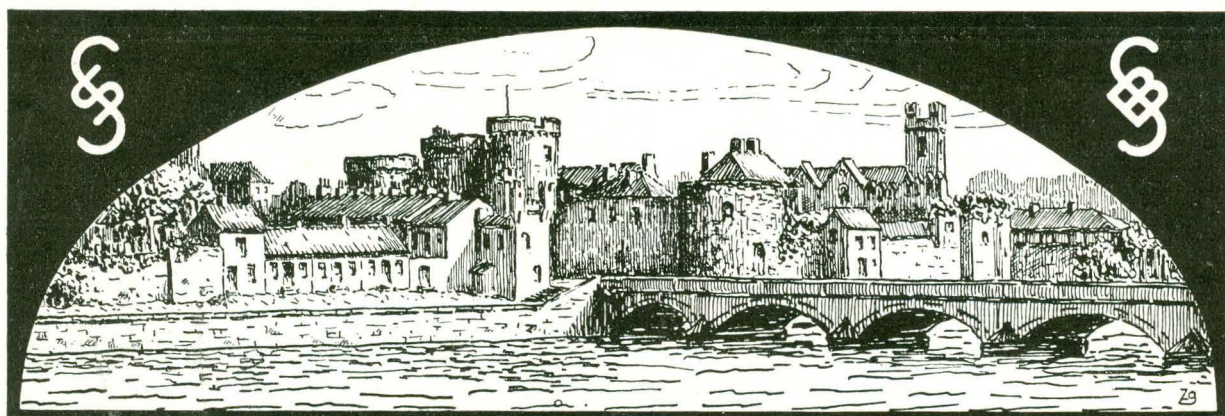




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PROGRESS ON THE SHANNON

3rd YEAR

OCTOBER 1928

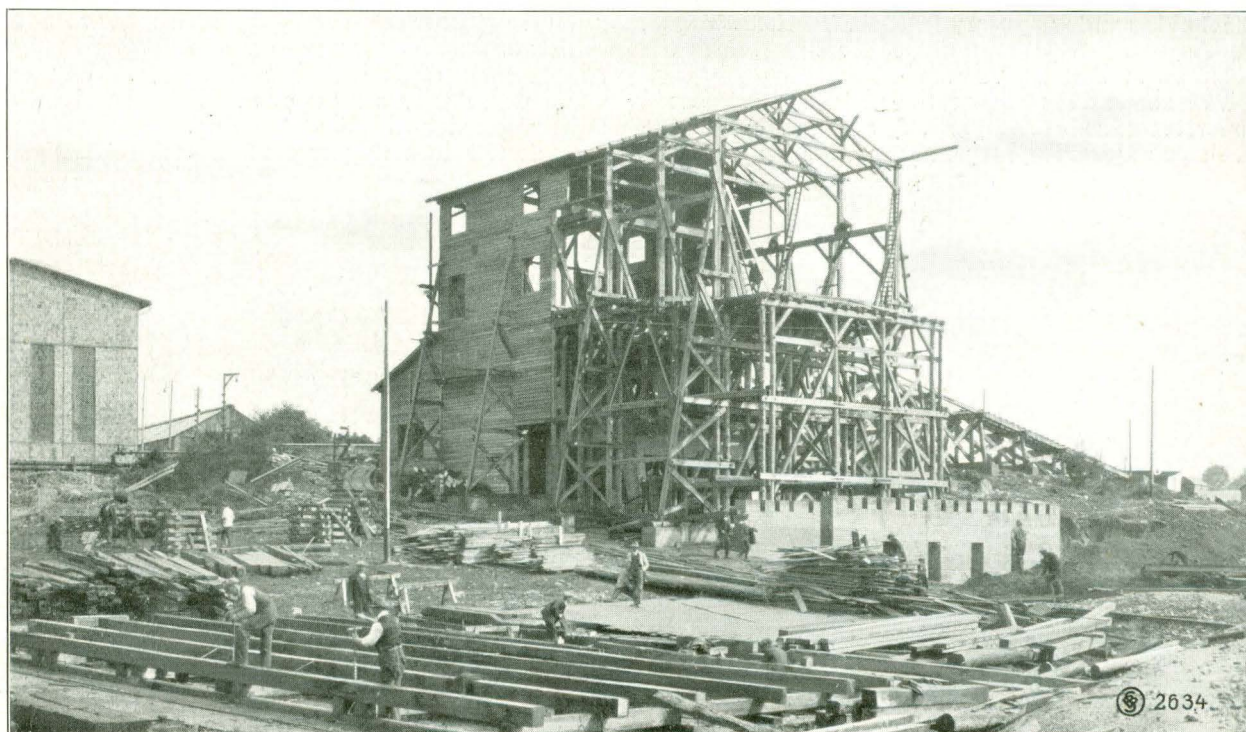
NUMBER 1

The use of Timber on the Building Sites of the Shannon Scheme.

