

degrees, again following a tangent to the Don River. At Cherry St. the old G.T.R. right of way will be again struck, the through tracks following the south side of the former right of way, as the new arrangements provide for a new Don exit for the C.P.R. line. In the existing arrangement, the G.T.R. and C.P.R. diverge at Berkeley St., the G.T.R. sweeping southerly to the Don River, and the C.P.R. following approximately a straight line through to the northerly turn at the Don River. In the new arrangement, the two lines will continue together to near the Don, the C.P.R. branching north along the west bank at that point. As mentioned, the right of way between Cherry St. and the Don will be slightly south of the present one, as the C.P.R. has its own line from Cherry St. east, there being crossovers from the common line just west of Cherry St.

To the south of the parallel sets of tracks will be the G.T.R. Don freight yard, from which the additional width for the right of way will be taken. It is proposed to rearrange this yard, but plans have not yet been prepared.

The 2 track C.P.R. line will sweep to the north on a 10 degree curve through 92 degrees, along the west side of the Don, following the right of way of the old G.T.R. Belt Line to its former right of way just south of Queen St. The line will commence to descend at Cherry St. on a 0.44% grade, easing to 0.09% around the curve, increasing to 0.45% to the former grade at Queen St. Queen St. is at present carried over the tracks on a bridge, and at Eastern Ave the plans call for an overhead bridge, probably of the same type as that at Queen St., bridging the river, through tracks, and freight yard approach tracks to the west.

The 5 G.T.R. tracks will continue across the Don River, south of the former right of way, crossing the river on a 120 ft. double girder, slab floor bridge, carrying 18 tracks, to accommodate the freight yard approach tracks as well as the through line. From the Don bridge, the line will swing to the north as far as Queen St. through a 40% degree angle on a 2 degree curve, thence on a short tangent to a reverse curve. From the Don, the line will ascend on a 0.4% grade to Queen St., from which point it will be level to Logan Ave., where it will again reach its former grade. Both Eastern Ave. and Queen St. will be carried under the tracks, the street level at Queen St. being slightly depressed. From Queen St. north the line will have only 4 tracks.

The two companies at present have most of their team freight tracks along the Esplanade. Under the new scheme this team track accommodation will remain about the same as at present, the abandoned through tracks being retained for this purpose. The Board of Railway Commissioners' original order expressly prohibited all grade crossings west of Church St., and in consequence the old tracks have been stopped off at that street. Entrances to the two fruit markets at Yonge St., one on the north side and the other on the wharf to the south, are to be made over trestle approaches from the viaduct. The trackage along the Esplanade east of Church St. is to be rearranged, and while the Yonge St. to Church St. portion is being removed, this rearrangement will make a trackage equal to that at present provided there. This arrangement of trackage will also provide access to all the industrial sidings along the old line. The approach to the viaduct will be over the old G.T.R. right of way, up a ramp that reaches the C.P.R. separate tracks where they diverge at Cherry St. All the tracks in this district will cross the streets at grade, with the exception of Trinity St., on the ramp approach, which will be carried

under the tracks. With the exception of the approach tracks, all the tracks along the Esplanade will be stopped off at Parliament St., and in order that the grade crossing feature may not present its objectionable feature, the Board's original order provided that on all surface tracks there should be no movement of cars except during specified hours at night, or, if the freight be perishable, when the train was preceded by a brakeman on foot. This Esplanade team track arrangement will have decided advantages over the accommodation provided in the last plans drawn up. In that there were three tracks at grade on each side of a concrete retaining wall viaduct to serve as team tracks and approaches to the present industrial sidings. The closeness of the surface tracks to the mouth of the subways would make them a menace to the public crossing.

From the C.P.R. line at Queen St. there will remain the present C.P.R. entrance, which will be used solely for entering the C.P.R. and Canadian Northern Ontario Ry. east end freight sheds. To serve industries located along the present line between the freight sheds and the Esplanade, there will be a single track line crossing the intervening streets. It will thus be seen that except for a little shunting of cars there will be no train movement on the level.

Most of the street crossings will be by subways. As mentioned, Bathurst St., Spadina Ave., Eastern Ave. and Queen St. will pass over the tracks on bridges. Yonge and Bay Sts. will have 80 ft. subways; York, Scott, Church, Jarvis, George, Frederick, Sherbourne, Princess, Parliament and Cherry Sts., 66 ft. subways, and Trinity St., two 30 ft. subways. The design of the subways has not been completed, but they will likely be of steel, with concrete abutments, facings and deck.

