assisting the secretaries of the various technical societies to act as centre; a club where men with common interests would meet and exchange greeting; a club where the visiting engineer or architect could be entertained and quickly meet the men of his profession that reside in this city.

Toronto requires such a club—and requires it now, and we wish the men behind the movement every success.

BRIDGE DESIGN.

Mr. L. H. Chase, M. Inst. C.E., Great Britain, read before the Liverpool Engineering Society recently a paper on the "Theory of Suspension Bridges."

The author criticizes the statement of Prof. Rankine when he says: "The effect of the stiffening girder is to distribute a partial uniform load uniformly all over the chain."

The author then proceeds to develop formulæ which explain his contention. Two cases were considered, namely, a bridge with a hinge at the centre of the span, and a girder without a hinge. In the first case the resulting formula is $x = 2W - \frac{c}{L}$ where x is the load carried by the cable, W a concentrated load at a point c feet from the abutment, and L is half the span. In the second case

$$x = WK \frac{1}{1 + \frac{c}{g}}$$

where K is a factor varying with the position of W and representing the ratio of the average deflection of a detached girder, due to a concentrated load, to the average deflection, due to the same load distributed; c is the average deflection due to any load distributed uniformly on the suspenders of the detached cable; g is the average deflection of detached girder due to the same load distributed.

VOLUME XVII.

With this issue we close another volume. The index for the numbers since July will be found on page 43, and by glancing over the list of authors and subjects readers will secure some idea of the field we have endeavored to cover.

We have placed the index on the last few pages, so that it may be detached and placed in the first issue of Volume XVII.

Volume XVIII. will, editorially (advertisements included) and typographically, be superior to any yet issued.

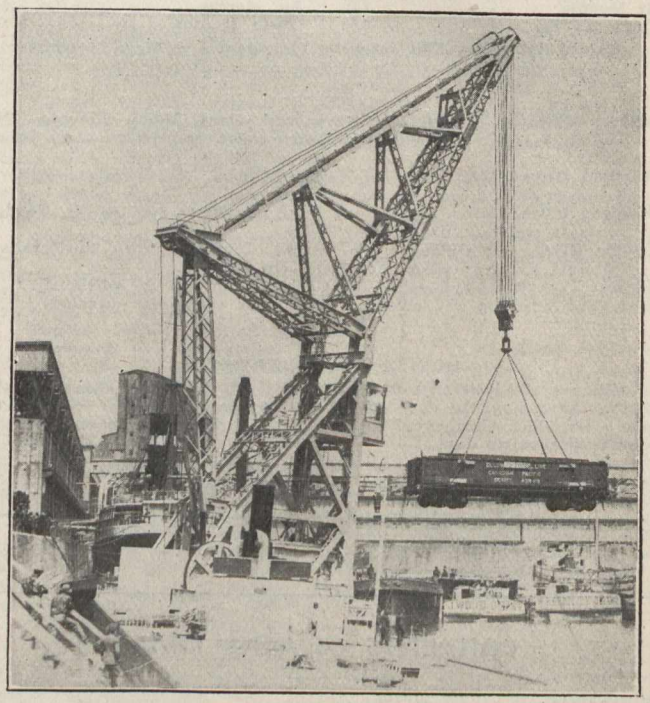
EDITORIAL NOTE.

The total returns of the Dominion for the eight months of the fiscal year to November 30th amounted to $439,959,213, an increase of $62,037,972, compared with the same period last year. Of this increase, $45,280,968 was in imports and $14,970,238 in exports. For November the total trade was $73,151,731. The imports for the month increased 40 per cent. and the exports 10 per cent.

75-TON FLOATING CRANE.

The continued growth of shipping at the port of Montreal has made necessary improvements in methods of transhipping. Recently the Montreal Harbor Commissioners added to their equipment a 75-ton floating crane. The design used was the outcome of a careful consideration of the relative advantages of floating and permanent. The crane selected can be taken alongside of any ship at any berth. Its radius can be varied: it can deal at a height of 100 ft. above water level, with loads from 75 tons downwards, and while suitable for unshipping such heavy units as locomotives, can be utilized on occasion for carrying the grain band conveyers loading ships in outer berths from barges, canal-boats, or warehouses. It has therefore a wide range of service.

The crane, of which a perspective view is given above, and elevation, sections and plans on the opposite page, was built by Messrs. Applebys, Limited, Leicester and Glasgow, and the pontoon, boiler, engines, &c., by Messrs. Vickers Sons and Maxim, Limited, at Barrow-in-Furness. This pontoon is of the following dimensions:—



Harbor Crane Raising Load.
(Photo by The Montreal Star.)

Length, moulded	200 ft. 5 in.
Breadth, moulded	43 ft.
Breadth, extreme	43 ft. 10 in.
Depth, moulded	10 ft.

The pontoon is strongly made, of mild steel, and has been built under the supervision of Lloyd's surveyors for their special class. A centre line bulkhead is built between the end bulkheads, and before and abaft these is tapered to the bottom. Strongly-built girders, well supported by deep floors, are fitted on each side to resist the strains set up under the varying conditions of working. Six transverse bulkheads are fitted, and the necessary store-rooms, &c., are placed in the hold of the pontoon between these bulkheads. A strong elm fender is fitted all round the pontoon at the level of the deck, securely bolted between angles. A walking gangway of white pine is fitted all fore and aft on the top of the floors on each side of the pontoon. A rudder, worked