

### THE IMPROVEMENT OF THE OHIO CANALS.

BY W. FRANK MC CLURE.

One of the most important improvements ever undertaken by the State of Ohio is the creation of a new deep-water link between Lake Erie and the Ohio River—a work which will soon be actually under way. Eventually there will be important inland navigation, undoubtedly, from the great lakes to New Orleans by way of Cleveland and Marietta. This year's appropriations for this work by the State will go toward providing a seven-foot channel from Cleveland to Dresden, at which point the Muskingum will be tapped. The river and harbor bill, now before Congress, includes an appropriation of \$8,000 for the dredging of the Muskingum and \$110,000 for the building of a dam between Dresden and Zanesville, in order to give a continuous waterway from Cleveland to the Ohio River at Marietta. The people along the southern end of the Ohio canal are also agitating the improvement of the southern portion of the canal, and will bring the matter before the next legislature.

The Ohio canals, which in recent years have so deteriorated, were once an important factor in the industrial development of the State. The beginning of the original construction of this canal system dates back some eighty years, and at its inception it was considered an engineering and commercial triumph. For a little more than twenty years these canals continued to grow in usefulness. In 1861, they were leased to private parties for a term of ten years, and at the expiration of this time they were leased again for an equal period. When again turned over to the State they were badly in need of extensive repairs, and ever since they have been on the decline. It is now generally conceded by the people of Ohio that the canal system should be maintained and made more effective, and that it should remain the property of the people.

The State canal system comprises the Ohio and Erie and the Miami and Erie canals. What is known as the Ohio and Erie canal extends from the lake port of Cleveland to the Ohio River at Portsmouth, a distance of 309 miles, and in addition there are several navigable feeders. There are two summits, one being in Summit County, 35 miles from the lake level in the Cuyahoga River, and the other—Licking summit—being in Licking County, 116 miles from the Ohio River at Portsmouth. There are 42 locks between the lake and the first summit. Between



WEIGHING A CANAL-BOAT IN THE CLEVELAND LOCK.

this and the Licking summit—a distance of 133 miles—there are 48 locks. Between Licking summit and Portsmouth there are 53 locks. The summit in Summit County is nine miles long, 395 feet above Lake Erie, 78 feet above Licking summit, 491 feet above the Ohio River at Portsmouth, and 968 feet above the Atlantic Ocean. Over the new canal route to Marietta the distance from Dresden, where the new route will leave the old canal, to Marietta is about 90 miles. Licking summit is about 30 miles southwest of Dres-

den. The accompanying photograph illustrates the weigh lock of the Ohio and Erie canal. It is situated near Cleveland, at what is without doubt the busiest place on the entire system. The boat shown in the illustration—the "Atlantic"—was built in 1863 and is still in service. There are numerous boats of similar size on the canal, weighing from 35 to 50 tons, and each one carrying from 75 to 80 tons of cargo. The length of one of these boats is 120 feet. This is the longest boat that can be weighed in the weigh lock. The latter is a small, separate canal, walled off from the canal proper by a partition of masonry. At each end of the lock there is a water gate, which lies flat on the bottom of the canal when open, and which is raised by means of chains and a gearing and crank on the stone wall at one side of the lock. When the boat to be weighed has been floated into the weigh lock and the gates have been closed, the water is released by the opening of a valve, and soon the boat is resting on the iron beams, which form the weighing platform of the scales. The weight of each boat is already known, and this is deducted from the weight of both boat and cargo, and the tolls are charged on the weight of the cargo. The weighing operation completed, the first valve is closed and another is opened, and soon the water has risen to the level of the canal, and the boat is ready to be towed out of the

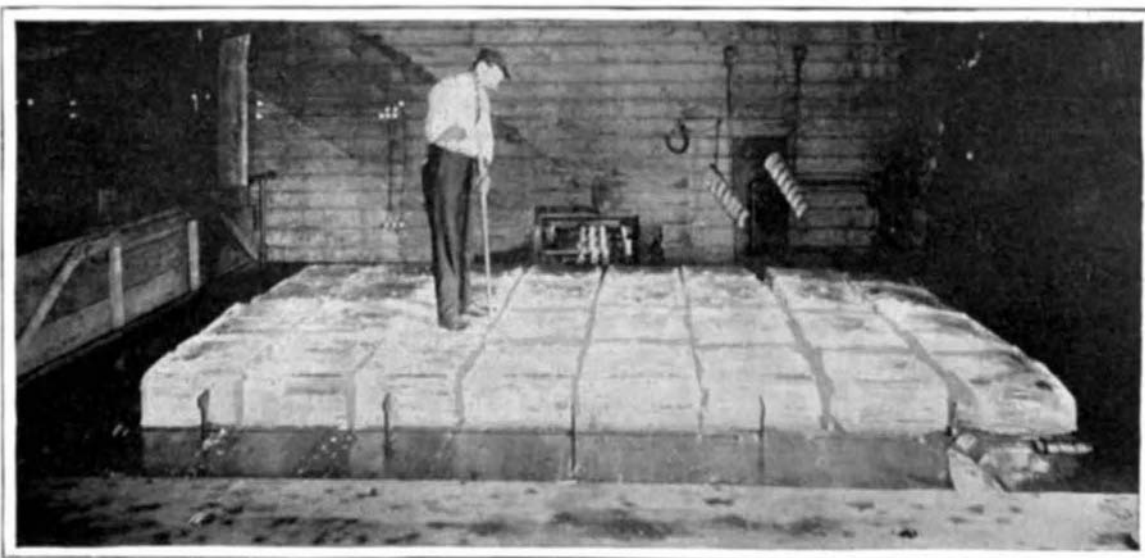
lock and on its way again. Along the northern portion of the Ohio canal, within less than 50 miles of Cleveland, are located manufactories employing a capital of \$30,000,000, all of which depend upon the canal to furnish water for their boilers. Coal is brought to these factories in canal-boats direct from the mines.