An estimate of the work places the quantity of earth filling for the viaduct at about 3,500,000 yds., and the total cost of the completed project, including the union station, at about \$14,000,000. The plans for the new station are in course of preparation, but nothing definite has been decided in this connection pending the formation of the new terminal company.

The viaduct plans have been prepared under the direction of H. R. Safford, Chief Engineer, G.T.R., and J. M. R. Fairbairn, Assistant Chief Engineer, C.P.R. Eastern Lines, by J. R. W. Ambrose, M. Can. Soc. C.E., who was in charge of the G.T.R. grade separation work through the southwest portion of Toronto, and who has been appointed Engineer of Grade Separation for the two companies. We are indebted to Mr. Ambrose for the data on which this article is based, and to Messrs. Fairbairn and Safford for authority to secure the same and for copies of the plans.

### The Passing of Sir William Van Horne's Old Office.

The old room at the Canadian Pacific offices in Montreal, in which Sir William Van Horne as, successively, General Manager, Vice President and President, sat and pored over the map of Canada and drew his plans, and thought out great undertakings, is being knocked out of all rememberable shape of its former self to correspond with the great scheme of reconstruction.

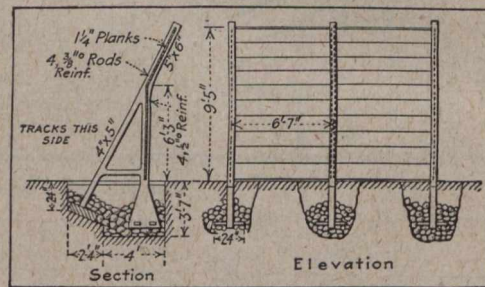
In this room Sir William used to receive his visitors, varied as to importance and distinction. The great ones of the earth have foregathered in the old room which has almost an historic significance. Men like Sir Henry Irving, Matthew Arnold, Lord Alverstone (as Sir Richard Webster), Lord Iveagh, Prince Arthur, His Royal

Highness the Duke of Connaught and many others belonging to the old world aristocracies and Illuminati, have chatted in the old room where Sir William, getting down the maps before him, used to evolve his policies of extension and consolidation—when he had time to think of more general things than the paying of the wages—in the early days.

Some of the older officials, who remember the room so well, and the many times they have appeared before the President to discuss large things with him, as well as to enjoy his epigrams (when he had a moment to spare for them), feel a little sentimental regret that its glory has departed.—From the daily press.

### Reinforced Concrete Snow Fences.

Snow fences for the Italian State Railways have been built of reinforced concrete along the Termoli-Campobasso line on the east coast of the peninsula. This branch is in mountainous country subject to heavy and continuous snow fall, which fills up the cuts beyond the power of the equipment to



remove. About five years ago a start was made toward the construction of snow fences along the most unprotected sections of the line, following the design shown in the accompanying illustration. Since then the whole line has been so protected, with great success.

The fence comprises reinforced concrete standards spaced 6 ft. 7 in. c. to c., with an intervening fence made up of 3 in. pine plank, fitting into grooves in the standards. Each standard is of the size and slope shown and is founded on rock ballast filled into a pit dug for the purpose. The reinforcement of the posts is made up of four round rods tied together with 1/8 in. wire.

The fence is designed to resist safely a uniform horizontal thrust of 20 lb. per sq. ft., or a concentrated horizontal thrust of 660 lbs. at the top of each section of the fence.

Tank Locomotives of the 2 : 12 : 2 Class have been built for the Java State Railways, and are said to be more satisfactory than Mallet duplex ones of the 2 : 6 : 6 : 0 class, being less liable to slip on account of the large number of wheels coupled into one group. The locomotives can operate on curves of 460- and 500-ft. radius, the track gauge (3 1/2 ft.), being widened a little over 9-16 in. for the former and 3/4 in. for the latter. The original trial order was followed by an order for a considerable number. The design was at first for a 2 : 12 : 0 class, but the trailing axle was added in order to allow of increasing the capacity of the coal bunker behind the cab. The length of driving wheelbase is 20 1/2 ft., and special provision is made for lateral movement of the axles on curves. On the sharpest curves this movement may be as much as 1 3/32 ins. for the first driving axle, and 3/4 to 2 1/4 ins. for the truck axles, the latter having radial axle boxes. All the wheels have flanged tires, but the flanges are smaller than usual on the two middle driving axles.