

1st YEAR

MAY 1927

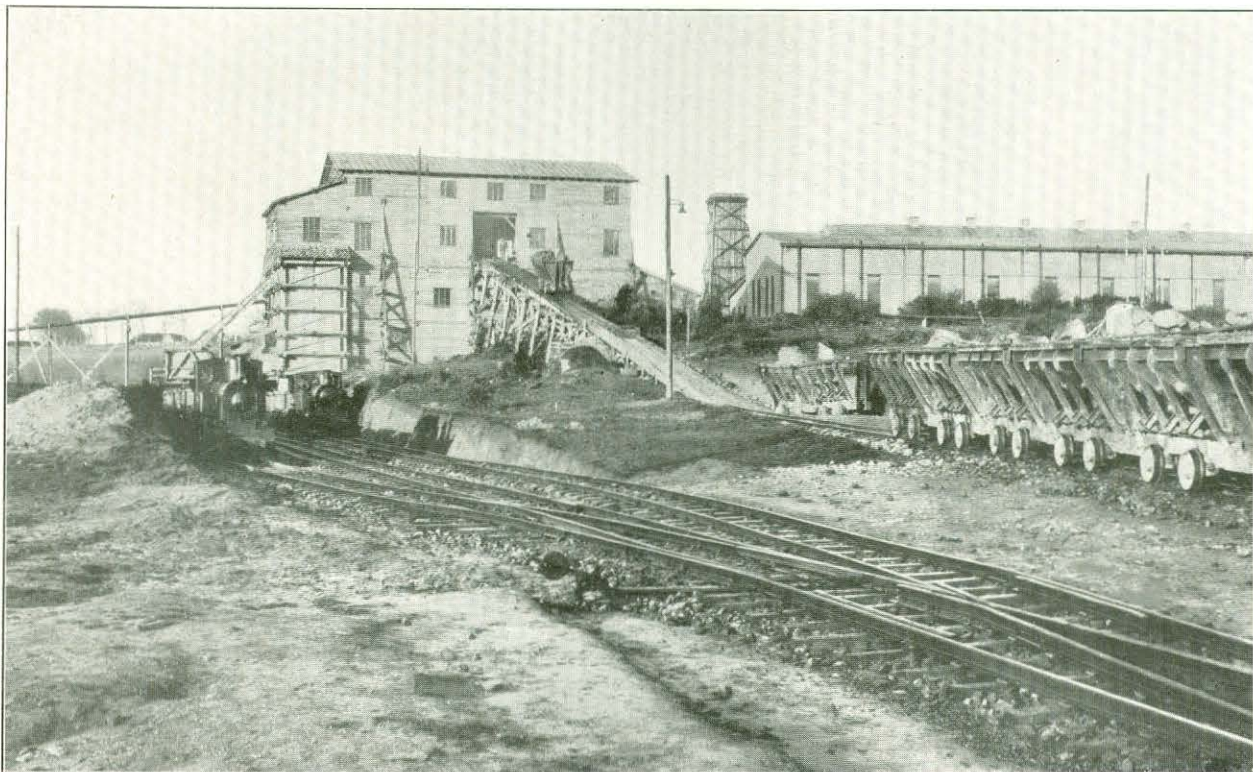
NUMBER 8

Stone Crushing and Washing Plant

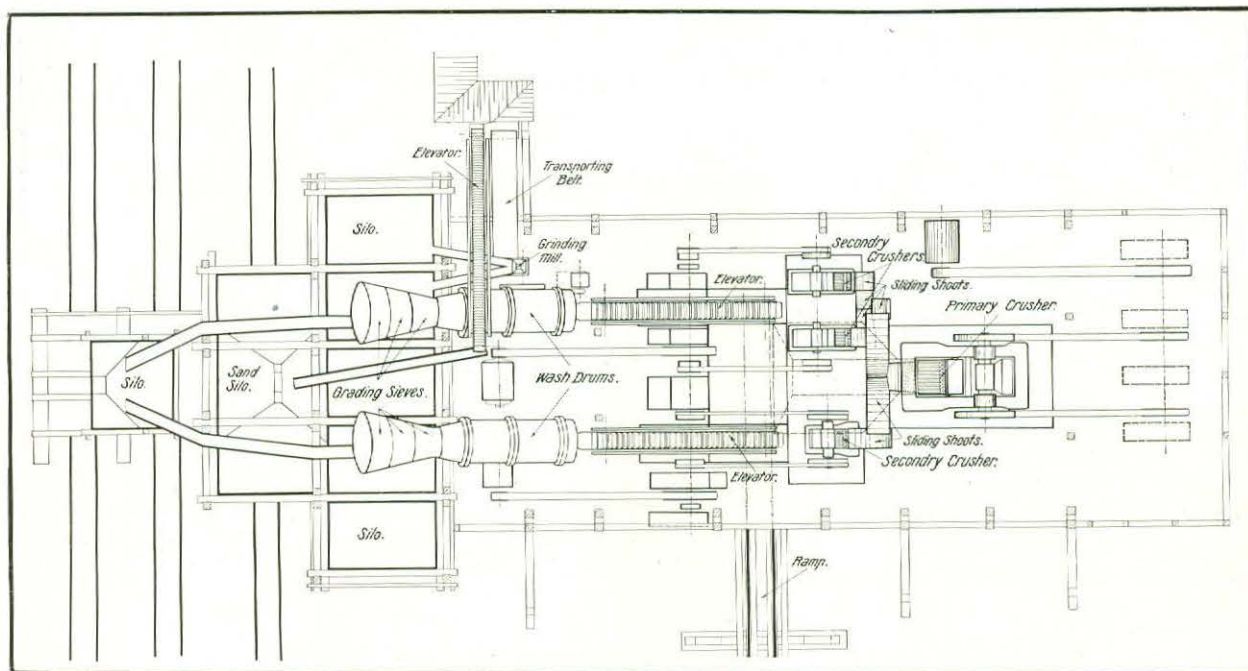
A large part of the sound limestone which is won by excavating the Head and Tail Races and the site of the Power House, is utilized to satisfy the demands of the Building Sites themselves. As this material is of good quality and does not possess any chemical disadvantages it can be safely used for concrete, road metal, railway ballast and rip-rap for dressing the bed and the sides of the Head Race.

About 290 000 c. m. are needed for concrete, for the dressing of the Head Race 370 000 c. m. are necessary, and for roads and railway tracks as well as for various other needs, 45 000 c. m. of broken stone will approximately be needed.

The rock is crushed into sand, aggregate and rip rap in 2 large Stone Crushing and Washing Plants which are situated in convenient places close to the



