

JOURNAL

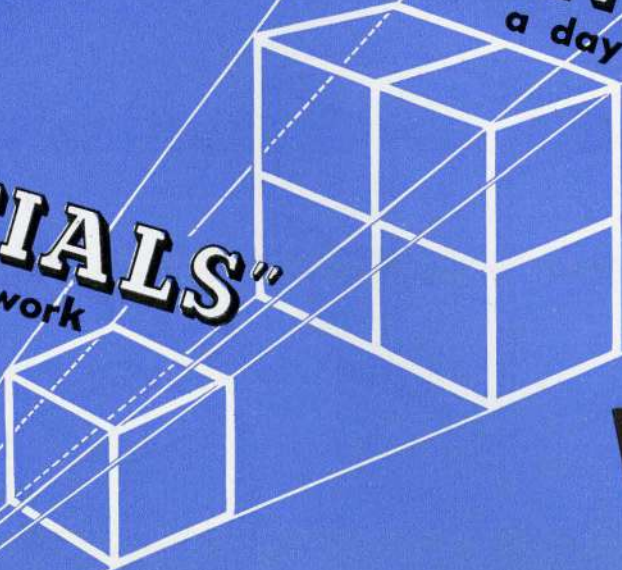
ROYAL ARCHITECTURAL
INSTITUTE OF CANADA



VOL. 20 TORONTO, NOVEMBER, 1943 NO. 11

"STANDARDS"
a day's work

"SPECIALS"
a day's work



IN SHEET METAL

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Economy!

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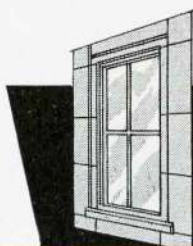
The secret . . . there really isn't any . . . was simply *standardization*.

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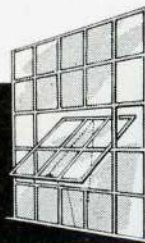
This lesson can be applied to all post-war construction WHERE ECONOMY IS OF MAJOR IMPORTANCE. By concentrating on "Standards" . . . by aiming to get as many "identicals" as possible, a designer is saving time and money for the owner, and perhaps some worry for himself.

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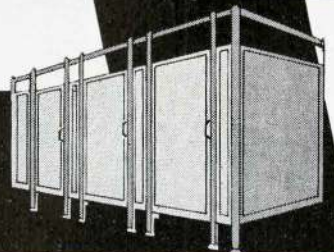
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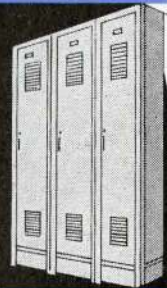
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JOURNAL

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

Serial No. 219

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R . A . I . C .
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NOVEMBER 1943

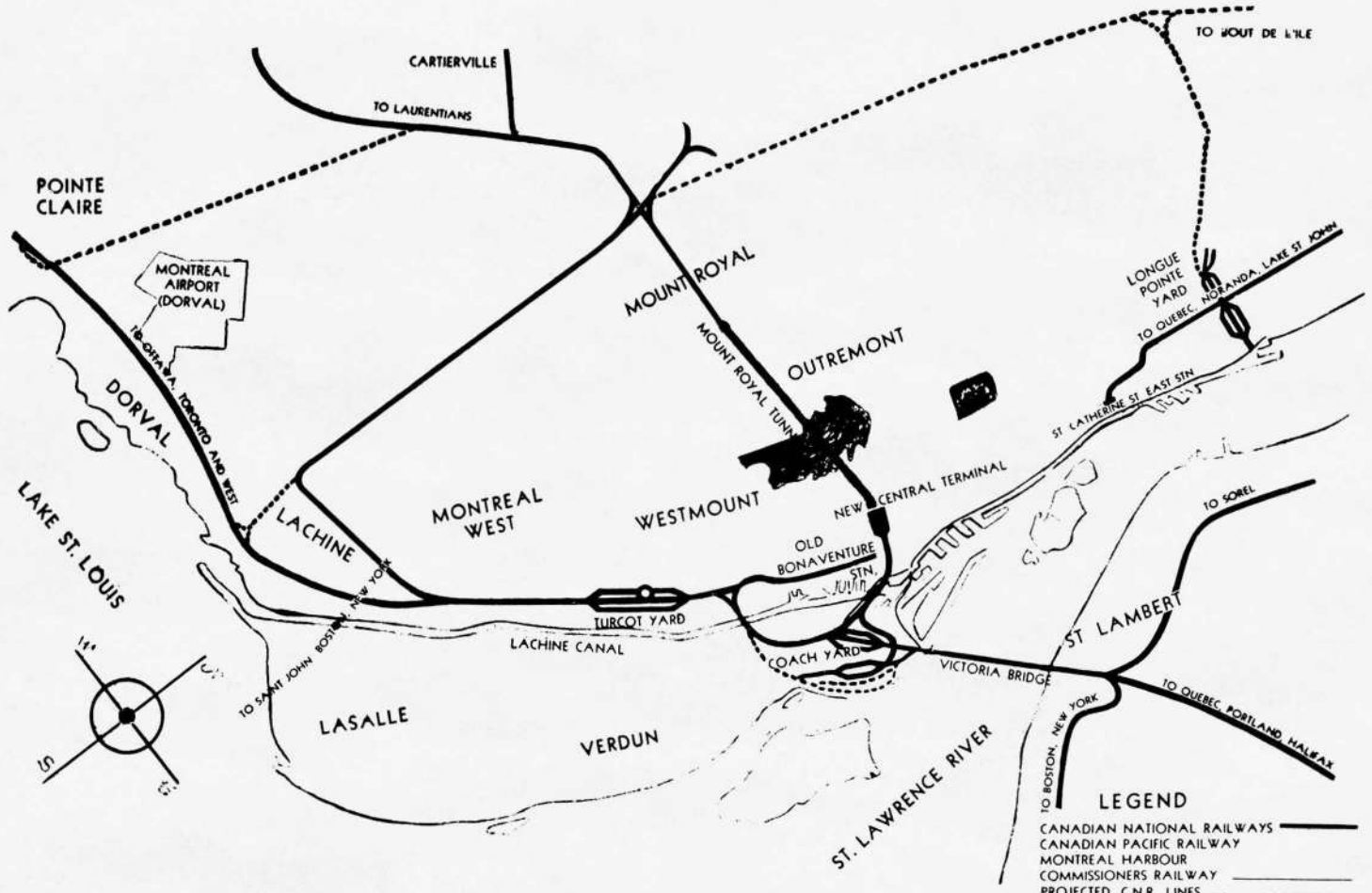
ONE of the outstanding changes in policy in the Institute during the war years is shown by the active interest which the Council is showing in Town Planning. Before the war, architects as individuals did heroic work in this field in many Municipalities. No member of the profession has ever, to our knowledge, received a fee for his services on Town Planning Committees, but many a project rests in municipal archives on which architects' time and talent have been given unstintingly. The little limelight, which they enjoyed, faded when the torrent of abuse, which seems to be the inevitable and traditional conclusion to all Town Planning proposals, had died away. In the past, the bodies competent to pass on the merits of a Town Planning project—the Royal Architectural Institute and the Engineering Institute of Canada—have been silent, and the enthusiastic architect, with his colleague the engineer, have been lost in the maelstrom produced by an embattled press, rival factions of city councils, realtors and property owners. That day we trust has gone. The public expects our cities to be replanned, and they will be influenced in their judgment by the considered opinion of competent societies. Of those, the Royal Architectural Institute of Canada will, by present signs, be a leader.

EARLY this year, at the instigation of this page, the Institute endeavored to obtain information regarding the state of planning in the larger Canadian towns and cities. That the results were disappointing may be judged from the fact that no replies were received from the two largest cities in Canada. The most complete data came from the Province of Saskatchewan. Nothing daunted, the Council is again in the fray. A questionnaire is being prepared and will soon be circulated to the Mayors of all Canadian towns of 7,000 population or over. The information so received should be of considerable value as a basis for post-war reconstruction.

A MATTER requiring urgent attention and one on the evils of which Provincial Governments and Municipalities are agreed is the pernicious method of subdividing land by "metes and bounds". A committee of the Institute might well make this the subject of a study that could be presented to the Annual Meeting, which could recommend the publishing of its findings. While such an anachronism is possible in suburban land subdivisions, we fail to see how planning will be enforced in the future. It is a technique of the subdivider that (under existing legislation) frustrates every effort of our planning departments, and should be abolished before the end of the war.

WE are indebted to Mr. J. Roxburgh Smith for his untiring efforts on behalf of the *Journal*. The form in which the Editorial appears in this issue is due to his interest. Many members felt that the Editorial page was difficult to read and Mr. Smith kindly came to the conclusion that it was the form rather than the matter that was at fault. Hence the new page.

CANADIAN NATIONAL RAILWAYS—MONTREAL TERMINAL DEVELOPMENT—NEW CENTRAL STATION



MAP SHOWING RELATION OF NEW CENTRAL TERMINAL TO EXISTING AND PROJECTED RAIL LINES IN MONTREAL AND VICINITY

THE New Central Station in Montreal was opened for operation on July 15th, 1943. Thus another milestone was reached in a public utility development dating back to 1911, when the Canadian Northern Railway Company bored the tunnel through the mountain to the uptown centre of Montreal.

The station forms but a part of the Terminal Development, although it bulks in the public mind as the principal part. This is not surprising since a considerable area in the centre of the City has been radically changed in appearance. The public is doubtlessly aware of the connecting lines, new yards, operating buildings and grade separations, but these are not spectacular and draw little attention.

LOCATION

The Terminal proper is located 125 feet south of St. Catherine Street; starting at Cathcart Street on the north it extends to St. Antoine Street on the south, a distance of approximately 1,700 feet, with Dorchester Street, the future Belmont Street and Lagachetiere Street crossing the length in the order named. On the west it is bounded by Mansfield Street and on the east by St. Genevieve, a distance of approximately 650 feet; at the north end McGill College Avenue is 100 feet west of the centre of this width. The Station Building appearing above street level is about the centre of the length.

OFFICE OF THE CHIEF ARCHITECT,
CANADIAN NATIONAL RAILWAYS,
JOHN SCHOFIELD, CHIEF ARCHITECT



EXTERIOR FROM THE NORTHWEST



The original station, known as Bonaventure Street Station, was built by the Montreal & Lachine Railway, later the Montreal and Champlain Railway Company. The Grand Trunk began using it in 1863, instead of the station at Point St. Charles which had been in service since the line was opened to Brockville in 1855.

The construction of the present station known as Bonaventure Station was begun in the latter part of 1886 and the building opened for business in October, 1888.

