



1st YEAR

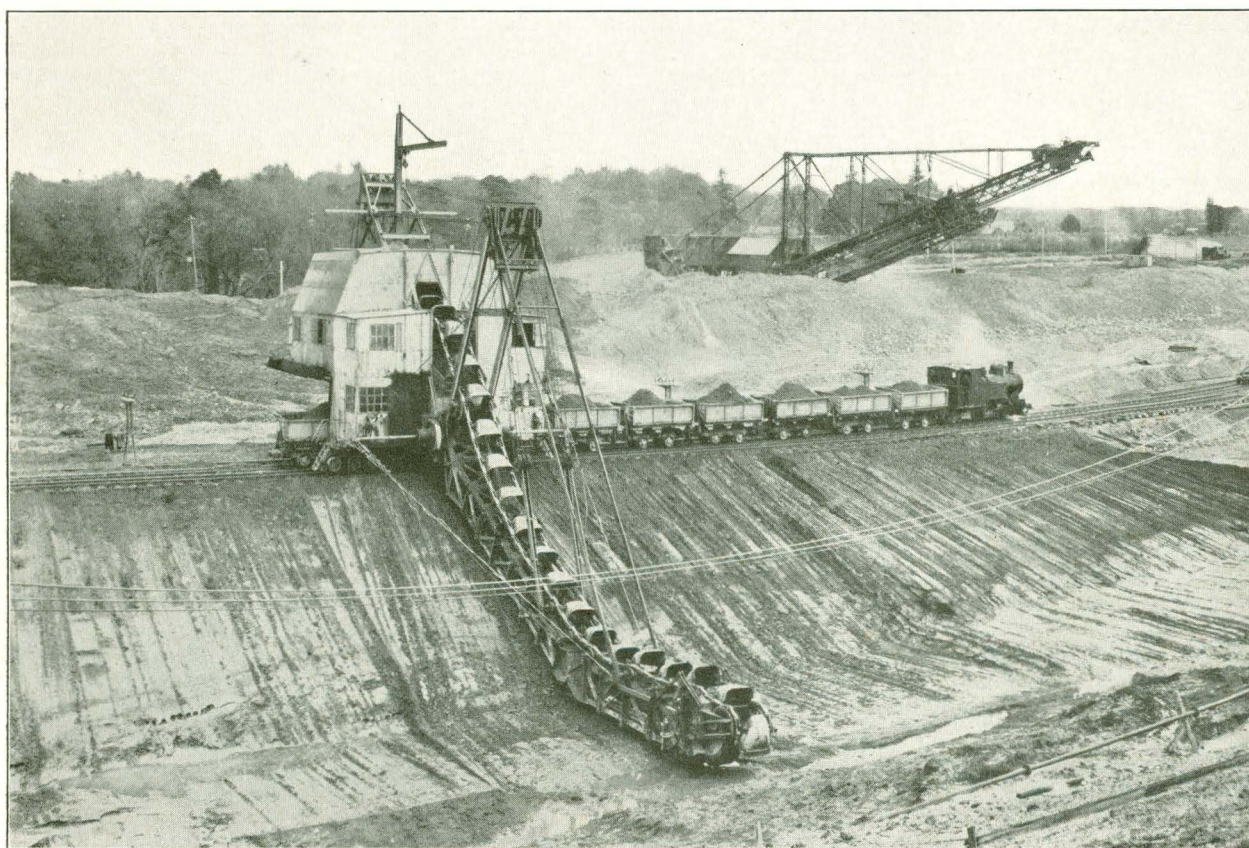
FEBRUARY 1927

NUMBER 5

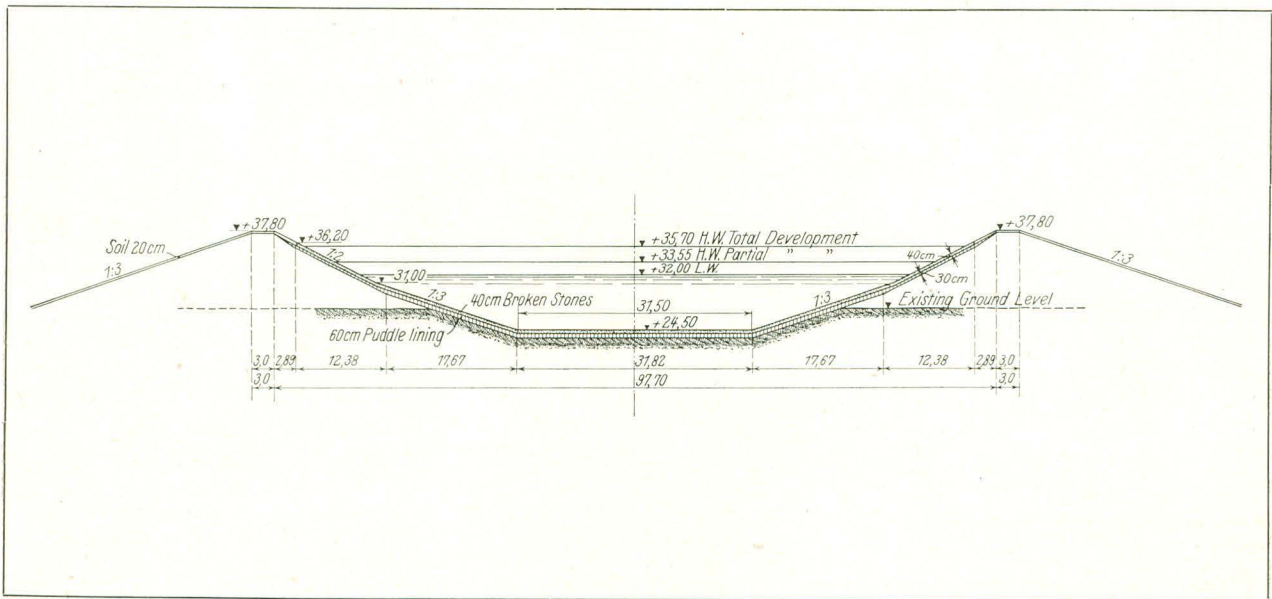
The Head Race

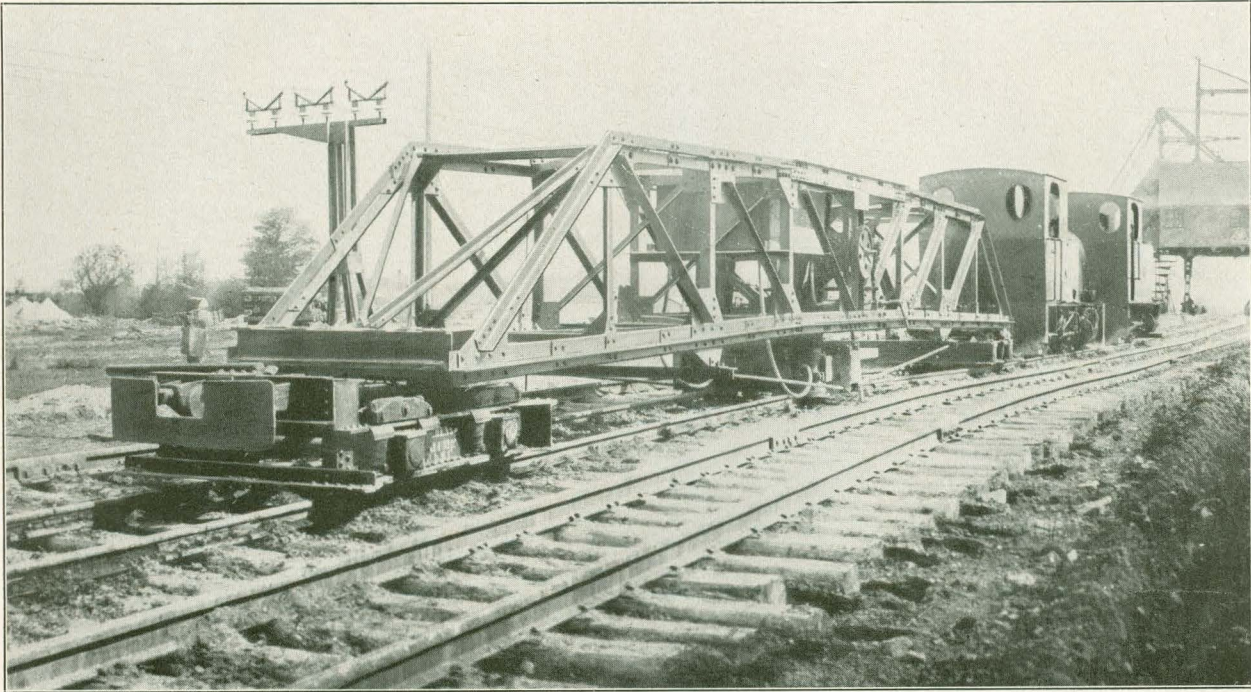
The object of the Head Race is to supply the turbines at the Power House with the necessary quantities of water required for the generation of power. The Full Development requires 500 cbm

per sec. As the Head Race is also intended for navigation purposes, it was necessary to limit the maximum speed of the current under exceptional conditions to 1.5 m per sec. The cross section of



