Survival No. 1, "Your Basement Fallout Shelter" may be had free from the local Civil Defence office or the Provincial Government. This booklet indicates the construction details and how the increase in shielding may be accomplished as well as an outline of furnishings, equipment and supplies, etc. A comparison of dosages acquired in different locations of the same building is illustrated in Fig. 1.

An example such as the one discussed is quite simple. However, there are numerous factors in actual practice which complicate the problem. In the analysis of existing public buildings one often finds that each exposure is different; i.e., on one side a street may exist which reduces the width of ground fallout that will affect the exposure under consideration. On another side or sides other buildings may provide complete shielding making an analysis unnecessary. The roofs of adjacent buildings may have an effect on upper floor areas which might be considered for



PROTECTION FACTORS

A = 100	C = 3
B = 30	D = 1

ASSUMING THAT INITIAL INTENSITY IN AREA AT (H+1) HRS WAS 1000 ROENTGENS / HR., TABLE GIVES DOSAGE ACQUIRED IN EACH LOCATION.

TIME	A	B	C	D
H + 2 hrs.	6.2	21	206 (sick)	620 (dying)
H + 7 hrs.	16	53	533 (dying)	
H + 2 days	27	90		
H + 2 weeks	33 (O.K.)	110 (slightly sick)	dead	dead

FIGURE 1 - PROTECTION FACTORS AND EFFECTS

shelter use. The analysis of the contribution from a roof may be affected by interior partitions and the subject may have a combination of roof, floor or floors and interior partitions all contributing to the shielding. The contour of the ground can provide protection for a building. The sharp drop of a river bank can shield a basement or ground floor effectively and possibly only a limited width of affected area may contribute. A body of water in itself is good protection in that many of the particles sink and the water effectively shields.

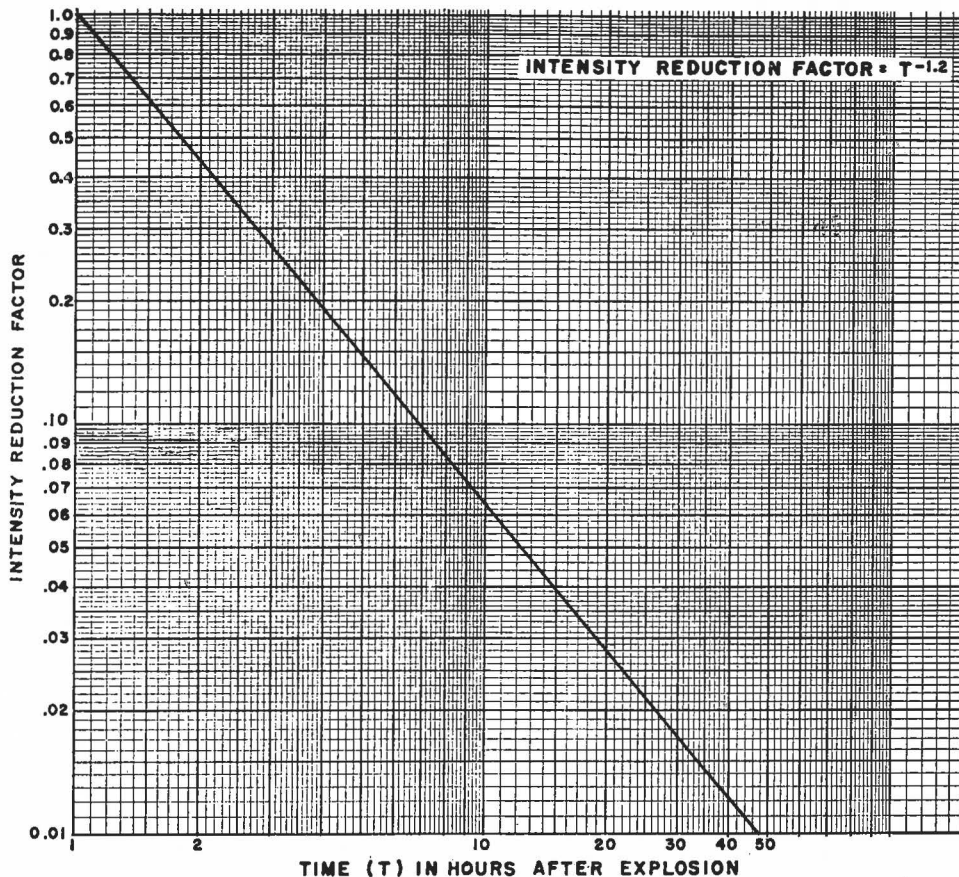
Upper floor shelters in multi-storey buildings must be analyzed somewhat differently. The roof contribution calculation does not vary but the effect of fallout on the ground is substantially reduced by distance or geometry shielding. It is possible to choose a floor in any given multi-storey building sufficiently far below the roof and sufficiently far above the ground such that the radiation from each source is equal and thus establish the safest space other than basement, in the building. In most Winnipeg buildings this space would not have a P.F. equal to 100 unless the window openings were bricked in.

Many basements in existing buildings are

made up of a number of rooms and due to exposure, distance from outside walls and windows and thicknesses of partitions each of these rooms may have a different P.F. and could well vary from near zero to well over 1000. To provide adequate protection in case of emergency each room that can possibly be used should be analyzed and marked appropriately. This should, of course, be tied in with a proper program of education of the public, with allocation of space, adequate facilities for ventilation, food, water, and sanitation. Entrances to basements to be used as shelters may need a concrete block baffle wall to prevent direct radiation from entering. The ventilation system in a public shelter that might be housed in a downtown office building would continue to bring in outside air, but as the filters will now trap not only "clean" dust but "radio active" dust, the filters must be shielded to prevent occupants of the shelter from getting an over dose of radiation from the filters, which are usually housed in a fan unit in a basement room.