TOPOGRAPHY

A few of the salient features of the topography may help to visualize the town-planning features which came into the design of the Terminal. The track level in the Terminal is practically the same as at Victoria Bridge (across the St. Lawrence River), 41 feet below the street level at the portal to the mountain, i.e. at Cathcart Street, 51 feet below Dorchester Street, 18 feet below Lagachetiere Street and approximately 18 feet above the general downtown level at St. Antoine Street. The relation of Cathcart and Dorchester Streets suggested that an extension of McGill College Avenue at the same grade as the existing street would pass under Dorchester and result in the lowest grade connection between uptown and downtown Montreal and at the same time lessen the drop from the street to a concourse level. This idea became in part an actuality by the construction of East Street; this street, at the Station, is only one floor above the concourse.,



BIRD'S-EYE VIEW OF THE EXTERIOR FROM THE SOUTHEAST

OVERHEAD BUILDINGS AND STREET LAYOUT

The overhead sites formed a most important consideration in the development of the scheme. Properly developed, the revenue from these sites will make a considerable contribution to the carrying charges of the central property. It might be mentioned that in the boom times of 1929, the income from overhead rights at the Grand Central Terminal in New York covered all carrying charges.

The large area requiring excavation lent itself to the development of overhead buildings, all of which north of Lagachetiere Street have one common floor level at the concourse level, which, incidentally, is the level of Lagachetiere Street.

The overhead building possibilities and the low grade street connections between uptown and downtown were material factors, therefore, in the street layout. The street plan shows a new street, East Street, on the east side of the concourse building. This rises from Lagachetiere Street to Belmont Street, one floor above the concourse, passes under Dorchester and up to Cathcart Street. A similar future street is shown on the west side of the concourse



EXTERIOR FROM THE SOUTHEAST



VIEW FROM MANSFIELD STREET

building forming a continuation of Inspector Street, rising from Lagauchetiere to Belmont, passing under Dorchester and up to Cathcart where it joins McGill College Avenue. These two north and south streets are connected by cross streets, one immediately north of Dorchester, North Street, the other south of the concourse building forms an extension of Belmont Street. There is a scheme for Belmont Street to cross over the two north and south streets by grading up from University Street on the east and dropping to Mansfield Street on the west; this scheme has the merit of cutting out two intersections. Another proposal for the development of the lower end of the property with access from the upper levels is indicated by a north and south street heading from Belmont Street to the south and crossing over Lagauchetiere Street. This makes possible an upper level development of the unusually large block between Lagauchetiere and St. Antoine, Inspector and St. Genevieve. It can be further divided by streets into reasonably sized building blocks or provides an opportunity for the development of a large self-contained scheme.

In order to forestall the criticism of creating congestion in street traffic at the north end of the property, a four-lane vehicle subway is proposed. It starts just south of Burnside Street, ramps down to pass under St. Catherine and Cathcart and emerges between Cathcart and Dorchester, where it connects with extended Inspector Street and New East Street via North Street. It might be mentioned in passing that the City and District Bank, in their new building at the corner of St. Catherine and McGill College Avenue, provided for an access to the concourse level via a corridor paralleling this subway.

MODEL

The ramifications of the scheme made it hard for the executives of the Company or any but technical men to grasp all the proposals from drawings and pictures, so a model was constructed. This model has proved intensely interesting and much could be said of it; suffice it to say it achieved its purpose in conveying to the executives and interested public bodies the vision of a development somewhat comparable to Grand Central Station or



ENTRANCE AND EXIT KIOSK—EAST END OF DORCHESTER STREET

Rockefeller Centre in New York. For the future it will simplify discussions between prospective clients, their Architects and the Railway, for, if Canada is to advance, Montreal will share in it and these central vacant sites cannot be ignored.

STATION BUILDING

The exterior is a direct expression of the plan and depends largely on the fenestration for effect. The towers are necessary to house the elevators to the upper floors. The requirements in height were so nearly alike that there was no point in treating them differently.

The facing is of Laprairie grey-brown brick, relieved with Deschambault stone copings, window and door trim. On the north face there are three sculptured inserts designed by Fritz Brandtner of Montreal. They depict the elements of transportation—Water, Fire, Commerce; on the two end wall faces and the Lagau-chetiere front the panels depicting Railroad, Shipping and Air motifs were designed by Charles Comfort of Toronto.

The adoption of brick as an exterior facing was dictated by several considerations. The north face may at any time be covered by an overhead development, a considerable part of the south face may be covered by the Belmont Street extension, leaving the only important permanent faces on the east and west ends of the concourse building. It can be assumed that the development on the north will be of considerable magnitude in which case the concourse will be incidental and will present no problem to the designers in form or colour.

Interest in the brickwork has been added by changing the bond and type of jointing; this may be observed in the illustrations, while the size of brick, $9\frac{3}{8}'' \times 4\frac{3}{8}'' \times 2''$, contributes something to the character.

CONCOURSE AND PUBLIC ROOMS

The principal architectural feature in the interior is the concourse. It is spacious and attractive in material and colour without being ornate. Along the centre of the length at 50-foot intervals are the parapets enclosing the stairs and escalators leading to the train platforms. There



DETAIL OF EAST STAIR AND ELEVATOR TOWER

are seven of these stairways and grouped with four of them are escalators. A fifth escalator is placed on the side of the concourse at the east end. They are reversible in operation and can be made to move upwards or downwards in accordance with the flow of traffic.

The west end might be termed the business end, for there are situated, on the north side the Ticket Wickets and Sleeping Car Wickets, Travel Bureau, Information Counter, Telegraph Office and Travelling Passenger Agent's Office; on the south side the Hand Baggage and Parcel Checking counters, Transfer Office, News Stand and Public Telephone Room. At the extreme west end, across the width of the concourse is the Restaurant. The placing of these facilities at the west end takes advantage of the lesser need for congregating space, since at this end are situated the suburban tracks to the north. Suburban passengers use the shortest possible route to and from trains, in and out of the station.

At the east end are the General Waiting Room and other facilities which are likely to be used by passengers who have time on their hands. These include, on the north side, the Women's Waiting and Retiring Rooms, Travellers' Aid, Navy and Army R.T.O., Air Force R.T.O., Service Men's Room; on the south side the Men's Room, Barber Shop, Drugstore and Soda Bar and further south the Immigration



DETAIL OF WEST ELEVATOR AND STAIR TO OFFICES

Offices and Waiting Room, Reception Room, Lost and Found Department, Staff Rest Room, etc.

The General Waiting Room forms an extension of the Concourse and is one of the most practical features of the station plan, since passengers can be seated out of the way and yet within sight of the life and movement in the concourse.

The Women's Waiting Room is panelled in oak and furnished with benches, tables and chairs. Features of the women's quarters are a Quiet Room for women who must rest and a Nursery en suite with the Medical Department where a trained nurse is in attendance. The walls and stalls of the toilets and bathrooms are in shell pink and black vitrolite.

The Men's Rooms, south of the General Waiting Room are in pearl-grey vitrolite walls and black vitrolite stalls. A feature of the men's quarters is the large number of baths and showers. The Barber Shop is located between the bathroom and the concourse and is entered from either.

Northward from the General Waiting Room a wide passageway leads to Dorchester Street; off this passageway a large room has been set aside for the use of the armed forces. It is operated by the Canadian Legion and is fitted as a lounge, reading and writing room. The room is equipped with a kitchen.

The Main Restaurant is of the low horseshoe counter type with four separate bays. There are a number of individual tables and these, together with the counter, provide accommodation for about 100 people. Immediately north of the Restaurant there are three private dining rooms each 33 feet long by 22 feet wide, supplied from a service kitchen. These rooms are separated by folding partitions which can be rolled back to allow the three rooms to be turned into two rooms or one room, as desired. This space will accommodate at least 165 people at a sitting.

The Public Address system in the station was installed by the Northern Electric Company. Six outlets in the concourse ceiling provide an excellent voice reproduction. Outlets are also provided in many of the public rooms where the intensity is adjusted to suit the room and on the platforms. A separate public address system from the operating tower gives train arrival and departure information to the Express and Baggage Rooms in the sub-track level.

VENTILATION

Air for ventilation of the concourse is supplied from outlets located along the north and south sides of the ceiling and from the east and west walls. This air is directed downward at sufficient velocity to reach the floor level. Four exhaust air ducts are located one in each corner of the concourse, where the air is drawn off near floor level. This exhaust air can be re-circulated in any proportion desired to suit weather conditions and occupancy.

All air supplied is filtered to remove dust and, in addition, is heated and automatically controlled in winter to the degree necessary to keep the concourse at a comfortable temperature at all times.

Separate supply and exhaust systems are provided for office, restaurant, kitchen and waiting room areas on the concourse level. All temperature control is automatic.

PLATFORM AND SUB-TRACK LEVELS

There are seven passenger platforms serving fourteen tracks, one platform for Inward Baggage and Express and one

other for fish, milk, etc. The platforms are flush with the level of the passenger car vestibules. This results in the cars being emptied in one-third of the time ordinarily required for low platforms where passengers have to climb up or down car steps.

A further and equally important feature of these platforms is that for the greater part of their length they are reserved for passengers. All baggage, express and mail is moved to and from trains by ramps situated near the ends of the platforms. Some of the platforms at the south end, where converging tracks made baggage ramps impossible are served by elevators. The elevators operate by means of movable platforms on either end; the weight of a man or tractor will operate the doors.

Below the track and platform level is the sub-track level, which is on the same level as St. Antoine Street. On this level is situated "behind the scenes", the operating staff of the station. From the standpoint of train operation it competes with the signal tower and the despatcher's offices for the title of the heart of the terminal. It contains the transformer room from which flows the current operating trains and lighting systems.

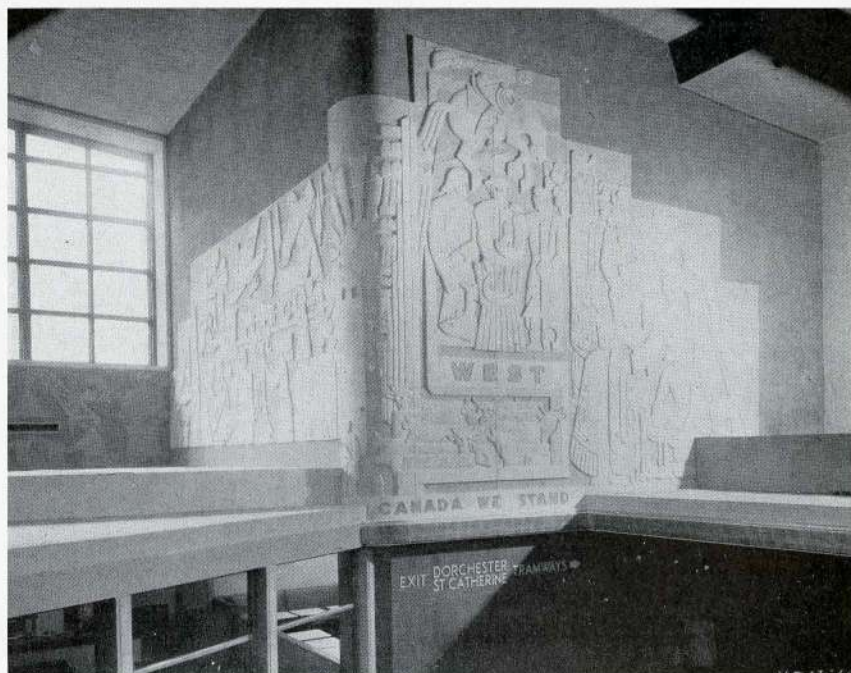
There are two entrances to the sub-track level, one is by roadway from St. Antoine Street, just west of St. Genevieve; the other is off Lagauchetiere Street, just west of the old Tunnel Terminal. From these roadways the sub-track area is entered through doors which operate automatically when cars pass over a magnetic control located about thirty feet from the doors; a similar arrangement operates the doors from the inside.