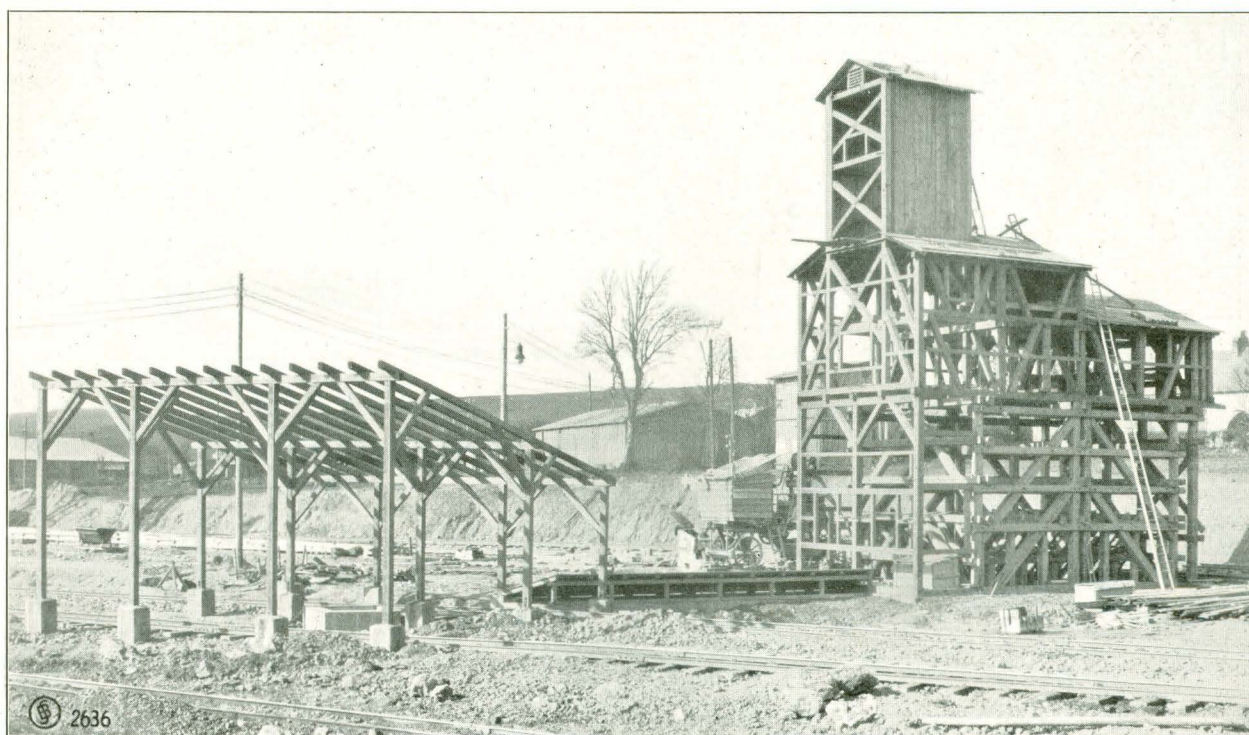
In most Civil Engineering Works timber plays a very important part both as a structural material for temporary structures as well as in the making of forms and centerings for casting concrete. On works of the size of the Shannon Scheme it is all the more so.

