



# SIEMENS

## PROGRESS ON THE SHANNON

1<sup>st</sup> YEAR

JUNE 1927

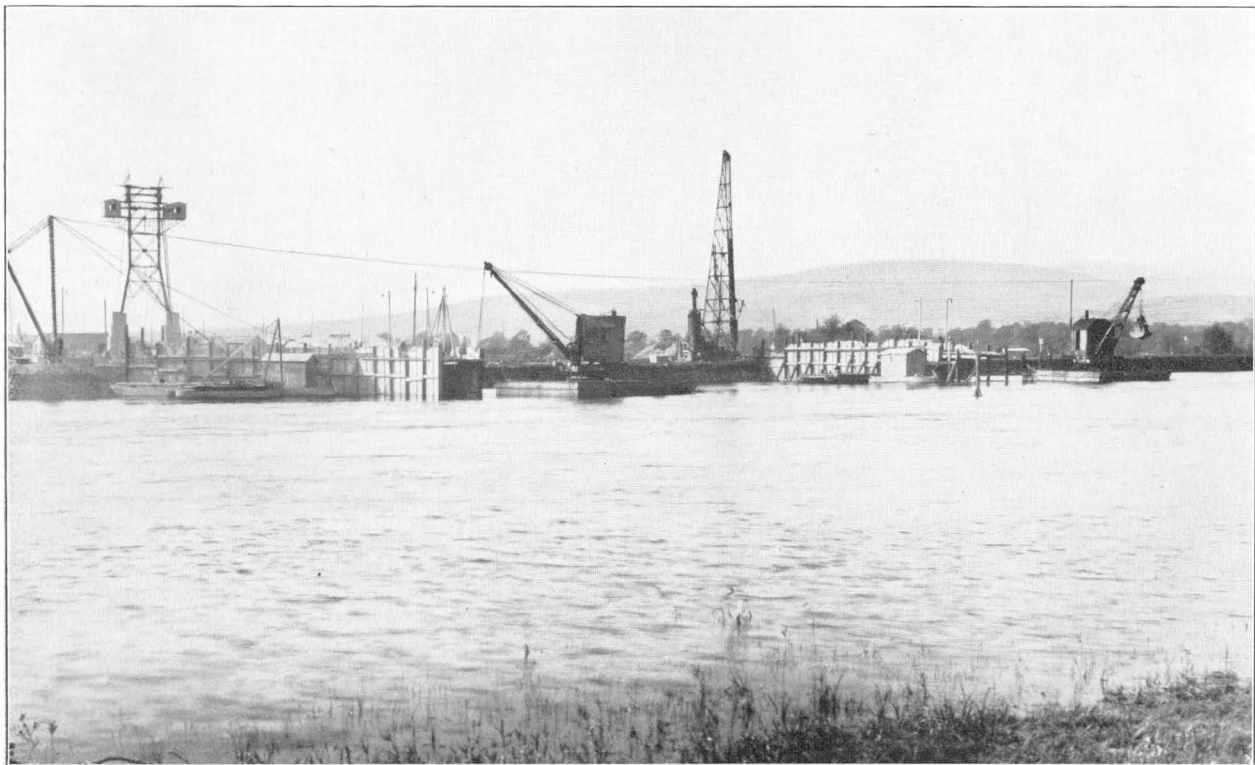
NUMBER 9

### Weir and Intake-Building

The Weir, which is now under construction at Parteen Villa about one mile above O'Briens-bridge, is designed with the object of raising the water level of the river at the site 7.55 m. above the present average level, so as to get the advantage of the fall in the river from the lake at Killaloe to Parteen Villa, and to turn into the Head Race the water necessary for the working of the Turbines at

the Power House. The new Weir has also to replace the existing Weir at Killaloe for the holding up of a sufficient reserve of water in Lough Derg during the dry season.

