



1st YEAR

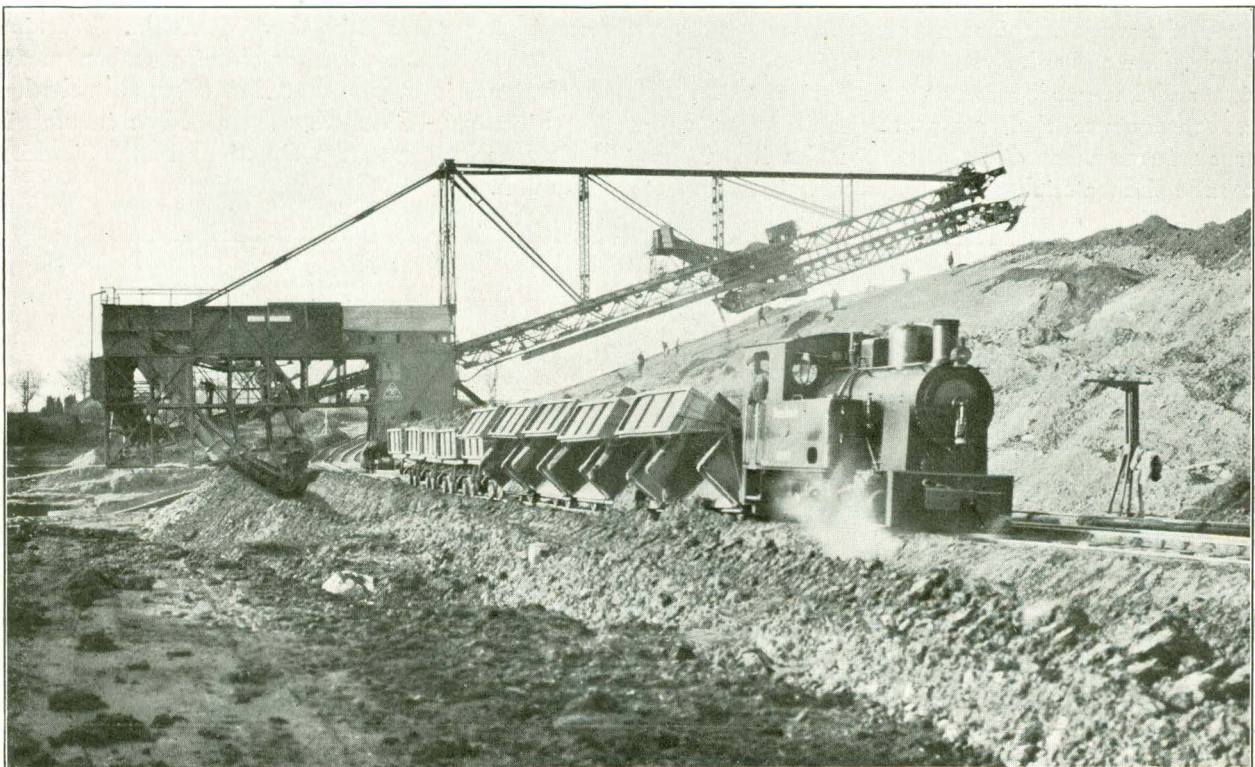
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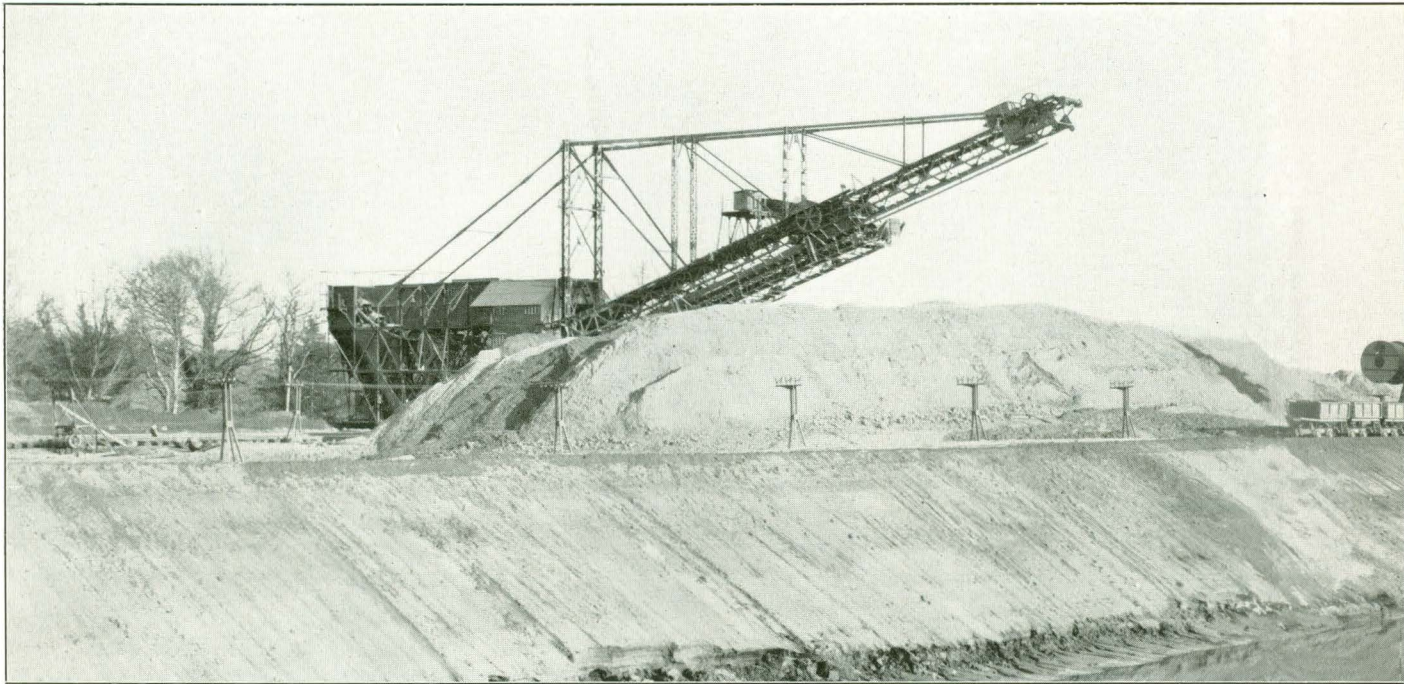
Building of Embankments with the Aid of Transporters