The timber is supplied in trees mostly from Germany, but local timber has also been quite extensively used. It is then first conveyed by road on lorries to the timber yard in Ardnacrusha. Here it is cut by a frame saw and circular saws in our mill into

planks of any desirable thickness and length respectively. There is also a special machine for making tongued and grooved planks for sheet piling where the planks have to interlock, as well as several planing and other machines. Altogether there are in Ardnacrusha 5 carpenter shops, and 120 carpenters are employed, while the total number of carpenters on the whole scheme is about 200. All the difficult timber work which need not necessarily be made on the spot is all prepared in Ardnacrusha, as all the required machinery and best labour is there at



Erection of stone crushing and washing plant Ardnacrusha



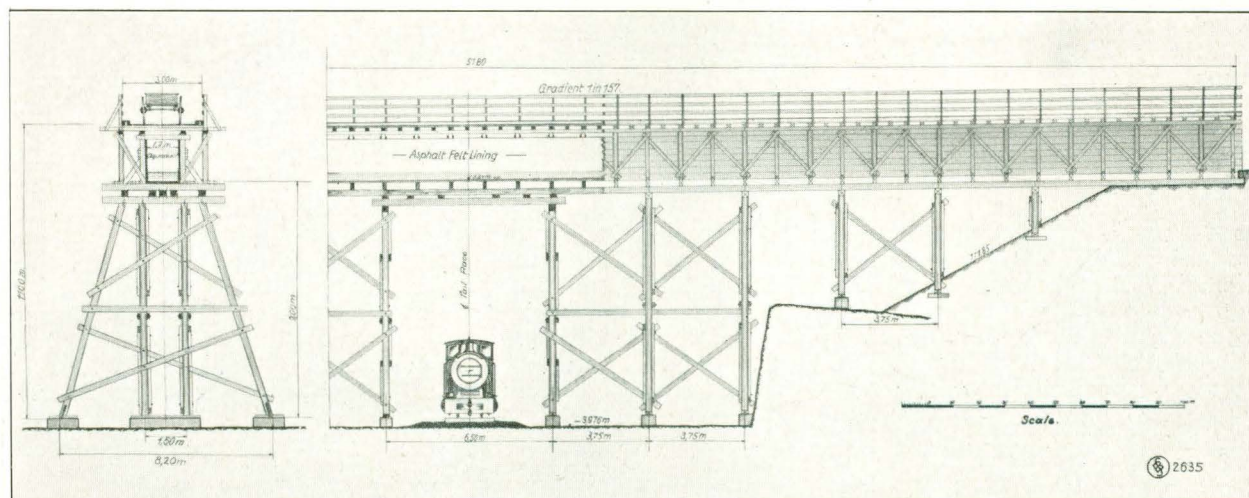
Erection of the cement silos at Ardnacrusha

hand. The cut timber or the finished parts of the various timber structures, as the case may be, are then conveyed by road or rail to any place on the works according to needs.

