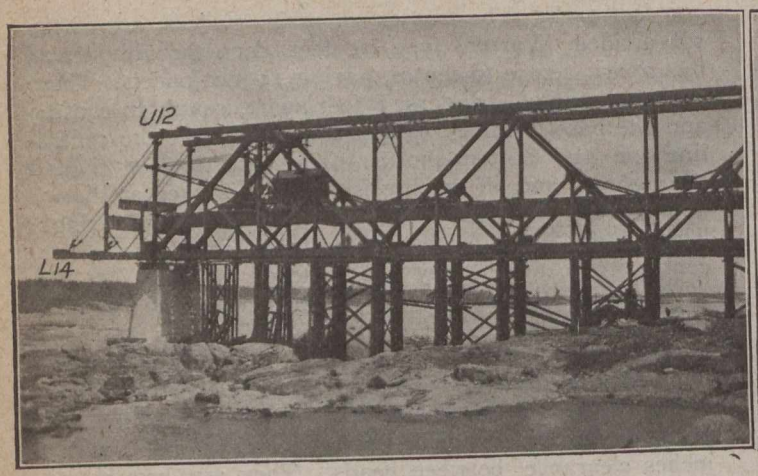

Fig. 3—Southern Anchor-span Erected; and Beginning of Cantilever Erection, Showing Temporary Supports for Panel-points L14

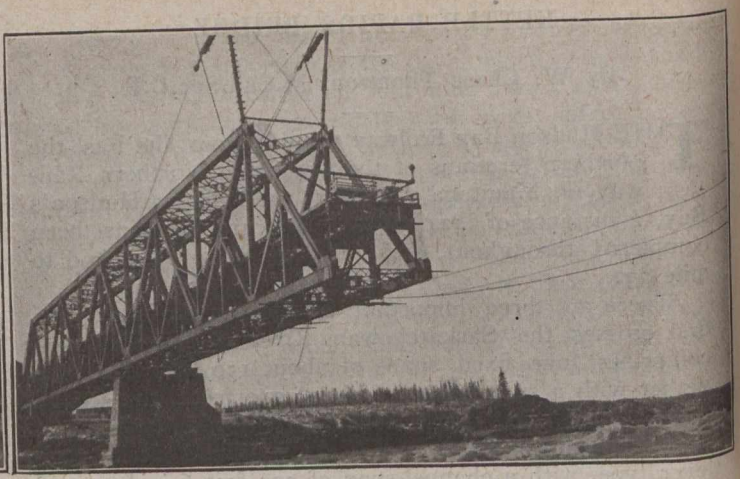

Fig. 4—Southern Half of Bridge Erected

chords of the channel-span adjacent to the piers, where the increase of section was slight; the simplicity and uniformity of the framing reduced the cost of fabrication to a minimum; and the continuous horizontal chords, without adjustable joints, greatly facilitated the work of erection. It is admitted that continuous-girder bridges have been regarded somewhat unfavorably in the past, for it has been claimed that the usual theory for computing the stresses therein, which assumes a constant moment of inertia, is inexact; that the computation of the stresses is too difficult and tedious. Finally, that the least settlement of any support would radically alter the stresses, and thus endanger the structure. No doubt, in the old days of pin-connected bridges, continuous girders were undesirable in many respects; although a notable example of such a structure, which has received much praise and which gave excellent service for many years, was the old Canadian Pacific Railway bridge at Lachine. Now that pin-connections have been almost entirely superseded by riveted joints, continuous girders are growing in favor; and the most remarkable example of such construction is to be found in the recently-constructed Sciotoville Bridge over the Ohio River, comprising two continuous spans of 775 feet each.

Regarding the objection that the computed stresses are inexact, it may be stated that, in the present instance, the reactions were first computed for panel-concentrations by formulæ as given in Merriman and Jacoby's "Roofs and Bridges," Part IV., pp. 12 and 13, and afterwards checked by the elastic method. The difference in the results obtained by these two methods was less than ½ of 1 per cent., which should satisfy the most exacting. This close agreement was undoubtedly due to the parallel chords and nearly constant moment of inertia; but, in the most extreme case, the error due to the use of the formulæ would probably not exceed 6 per cent.