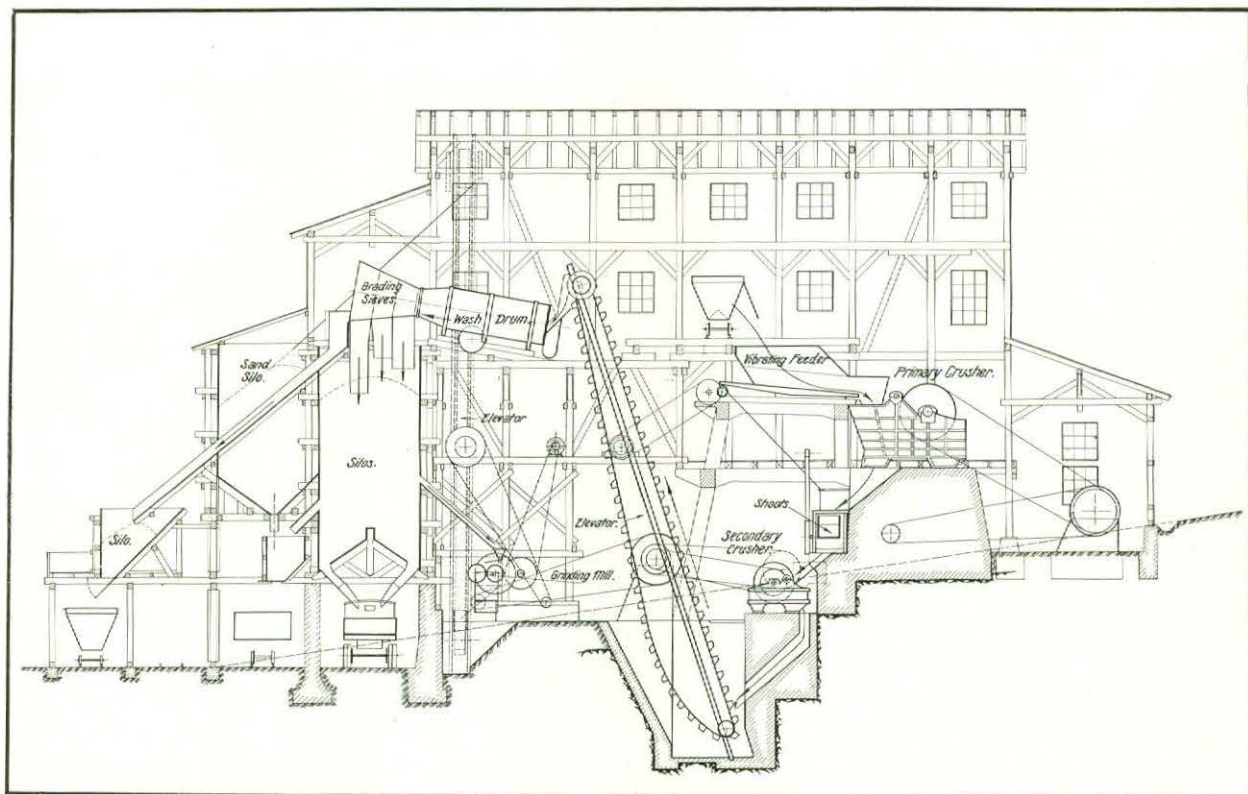
Stone Crushing and Washing Plant near Ardnacrusha



Plan of the Crushing and Washing Plant

rock sections, i.e. on the upper part of the Tail Race and near Clonlara. In each Stone Crushing and Washing Plant the machinery is concentrated in one building and the Silos which receive part of

the broken stone and sand are directly attached to this building. The whole process is arranged in such a way that the material goes through a certain number of machines and transport appliances from