The Royal Mail occupies a large portion of the south-east section of the sub-track level. This is used for the handling of inward and outward bound mail. The vehicular tailboard doors are so situated that they do not enter the main Sub-Track Area.

The Canadian National Express and Railway Express Agency facilities occupy, almost exclusively, the north-east section of the area. There is a connecting stair and elevator from sub-track level to the street level of the Old Tunnel Station; this is provided particularly for the convenience of clients of the Railway Express Agency who have to do business with the



VIEW ON THE CENTRE LINE OF CONCOURSE FROM THE WEST END



DETAIL OF WALL MURALS AT THE WEST END



AERIAL VIEW OF THE STATION FROM THE SOUTHEAST

United States Customs authorities, who share space with the Railway Express Agency in the sub-track area.

The Baggage Room is situated in the north-west section. Off the Baggage Room the offices of the Canadian and United States Customs services are located. The Baggage and Express facilities can be reached by motor roadway leading from the St. Antoine and Lagachetiere Street entrances. There are two elevators in the Baggage Room for baggage movements to and from the Baggage Checking Room in the Concourse. Passengers who have to reach the sub-track level Baggage Room direct or who wish to have baggage passed by the Customs, use an elevator adjoining the Baggage Checking Room in the Concourse.

In addition to these large facilities, the sub-track level also contains numbers of rooms and offices for the transaction of purely interdepartmental railway business; garage facilities for from 90-100 express trucks; Canada Railway News; sleeping and dining car facilities.

ENTRANCES AND EXITS

The station is well provided with entrances and exits. For taxi cabs and cars, one of the most important features of Railway Station design, there is one main entrance and one main exit. Taxis and private cars carrying outgoing passengers to the station reach the concourse by driving down the ramp off Cathcart Street almost due south of McGill College Avenue. This three-lane ramp descends to the plaza in front of the station. The main taxi entrance is situated at the centre of the concourse. Returning, these taxis and cars make a circuit of the plaza from west to east and then proceed northward up the ramp to Cathcart Street and McGill College Avenue. Immediately north of the plaza, underneath Dorchester Street Bridge, there is a covered parking space. This, along with other parking areas on the plaza, will accommodate 250 cars.

Generally, incoming passengers, who intend to proceed by taxi or car, will leave the station by the main exit in the centre of the south side of the concourse, although there is nothing to prevent passengers picking up cabs at the north side.



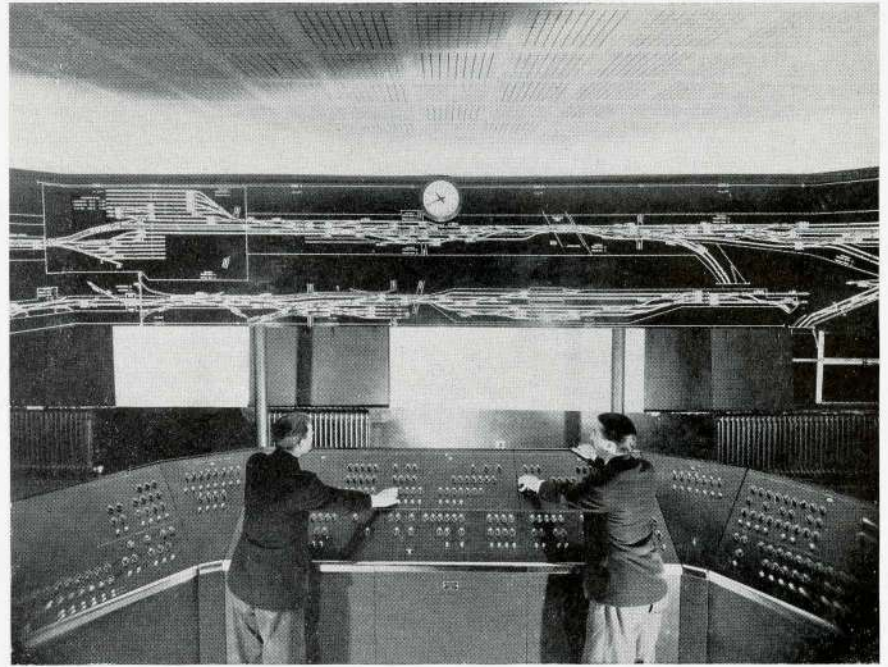
VIEW OF VIADUCT FROM WELLINGTON STREET LOOKING NORTH

The south exit opens upon a wide plaza with a spacious taxi parking area south of it. Taxis draw up to the station door, facing west and, on leaving, move west and south along the station roadway to Lagachetiere Street. Those proceeding north or east may, if they wish, do so by swinging east on Lagachetiere Street, and north up new East Street to Cathcart Street.

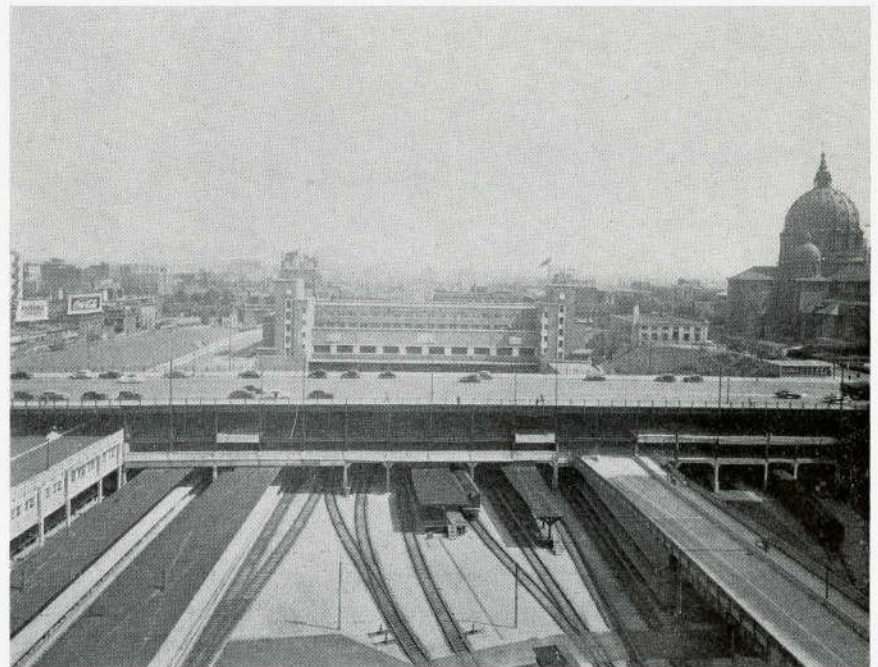
"Where is the main entrance to the Station?" was a question frequently asked in the development of the plans. The answer is, as in the Grand Central in New York, "From all points of approach; there is no main entrance." In the original scheme, where an office building was contemplated between the station building and Dorchester Street, there was a concession to the demand for a main entrance. Combined with the office entrances, banks and stores on the street level, a large entrance hall was developed in somewhat of the conventional manner with stair and escalator connection between street level and concourse. An entrance at this point, however, brings the passenger to the centre of the block, while the natural inclination would be to take the nearest entrance from the point of approach. When the overhead buildings on the east and west ends of Dorchester are developed, entrances will be provided at these points. The present stairs and escalators at the south-west corner of Mansfield and Dorchester and the north-east corner of the property temporarily fulfill this function.

For pedestrians there are many ways in and out of the station. The main entrance from the north or St. Catherine Street is via McGill College Avenue to the south-west corner of Cathcart Street, whence a sidewalk parallels the taxi roadway. This roadway and sidewalk descend, by an easy grade, to the cover of Dorchester Street Bridge at the concourse level. From this point under the Bridge the passenger may enter the wide corridor, which adjoins the concourse at its western end beside the restaurant, or may continue by sidewalk to the taxi entrance at the centre of the concourse. From the corridor mentioned an elevator and stairway lead to the offices over the concourse.

Another entrance from the north is via University, Cathcart and East Streets. At



VIEW IN THE INTERLOCKING TOWER SHOWING THE INTERLOCKING MACHINE AND TRACK DIAGRAMS



NORTH FRONT FACING DORCHESTER STREET

the north-east tower there is an entrance leading to a wide flight of stairs arriving at the east end of the concourse. This entrance off East Street is also one of the doorways to the offices on the upper floors.

Approaching from the west, at Dorchester Street level, there is an entrance at the south-west end of the Dorchester Street Bridge where a covered stairway leads to the wide corridor mentioned in the approach from Cathcart Street. For outgoing passengers an escalator is provided alongside the stairs from the concourse level to the Dorchester Street level.

Approaching from the east, at the north-east corner of the Bridge, adjoining the St. James's Club, there is another covered stairway and escalator. This stairway descends to the concourse level and the passenger may proceed by the east corridor to the waiting room end of the concourse. From the south, off Lagachetiere Street, there are three combined entrances and exists as shown on the concourse plan.

The railway offices above the concourse, may be reached by the elevator or stairs, adjoining the restaurant at the west end; or, at the east end, the elevator and stairs at the north-east corner of the concourse. This latter stairway also leads to East Street.

STRUCTURE AND MATERIALS

The Station structure is of steel frame, concrete fire-proofing and reinforced concrete floor and roof slabs. The trusses spanning the concourse are the rigid frame type.

The rigid frames supplied the note for the character of the interior of the concourse; their form being followed except in the vertical leg, where a straight line connects floor to ceiling; to follow the actual form of the leg would have resulted in a rather broken back appearance.

It is necessary in station buildings to use materials which will withstand hard usage and be easy of maintenance. A strictly controlled budget also dictated care in the choice of suitable materials. In the public corridors and the concourse, terrazzo in situ supplied the answer. Besides being economical, it gave excellent opportunity for variety in colour. War conditions limited the supply of chips and, except for some Red Vermont, all of the marble used was Canadian. The colour was, for the most part, added to the cement. The only precast terrazzo used, on a job where terrazzo was used in considerable volume, was with one other exception, in the form of mouldings extending from floor to ceiling on the inner faces of the rigid frames. Between the mouldings and on the sides of the frames is terrazzo in situ. In the General Waiting Room, which forms a continuation of the concourse, a pleasing change of materials was adopted in the use of Ilca Buff stone.

