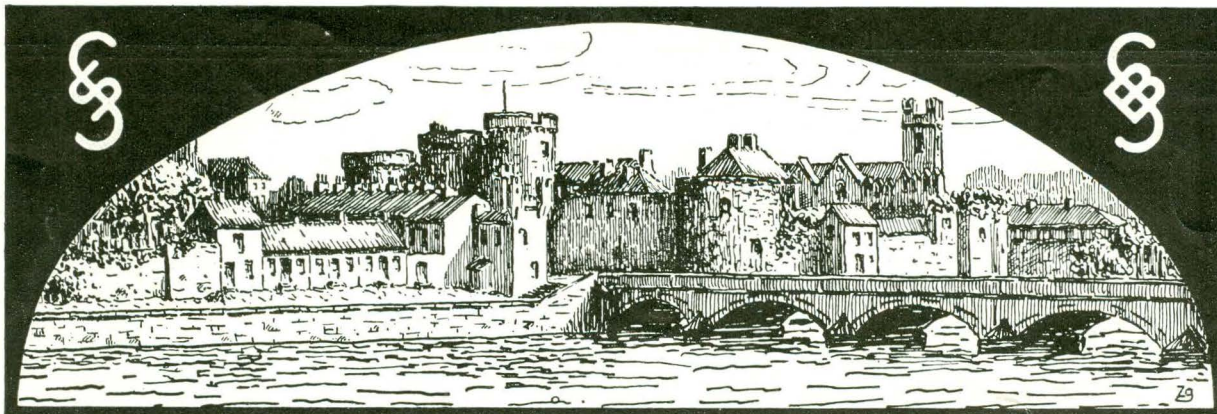




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PROGRESS ON THE SHANNON

3rd YEAR

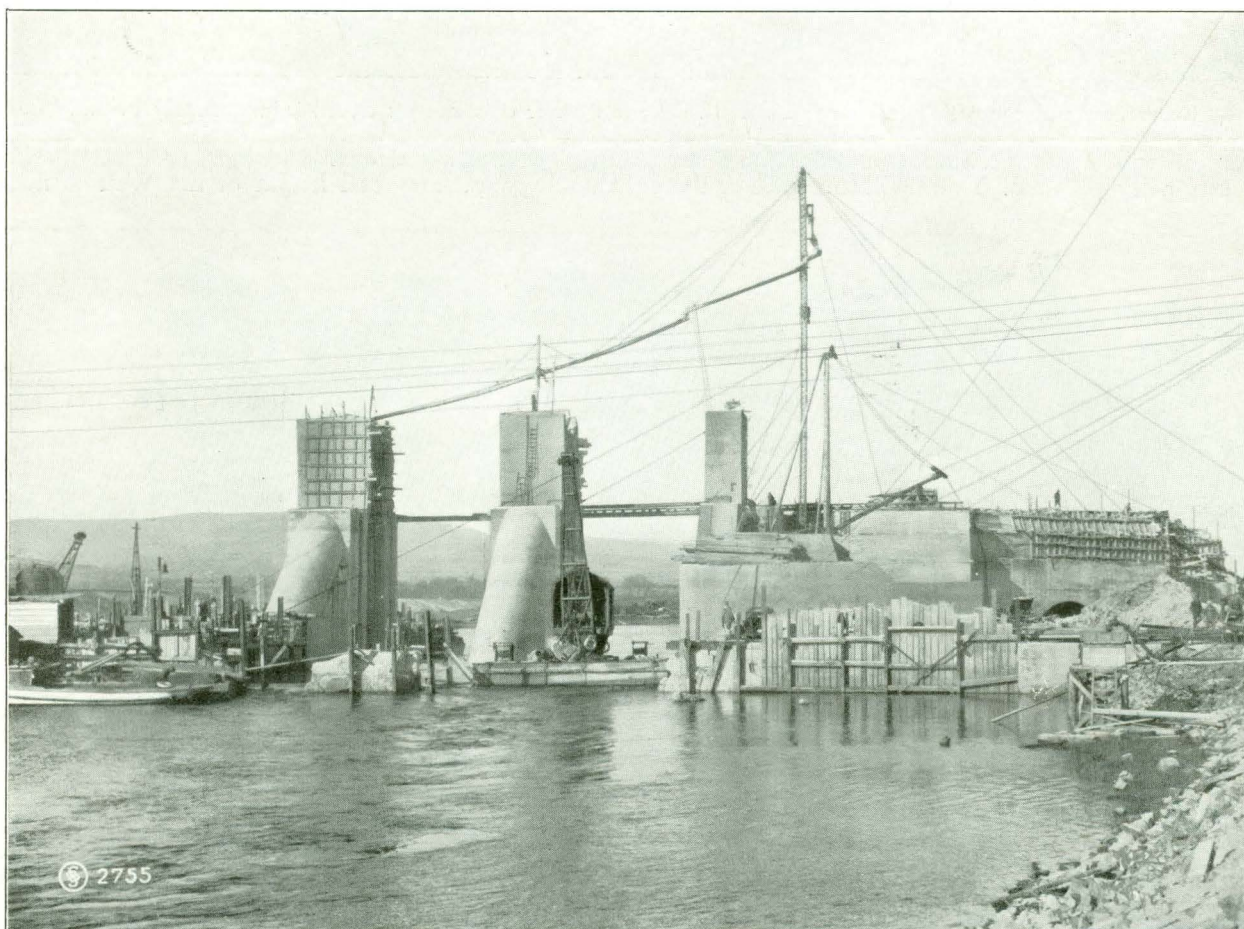
MARCH 1929

NUMBER 6