The objection that the labor of computing the stresses for continuous girders is too difficult and tedious is unworthy of notice, especially where a large and important structure is concerned.

Finally the claim with reference to results that would be produced by a possible settlement of one or more of the supports is more rational, but much exaggerated; for continuous girders are very elastic structures, and can accommodate themselves to small settlements of supports without developing serious alterations of stress in their members. In this case, the ends of the trusses, if unsupported, would deflect 25 inches below the horizontal line from dead-load; and the alteration in the dead-load reactions at the abutments, due to raising or lowering the end supports a whole inch, would only be 9,500 lbs., or 4 per cent., whilst the reactions and stresses for the live-load would not be affected at all. Moreover, it is inconceivable that any settlement of the foundations can take place, as they are all on the solid rock; otherwise, this design would not have been adopted. Furthermore, in order to provide for possible small inaccuracies in fabrication or erection, the ends were made adjustable by

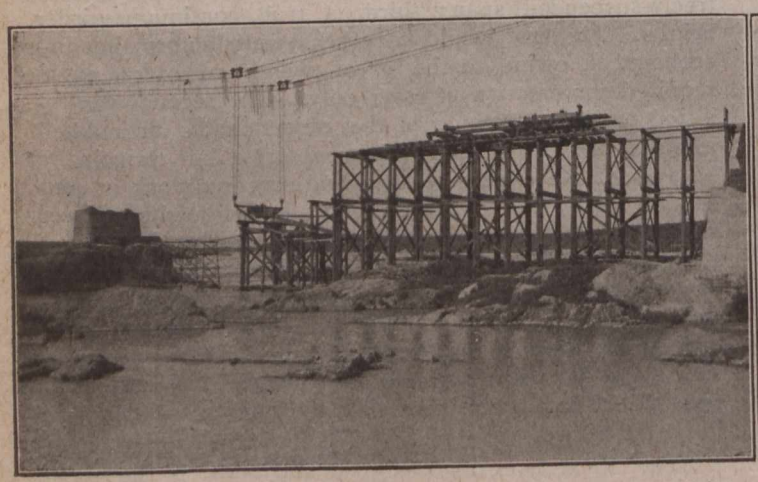

Fig. 5—Falsework Under Construction for Northern Anchor-span

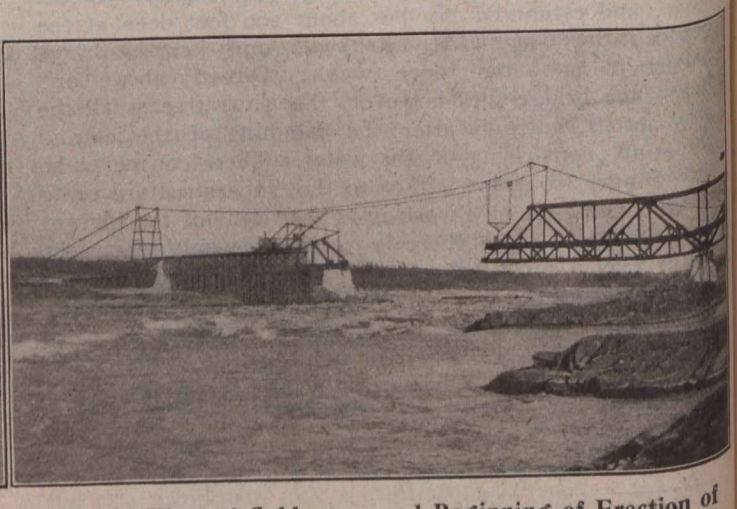

Fig. 6—View of Cableway; and Beginning of Erection of Northern Anchor-span, with Traveller at Floor-level