



SIEMENS

PROGRESS ON THE SHANNON

1st YEAR

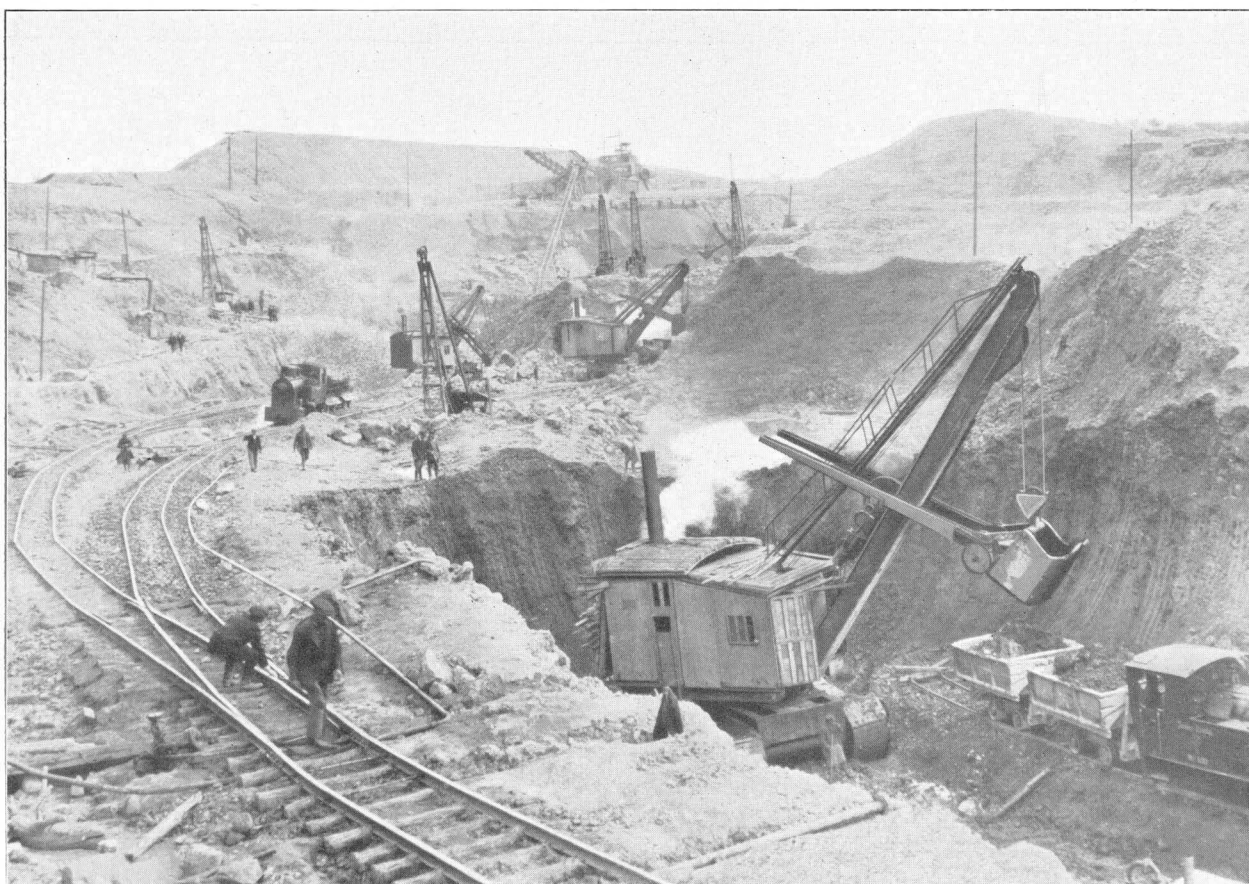
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Excavation for Main Power Station

Practically half a century ago, it was recognized that, if ever the Shannon was to be harnessed, Ardnacrusha ought to be the site of the Power Station. Situated about 3 miles due north of the city of

