been done by the use of a type of bridge consisting of four deck plate girders instead of the original lattice truss construction, with the traffic running as it were, *through* the bridge.

This plate girder swing span is understood to be the longest plate girder span of its kind ever built, being 239 ft. 7 ins. long and 13 ft. 6½ ins. deep in the centre, reduced to 8 ft. ½ in. at the ends, measured from back to back of flange angles. The four main girders of which the structure consists were each shipped in three pieces from the Dominion Bridge Company's shops, which are near the bridge site, and were lowered into place by heavy derricks. When all the parts were accurately assembled, they were riveted up into their completed lengths, after which the operating machinery was installed. The use of four girders was especially dictated by the necessity of maintaining traffic while the demolition of the old structure and building of the new, was being carried on. By this plan it was possible to erect two girders on the upstream side of the old bridge, after which traffic was diverted upon them, while the downstream side was altered and the other two girders erected; after which the four girders were connected by their lateral and other bracing. This operation saved the building of a special temporary wooden bridge alongside the old structure, as would otherwise have been necessary.

The weight of each of these girders is 112 tons and of the whole swing span 615 tons. There is also a 90-ft. span at the south end of the bridge to accommodate the existing roadway and admit running of a future railway track along the south canal bank. This span weighs about 143 tons, making a total of 758 tons for the whole bridge.

The electric operating power is carried by submarine cables under the canal to the centre pier, and there supplied to duplex 30-h.p. motors, which are controlled from the operator's house on the north bank of the canal, and in addition, a spare 30-h.p. motor is kept on hand in the house in case of emergencies. This house itself is a handsome structure, built entirely of fireproof construction so as to remove the possibility of risk and delay to the canal or railway traffic by fire.

Not only is the design of the structure interesting, as above stated, but the rapidity of construction is also noteworthy. Work was started on the substructure on December 1st, 1914, which involved the demolition of the old south single-track abutment, and the building of a new double-track abutment behind it, likewise the removing of a certain amount of earth embankment and the widening of the old one to accommodate the new double track. It also included the extension of the two piers on the upstream side towards the Lachine locks, one of which (the pivot pier) required considerable subaqueous work and bonding into the old stonework. The north abutment was extended in the same direction to accommodate the double track, and also to act as the lower story for the operator's house.

This substructure work was carried out during the winter, working 24-hour shifts most of the time, until the bridge seats were ready to receive the steel girders on February 8th, 1915. Since that time the erection of steel and the building of masonry have gone on concurrently until March 31st, 1915, when the span was swung under hand power for the first time, thus making it independent of the temporary falsework which had to be erected in the canal, to take down the old bridge and erect the new. The double track was put into service on April 3rd, and the electric power was turned on on April 15th in the presence of officials of the railway and others interested.

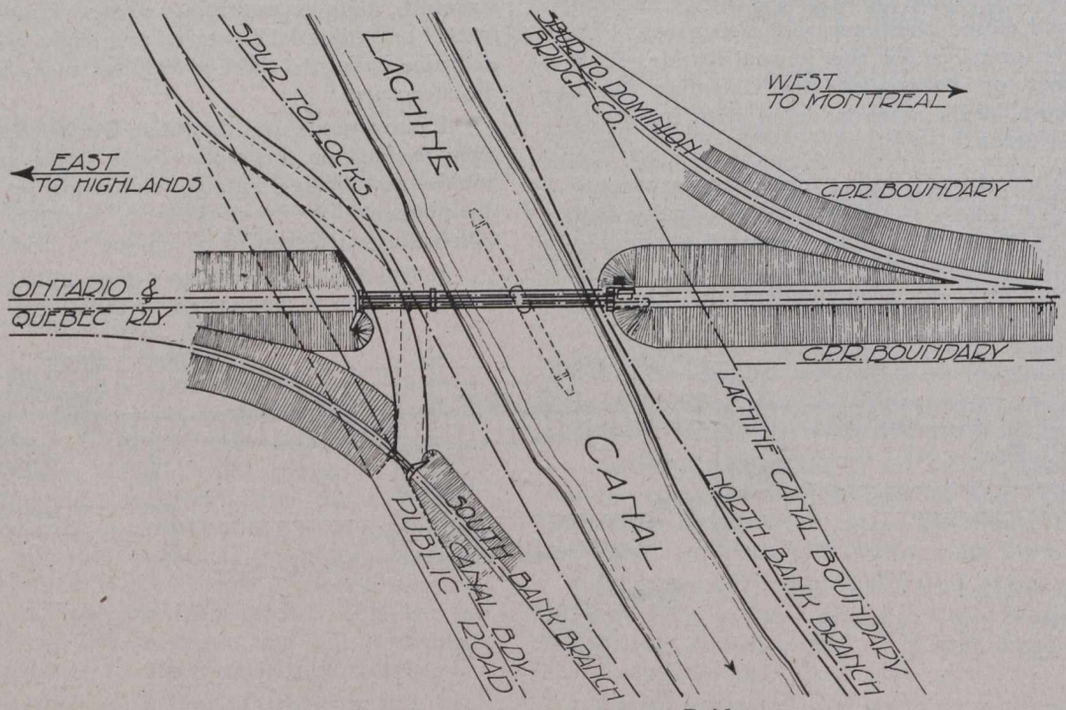

Fig. 2.—Track Connections at Bridge.

During the progress of the work, no trains were delayed by any of the operations, and considering the nature of the work and the tonnage erected, the speed of the work is considered to be remarkable.

The bridge is protected by a 16-lever mechanical interlocking machine with power-operated home signals and electric track-circuit locking, so as to make it impossible for a train to approach before the bridge is properly closed and safely locked, and in addition, it is impossible for the operator to open the bridge for canal traffic until