The construction of the canal includes both excavation and the placing of the excavated material in bank. Multiple bucket excavators dig out the earth and load it into trains of from 14 to 20 wagons, each with a capacity of 5.3 cbm. The trains are drawn by 200 H. P. steam locomotives made by Henschel and Sohn, Borsig and Hannomag, the wagons were supplied by Krupp, and are de-

signed so that the tipping arrangements can be manipulated by one man. In the early stages of the works, while the transporters were under erection, the embankments were formed in the ordinary way by tipping in layers from the wagons, which involved continuous slewing and lifting of the track in the heavy wet clay, so that when the transporters came into operation, their advantages were quickly appreciated.



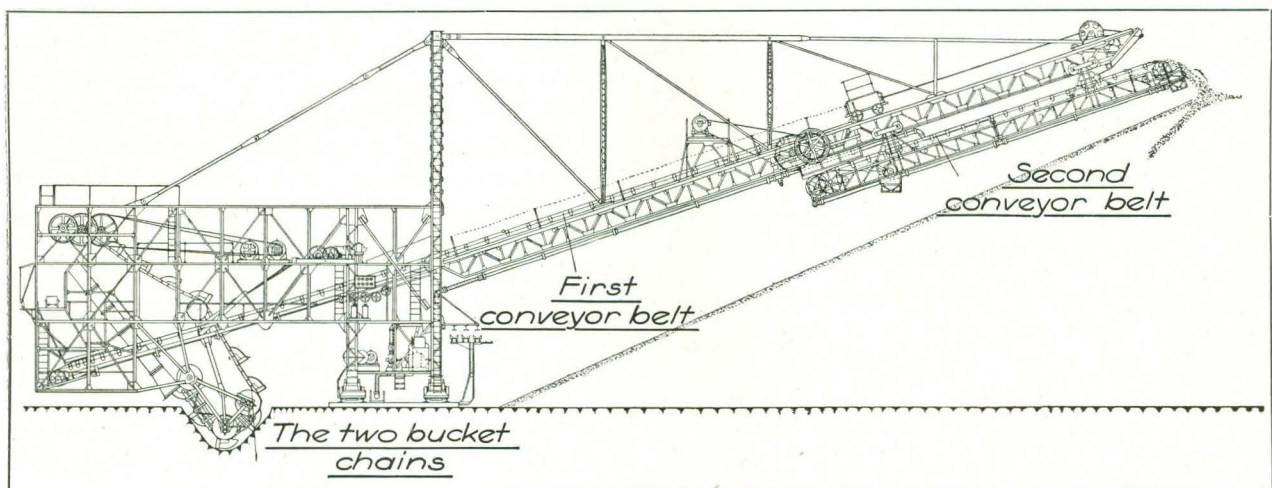
Train bringing material for Transporter



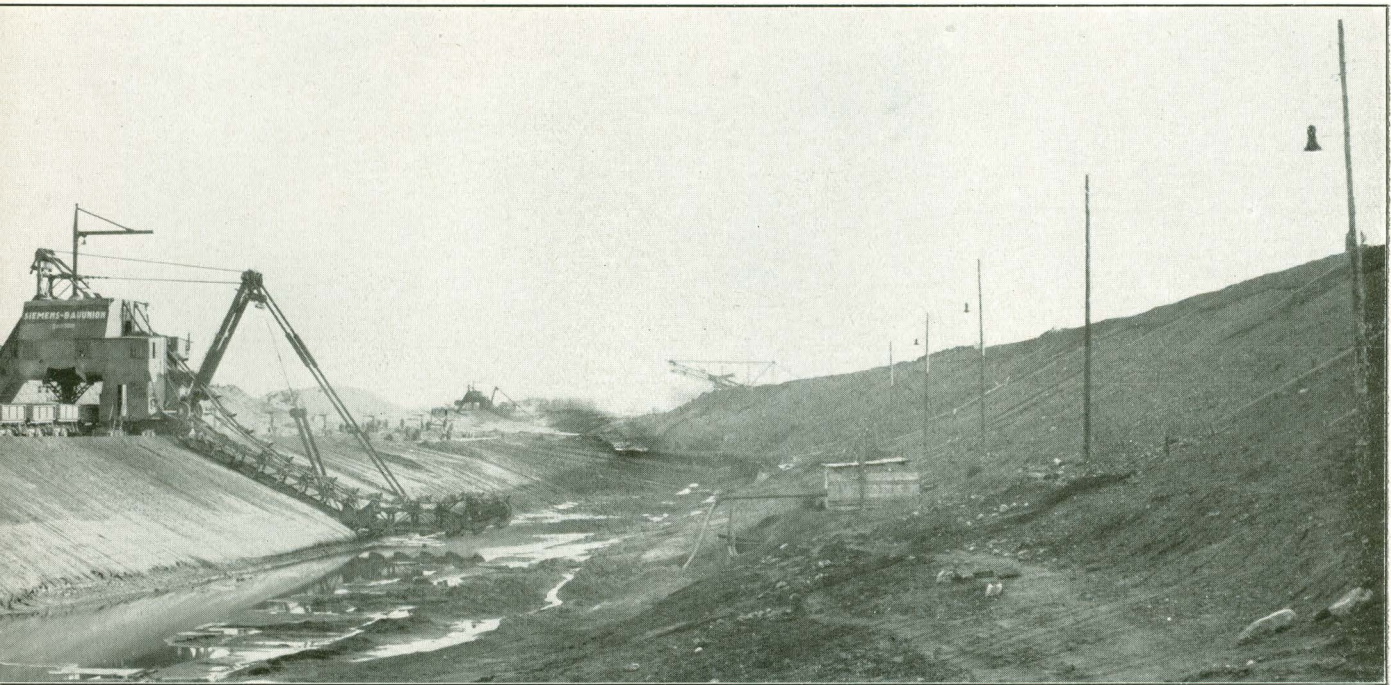
Transporter and multiple bucket excavator cor

These transporters had previously been found satisfactory when used for winning brown coal in the mines in Germany, but it is the first time they have been used for constructing embankments. In the mines, where it is only a question of transferring the material on to ground which is already consolidated, the work of the transporters is comparatively simple. The embankments on the Shannon are 18 m. high and have to be built up in horizontal layers. In consequence the transporters had to be constructed somewhat differently to make it possible to raise the material to the required height, and at

the same time to make it possible to dump the earth on to any chosen spot over a considerable width. The former condition had already been complied with in a design for a transporter which was under construction at the Krupp factory when the Shannon transporters were ordered. This transporter was to work in the mines Elise II in Muecheln. Working on this model, the plant for building embankments was designed jointly by the 3 Firms Krupp, Luebecker Maschinenbau - Gesellschaft, and Maschinenfabrik Buckau according to the directions of the Siemens-Bauunion.