Limerick, it is admirably suited for the purpose of economically concentrating the fall between the Intake of the Head Race above O'Briensbridge and the Tail Race Outlet at Parteen. Excavation on this



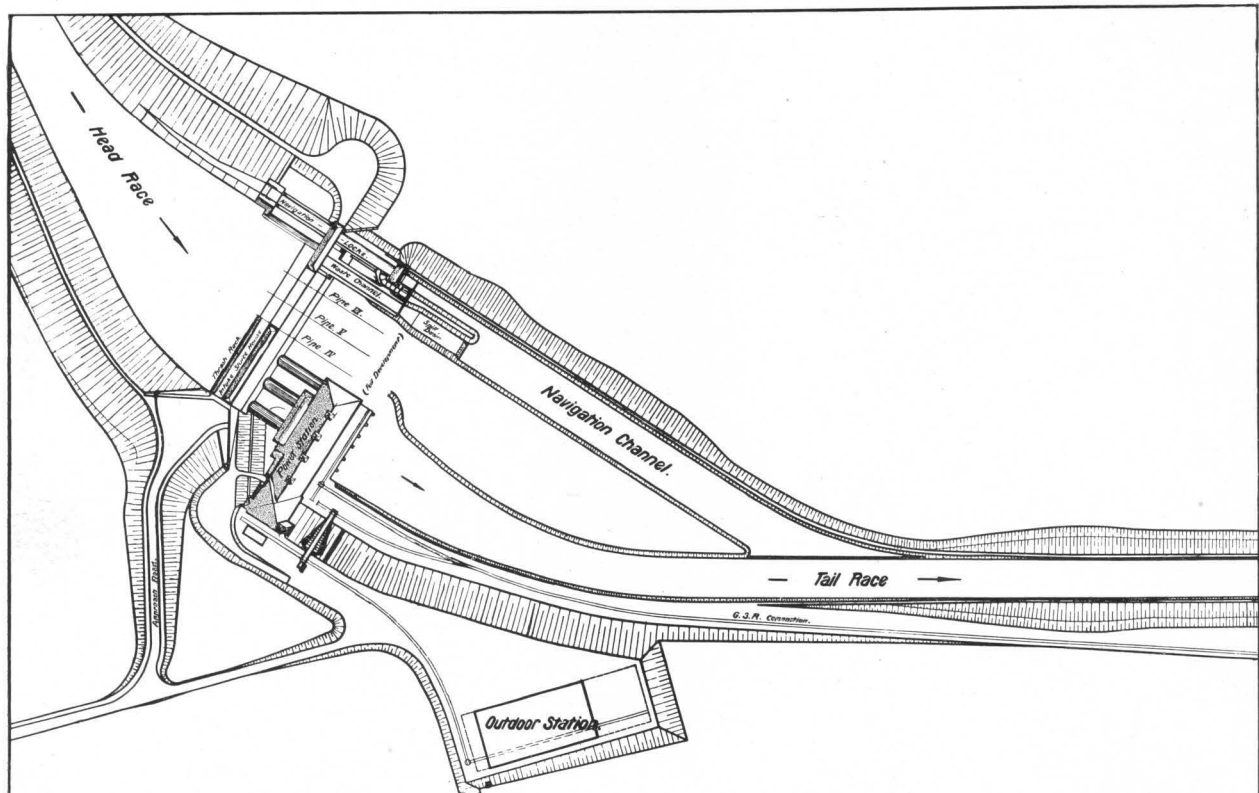
Power Station excavation with Head Race banks in background