Krupp multiple bucket excavator excavating the Head Race. In the background a Transporter forming embankment



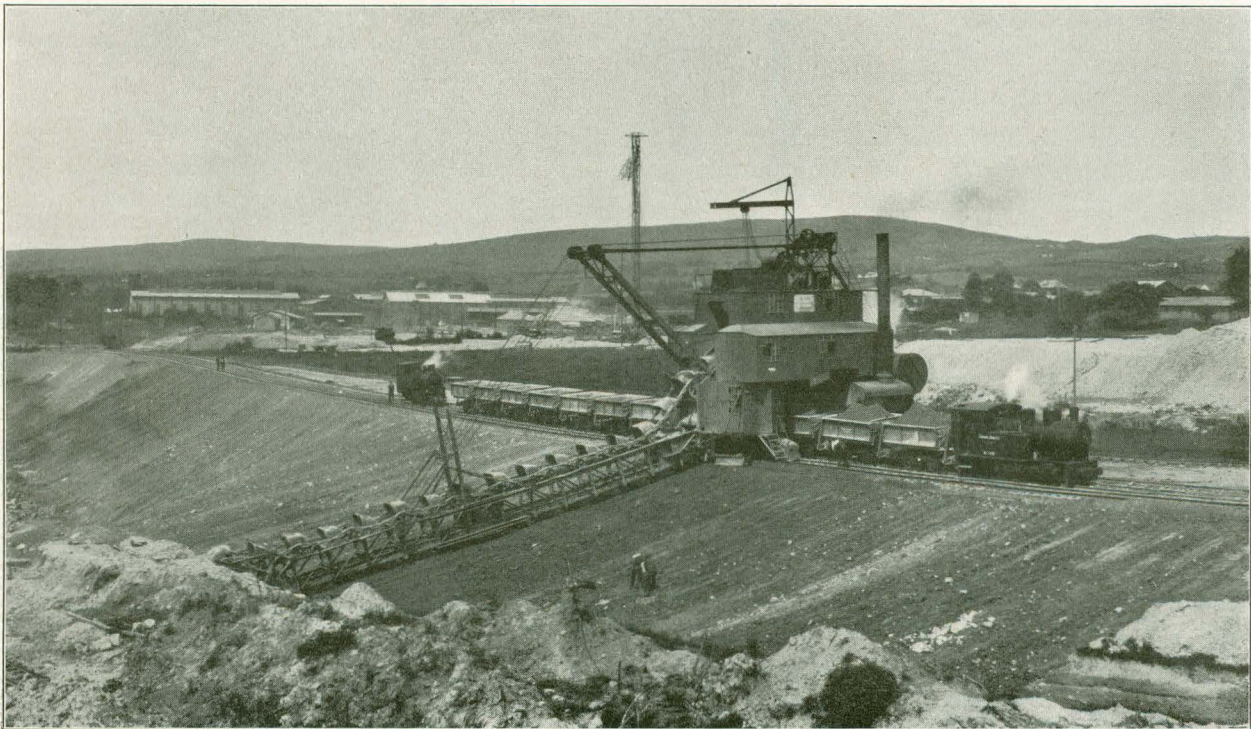


Machine for moving track of the Arbens-Kammerer Type

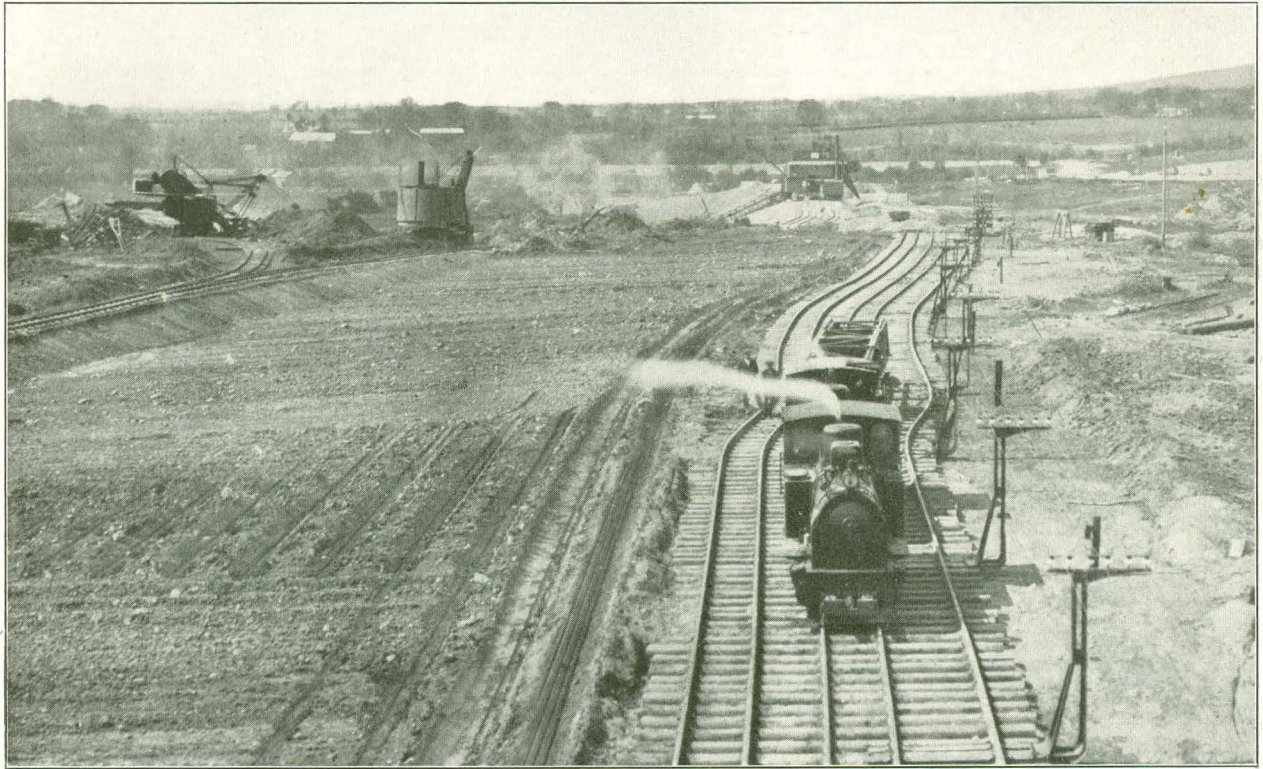
ned formation is the best to secure the stability of the embankments. The bed and slopes of the canal are protected against erosion by a 40 cm deep layer of rip-rap, and a 12 cm thick layer of concrete is provided as additional protection against wave action

between high and low water level. The outer slopes of the embankments and the top of same will be covered with soil and sown with grass seed.

Approximately $4\frac{1}{2}$ million cubic metres of earth and over 300000 cubic metres of rock have to be



Luebecker multiple bucket excavator excavating Power House Site



The Track being moved

excavated and transported along the Head Race. The removal of these vast quantities within the short period of the Contract has necessitated the use of the newest and largest machinery available.

Most of the earth is being excavated by 5 multiple bucket excavators. These excavators, which are supplied by the Firms Krupp, Maschinenfabrik Buckau and Luebecker Maschinenbau A.G., possess buckets with a theoretical output of 375 cubic metres per hour. The excavation reaches a depth of $17\frac{1}{2}$ m with a slope of 45° . The excavators are driven by a three phase alternating current at a tension of 3000 Volts. The current is conveyed by a loop line running loosely in guards which is constructed parallel to the 300 m long excavator track.

When work was started on the Shannon, time was needed to build the Power House and to install the machines in the latter. To enable earth excavation to start at once, it was therefore necessary to install one steam driven bucket excavator. After this excavator has excavated the Power House site, it will also be adapted for electric current.

As can be seen on our illustrations, the trains which transport earth run on a special 90 cm gauge track between the tracks of the excavator, and pass under-

neath the latter. The excavator itself is moving and, while the buckets are excavating the soil, the earth is dropped into the trucks from the machine. As soon as the last truck has been filled, the foreman blows his whistle, and the loaded train moves on making place for an empty one.

The considerable width of the Head Race makes it impossible to excavate the canal with the aid of a single cut. The track of the excavator must be moved away from and towards the centre of the canal from time to time. The ordinary method of moving the track would have required 40 men with levers which is a very tedious and laborious operation. Now-a-days the track is moved on large building sites with the aid of a special machine, as shown in the accompanying illustration (Type Arbens-Kammerer).

The Arbens machine consists of approximately 15 m long girders between movable supporting frames. After the machine has been placed in position, a locomotive moves it along the transport track and, as it moves, it lifts the track and shifts it sideways so that in a few minutes the transport as well as the excavator track, which is laid on the same sleepers, is moved into its new position.