Gamma particles which contribute the major portion of the radiation to which we are likely to be subjected have a rapid rate of decay so that the intensity reduces very quickly.

FIGURE 2 - DECAY RATE OF FISSION PRODUCTS



See Figure 2. The intensity may be much reduced by the time the fallout has settled to earth, particularly in areas some distance from the blast centre. This fact is very important and without this decay factor being in our favor it might not be worthwhile to even consider any protection. However, with this rapid decay rate and the relative ease with which an individual or a community could protect itself it would seem very worthwhile to make this effort in the hope that a solution to world problems would be found before a second attack.

On the hopeful side the Canadian Government has completed a program of analysis of all Federal Government buildings and is now studying the costs and methods of bringing to an acceptable P.F. as many of these buildings as possible. New Federal and Provincial buildings are being constructed with basements easily adaptable for shelter use. This space which is now available or under construction will only house a small portion of

the population. If adequate shelter space is to be available in an emergency many more agencies and individuals must do something about it.

One word of warning to the individual may be in order. If you are having a fallout shelter built in your new home or in the basement of your existing one, take the trouble to ensure that the drawings have been stamped by the Emergency Measures Organization. They are a Federal Government Organization who have published a number of booklets on the subject of survival and are currently preparing more. They have a staff who will check any contractor's design and if it comes up to an acceptable level of protection they will certify it as adequate.

Considering the genius shown by Engineers and Scientists in splitting the atom, the development of nuclear bombs, ways and means of protecting oneself if attacked and exposed to nuclear fallout, it would seem reasonable to

expect the same degree of genius to be present in working out ways and means of enjoying oneself in a fallout shelter if one must be so confined. One might wish to improve one's mind at Scrabble. The possibility of being confined with the shelterless blonde from across the street as well as one's wife might appeal to a few. The older Engineers may prefer liquor.

BIBLIOGRAPHY:

- An Engineer Looks at Fallout Shelters
- 11 Steps to Survival
- Your Basement Fallout Shelter

All prepared by the Emergency Measures Organization.



LOST, STRAYED OR STOLEN?

Mail sent to the following members has been returned to the office. Anyone knowing the whereabouts of any of them is asked to telephone the office.

R. Gowland, L. E. Hansen, L. A. Buhr, A. C. Mackey, R. W. Kelly (Calgary), A. Harms, C. Crust, F. J. Raal (Toronto), J. Clarke (Grand Centre), H. C. Henderson,



ENGINEERS SWEEP IN ALUMNI 'SPIEL

Engineers dominated play in the 19th annual bonspiel of the Alumni Association of The University of Manitoba, as Bill Ayres led his rink to victory in the main event and Sigi Goodbrandson's men took the Consolation. With Bill capturing the Dr. A. B. Alexander Memorial Trophy were Harry Pascoe, George Dyck and Nick Partyka. Sigi went with Barry Strange, Doug Struthers and Ron Gordon. Another Engineering rink, Ken Hallson, Skip, Bob Stewart, Ed Mirosh and Bill Morris reached the fours of the Main Event.

The Ayres rink entered the fours by defeating Bill Adams, last year's finalist and went on to gain the final by beating John Iverach's Accounting foursome. Herb Williams of Commerce, defending champions, knocked three Engineering rinks, Clyde McBain, Mike Green and Ken Hallson, out of the Spiel in successive games, to reach the final. The final was a closely fought game with Ayres carrying a 5-4 lead into the last end and then holding Williams off to take the honors.

With the engraving not yet completed on the trophy, the other Engineering rinks were talking "next year" when the 20th Annual Alumni Bonspiel will open January 14, 1963. —K.H.

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FEES ARE \$18.00 AFTER MARCH 1st

WHENHAM GETS AN A

J. E. Whenham of this Association was one of 52 candidates who attended a course in Shielding Analysis Techniques held in Arnprior last Fall. R. B. Curry, Director, Emergency Measures Organization, has advised the Association that Mr. Whenham was one of four candidates receiving an "A" on the written examination. According to Mr. Curry's letter, the "A" signifies "Outstanding." Congratulations Jim.



Letters to the Editor

The Editor:

Recalling the temptation of a comfortable bed on the morning of the recent Annual General Meeting I am hardly in a position to criticize. Indeed, I must confess that had it not been for the fear of being dragged down town to shop on a Saturday just before Christmas I would have succumbed to temptation. Consequently there could easily have been one less present and one more absent. One more or less in relation to a thousand members seems insignificant. However, as the afternoon session progressed many of the small percentage of members present started to drift away and there came a time when one member was very significant. Near the end of the meeting the guests from other Provinces were asked to say a few words and if one more of us had been absent the guests would have outnumbered the members present. This was to the point of being embarrassing.

BRIAN WHITFIELD.

JACK SPEIRS VERNER

Jack Speirs Verner passed away in Winnipeg on January 13th, 1962, after a short illness. With his passing the Association loses one of its fine young members. Jack graduated in Civil Engineering from the University of Manitoba in 1951 and was employed by the Manitoba Government since that date, first with the Water Resources Branch, then with the Lakes Winnipeg and Manitoba Control Board and latterly with the Water Control Commission. Jack was an enthusiastic curler and duck hunter and also enjoyed a good game of bridge. The sympathy of the Association is extended to his wife Alice, his mother and father, two sisters and brother Richard.