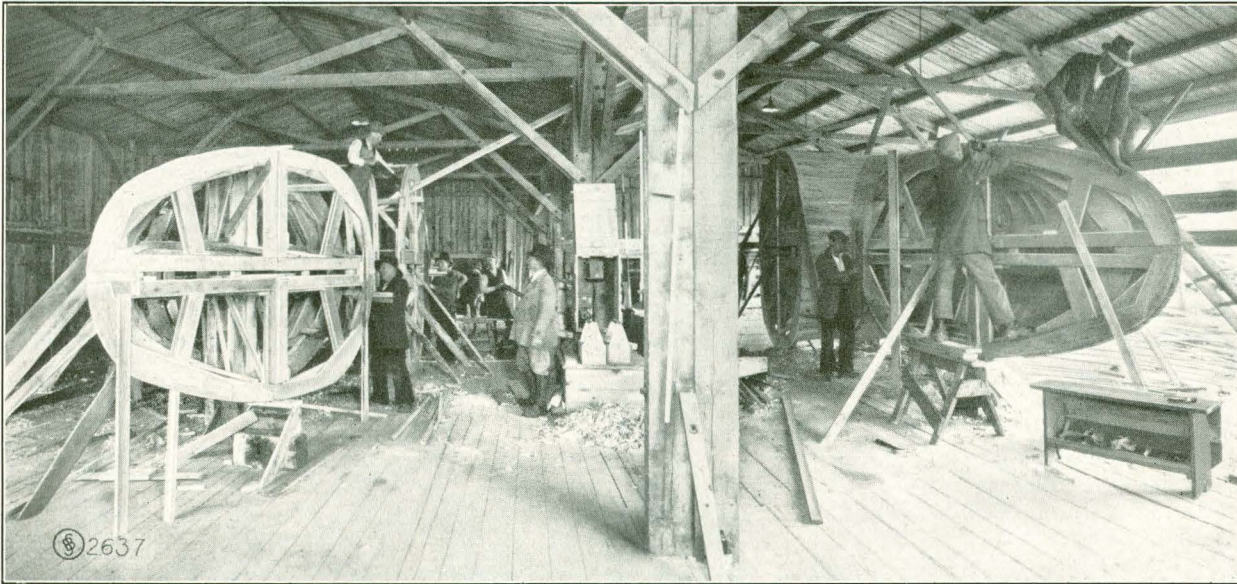
Timber is being used on the Works for a variety of purposes, namely for forms for shuttering for all the concrete work, centerings, foundation piles, sheet piling and temporary structures, such as bridges, houses, workshops and the coffer dam across the Shannon at Parteen Villa.

The shape of some of the plain and reinforced concrete structures and parts, though made as simple in shape as possible, may still present a very difficult

surface for it to be shuttered, requiring great skill on the carpenters part. As an instance of complicated timber false work one can mention the forms that were required for concreting the draught pipes and the stays supporting the strainer at the Power Station. These can well be seen from illustrations in our June number. The forms or shutterings for the small semispherical domes over and between the outlets of the draught pipes are also another example of extremely difficult timber false work. They were made of actually a mass of small timber pieces all tightly glued and nailed together. Comparatively complicated shuttering frames had also to be designed