Sectional Elevation of the Crushing and Washing Plant



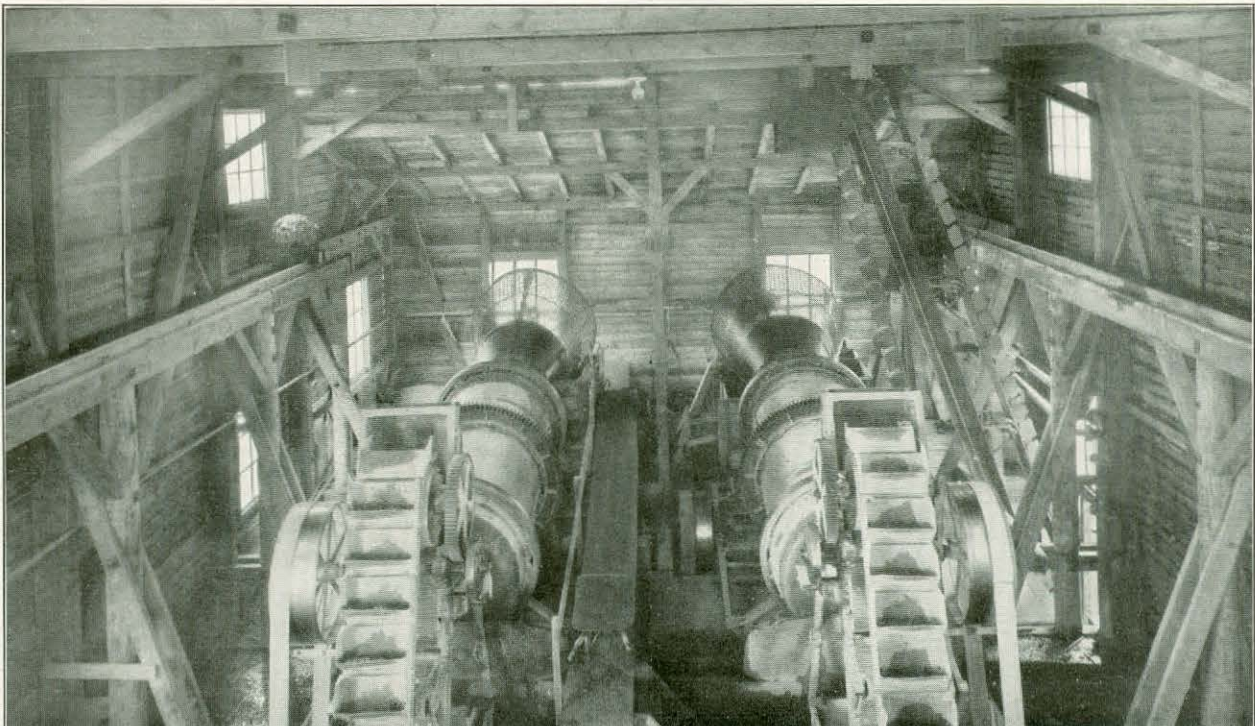
Stone Crushing and Washing Plant at Clonlara

the moment that it leaves special trucks until it reaches the silos. No hand work of any kind is necessary and only a few workmen are required to attend to the plant.

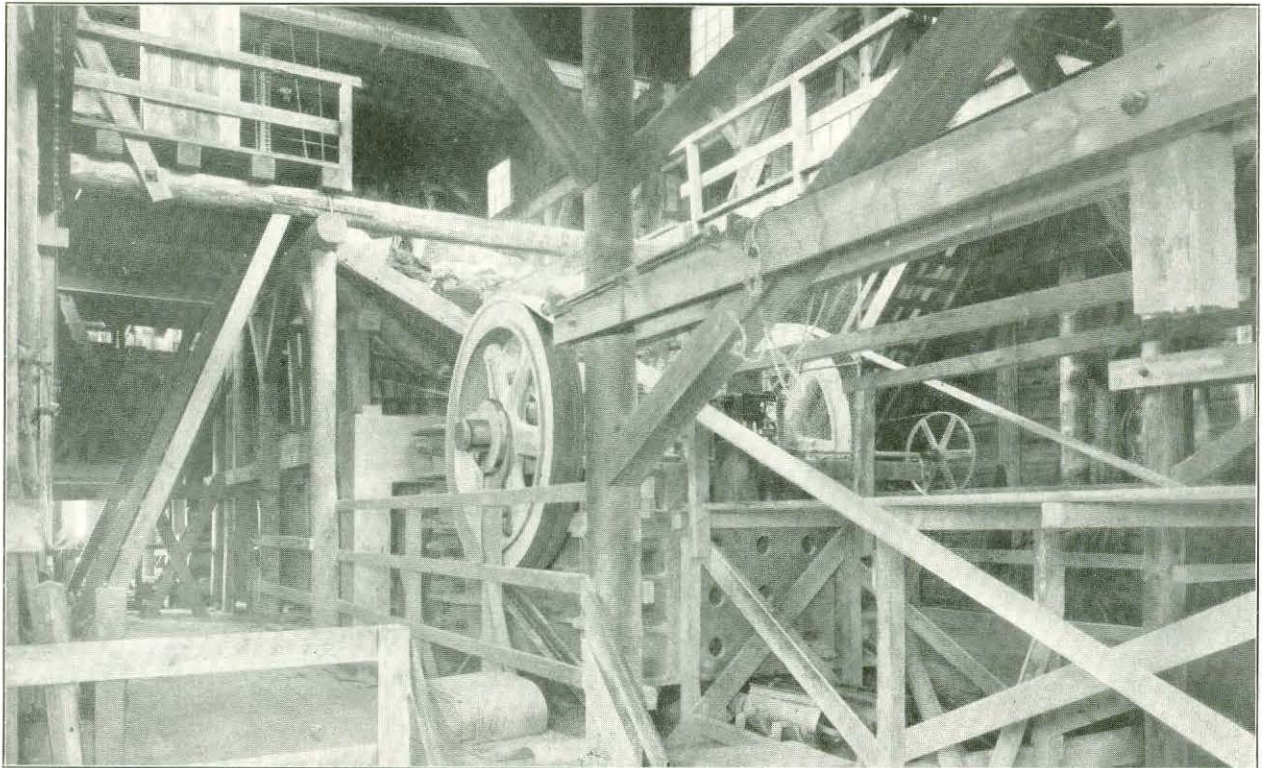
It is now proposed to describe the method of working and to explain the accompanying drawings