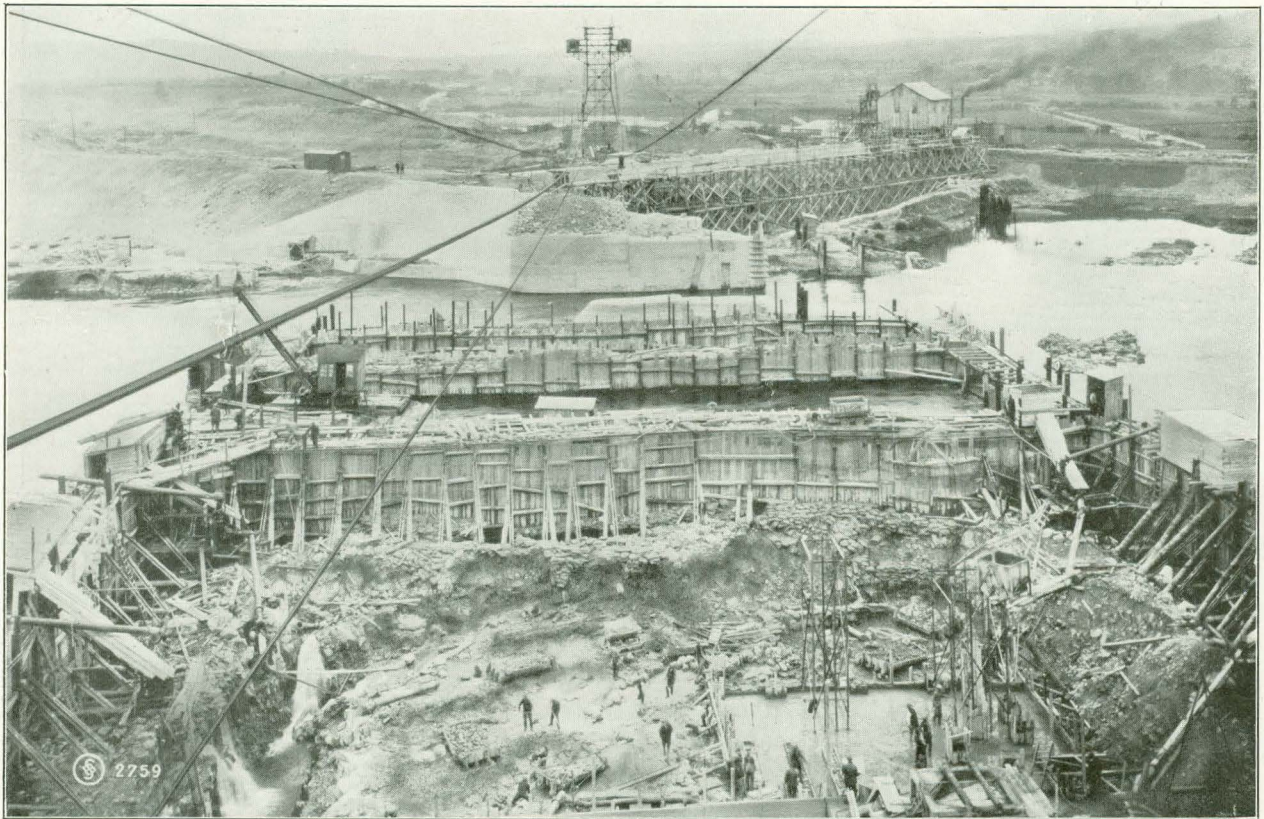
Construction of Weir Section II

Since the publication of our June 1927 No. 9 and April 1928 No. 7 pamphlets, the general arrangement of the Weir has been considerably modified.