Timber aquaduct with roadway over the Tail Race

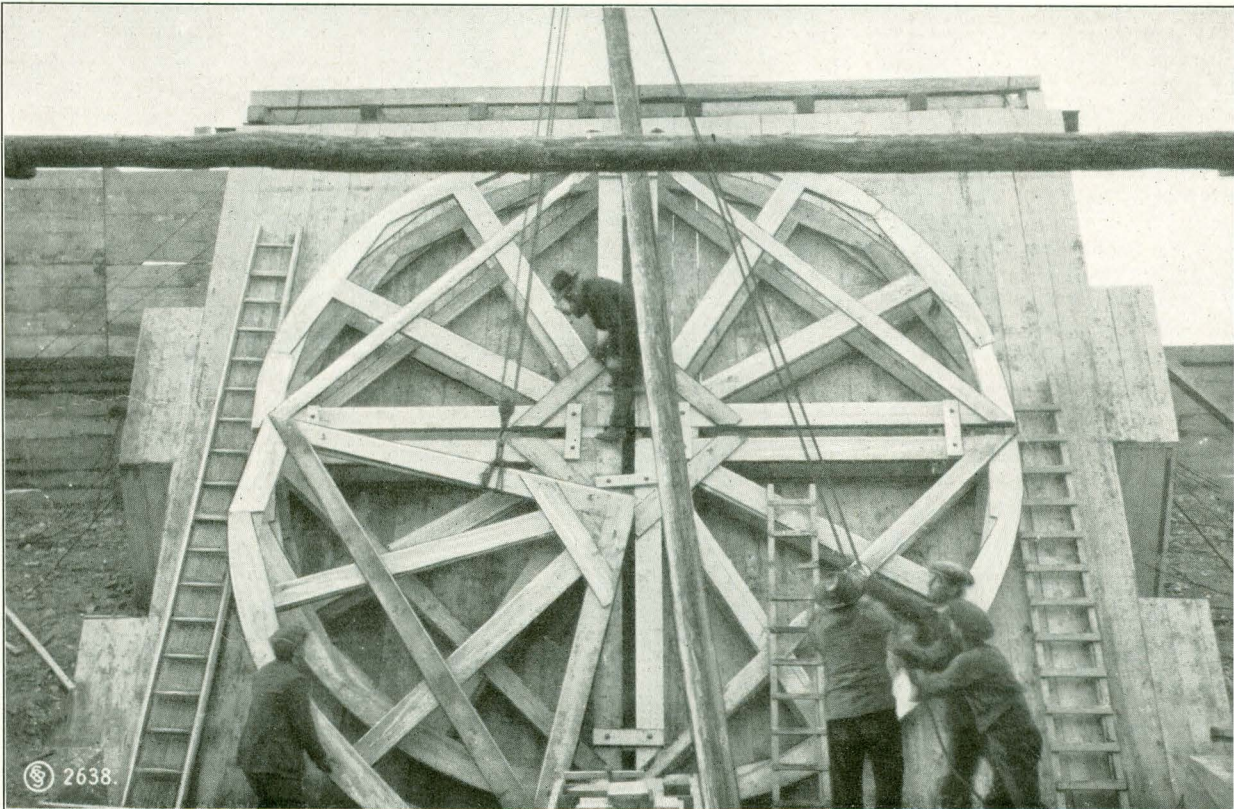


Preparing the casing for the circuit inlets of the Locks

for the cold air tunnels and the draught pipes at the Power Station, as, in the latter case, the cross section gradually changed from a horizontal circular one immediately under the turbines to a vertical rectangular or elliptical one at the outlet ends.

As timber, which is pine in all cases, is a comparatively expensive material one tries to use the

same timber and often the same form work over and over again. The latter is in many cases designed that it can be moved in sections. The Intake Sluice Building or the Navigation Locks are an instance have thus been concreted. The shut rings were made in sections, which in height and length represented only a small fraction of the



Casing for the inlets of the turbines

corresponding dimensions of the final structure. After a row of sections had been fixed into position the concrete was poured in. The next rows were then erected and the concrete placed. When the concrete between the first set had sufficiently set the row first used was removed and pulled up to the top of the last set. This was repeated till the top of the structure was reached. All the culverts and syphons under the Head Race were another instance where the same set of forms was used many times over; in fact, in the case of the 7 small syphons and culverts which were all purposely made of identical section, the barrel shaped forms had to be used so many times that the surface that came directly into contact with the concrete had to be protected by a tin lining.

The centerings or in other words the frame works, supporting sometimes, like in the case of bridges, culverts, ceiling roofs etc., the actual form work into which the concrete is poured, are also an important matter. They have to be both light and strong and often require careful designing. The biggest centerings made were those for the curtain wall of the Intake Building and the bridges at O'Briensbridge, Cloonlara, Blackwater and Parteen. Here again, in order to save timber, which in these cases was particularly heavy, and the extra work involved in cutting fresh centerings, the same centerings were used for O'Briensbridge Bridge as for Blackwater Bridge, while the now already removed centerings of Cloonlara Bridge will be used for Parteen Bridge — these four structures having purposely been made of 2 types only. The bridge centerings made chiefly of uncut 30 cm. ϕ timber consisted of a lower or foundation part composed of frames about 11.50 m.