For regulating the water level above the Weir and to carry water away during floods, six sluices are to be provided, four sluices 18 m. wide and two central deep sluices 10 m. wide.



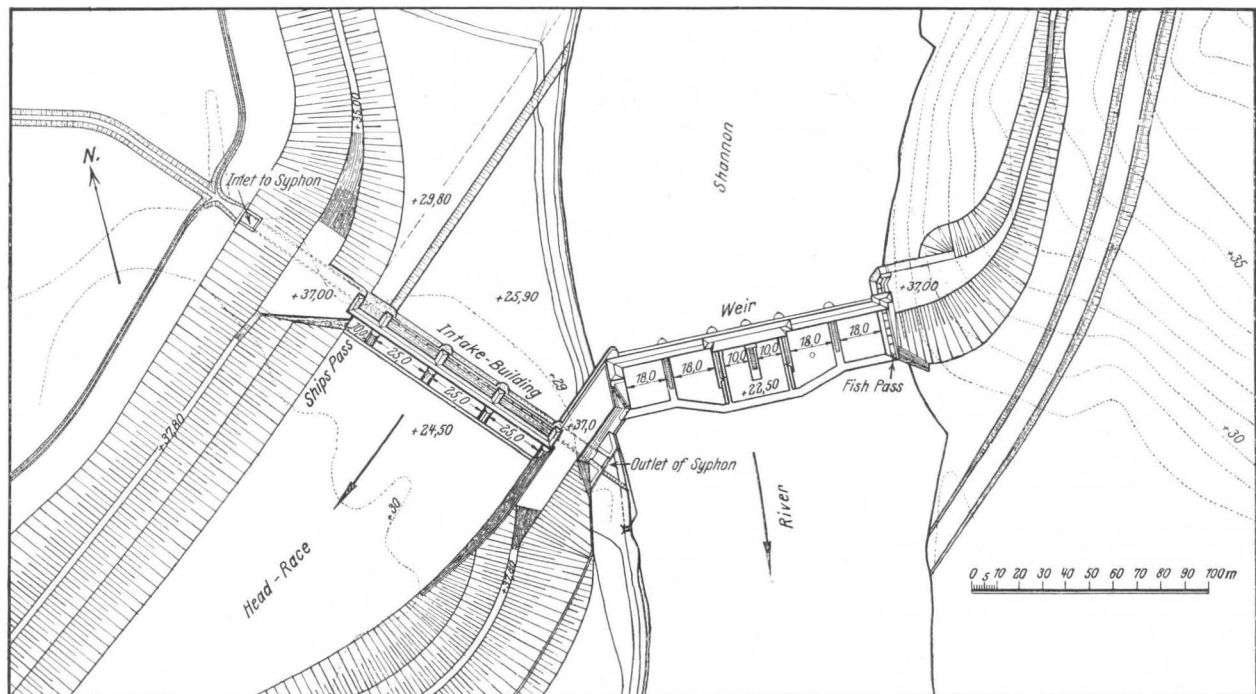
Construction of the Weir at Parteen Villa.