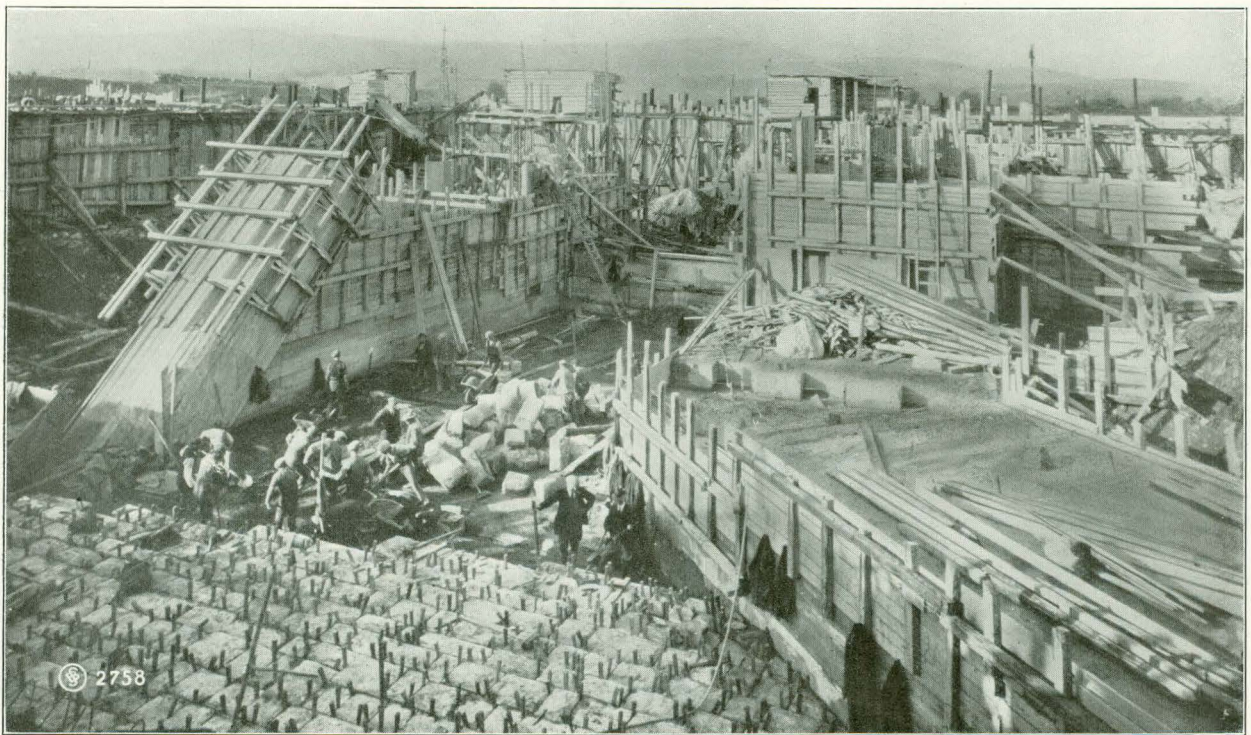
The two 18 m. wide openings with high sills and shallow gates on the left Shannon bank have been substituted by two 10 m. wide and deep openings,