The hard surface terrazzo floors and walls added to the necessity of acoustic ceilings. The concourse ceiling is about 75 per cent. acoustic and Perma-acoustic tile supplied the answer. The colour is in an agreeable range of buffs and creams; an irregular V-joint pattern adds to the interest. The General Waiting Room, of necessity a low ceiling since it is under East Street, has a 100 per cent. perforated transite ceiling in two-foot squares, backed with acoustic pads. On the borders of the room cork was used. In the East and West corridors a similar 60 per cent. acoustic ceiling was used.

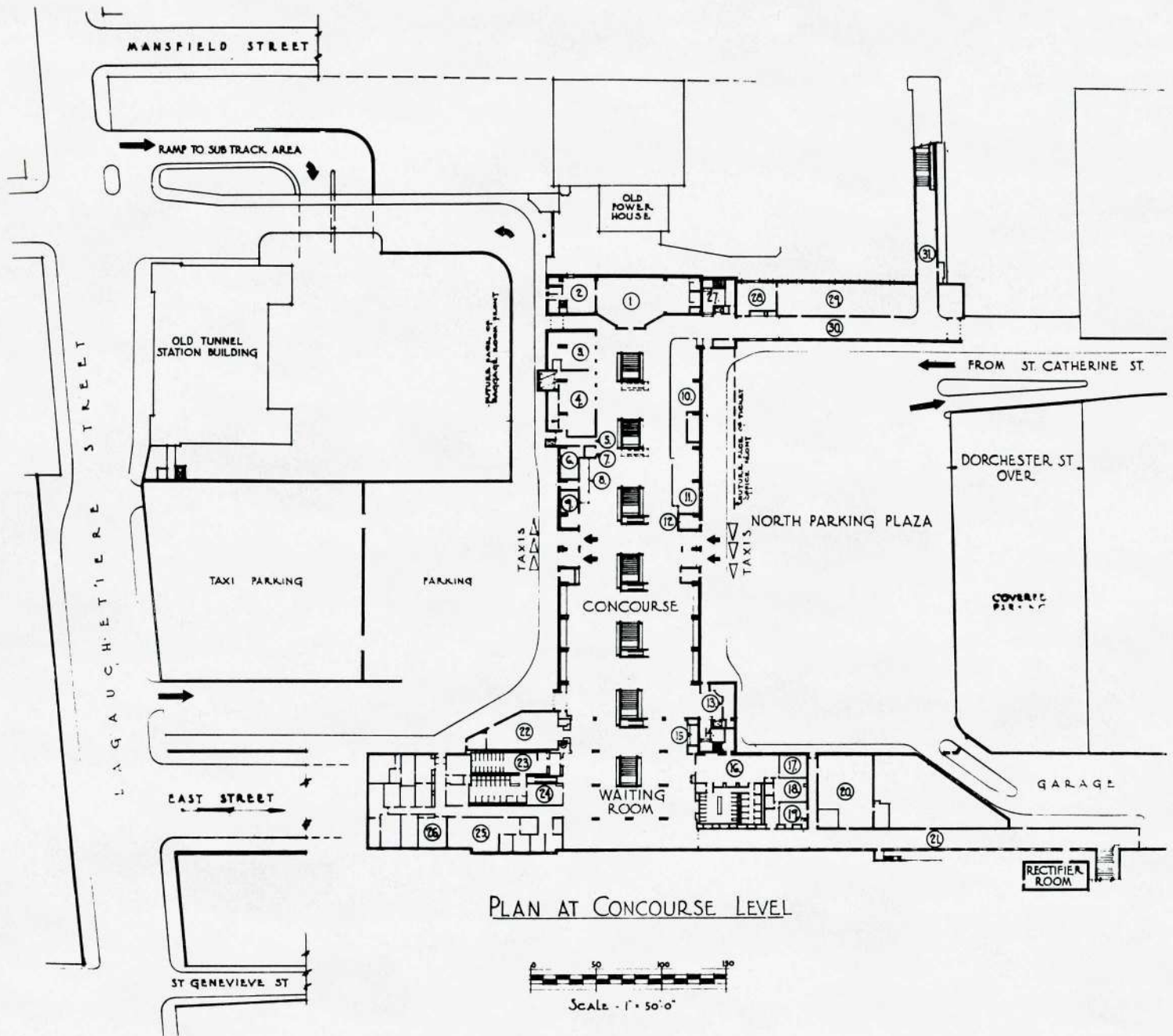
The balance of the rooms under East Street are in fibre board or cork tile ceilings. These materials serve the triple duty of sound absorption, insulation and satisfy the requirement for a material which would not crack when attached to the suspended ceiling (mostly lath and plaster) hung from the street deck slab and subject to a great deal of vibration. The ceiling was separated from the walls by cork; the walls in turn rise from a floor which is separated from the street carrying columns.

POINTS OF INTEREST IN CONSTRUCTION

There are some features in the construction somewhat different from the usual run of the mill. These result from the combination of train tracks on structure, streets on structure (the decks of which form the ceiling for some of the more important rooms), together with a building structure abutting but separated from the streets, the supporting columns of which pass through the track structure. Such features presented problems which, while not entirely new, differed sufficiently from precedent as to require their own solution. Close collaboration was maintained between the Architects and Engineers at all stages in the planning to meet these conditions.

SEPARATION OF STRUCTURES

In the Main Station Building and in the more important rooms under East Street it was deemed necessary, in order to avoid train and street traffic vibrations, to isolate the building structure from the street and track structures. To accomplish this isolation, openings for building columns were provided in the track structure on a grid roughly 25 feet square. The openings occurring under train platforms were made large enough to accommodate service connections between the sub-track and the track level. The building columns pass through these openings from concrete footings laid between the track column footings but separated therefrom by cork insulation. Track columns and building columns were placed on a slightly different strata level and in addition to this



LEGEND

- | | | |
|-------------------------------|---|---|
| 1. Restaurant | 13. Air Force R. T. O. | 23. Men's Wash Room |
| 2. Kitchen | 14. Stairs to Offices | 24. Barber Shop |
| 3. Parcels | 15. Navy and Army R. T. O. | 25. U.S. and Canadian Immigration |
| 4. Baggage | 16. Women's Retiring and Wash Rooms | 26. Board Room |
| 5. Elevator to Customs | 17. Quiet Room | 27. Stair to Offices |
| 6. Baggage Agent | 18. Nursery | 28. Annex Kitchen |
| 7. Transfer | 19. Medical Room | 29. Service Men's Dining Room |
| 8. News Stand | 20. Service Men's Room | 30. Passage to Dorchester and Cathcart Streets |
| 9. Telephones | 21. East Passage and Escalator to Dorchester Street | 31. West Passage and Escalator to Dorchester Street |
| 10. Tickets | 22. Drug Store | |
| 11. Telegrams and Information | | |
| 12. Terminal Passenger Agent | | |

precaution, the building columns were set on vibration pads. The pads consist of a thin sheet of steel with $\frac{3}{8}$ " transite above and below, the whole sheathed in a watertight envelope of $\frac{1}{8}$ " lead. Where the building columns pass through the track structure insulation has been secured by cork. At the Sub-Track floor removable floor slabs were provided on the same grid as the track slab to take care of future building columns. In the building already erected the lightly loaded column footings are set between adjoining track column footings. The heavier loaded columns required an H-shaped footing extending around the ends of the track column footings to give the required spread.

TRACK SLABS AND COLUMNS

The track slab over the greater part of the Sub-Track Area is approximately two feet thick. The carrying beams are parallel to the tracks and in order to obtain clearance for vehicular traffic and a smooth ceiling in the sub-track area, the beams supporting the track slab are above rather than below the slab. The track slab beams located under the platforms form centre supports for the train platforms. The columns are spiral reinforced concrete with circular welded No. 10 G. steel casings. The combination of flat slab and round columns results in an extremely simple, clean-cut looking structure in the Sub-Track area.

Expansion is taken care of by dividing the slab into sections roughly three bays in length (80 feet) by two bays wide (50 feet). Sliding expansion joints were avoided by supporting each section on its own columns. This resulted in groups of four columns under the longitudinal expansion joint and groups of two along the length of the platforms with space between for the building columns.

EXPANSION JOINTS IN THE STRUCTURE

To meet the unusual conditions of an enclosed structure supported on columns exposed to outside temperatures, the building was divided into three sections in the length. No attempt was made to camouflage the joints on the exterior; they were, on the contrary, regarded as an element in the design. They are flashed on the exterior with lead-covered copper and on the interior walls and ceilings two galvanized iron angles forming a sliding channel.

It was the intention to fill the one-inch space with expansion joint cork, but this was not available at the time and resort was made to asphalt plank. The floor joints in terrazzo are filled with expansion joint cork between angle strips the depth of the terrazzo.

One of the early problems affecting the design of the Terminal was the column spacing. Elements brought into the problem were stair widths, escalator

widths, clearance between edge of platform and any obstructions, manoeuvrability of vehicular traffic, limitation of heights available and consideration of economy in construction.

Tests were made with all kinds of vehicles to determine a suitable minimum spacing and it is gratifying that despite a forest of columns the spacing in service has proved very satisfactory. In the Express Department there are some 68 tailboard doors, all of which are frequently occupied at one time.

MECHANICAL AND ELECTRICAL SERVICES

The ventilation of the Sub-Track Area was an important consideration due to the number of gasoline-driven tractors necessary in the Baggage and Express Departments and the vehicular traffic on the roadways. Air is forced into all enclosed spaces and escapes to the roadways. From the roadways it is exhausted through grilles placed under the tailboard doors to ducts leading to the north end. In this location the grilles are suitably placed to catch the fumes of the roadway vehicles backing to and starting from the tailboard doors. At the north end the ducts are deflected to fan rooms at the east and west sides of the property and blown to the outside air.

HEATING

The heating for the Sub-Track areas is done by forced hot air systems automatically controlled. The concourse is heated by four separate forced hot air units located one at each corner of the room. As mentioned under Ventilation, the heated air is supplied through apertures in ceiling with re-circulation ducts at the floor level. The stairways and escalators between train platforms and concourse are heated by concealed unit heaters. Forced hot air heating elements and unit heaters are supplied with steam at 50 pounds pressure. The offices on the second and third floors are heated by concealed fin-type convection radiators supplied with low pressure steam. The steam for the Terminal property is supplied at present through an eight-inch insulated main from the Power Plant of the Sun Life Assurance Company.

The Mechanical Room from which radiate the steam heating and water services which supply the station and all future overhead buildings, is situated in a central location, two floors under the concourse. From this room a system of tunnels extends north, south, east and west, servicing every overhead block.