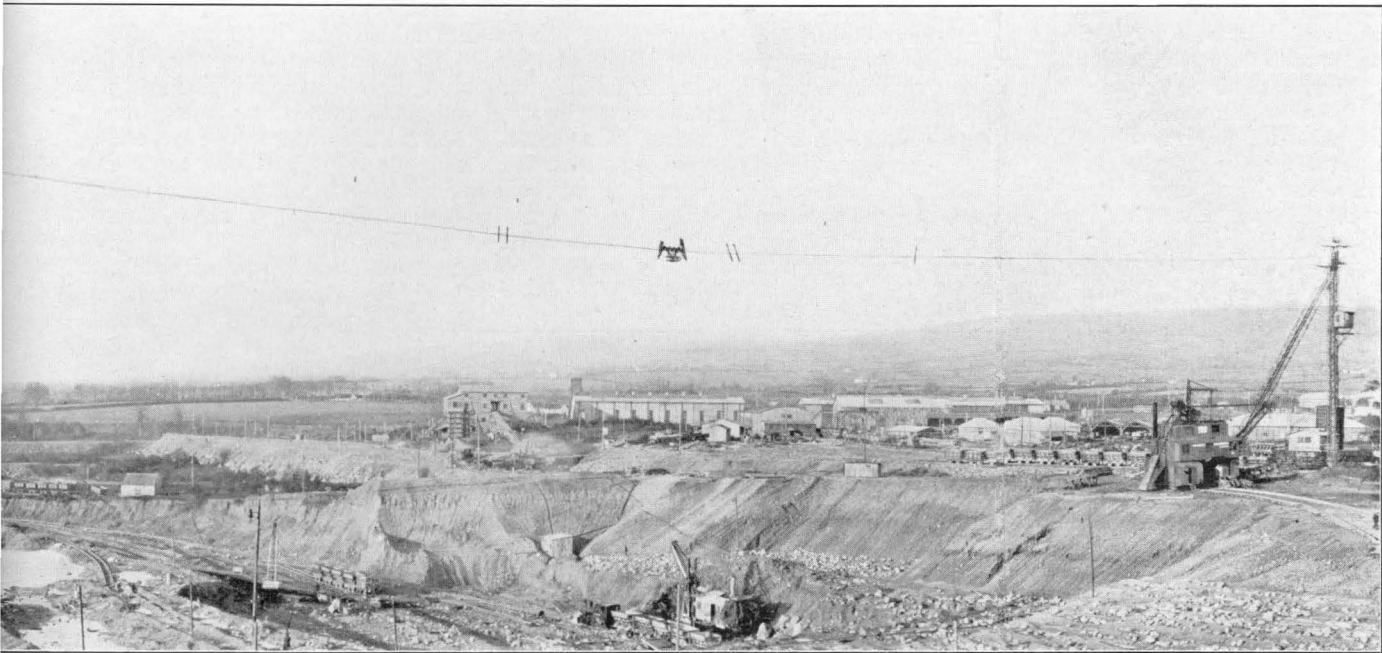
General excavation of Power Station with temporary

Building Site was started in March 1926 with two 2 cbm. steam shovel excavators and one steam bucket excavator, which were described in our previous articles.

A considerable quantity of earth had to be removed before reaching bed rock, the mass of which was utilized for constructing the adjacent Head Race banks. In general rock was met at some 12–16 m.