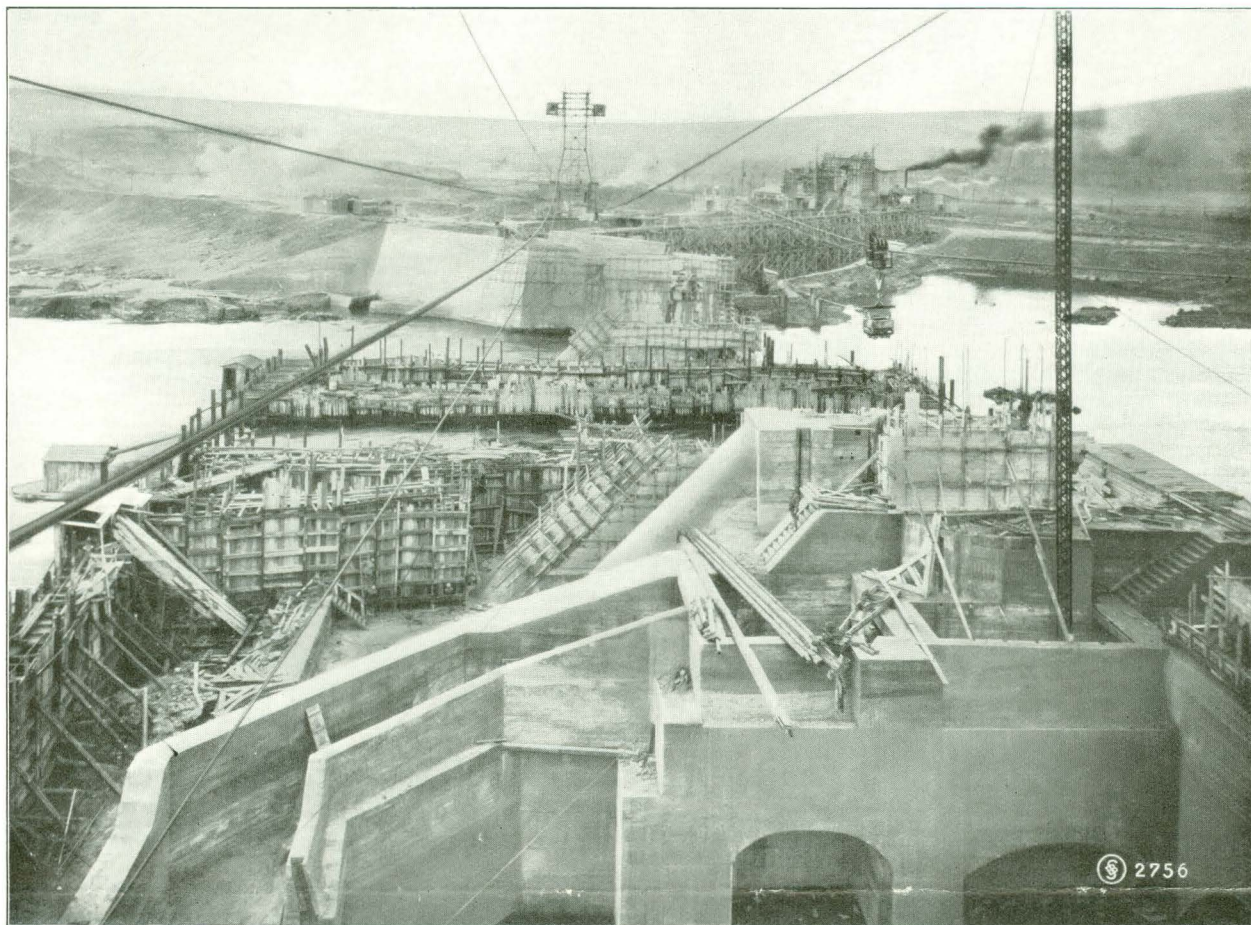
Removing the coffer dam of building section II round the 2 piers and left abutment. Concreting the piers by means of a tower and chute



Excavation and concreting inside coffer dam II. The last coffer dam not yet closed is immediately behind identical with the two central ones that remain same deep or flush controller openings, each fitted with as originally planned. There will thus be 4 of these double gates. The total length of the Weir is now



