

ARTISTIC DESIGN FOR MODERN LIFT BRIDGE, AFFORDING A CLEAR CHANNEL OF 200 FEET WHEN OPEN FOR THE PASSAGE OF BOATS—COUNTER-WEIGHTS AND MACHINERY FOR RAISING THE SPANS CONCEALED IN THE MASONRY—A GOOD SUGGESTION FOR A BRIDGE CONNECTING DRIVEWAYS OR BOULEVARDS OF A PARK, WHERE BROKEN BY A RIVER OR LAGOON. *Fig. 1.*

Development of the Bascule Lift Bridge

Length of Span, Rigidity and Time Required in Operation, Much Improved Upon by Modern Inventors—Latest Types of Drawbridges Have Awakened New Possibilities in Inland Navigation

INCREASING channel requirements have stimulated invention to wondrous achievements in movable bridge construction until, in the present day, canals and rivers may afford an unobstructed passageway of 300 feet or more in width to mammoth steel clad transport vessels of enormous beam, without interfering, to any appreciable extent, with overland traffic. With the advent of the propeller and the cheap steel vessel or barge, vast possibilities in inland waterway transportation have arisen, and commercialism, ever alert the world over, is demanding that these possibilities be effected to the very limit, and with despatch. Vessels of unprecedented draught, length and beam, are being constantly slid down the ways of the shipyards to take up their positions in the long line of progress through river, lake and canal. It therefore becomes the duty of every country's government to provide direct and adequate passageway as broad and free from obstruction as engineering science will permit.

On the other hand, there is a progressive commotion on land, ever swelling its proportions, increasing its velocity and demanding its uninterrupted right of way. Thus to avoid a congestion of traffic either on land or water, bridges must be constructed that may be opened and closed so as to give passage alternately to vessels plying up and down stream and to permit of pedestrian, vehicular or railway traffic crossing the channel—and these crossings must be effected quickly.

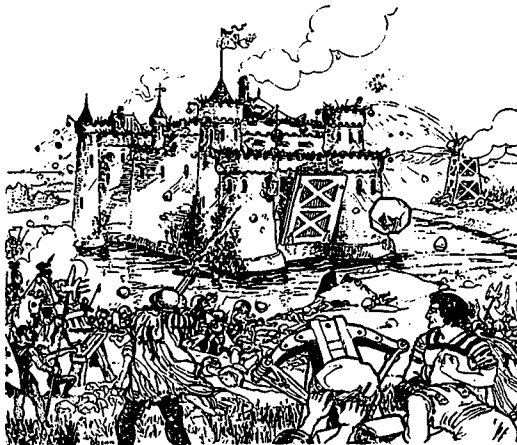
For many years the swing bridge, supported on a pivot pier in the centre of channel has taken precedence over the ferry and more primitive forms of draw bridges, because of the increased length of span it provided, in addition to being operated more quickly than other types. It also showed superior strength. But the day of the swing bridge's utility is on the

wane, it being found inefficient both in respect to the width of unobstructed channel it affords and the length of time consumed in its operation.

One does not need to go outside of Canada for an evidence of this fact.

The Chief Engineer for the Dominion Government in the last annual report of the Department of Railways and Canals, states that all pivot piers of the bridges in the centre of the Welland Canal are to be entirely done away with, in order to give a clean channel of 100 feet in width. It is proposed, each year, to tear down two or three of the old bridges and build new structures spanning the entire channel, until every bridge at present standing has been replaced.

Just what form or type of movable bridge is to be adopted by the Canadian officials in connection with the imminent necessity of increasing the efficiency of navigable waterways is a momentous question. Canada has already spent more money in constructing and improving her inland water transportation service than any other country in the world—a total of \$116,230,342.94—and has provided, by means of the "enlarged canal system," and the intermediate waterways (as her chief navigation project) a minimum depth of fourteen feet of water from Lake Superior to the head of the ocean navigation at Montreal to accommodate vessels 255 feet long with 44-foot beams. "In exceptional cases," says the latest Blue Book, "this length can, with certain manoeuvring, be sometimes increased to 265 feet, being governed, of course, by the form of the vessel." That the country will, before long, be called upon to make further extensions and improvements in this direction is certain, in order to meet the demands of her fast increasing population her commerce, and



MEDIAEVAL PIVOT OR TRUNNION BASCULE BRIDGE OF VERY SHORT SPAN. THE BASIS OF SUGGESTION FOR THE MODERN LIFT BRIDGE OF OVER 300 FEET IN LENGTH. *Fig. 2.*