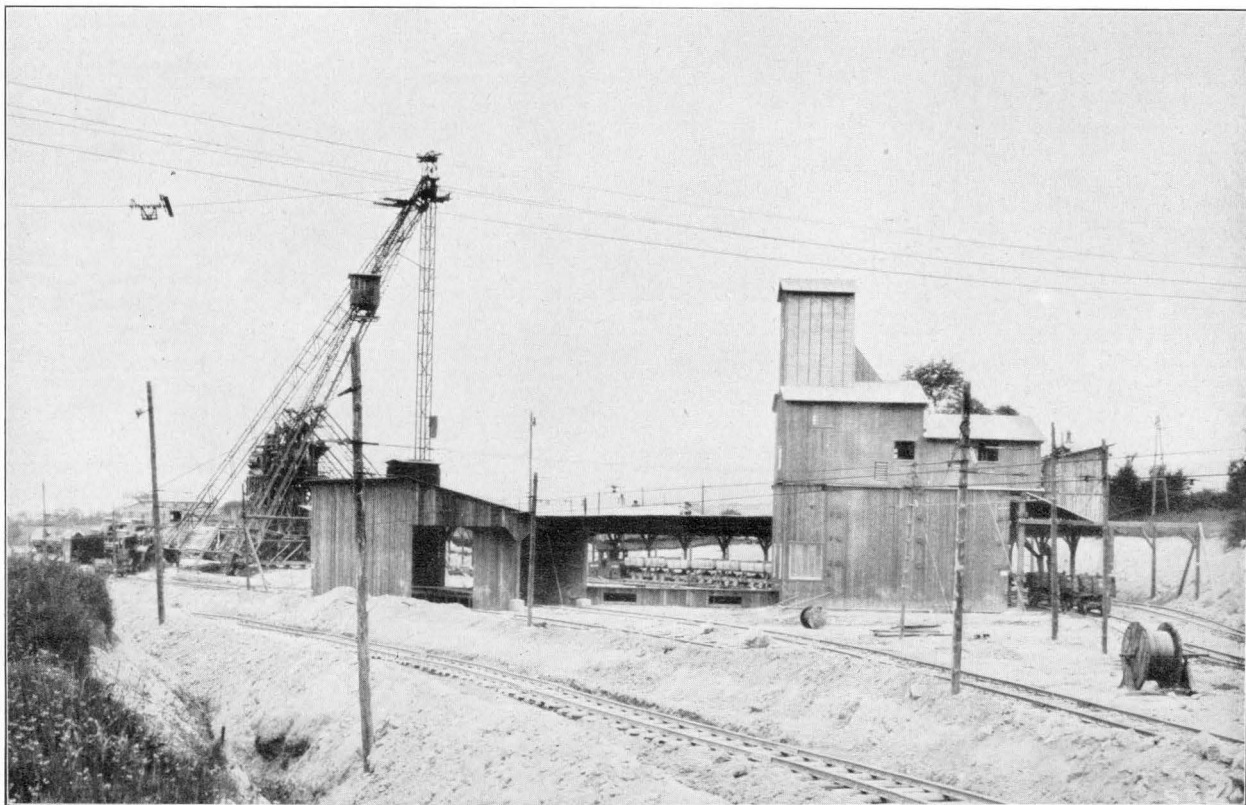
General layout of Power Station



Power Station, Workshops etc. in the background

below ground level, after passing through varying strata of hardpan, gravel and sand, with occasional layers of stiff clay. The rock, a carboniferous limestone, although partially weathered on the top

for about a metre or so, gives a sound foundation, serious fissures being rare. One interesting feature however was encountered some 100 m. below the Power Station Site in the excavation of the Tail



Cement Store

Race, where a bed of nearly 70 m. wide was found containing a broken silicified limestone mixed with carbonaceous earth showing traces of fossil remains.

A glance at the plan will give the reader a clear idea of the general layout of the Power Station. It will be observed that the Head Race on approaching the Power Station gradually widens out into the head bay where the velocity is reduced and the water retained by the intake dam prior to going through the pressure pipes and turbines.

The water is discharged through the draught tubes, 32 m. below, into the Tail Bay (the curved canal on the west side of the Power Station). The bed of the Tail Race at this stage, paradoxical though it may sound, is sloped to a rising grade, the object of which is to reduce the velocity and swirl of the spent waters; after some 100 m. the Tail Race assumes its normal type section with practically a level bed.

The crescent shaped island between the Tail Race and the waste canal is an economy in excavation necessitated by the fact that we must first provide only for the Partial Development of the Shannon. The waste canal will control the head of water in the Head Race according to the load demand. The Navigation Locks on the south side are divided from the waste canal by a rock wall and consist of two deep locks for enabling boat traffic to surmount the 32 m. fall between the Head and Tail Races, and thus render both canals navigable from Limerick to Killaloe.

A branch line from the Great Southern Railway at Longpavement will run beside the Tail Race and into the Power Station; this will greatly facilitate the transport of heavy machinery. In this way the Power Station will be connected with the existing rail and waterways of the country.