Concreting and the placing of the granite blocks inside coffer dam II



The left abutment with the fish pass and the 2 piers in course of construction

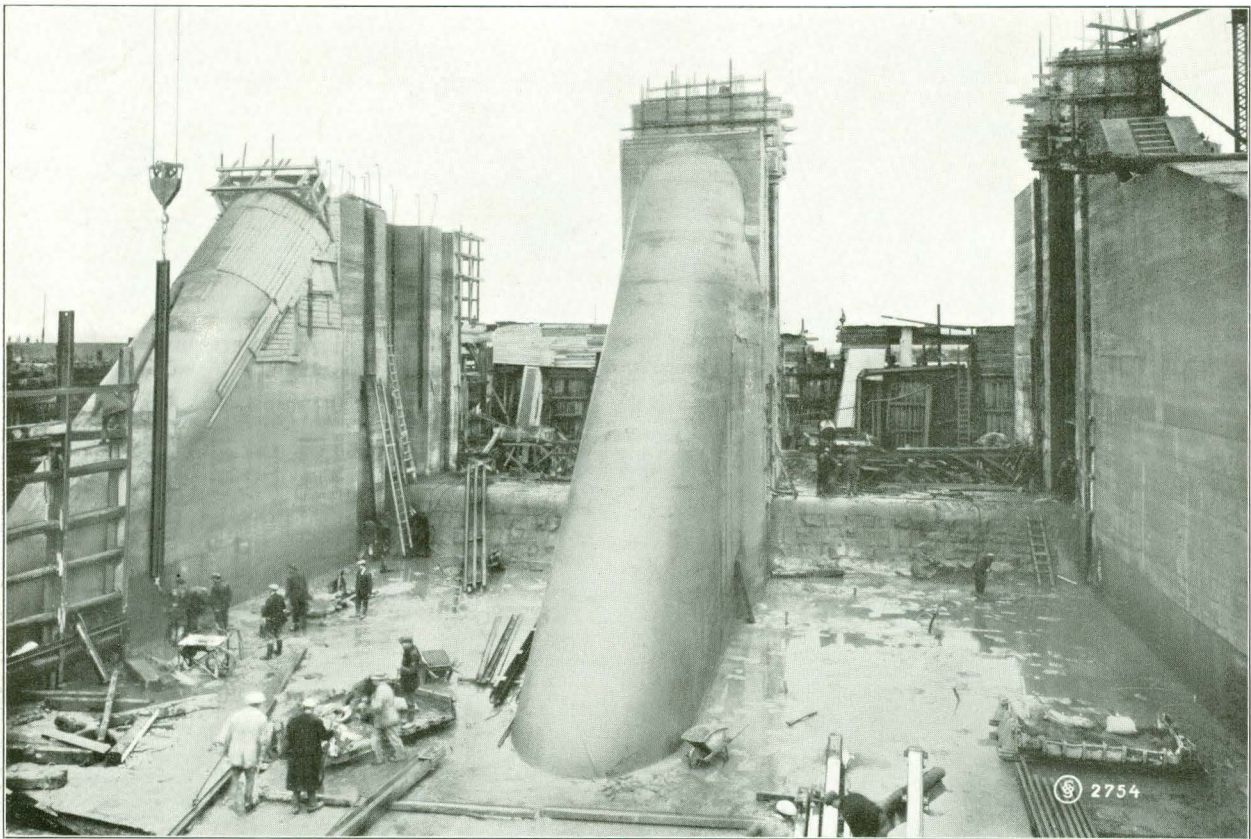
consequently some 14.50 m. shorter than previously, with the left abutment projecting more into the Shannon by a corresponding amount, while the superstructure housing the machinery for operating the gates and running from top to top of piers has been changed from a reinforced concrete to a steel one. And last but not least the general design of the Fish Pass has also been revised in order to give the best possible conditions for the fish.