Under these tunnels there is a sewage system which takes care of the whole Terminal; the main sewer starts near Cathcart and empties into the city sewer under St. Antoine. The tunnel extends across St. Antoine and for the length of the viaduct where it connects with a power house.

All lighting and power, exclusive of power for traction, are serviced from a transformer vault located at a central point in the sub-track area. This transformer vault is serviced by two 13,000 volt services by the Montreal Light, Heat and Power Consolidated. Each of these services is from a different sub-station and is equipped with automatic change-over switches so that should a power failure occur on one service the other is automatically thrown on.

Office spaces and Lunch Room are, in general, lighted with fluorescent lamps, the fixtures being of a simple but pleasing design utilizing bare lamps without objectionable glare.

The Main Concourse and East and West Corridors, as well as Stairways and Escalators leading from the platforms, and to exits on Dorchester Street are illuminated by means of flush-mounted lens lights. Those in the high concourse ceiling are arranged so that cleaning and relamping can be performed from above the ceiling.

Platforms are illuminated with enamelled steel reflectors. The sub-track roadways are equipped with prismatic glass luminaires which produce extremely even illumination with a wide spacing of units.

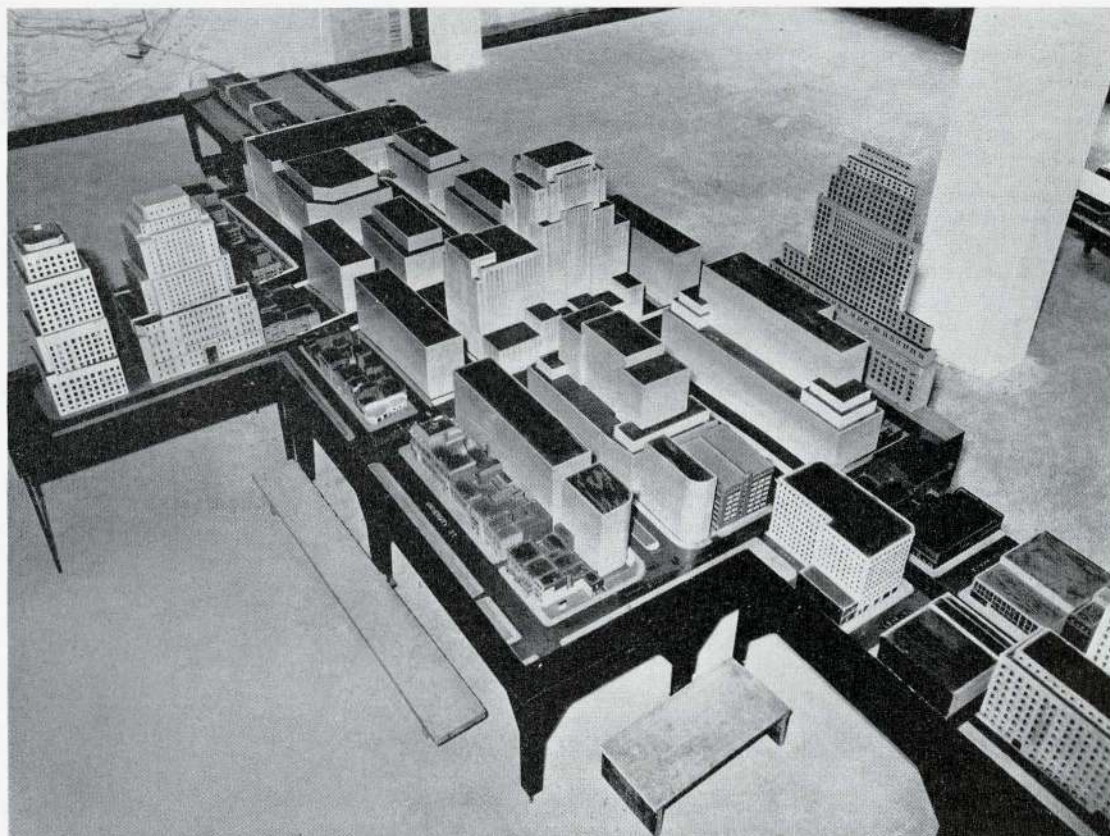
Power for traction purposes is obtained by means of Hewitic rectifiers installed in a specially constructed switch room on the 90-foot level and is serviced by

transformers located directly below on the platform level. These transformers receive power at 13,000 volts from the same main service which supplies all lighting and other power. The rectified current is 2,400 volts d.c.

Telephone and communicating services in general are carried in a network or underfloor fibre ducts on the two office floors, these ducts can be tapped at any point by drilling the floor and inserting a service head. The remainder of the communication system is carried in rigid iron conduits.

A complete system of electrically operated clocks has been provided. These clocks operate on the minute impulse principle and are synchronized at all times with the master clock. Power for operating the clocks is provided by a storage battery which has sufficient capacity to operate all clocks for a week should a power failure occur. The battery is kept fully charged at all times by means of a "trickle charger".

The building was designed under the direction of John Schofield, Chief Architect and G. F. Drummond, Assistant Chief Architect. John W. Wood was in direct charge of the job and the Resident Superintendent was W. T. Henry. The mechanical and electrical work of the building proper was designed by H. C. Cann, Mechanical Engineer and N. S. B. Watson, Electrical Engineer, of the Chief Architect's Office.



MODEL FROM THE NORTHEAST SHOWING OVERHEAD BUILDINGS

THE WINNIPEG FOUNDATION PROBLEM

By R. E. MOORE

The Winnipeg Foundation problem has received publicity of various kinds during the past ten years and as the problem is peculiar to this district in Canada, it was thought that the subject might be of interest to Architects in other cities.

It is intended also to show that the problem can be solved and thus correct the impression given by publicity of a damaging nature.

This article will be limited to new house foundations only. The subject includes foundations for large and small commercial buildings, and the underpinning of existing buildings and houses and is so broad that it would be impossible to cover it in a short article.

The science of soil mechanics is fairly new and most of our present knowledge in this district has been gained by a free exchange of information and experience by local Architects and Engineers who have had to deal with the problem. It has been an expensive and trying problem but the principles are now recognized and can be provided for in the construction.

This Winnipeg area is in a dried up prehistoric lake having a bed of clay 30'-0" to 50'-0" deep overlying the limestone rock. House foundations and their basement floors are constructed on top of this clay bed so any factors affecting this clay affect our house foundations. The most important factors are:

1. Bearing capacity of clay under foundations.
2. Changes in volume of clay due to change in moisture content.

As the loads on house foundations are small, almost any type of clay encountered locally will support the loads. The second factor, moisture content, thus becomes the chief factor for which to provide.

Any variation in the moisture content of the clay causes a corresponding change in volume which results in shrinking or swelling below the foundation and basement floor. Since the foundations and floor are as little as four feet from the surface they are quickly affected by the seasons, rainfall, drought, orientation of the house, trees, etc., as well as such man-made hazards as leaking eaves, broken pipes and sewers, weeping drains, etc. The variation is further affected and the wet and dry cycles broadened by the depth of soil many feet below the foundations. This acts as a reservoir for moisture during droughts until it becomes dry itself, then slowly re-absorbs moisture when periods of heavier rains occur. Thus the action of the sub-soil extends over a long period and the extent of its effect on the house is hard to anticipate.

Climatic conditions and foundation troubles show a close parallel. For example, houses built from 1920 to 1930 were generally free from foundation trouble, but were subject to severe settlement along with older houses during the drought years from 1932 to 1936. New houses built during the dry period were subject to damage from swelling clay due to relative increase in moisture below the foundations after construction.

Damage as a result of settlement is well known. Damage due to swelling is not so common so three illustrations of this are given.

No. 1. Mason's level rests on high point of floor supported by a 2" x 4" at the low end. The rise is approximately 4" in 4' - 0". In this case the foundation supports are hand excavated caissons to hardpan so that settlement of the basement walls cannot be considered as a contributing factor.

No. 2. Floor raised around interior post which is supported on reinforced concrete pile. Mastic joint used around pile head

to eliminate bond between floor and pile. Total rise approximately 6". Note that cast iron soil stack has buckled against first floor joists.

No. 3. Relation of floor at centre to floor at walls in the same house as No. 2.

No. 4. A concrete beam which runs from front to back basement wall supported at the centre on a reinforced concrete pile. The swelling of the clay has lifted the beam off the pile causing the circular crack shown.

The hand excavated caissons mentioned when referring to illustration No. 3, may seem extravagant for houses. However, at the time this house was built, the swelling action had not been recognized and all troubles were attributed to settlement, even though reinforced concrete piles were in use and their failure had never been proven. There was a great amount of misinformation even in the daily newspapers and among builders, so that home owners were willing to pay a stiff price for proper foundations and the caisson was thought to be a sure way to prevent settlement. Since the swelling action has been demonstrated this type of construction has not been used for houses.

Now that both settlement and swelling are understood it is possible to design house foundations to provide for movement or eliminate it and some of the methods are shown here. Unfortunately however, the cost of these types make them prohibitive for smaller houses and some allowance for movement must be made in the structure. The following have been found helpful:

A square rectangular plan is best suited for foundation design.

Fully excavated basement give less trouble than types of basements involving two or more types of foundations.

Basement partitions cannot be fixed tightly to floor and ceiling. Various types of slip joints have been devised, none entirely satisfactory and all develop problems of trim, baseboards, etc. If the owner is satisfied to wait, it is best not to try and finish any basement rooms for several years.

Basement stair landings should be suspended from first floor joists. Any supports bearing on the basement floor will raise the stair and all framing above it, doing considerable damage throughout the house.

Interior chimneys built on their own interior footings must also be entirely free of the structure so that the only damage is at the roof flashing which is relatively easy to repair.

Interior posts must be cut short to allow the footing to rise. Usually a number of masonite shims are placed between the top of the post and its beam so that the height can be reduced by $\frac{1}{8}$ " moves. A total adjustment of three inches is recommended and it is necessary to jack up the beams each time an adjustment is required. When the interior posts are supported on piles it is necessary to break all bond between floor and pile cap, otherwise the floor will rise and lift the post off its pile.

The average small residence is built with a concrete footing 10" x 30" supporting a 9" concrete wall to the ground floor. In this type of foundation (Drawing No. 1), reinforcing of the footings and walls, so as to resist the stresses in the wall caused by the movement of the clay, is the only improvement over the plain concrete wall. The inherent disadvantage of this type of foundation is the inevitable cracking and heaving of the basement floor and coupled with this the movement of the interior posts, unless provided for, results in the cracking of the interior partitions, binding of doors, etc., in the upper part of the house.