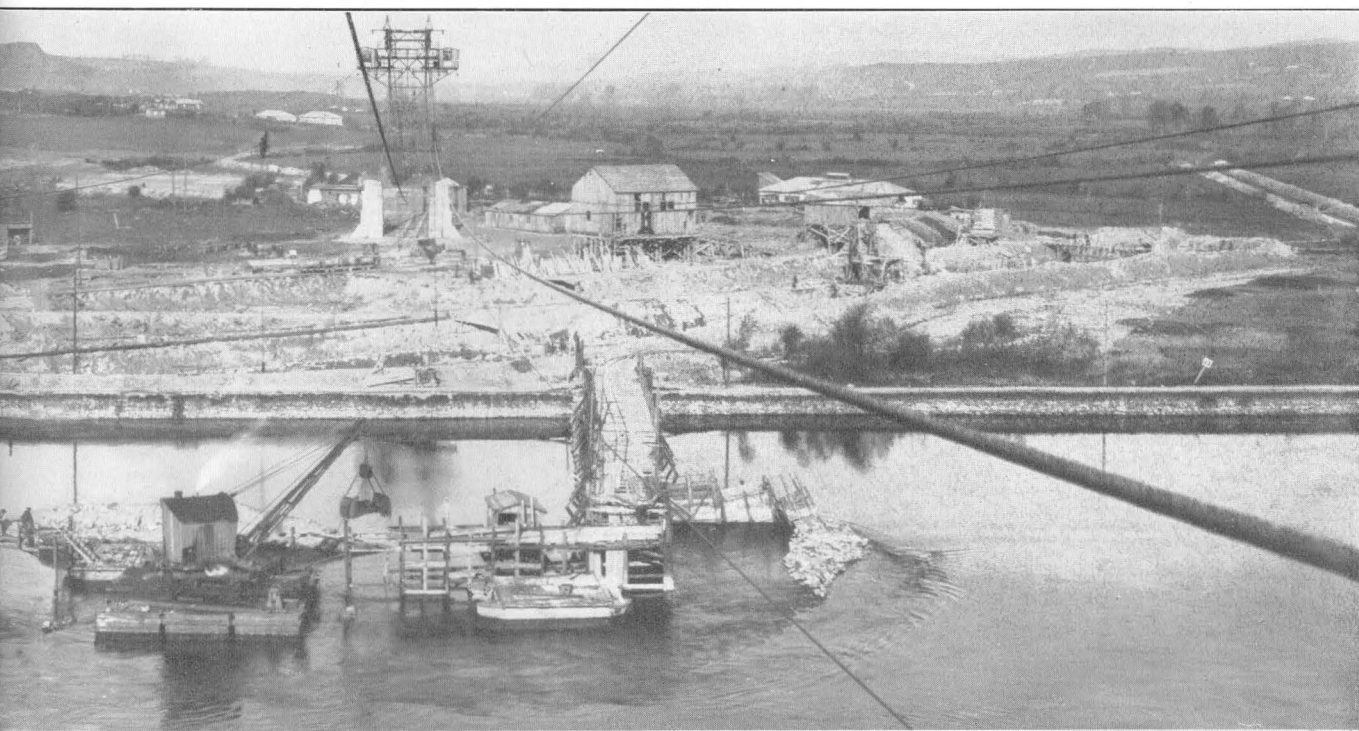
General Picture of V

The Weir is so designed that, even with one of the central deep sluices closed for repairs, the Weir can discharge the maximum flood of the Shannon, 920 cbm. per second, with the Head Race closed. The outer sluices are closed by steel roller sluice

gates, each 18 m. wide by 2,7 m. deep, the intermediate sluices by roller gates 18 m. wide by 3,5 m. deep, and each of the 10 m. wide central sluices or flush controllers is closed by a double roller gate divided horizontally and of a total depth of 10,9 m.



General Plan of Weir and Intake-Building.



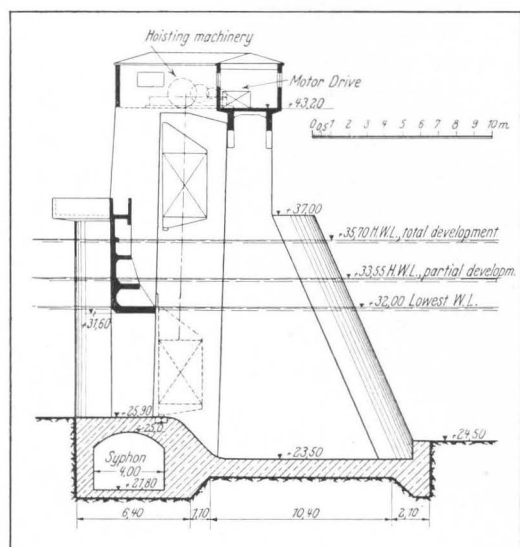
Weir-Construction.