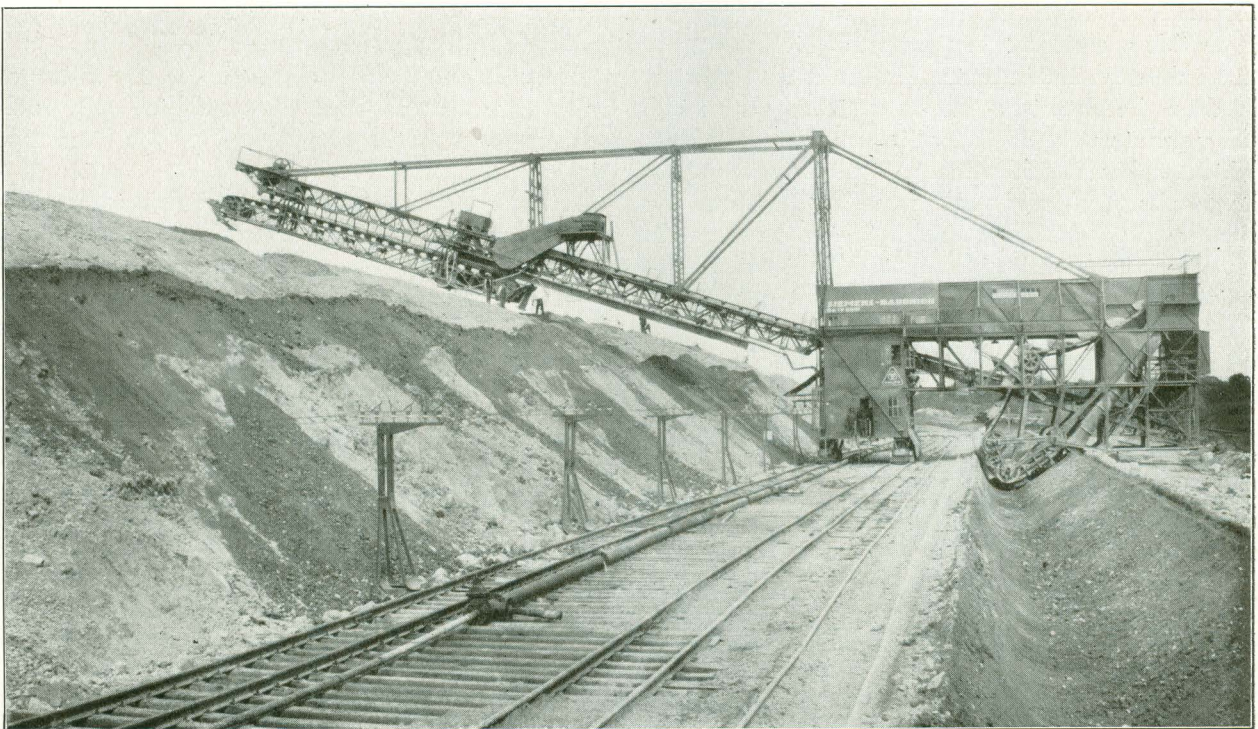
Schematic drawing of Transporter



Constructing the embankments of the Head Race

The method of working is briefly as follows:
The trains bring the earth and discharge it into a trench about $2\frac{1}{2}$ m. deep which is previously excavated by the transporter itself. After the trench

has been filled with loose earth, the 2 bucket chains of the transporter, which have buckets which are interchangeable with those on the excavators, scrape up the material and empty it into a storage hopper,



Transporter at work



Krupp tipping wagon

which drops the material on to a conveyor belt supported on a boom. This belt runs at a gradient of 20° with a speed of 1.5 m. per second. Under this conveyor belt, there is a second belt which is reversible and carried on a support which can move up or down the main boom. This makes it possible to drop the material wherever desired over a width of approximately 40 m., and is a unique feature which makes the machine particularly adapted for its purpose. A great problem to be overcome was the handling of large stones which have to be transported together with the earth. This was solved satisfactorily, and it is now possible to transport 6000 cbm. with one transporter in 18 hours time. The embankments built by this method are extremely solid, as the big height from which the material is dropped has the effect of ramming it in. On the lower boom a sprinkling device is attached so that the material in the bank can be watered as desired. The height through which the material falls, makes it possible to build a well consolidated bank.

The greater part of the embankments can be dumped without moving the track of the transporter. Only in some places, where the embankments are unusually wide, it is necessary to shift the transporter track. This is done by means of the track shifter which has been described in a previous article.

After the embankments have been roughly formed, they are allowed to settle, and the slopes and top are then dressed by hand; then a top layer of surface soil 20 cm. thick is placed on the top and outer slope by the transporter.

These transporters are used on the Shannon Works at present, and each machine can easily convey to bank the output of 2 of the large multiple bucket excavators.

All the transporters are driven electrically. The electric current is conveyed to the transporter by a loop line running loosely in guards. This current has a tension of 3000 Volts, and is transformed by a transformer which is situated on the transporter to a current of 380/200 Volts.

The main technical data of the transporters, which are all of the same type, are the following:

Theoretical output	750 cbm/h.
Bucket capacity	250 l.
Bucket emptyings	$2 \times 25/\text{min.}$
Travelling speed	8.28 m/min.
Length of sleepers	6200 mm.
Maximum dumping width . . .	35 m.
» » height	15 m.
Speed of the belt	1.5 m/sec.
Maximum gradient permissible .	1 : 30