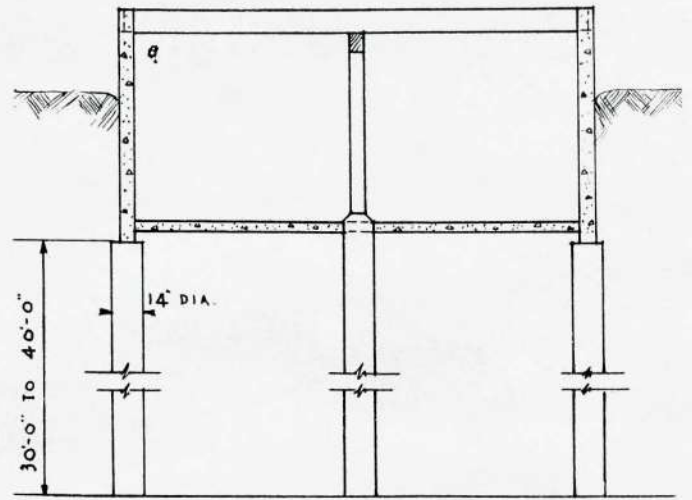
An improvement over the spread footing type of foundation is shown in drawing No. 2, using a spread base pile. These piles have been developed locally and are bored in the clay with a special tool to remove the clay and are afterwards filled with concrete. The load of the house is thus transferred to a strata of clay where constant moisture content may be expected, usually 12 to 15 feet below grade. These piles are also used under all interior posts. When properly designed so as not to overload the piles and with the walls properly reinforced to span between the piles as a beam, this type of foundation has proven to be quite satisfactory. It eliminates the troublesome movement of the interior posts and any necessity for adjusting posts. It does not eliminate the cracking of the basement floor.

In larger and heavier homes, full length piles bored to hard-pan are used. With this type of foundation it is possible to use a structural basement floor above the clay. Special provision for drainage of the space under the floor has to be made.

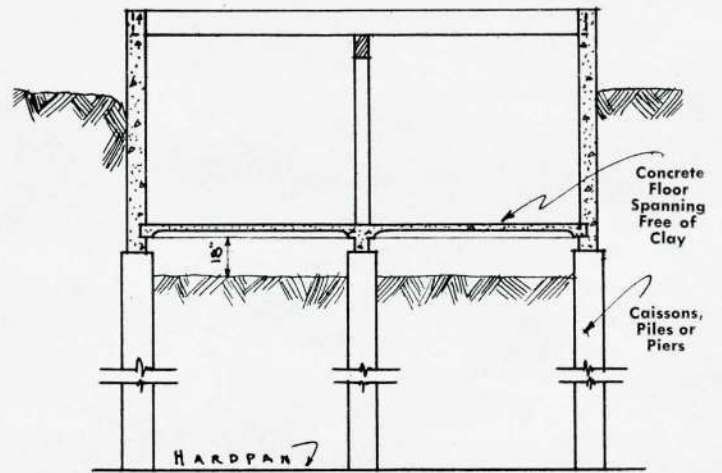
In one district having large and expensive homes there are a few cases of caissons dug by hand to hard-pan, which is about 30 feet below grade, No. 4. The foundations are similar in other respects to the ones previously described. The caissons offer a slightly more satisfactory foundation, in that positive bearing is obtained on the hard-pan.

One other typical foundation is illustrated in drawing No. 5, in which concrete pads supporting concrete columns are constructed at a depth of 12 to 20 feet below grade, in order to obtain proper bearing on satisfactory clay of uniform moisture content. The walls and floors are constructed in the same manner as in No. 3.

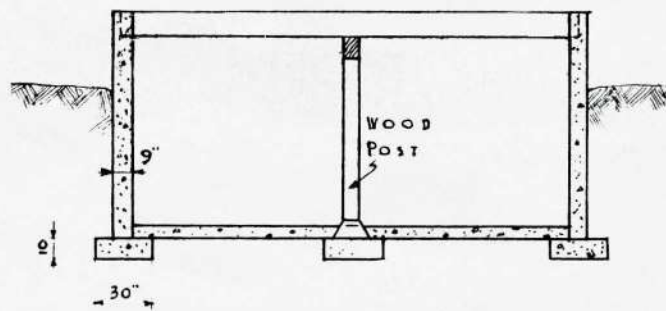
There is much that is still to be learned in the design of foundations for homes in this area. This is particularly true with the large complex foundations where in spite of every effort to take care of contingencies, some slight defects still appear. Nevertheless, the average house can be built in Winnipeg today with reasonable certainty as the result of past experience and developments of suitable foundations.



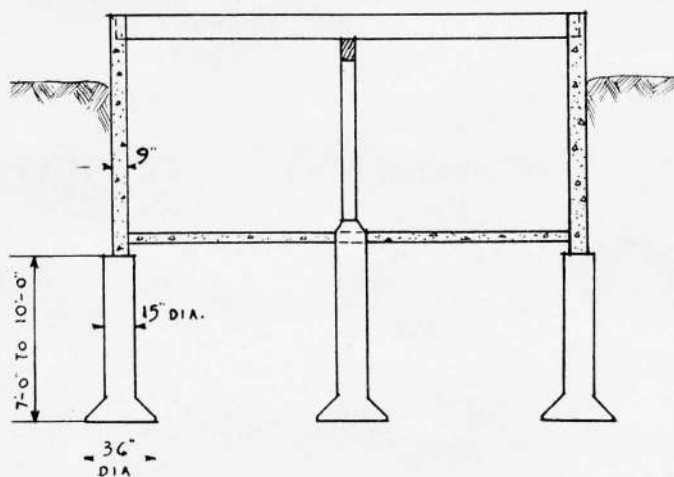
3. PILES TO HARDPAN



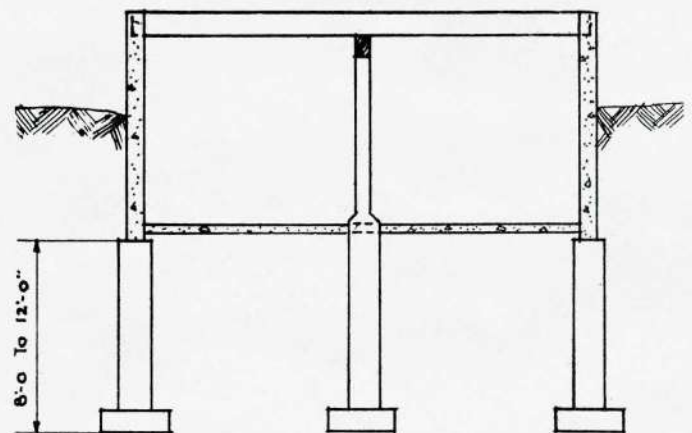
4. STRUCTURAL BASEMENT FLOOR



1. SPREAD FOOTING



2. SPREAD PILE TYPE



5. DEEP PAD TYPE

REQUIREMENTS FOR A TEMPORARY LICENCE

Report on the requirements for a temporary licence to practise Architecture in the various provinces of Canada under the provisions of their Provincial Charters, as they apply to a Member of an Architectural Association of another Province.

ALBERTA

Full Membership: All members of Associations of Architects incorporated by Special Act in any other province of Canada, if domiciled in the Province of Alberta, may register as members of the Association upon payment of the proper fee. This provision also applies to members of associates of the Royal Institute of British Architects and members of foreign Associations of Architects approved by the Faculty Council of the University of Alberta.

Temporary Licence: The Council shall have power to grant to any member of a Provincial Architectural Association in Canada, and to Members or Associates of the R.I.B.A., or of any foreign Association of Architects approved by the Faculty Council, who are not domiciled in the Province of Alberta a Temporary Licence to practise as an Architect in that province for such period as may be determined by the Council, upon payment of the proper fees and nomination of an architect registered in the Province of Alberta to collaborate with the visiting architect in the execution of his work.

BRITISH COLUMBIA

Full Membership: The Council shall admit to membership in the Institute all British subjects of the full age of twenty-one years who are members of the Association of Architects in any province of the Dominion, or of the Royal Institute of British Architects, or of any British Association of Architects of equal standing, on presentation of their credentials.

Temporary Licence: The A.I.B.C. issues no temporary licence to practise but provision is made that the services of a non-resident architect may be engaged to lay out, design or direct the construction of any building the value of which is \$250,000 or upwards, providing such architect before commencing such work shall pass such examination as may be required by the Council, but such architect shall not hold himself out as a practising architect, in the province to secure other work, unless he becomes a member of the Association.

MANITOBA

Full Membership: The conditions for admission of Architects practising outside the Province of Manitoba who desire to enroll as members of the Manitoba Association will be the same as the conditions of admission prescribed by the Association of which he is a member with respect to the admission to that Association of an Architect practising in the Province of Manitoba.

Temporary Licence: The Charter of the Association in this province does not provide for a Temporary Licence as such, but it is understood that the provisions laid down for Full Membership apply in respect to a Temporary Licence to practise.

NEW BRUNSWICK

Full Membership: An Architect who is duly registered as a Member of an Association in any other province of Canada or of Great Britain, Northern Ireland or any British Dominion or Colony, may become a duly registered member of the Association upon taking up his residence in New Brunswick, producing a certificate of membership in good standing in his home Association and upon the payment of the prescribed fees.

Temporary Licence: The Council shall grant to any Architect residing outside the province, who is a member of an Association recognized by the Council, a licence to practise architecture within the province for such a period as the Council may determine, upon application and payment of the prescribed fees.

NOVA SCOTIA

Full Membership: Any person who comes to reside in the Province of Nova Scotia and who at such time is a duly registered member of an Association of Architects which, in the opinion of the Council, is similarly constituted of any other Province of Canada or of the United Kingdom of Great Britain and North Ireland or of any British Dominion or Colony may become a duly registered member of the Association upon producing to the Provisional Council or to the Council a certificate of membership in good standing in such other Association and upon payment of the prescribed fees, if any.

ONTARIO

Full Membership: Membership in the Ontario Association is granted to members of other Provincial Associations of Canada on a reciprocal basis, upon the presentation of their credentials and payment of the required fee, provided that the applicant is a British subject, or has taken the oath of allegiance and declared his intentions of becoming a British subject.

Temporary Licence: (a) The Board may, at its discretion, grant a temporary licence to practise in Ontario to any person who is a British subject domiciled outside of the Province of Ontario, but within the British Empire, who is a member of an association or society of architects within the British Empire recognized by the Board, and who prepares the drawings and specifications and conducts the work, for which the licence is granted, in collaboration with a Member of the Association domiciled in Ontario.

(b) No such association or society shall be recognized by the Board unless it is established to the satisfaction of the Board that the qualifications as to education and experience for membership in such association or society are, in the opinion of the Board, equal to its own requirements.

(c) Every application for a temporary licence to practise shall be on a form prescribed by the Board, and shall state the character of the work which is to be undertaken, an estimate of the cost and of the time required for its completion. The applicant shall sign the undertaking hereto appended in accordance with Form "B" that he will comply with the ethical standards of the architectural profession in Ontario and observe and perform, in so far as the same may be applicable to him, the Act and Regulations of the Board. The said application shall be accompanied by the fee provided by Regulation 35 (b), which fee shall be an annual fee, and shall be payable from year to year so long as the licence is to be kept in force.