The hoisting machinery, which can be worked electrically or by hand, is situated on a 2 m. wide roofed gangway which is built on the Weir. As a safety measure and for cutting off the water during repairs to the sluices, recesses for stop beams are provided in the piers; the steel stop beams can be lowered into position by a specially designed crane. Spillway basins are provided below the Weir openings faced with granite to prevent erosion and the undermining of the Weir foundations.

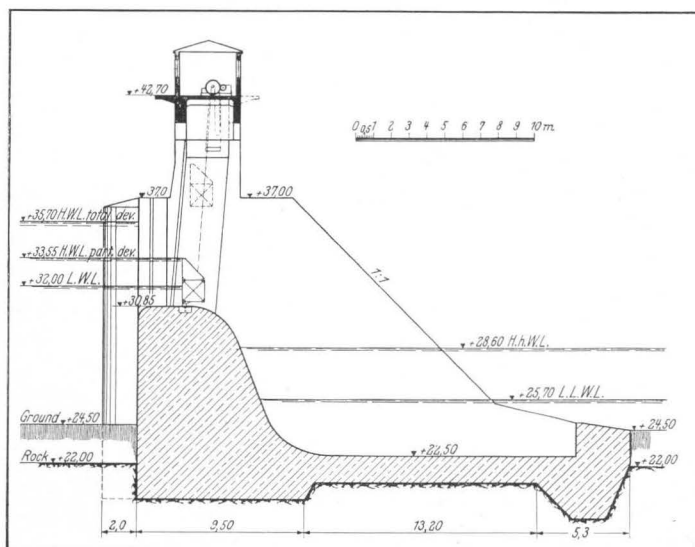
A fish pass is to be provided on the left bank at the Weir designed in accordance with recent experiences. All the work will be founded on Devonian or old red sandstone.

The Weir must be built in three parts to provide for the free flow of the river while work is in progress.

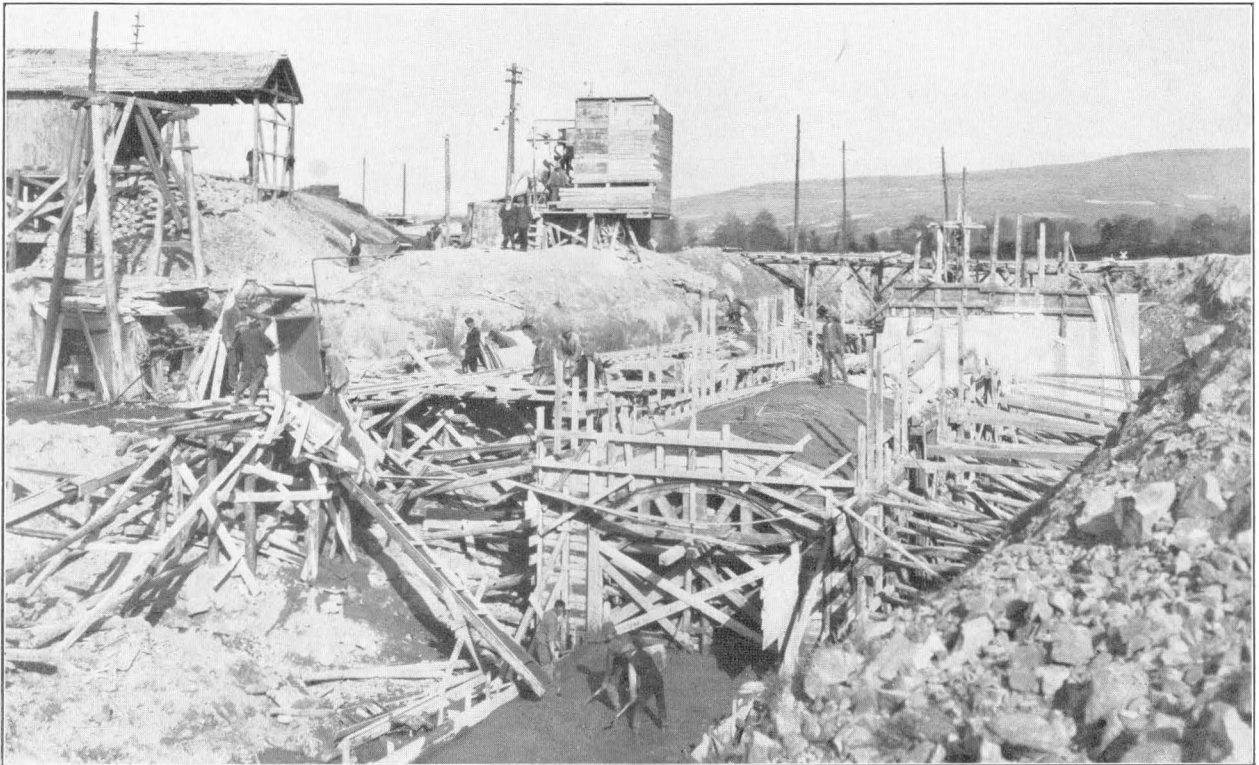
The work is being done in a dry pit between coffer dams; the erection of these dams especially in winter is difficult and takes a long time because