of the chief Stone Crushing and Washing Plant at Ardnacrusha.

The trucks are drawn up an incline supported on wooden trestles, by a winch on to the upper floor of the building, after having been filled from excavators. A workman opens the side of the truck and the



Two belts and washing machines in the Plant at Ardnacrusha.



The preliminary crusher in the Plant of Ardnacrusha

material drops into a large receptacle which has a moveable bottom. From the above-mentioned receptacle the blocks of rock are conveyed into the large crusher which has an aperture of 1200×900 mm and can easily crush blocks up to $\frac{3}{4}$ c. m. in size. The plant makes it possible directly to use the rock in its original form after blasting operations and as loaded by the steam shovels into the trucks and the expensive work of dividing the large blocks of rock by hand or by further blasting is avoided. The main or preliminary crusher breaks the rock into pieces of a maximum size of 20 cm. The material is then conveyed on slides through three other crushers, of which two have an aperture of 650×300 mm and the third an aperture of 750×400 mm. These crushers finally reduce the material to rip rap, coarse and fine aggregate and sand. Two belts now convey the material up again to the two Washing Machines above the silos, where a final cleansing of the material from earth is undertaken. The washing drums contain screws perforated with holes which convey the stones through the flowing water. The sand aggregate and rip rap gets thoroughly cleansed as it is being continually shaken while water is being poured over it. The necessary water is pumped by a large pump at Ardnacrusha from the Blackwater. Perforated drums are attached to the washing plant and these divide the material into sand, fine and coarse aggregate, and the so-called overflow. The three first kinds of material fall into the silos intended for each kind, to which they are conveyed on shutes. The overflow which

can be used for the slopes of the Head Race and for road metal and railway ballast, falls directly into the trucks of the transport railway; a small intermediary silo makes it possible to dump the material temporarily while the trucks have to be moved.

The silos for sand, fine and coarse aggregate, are built in such a way, that the material can be emptied into the trucks of the train or also into the lorries. It is therefore possible to supply even the most distant building sites with the necessary sand aggregate and road metal quite conveniently.

The 15-ton crane which runs alongside the crushing plant building, facilitates any repairs which might be necessary.

The Stone Crushing and Washing Plant at Ardnacrusha is capable of crushing and washing from 40 to 50 c. m. of sand aggregate and rip rap in an hour.

The Crushing and Washing Plant at Clonlara is on somewhat a smaller scale but is otherwise built on the same principle as the one at Ardnacrusha. Two crushers are provided, one with an aperture of 1000×600 mm and one with an aperture 750×400 mm. After being crushed, the material is washed in a special drum provided for this purpose. This arrangement of the silos is similar to that in Ardnacrusha.

The whole machinery of both installations is electrically driven and is for the most part provided for by the Internationale Baumaschinen-Aktien-Gesellschaft (Ibag) and by Krupp.