(d) Any temporary licence granted by the Board shall place the party to whom it is granted under similar limitations and restrictions to those which are imposed on Members of the Ontario Association of Architects obtaining temporary licences in the Provinces of Canada or other parts of the British Empire in which the licensee resides.

(e) Where a Member of the Royal Architectural Institute of Canada, domiciled in Canada but outside of Ontario, desires to

furnish drawings and specifications to a Member of this Association for use in the course of the erection of a structure in Ontario under the supervision of such Member of this Association but has not and does not intend to come into this Province in connection therewith, the Board may at its discretion grant such Member of the Royal Architectural Institute of Canada a limited temporary licence to practise in Ontario which shall permit him to furnish such drawings and specifications as aforesaid only and to use his name thereon. He shall in his application set out the name of the owner and the location of the proposed structure and the estimated cost thereof, and such other information as the Board may require. He shall not be required to give the undertaking referred to in (c) hereof. His application shall be accompanied by the fee provided by Regulation 35 (b) and no annual fee shall be payable.

QUEBEC

Full Membership: The Council may, at its discretion, admit to membership all members of Associations of Architects in any other province of Canada, also members of the Royal Institute of British Architects, and of foreign Associations of Architects, of equal standing and on presentation of their credentials.

Temporary Licence: The Council may, at its discretion, grant to any Architect residing outside of the Province of Quebec and being a member of an Association, Society or Corporation of Architects recognized by Council, a temporary licence to practise, upon payment of the fees provided for in the By-laws, on condition that the drawing of plans and conduct of the work shall be executed in collaboration with a member in good standing of the Province of Quebec Association of Architects, domiciled in the Province of Quebec.

SASKATCHEWAN

Full Membership: The Council shall admit to membership in the Association all British subjects if domiciled in the province for one year prior to the date of their application and who are members of any Association or Institute of Architecture in any province of the Dominion of Canada, or of The Royal Institute of British Architects, or of any foreign Association of Architects, approved by the Council, on presentation of their credentials and payment of the prescribed fees. Membership can be obtained by passing examinations as well as by transfer from other organizations.

Temporary Licence: The Council may grant to any Architect not domiciled in the province, but who is a member of an Association, Institute or body described in clause (a) or (b) of sub-section (2), a temporary licence to practise as an architect in the province for such period of time as may be determined by the Council, upon payment of the proper fees in that behalf, provided that such practice is carried out in collaboration with a registered architect. Any person so licensed shall be known and is referred to in this Act as a "licensed architect".

THE PERIODICALS SHELF

By ANTHONY ADAMSON

Canadian Homes and Gardens. It gives us peculiar pleasure to write that the current copy of this Canadian magazine is a ringer. Its 10,000 loyal readers seemingly are about to be lead off the primrose path to blueberry shortcakes, eggplant accents, and Mr. and Mrs. Conover Plushbottom's distinctive residence. Prefabrication, decent modern furniture, town-planning, low-cost housing for those not in Mrs. Plushbottom's set, and even electronics are being offered instead. The lay-out is excellent and colour is splashed about most effectively. Something new has been added. We understand on impeccable authority that it is an architect, Mr. J. F. C. Smith. We have all to thank him.

Архитектур We feel a little Ничего about this as we promised to write up the Russian periodicals coming to our shelf. Our Russian is limited, limited to having a Russian reading it over our shoulder. So we got a Russian in this position, a nice big faired-haired Товарищ but he turned out to be a Ukrainian who only spoke his own language and Polish. Sorry, we will try again.

Pencil Points and the Architectural Forum. Apologies are due about these two. The latest number of *Pencil Points* has been held up by the Customs. Perhaps one of those Crane plumbing advertisements has gone a little too far. The *Forum* was, shall we say, borrowed, and can't be found.

Architectural Record. All the magazines, except the *Journal*, are smaller. This is quite noticeable in the *Record* this month. What is there, is good. There are two articles about architects and their livelihood and usefulness with suggestions on how to come in out of the rain. If it is not usurping editorial space, we will quote what the *Record's* Mr. Stowell notices as current trends of significant implication to architects preparing for post-war practice.

"Trend One is the response to the demand for more complete service. Most owners, like Uncle Sam, will want a single responsible firm to handle all planning and design work, all preconstruction work, including all engineering, site planning, interior design and equipment. This means better balanced, better integrated firms or associations of firms.

"Trend Two stems from the urge of those with building problems to have an architect in their exclusive employ, with or without a staff, either as advisor, their expert, or as an operating architect.

"Trend Three is the growth of similar salaried employees and staffs in government bureaus, municipal, state and national.

"Trend Four indicates the tendency of firms successful in some branch of building to extend their facilities to include architectural service as a part of their business, either by employing architects in salaried positions, or as firm members."

Hudnut is at it again telling us that town-planning is a political science and that Nero had the proper idea. Part 2 of "Dry-Wall Construction" is mostly about gypsum and plywood this time.

Task. If anyone thinks that town-planning and architecture are not "political sciences" it is not the editors of *Task*, "a magazine for Architects and Planners", (211 East 49th Street, New York City). All good C.C.F. fans should subscribe. It was only our duty to the *Journal* that overcame our bias to open the thing and it could not be expected that we should read the whole of it. "The Lesson of Willow Run" is that Henry Ford is not very nice. There are articles on "Nursery Schools", "Labour's Responsibility in Housing", "Planning for Child Care", "Stuyvesant Town" and "Architecture and its Profession in Canada", which came as a surprise to us as we turned the pages. The author is Frederic Lasserre. We think it should all be reprinted in the *Journal* but in case it is not, we quote from it. He describes the Canadian economy as more highly monopolistic than that of the U.S.A. and says that architects till very lately "Seldom felt themselves linked up with the social welfare of the Country" but that now "the idea that architecture should serve the interests of society has come with such a force that it is difficult to find a speech or an article by a leader of the profession which does not include: . . . 'We must become the servants of society'". He praises the R.A.I.C. and N.C.C. co-operation as "one of the profession's greatest achievements". He praises "Wartime Housing" as "the most successful on the continent" in United States' opinion.

(Continued on page 204)

LETTERS TO THE EDITOR

From Major-General C. S. L. Hertzberg.

Thank you for your letter of July 28th, and my apologies for the delay in answering it.

As you perhaps know, Jimmie Melville has taken over from me as Chief Engineer.

I'm afraid no one could give you an adequate story of the activities of the members of your Association who are serving in the Canadian Army—they're scattered all over the lot beating their tee-squares into swords and, I suppose, forgetting all about the seven orders (was it seven?). Some of them are in the Engineers and, to some extent, working at their trade. Such stalwarts as Eric Haldenby, Mac. Waters, Jim Craig and Jim Wilson are with other Arms of the Service and I see them only very occasionally at the odd carouse. We did our best to bring Jim Wilson back to the fold but he was doing such a good job with the Royal Corps of Signals that they refused to let him transfer to the Royal Canadian Engineers.

Our construction programme during the last four years has been large and very diversified—much of it purely engineering with no need of architectural design. A great deal of it, however, has been—and still is—the construction of buildings on which we have made full use of the Architects serving in the Royal Canadian Engineers.

Without Major Harvey Dawson, R.C.E., I don't know what we should have done. He was practising in England when war broke out and, by the time the First Division arrived, was already busily employed planning for our arrival and for the accommodation of all those who were to follow. From that time until his sudden and tragic death last year, he had charge of all architectural design. His capacity for work was enormous. His outstanding ability and knack of getting on with the numerous officials he dealt with enabled him to do a really remarkable job under difficult conditions. Major Moody, R.C.E., is now handling our architectural work in this country and he's a busy man doing a grand job.

Wartime conditions over here introduce unique problems into the design of buildings. There is, of course, the blackout with the consequent difficulties of providing adequate ventilation, particularly in sleeping quarters.

Then careful consideration must be given to protection against bombing. The effect of blast and bomb splinters must be localized as far as possible. In this connexion extensive research has been undertaken to determine the effect, on buildings, of both air and seismic transmission of blast effect. A vast amount of data have been collected and studied with very valuable results.

Priorities of available building material and the necessity for the strictest economy, tax the ingenuity of the designer. Unit construction is the order of the day and I doubt if some of the resulting structures would stand much chance of winning a competition for architectural beauty. God forbid that I should claim that we have developed a new style of architecture—there are already too many!—but, as always, necessity has been the mother of invention and the fact that utility and economy have been the governing factors has produced results that, to my uncultured, lay mind, are not displeasing (*vide* John Ruskin).

I have said nothing of our purely engineering construction—roads, railways, airfields, water-power development, water supply, sewage disposal, defence works, mine development, tunnelling in Gibraltar and elsewhere, and all the variegated

jobs that fall to the lot of the Sapper and must be sandwiched in between the intervals of training for the primary role of fighting.

This is a very meagre letter, falling far short of your specifications and I'm afraid that a full discussion of the subject must wait until after the war when we can compare notes with all of you who have been doing such outstanding work in war construction in Canada. I suggest that Bob Binnie be instructed to arrange for a meeting to be modelled on lines of the annual meetings he used to stage at his office.

Kindest regards to you and to all my architectural friends.

Sincerely yours,

C. S. L. Hertzberg.

From Dr. Leonard C. Marsh, Exec. Sec., James Committee on Reconstruction.

I note from one of the articles in your very interesting September number that my friend Mr. Mathers has placed an interpretation on a statement in my Report on Social Security which is incorrect. Unfortunately, I did not learn of it at the time of the delivery of the address to the C.M.A. Because of its importance to the construction industry, I hope you will allow me to make the necessary comments.

Mr. Mathers states that the Report proposes "that the volume of construction required for full employment in Canada should be in the neighbourhood of one billion dollars per annum." He then goes on to discuss the extent to which the construction industry could expand to such dimensions.

My actual statement is that "the employment reserve for Canada will not be safe unless it is part of a billion-dollar programme in the first postwar year." No suggestion was intended that all of this employment should be provided *through the construction industry*. Undoubtedly construction projects would form a large proportion of any balanced programme; but, as I think the context makes quite clear, a variety of other projects should be included such as conservation, training, and cultural programmes, which have nothing directly to do with construction. Moreover, at least some allowance (desirably it should be conservative) should be made for secondary or "induced" expenditures, only some part of which would be on construction materials and supplies.

The confusion is very common between (a) a given volume of construction projects, and (b) the volume of expenditures produced by the net action of government fiscal policy plus such works programmes of all kinds as are needed to complement it in giving direct employment. So stated, I think, the difference is clear, even though the latter concept may be somewhat unfamiliar. The first is merely part of the second, both in terms of actual works projects and in terms of economic policy.