After the building section I of the Weir (see June 1927 No. 9) had been completed, building section II was begun and the coffer dam for latter completed and pumped out by the end of June 1928. This section comprised the whole of the left abutment of the Weir with its Fish Pass, the first two 10 m. wide flush controller openings with their 2 piers, each pier being 4.50 m. wide. The coffer dam adopted for this section differed considerably from the type used for the first section; it was much narrower, measuring only 2 m. from inside to inside of the vertical row of I joists, and was concrete instead of earth filled, the total working space it afforded amounting to some 1950 sq. m. as compared with 1300 sq. m. in the case of building section I. This type of construction proved extremely efficient and satisfactory; in fact, on account of the considerable difficulties experienced with the foundations, one can safely say that an earth filled type would

hardly have stood the extremely trying conditions. The difficulties with the foundations were due to the fact that in some spots the solid rock bed proved to be much deeper than first anticipated and furthermore was covered by a layer of soft material with hard rock on top of it again. It is on this top layer that some portions of the coffer dam were built, with the result that, in order to prevent bad percolation underneath the coffer dam through the soft strata, it had in places to be strengthened from outside by another concrete filled coffer dam extending right down to the solid rock bed. When this strengthening work was completed the coffer dam itself proved sufficiently watertight, and most of the water that leaked in came through the fissures in the rock below the coffer dam as in building section I, although the rock foundation was carefully cement grouted under a pressure of 6 atmospheres. Nevertheless the working space was kept quite dry by 4 to 8 pumps working continuously.

For about a fortnight at the end of November and beginning of December 1928 the Shannon was in an exceptionally high flood, and the work inside the coffer dam had to be interrupted and the latter flooded. When the water level was back to normal, the coffer dam was pumped dry again, no damage whatever having been caused to it.

The excavation work for the piers, spillway, left



The 2 piers, spillway and left abutment as viewed from downstream in course of construction

abutment etc. was chiefly done by a small 0.80 cub. m. steam shovel on caterpillars, while the minor excavations and excavation in places inaccessible for the steam shovel were made by hand and cable crane as described in our June 1927 No. 9 pamphlet. The material removed by the steam shovel was hauled up to the left Shannon bank by an inclined elevator and subsequently used to strengthen the toe of the new bank between the Kilmastulla River diversion and the Shannon. The material was conveyed from the elevator to the bank by a narrow (600 mm.) gauge railway. The excavation work was begun immediately the coffer dam was pumped dry, the necessary strengthening of the coffer dam being carried out simultaneously so that no time might be lost. The abutment and the pier nearest to it were concreted first, while the foundation for the second pier was being prepared. The rock foundation under the piers and sills of the openings between them was cement grouted to a depth of 5 m. and the upstream side of the left abutment to depths varying from 4 to 3 m. The distance between the grouting holes was on the average 2.30 m., the holes being spaced in two rows 1 m. apart. The cement grout was injected under a pressure of 6 atmospheres. This grouting was necessary in order to prevent percolation under the Weir through the fissures in the rock foundation. The spillway and the top of the sills between the piers were granite faced to an average depth of about 50 cm. The granite blocks on top of the sills required parti-

cularly careful anchoring and placing as the rush of water over them will be very severe when the gates are being lifted. Furthermore in order to minimize the friction of water rushing over them, their surface was dressed in a special way. The concreting work was done chiefly directly by the cable crane, and partly by a special tower and chute arrangement. The work was carried out without interruption except when frosty weather intervened, as concreting had to be stopped when the temperature dropped to 32° F.

The gates between the piers consist of 2 portions, the upper and the lower, and are of a steel lattice type, their compound depth amounting to 10.90 m.

The work inside the coffer dam was completed by the end of January 1928; it was then flooded and blasted up in sections, the debris being removed by a grab excavator on pontoons.

The Fish Pass, one of the biggest in the world, is some 190 m. long (for Full Development) and consists essentially of a series of steps with stop walls at the end forming pools, the drop between each being on the average 50 cm. Each pool is 7 m. long by 3 to 4 m. wide. Three rest pools of lengths up to 20 m. have also been provided. The supply of water will be regulated by a series of small gates measuring 1.50 by 2.00 m. and located in the upstream wing wall of the left abutment behind which the Fish Pass is situated.

At the present time (spring 1929) the Fish Pass, the steel superstructure and the last coffer dam for the remaining 2 piers are being completed.