in height and a top part immediately supporting the form work above and resting on jacks placed on the lower or foundation portion of the centerings. These jacks, each of 20 tons lifting capacity and spaced in rows across the bridges were used in order to be able on completion of the work to lower the centerings simultaneously and to the stipulated amount which varies with the different centering frames along the bridge. Each jack was operated by one man and all were lowered by giving them a $\frac{1}{4}$ turn,

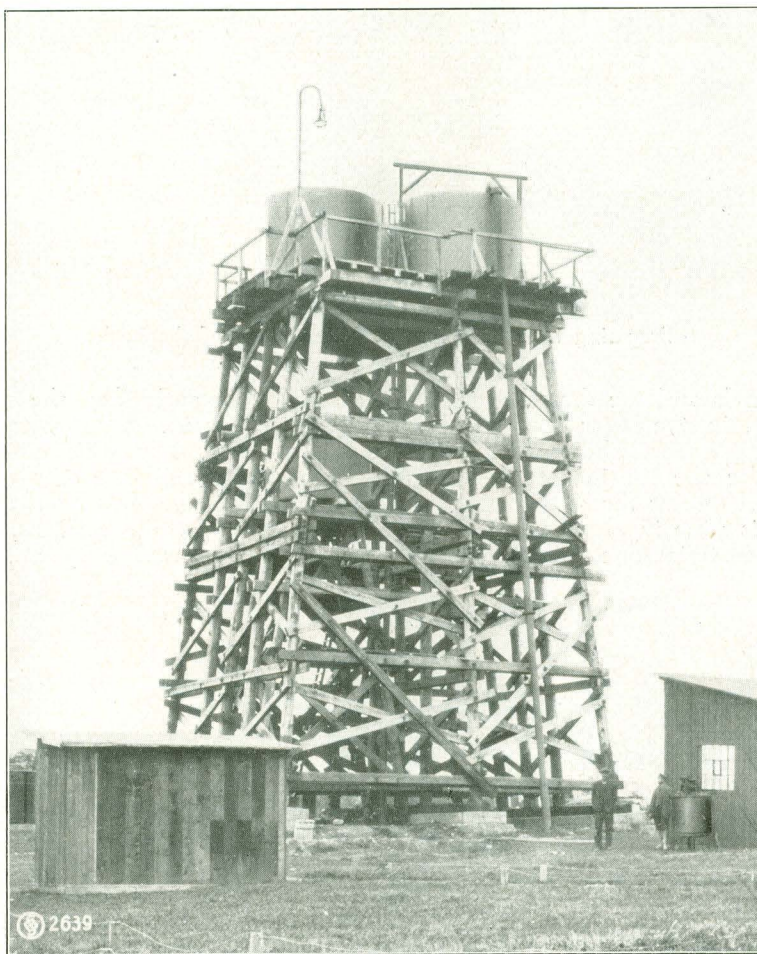
equivalent to 3 mm. at a time simultaneously. The time for them to be turned was given by signals at intervals till the centerings were clear of the bridge.

For structural purposes timber has been used for many buildings on the whole stretch of the works. The most notable structures being perhaps the huge stone crushing, washing and sieving plants at Ardnacrusha and Cloonlara, as well as the Cement Silo and the water tower at Ardnacrusha. Several timber bridges have also been built, one roadway bridge across the Head Race near

O'Briensbridge Village, a railway bridge over the Blackwater River and another near Cloonlara Village, while a timber aqueduct with a small roadway over it for light traffic only spans the Tail

Race near Parteen, thus serving a double purpose of bringing both a stream and a road across the deep rock cut.

A considerable amount of timber has also been used for the coffer dam at the Weir. It consists of 2 rows of sheet piling or thick inter-locking planks driven next to each other between strong steel I-girders into the bed of the river, the space of $2\frac{1}{2}$ m. between them being filled with concrete to a level higher than that of the average high water.



Water tower at the Ardnacrusha Building site