Cross Section of Intake-Building.



Cross Section of Weir.



Syphon under the Intake-Building.

of the strong current. As the dam must be built on solid foundations, the loose stones and earth on top of the rock must first be removed. Two grab excavators on pontoons are carrying on this work. After the diver reports that the rock is free of any loose material, the holes are bored for the insertion of the "I" bars, which form the frame in two rows for the outer walls of the coffer dams consisting of sheet piling. After the connections and strengthening of the bars and the outer walls have been put into position, the intermediate space is filled up in its lower part with concrete and higher up with good watertight clay. The first coffer dam, which is connected with the right bank of the Shannon and comprises the two first openings of the Weir, has now been completed. Navigation, which formerly passed along the right bank, has been deviated towards the middle of the river which has been deepened for this purpose.

The Intake joins on to the right side of the Weir. Its object is to regulate the flow of the water from the Shannon into the Head Race and to cut it off completely if necessary. It has three 25 m. wide openings and a boat passage which is 10 m. wide; all of these can be closed with the aid of steel sluices in a similar way to those at the Weir. A culvert is being constructed underneath the Intake-Building to conduct the Black River and water from the drainage trenches into the Shannon below the Weir. The inside section of the culvert is 11,50 m<sup>2</sup>, and is calculated to be able to take 10 cbm/sec at high Shannon water level.

To the right of the Intake under the embankment, this culvert is carried out in reinforced concrete.

The same rock on which the Weir is built is to be found on the right bank of the Shannon about 3 m. below the surface, and will be used for the foundation of the Intake-Building. The excavation of the foundations for this building was done in an open pit, partly by a shovel excavator and partly by hand. The right part of the culvert has been completed. The concreting work of the Navigation Channel has now been started.

The above mentioned raising of the level of the river by 7,55 m. makes it necessary to protect the land which lies above the Weir and the Intake Building from floods. This is therefore done on both sides with banks. On the right bank this protecting bank forms the continuation of the bank of the Head Race up to the Ardclooney River, where the land is higher. On the left bank the protecting bank is connected with the Weir and runs further along the river till it loses itself in a hill at Fort Henry. Streams, which formerly flowed into the Shannon, are conducted along trenches behind the banks into the tail water of the Weir; on the right side this trench is insignificant, on the left side it is larger as it has to take up Kilmastulla River. The excavation of these trenches is easy as a whole; only where they must be conducted round the Weir at Parteen Villa, a 10 m. deep and 9 m. wide cut must be made in rock.