Naturally, as Mr. Mathers says, a billion dollars a year for the construction industry alone would be "a spectacular proposal", implying as it does that the industry would have to be more than doubled in production capacity from its present size. But—at least in the absence of more information than is available at the moment—I do not put the figure nearly so high. What the proper proportion of construction projects in a billion-dollar programme should be for Canada, I do not know. It might conceivably be only half-a-billion dollars (including public housing); probably more. It is very desirable, of course, that

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THE PROVINCIAL PAGE

ALBERTA

Difficulties in the way of building are to-day many and various. The city of Edmonton is in this respect typical of others but probably one of the most seriously affected. This may be illustrated by the problem raised by the application made to the city by the American Red Cross to erect a recreation building for which there is an appropriation of about \$90,000, including \$10,000 as cost of site. In more normal times the building would probably cost approximately \$60,000. But it seems that the cost does not stand in the way. It is the labour problem that causes anxiety. A project is in progress on 350 houses under War Time Housing. This is proceeding at a woefully slow pace. Now, labour at any time must be drawn from a more or less limited "pool". At this time the pool is reduced to a mere damp spot. Therefore, if men for the recreation building—admittedly a pressing necessity—are to be drawn from this pool they must be withdrawn from War Time Housing and, incidentally, from any other housing. The shortage of housing is so great that, from time to time, an S.O.S. is sent to the city hall intimating that a family of six or eight persons is in the street without shelter, the owner of the house requiring it for his own occupation. In several cases the Chamber of Commerce, a resourceful body that takes an active interest in such matters amongst many other things, has managed to get tarpaulins to cover, for the night, the furniture of tenants which has been ejected into the street. Under these circumstances is it right and proper to issue a permit for a recreation building?

Appeals for labour are sent out to other cities. I have been told of a case where forty-five men were recruited in this way but, before entraining, they learned that there was to be no Sunday work. Thereupon they refused to move. Sunday-time gets double pay. Americans coming in and being paid at high rates have imperilled the wage market and the price ceiling scheme. The "vicious spiral" is more than a picturesque expression, it is a dire reality. Persons of the more mobile or more casual forms of labour, including stenographers, are having a good time. The single person of this class earns far more than a man of regular occupation with a family to support. Surely, something is bound to happen about this before long. Prophecy is not one of my accomplishments.

Some of the writers in the "*Journal*" of September have shown us the shape of things to come in scientific fashion. Before I express admiration for their science and imagination, I want to see their impact on the solution of the problems of the hour as outlined above, which may be expressed as:—Wanted, one million good human habitations to be erected within the space of one month at a cost to suit the slender purses of those who need the houses. I have sometimes heard scientific men speak scornfully of those whose vocation is in other, quite essential, fields. Here, then, is their problem. When they solve it they shall have due honour, not sooner.

Cecil S. Burgess.

MANITOBA

Indian Summer is with us, but vacation for Council is ended. The fine weather bug had evidently bitten into several of the members as shown by the attendance at the first meeting. What happens to the Architects in the summer-time is a mystery. Perhaps it is that we lack one live, entertaining member to stir things up.

The matter of co-operation between the Association and the

students at the University is taking shape and in the near future it is hoped to have students and associates, as well as members. There is a vital need for keeping in touch with the graduates and the Association must do all in its power to encourage and welcome them into its ranks. There is undoubtedly a different outlook among the younger men, and while we may not see eye to eye with them, at least there will be much to be gained by all.

The Department of Architecture of the University of Manitoba is doing all it can to keep itself before the public and thus benefits the architectural profession generally.

The students of the Department of Architecture and Fine Arts at the University of Manitoba held a special meeting on October 9th to hear an account from Professor Osborne of his year's study of architectural schools in the United States and to view an exhibition of Modern Housing from the Museum of Modern Art in New York.

Professor Osborne's discussion covered only four of the twelve schools which he studied in detail on his tour. His itinerary covered twenty-five schools teaching architecture and art. The discussion was concerned chiefly with those points in which our curriculum is similar or differs from that of other schools, the methods of teaching design and construction in the various schools, and a general picture of the teaching problems which wartime conditions impose.

Members of the Manitoba Association of Architects, graduates and friends of the Department were guests of the meeting. President Ernest Smith presided and gave a very appropriate address of welcome to the visitors and the new students.

In celebration of its thirtieth anniversary, and in honour of the founder of the Department, Professor Emeritus A. A. Stouahton, a fine exhibition of students' work was opened in the Art Gallery at the Civic Auditorium on October 20th. A reception was held to which members of the University Board of Governors, members of the Faculty, the members of the Manitoba Association of Architects, and the parents and friends of the Department were invited. This is by far the most ambitious show the Department has ever given and the students are to be congratulated on the excellent work that is on display. The gallery in which the show is held is large enough to allow for the proper display of a great many drawings and models, and large screens were set up and painted in appropriate colours to set off the drawings to advantage.

The display includes problems in architecture and interior decoration, engineering problems, thesis drawings, free-hand, water colour, pattern design, and colour theory, arranged and grouped to make them most effective. An unusually attractive group of models shows a complete replanning of the Fort Rouge district of the city; others are concerned with the rearrangement of the Mall; another shows a model farm for Manitoba and another an interior arrangement for a modern house.

The exhibition seemed to be a suitable opportunity to educate the public to an appreciation of the architect's place in the community, so large panels tell graphically the "functions of the architect", another explains "modern architecture", and others list the membership of the Manitoba Association of Architects and designate those members as well as the students and graduates of the Department who are in the armed services. It is a fitting and timely attempt to bring architecture to the attention of the Winnipeg public in a most attractive manner.

THE PERIODICALS SHELF

(Continued from page 201)

After visiting such an excellent exhibition I feel that a separate article with photographs should be sent to the *Journal* showing exactly what the Department of Architecture under Professors Osborne and Russell have accomplished.

The Post-War question was again discussed.

Gilbert Parfitt.

ONTARIO

Many architects spend their leisure moments, restore equanimity to their harassed minds and commune with their families in homes removed from the hum of traffic and confinement of city structures. Yet the greater number of their fleeting hours they, of necessity, spend with furrowed brows and intent minds, evolving works of "Art", culmination of earlier aspirations, in circumscribed surroundings. To get a glimpse of nature's blue ceiling demands first, opening a window, second, projecting that portion of the anatomy once adorned by hirsute abundance, and then on its columnar support form a right angle.

May this member, therefore, be forgiven for relating his entirely different experience of the past three years and at the same time be excused by Group Captain Marani, if in so doing we refer to a subject he so ably dealt with. It is a location in Ontario quite a distance from O.A.A. headquarters.

Our job has little to do with design, that is done in a city noted for its citizens of architectural prominence including past presidents of the O.A.A.

The surroundings in summer are beautiful, across an expanse of rippling water, we see varying shades of green, nestling therein, white gables and weather-browned roofs which spell home, with all that word implies, to someone. On this site arrives some rather knotty spruce sheathing, some two by fours of questionable lines and a couple of casual labourers with an axe, a saw and strong arms. Lo—an office.

Follow then, reams of specifications, roll upon roll of blue-prints, which at times, in our effort to reconcile one with the other, create an unjustifiable desire for liquid lubrication of the Genus Homo and its Cerebral matter.

Before this the contractor or contractors arrive with din and bustle, usually with a brief, "Hello—I'm Brown of So and So; by the way we have a hundred men arriving on Monday and must have at least four buildings staked out before then." Our street lines are not yet properly defined. Well into the midnight hours we, at first enthusiastically and then rather wearily pursue the elusive data. The city architect working late cannot see the rising moon because of obstructing masonry, we do not see the silver path it sheds across the water because the urgent call "information please" demands our attention. We do, thankfully, remember this is Ontario, blessed with safety and not the battlefield of danger.

Then follows months of feverish activity with their alternating successes and frustrations, incidents trying to the point of exasperation and sometimes humorous. To describe them in detail would take too much space.

We would, however, like to describe another scene. Autumn has changed to Winter, howling winds, with piercing dry snow particles stinging our flesh, temperature twenty-two degrees below zero, and concrete foundations must go on, and do.

Again as dusk draws the curtain of night, we look across the white space of frozen water to the snow laden pines of the other shore. Twinkling lights show here and there. Home and comfort calling. Some members of the families can see it only in memory from thousands of miles distance. That is why we architects not on active service deem it an honour to perform even a small part in "getting on with the job". And so Celesti, which interpreted by our musical friend, Gladstone Evans, may mean soft pedal until some future date.

F. C. Bodley.

He says there are "only eight offices which employ more than ten men, The Army, Navy and Air Force Works and Building Offices, Defense Industries Limited, Wartime Housing and Allward and Gouinlock". He condemns "the older members of the profession" who fear "a barbarous form of architecture fostered by government bureaucracy" after the war, and who always demand that building, especially housing, be taken over after the war by private enterprise". We found it all very stimulating.

Architectural Design and Construction. This English paper has an interesting exposition of the City of Coventry experimental houses, "experiments in prefabrication and dimensional co-ordination" as well as a full description of two types of English prefabricated method. Besides these, it has an interesting article on frontages and privacy in terrace housing.

The South African Architectural Records are concentrating on sub-economic negro housing, which is something that doesn't need to worry us. **Country Life** concentrates (September 24th) on the "Problems of Dresser Feet" and "The Unpredictable Snipe" and we suppose these don't need to worry us much, either.

LETTERS TO THE EDITOR

(Continued from page 202)

the construction industry be reviewed as to capacity and future programmes from every angle, and the Committee on Reconstruction has been doing its best to contribute to this field of study. It is to be hoped that before long, with the growth of both private and governmental investigation and interest in the subject, some detailed estimates of project components, the labour supply requirements these involve, and so forth, will be possible. In the meantime, I feel constrained to suggest that, with all its importance, the construction industry, as such, is apt to be given more weight than is really justifiable, in many discussions of post-war employment.

I have no intention of minimizing the need for such considerations as Mr. Mathers puts forward. You will find in the Social Security Report citations of recommendations on the training and recruitment of building labour (Appendix IVb, p. 132), for this reason. We have a lot to learn yet, however, about dimensions.

A secondary point might perhaps be added. The reason for the phrase "in the first year" is that this is set as a safe margin or a target. There should be a programme of sufficient size, and planned to operate over a sufficient period, to be capable of concentration to this extent even in the first year after the war. This, of course, is quite different from a flat-rate programme of one billion per year. The reserve might not all be needed in the first year, if the transition were rapid: equally, the unused margins from this level might all be needed together if the post-war re-equipment boom came suddenly to an end. This is a different point—one of timing rather than components—which I assumed is generally understood.

Very truly yours,

Leonard C. Marsh,
Research Adviser.

NOTICE

It has just been announced that Mr. J. P. Hynes, who is in his 76th year, is retiring very soon from his position as Secretary of the O.A.A. His successor has not, as yet, been appointed. In a forthcoming issue of the *Journal* we hope to record our appreciation of his great service to the profession in Ontario, and indeed, in Canada.