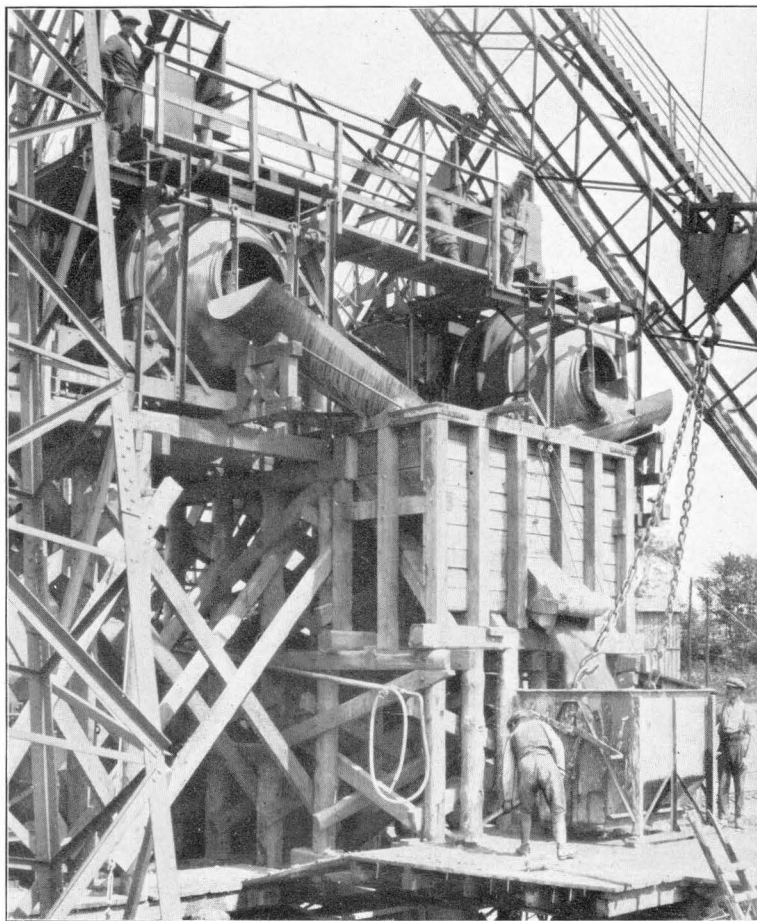
Prolonged excavation work has to be carried out in the Power Station area owing to the con-

siderable amounts which have to be dealt with, but already vast strides have been made towards the completion of this most important feature of the Scheme. The excavation for the Intake Building foundations is now completed, and concreting has begun. Hundreds of tons of concrete are placed daily by means of one of the most up-to-date systems. From the adjacent stone crushing plant graded aggregate is hauled in trains of twelve 2 cbm. trucks to the Cement Silo, where a specified weight of cement is added to the batch.

Continuing on the circuit to the rear of the Cable Crane, the batches are dumped into hoppers and raised by means of an elevator to 2 large concrete mixers (1 cbm. capacity) of the baffle plate type. After $\frac{1}{2}$ a minute dry and $2\frac{1}{2}$ minutes wet mixing, the concrete is slid into a 2 cbm. bucket, and hauled to its destination by means of the cable crane. The entire mixing plant, although connected to the cable crane, is supported independently on a middle rail.

The Cement Silo, a massive timber structure, is built in the immediate vicinity of the cable crane; this is at the same time a store and an arrangement by which the most economic handling and weighing of the cement can be effected.

Referring to our picture, the cable crane will be seen to consist of a pair of steel towers, rising some 40 m. above ground level, with a strong cable spanning the 300 m. gap between their apexes. These towers run on parallel rails and so the crane is capable of serving an area of about 35,000 sq. metres. The maximum safe load which the cable crane can carry is about 6 tons, and its hoisting gear and propelling motors are driven electrically. While the primary use of the cable crane is for placing concrete, steel work and machinery, it has proved invaluable for all manner of transport, and for difficult rock excavation where it would be uneconomical to lay railway tracks.



Concrete mixing plant on cable crane in operation