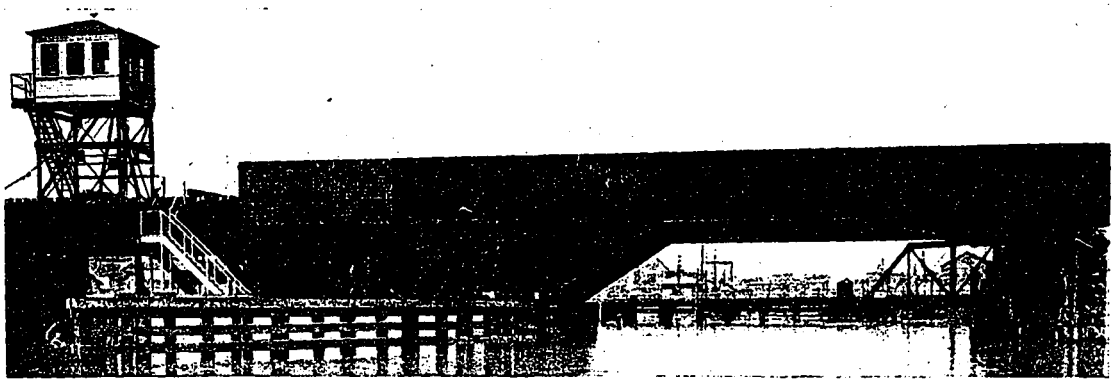
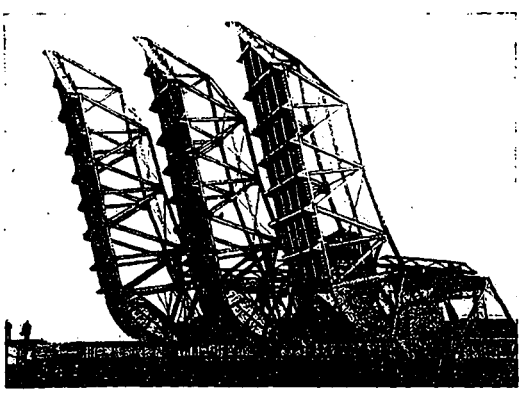


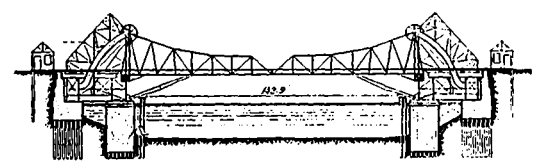
A MOVABLE STRUCTURE WEIGHING 3,200,000 POUNDS ACROSS THE PEQUONNOC RIVER, BRIDGEPORT, CONN., BEARING A COUNTERWEIGHT, TO AID THE UPWARD ROLL, OF 1,100,000 POUNDS. THIS BRIDGE CARRIES FOUR TRACKS BORNE ON TWO SEPARATE STRUCTURES DESIGNED TO MOVE DISTINCTIVELY OR AS A UNIT. *Fig.* 11.

electric motor, much upon the following simple principle: "Lay a walking-stick, having a semi-circular curved handle, upon the floor, the crook pointing upward; then pull down upon the end of the handle until the stick rises into the air and stands erect. This movement constitutes the *rolling lift*." The bridge is lifted by the rolling of its curved lower part upon a flat surface, or set of rails, a counterbalance being provided to overcome the dead weight of the heavy steel framework. The plan gives a large bearing surface so that the wear caused by the friction of opening and closing the draw is reduced to the minimum (a reference to the illustrations will plainly portray the principle). The Rolling Life Bridge was found to fulfill every requirement essential to a drawbridge. It eliminated the objectionable features of the pivot hinged or trunnion bascule, the swing bridge and the direct lifting bridge. The introduction of this practical invention marked a new era in the progress of movable bridges. Several types of lift bridges, entirely at variance with the original principles of the *lift, trunnion* or *bascule* bridge, have developed from the suggestion of Mr. Wm. Scherzer. Figure 13 represents one of these adaptations as conceived in 1889 and submitted in a competition of designs for a structure to span the channel at Canal street, Chicago. It is the Schinke Bascule design. In this particular instance the Rolling Lift idea was accorded the preference, because the latter was found to be more simple in its moving parts, and equally adequate for the purpose, it having no axle or journal friction in its structural portions when moving, and no flexible joints in the carrying parts, which is an important factor of consideration in the stability of a structure which must needs be subjected to severe and incessant usage.



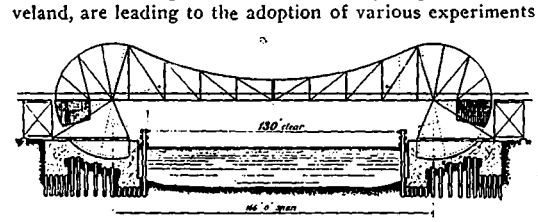
SIX-TRACK ROLLING LIFT BRIDGE CROSSING FORT POINT CHANNEL, BOSTON, MASS., AT AN ACUTE ANGLE. EACH BRIDGE OPERATED BY A 50 H.P. MOTOR, BUT ARRANGED TO WORK AS A SINGLE STRUCTURE, AND TO BE OPERATED BY ONE MAN. OVER 1,000 TRAINS CROSS IT DAILY. *Fig.* 12.

A bridge of the type shown in Fig. 14 may some day come into more or less extensive employment; it differs from the Rolling Lift only in that its friction member is a bolt or pivot around which the bridge revolves, instead of rolling up and down on a pair of tracks. In the trunnion lift, the utility of a counter weight to facilitate the upward motion of the cantilever arm, has also been taken advantage of.



THE "SCHINKE" BASCULE DESIGN—ITS CHIEF OBJECTION BEING THE COMPLEXITY OF ITS WORKING PARTS. *Fig.* 13.

Another type of bascule lift bridge that is coming in for popular utilization is that manufactured by the Cowing Engineering Company, of Cleveland, Ohio, illustrations of which appear in this issue. In connection with its installation in the Forest City, and in consideration of the fact that the Canadian Government has entered upon the project of eliminating the centre piers of bridges crossing the narrower navigable waterways, it is interesting to note that increasing channel requirements for the movement and handling of iron ore in the Cuyahoga river, Cleveland, are leading to the adoption of various experiments by the city toward facilitating the progress of the industry. Notable improvements in this line have been the elimination of a curve in the river channel at Jefferson street, which was very close to 300 degrees, by cutting a channel between the two extreme ends of the curve, permitting the free passage of the largest boats drawing



LATELY PROPOSED TYPE OF TRUNNION BRIDGE. *Fig.* 14.