### ICE-MAKING BY ELECTRICITY

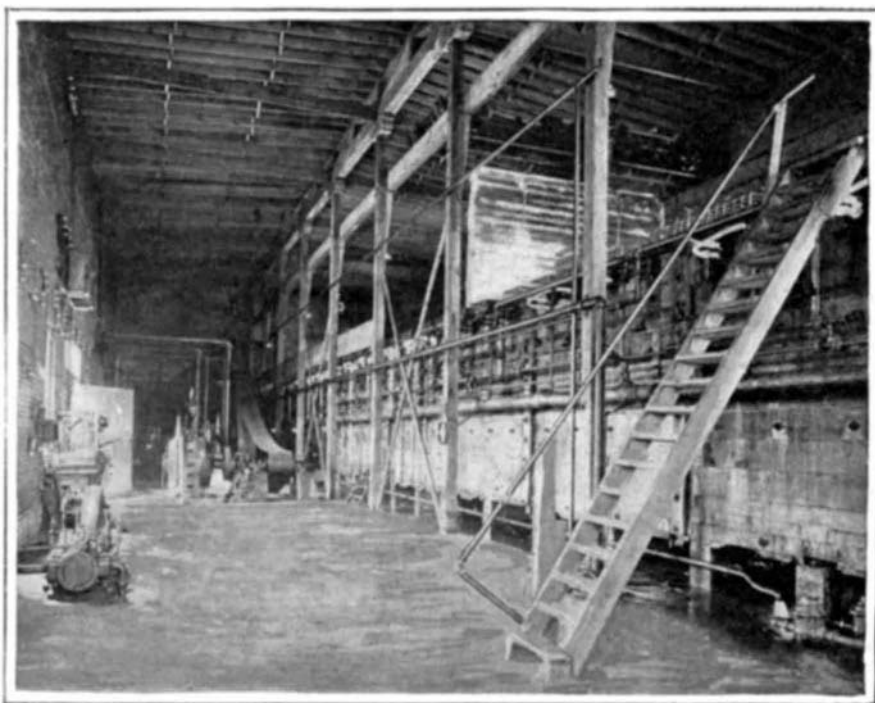
BY ORRIN E. DUNLAP.

What is believed to be the only electrically-operated

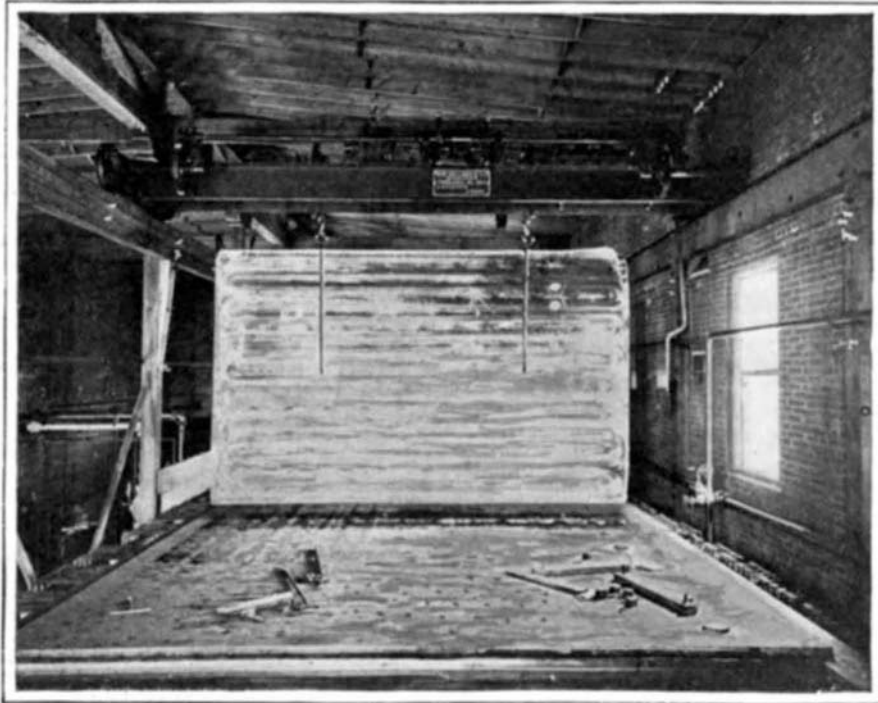
ice-making plant in the United States has been installed by the Cataract Ice Company, of Niagara Falls, in a new brick building, 125 feet long, 44 feet wide, and which has a height of 28 feet. The greater part of the artificial or manufactured ice of to-day is made by one of two systems. These systems are known as the "can" system and the "plate" system. The Cataract Ice Company formerly used the "can" system, but desiring to increase its output, as well as the quality of its product, it adopted the "plate" system, and the plant it has installed is one of the most interesting in the world.



Splitting up an Electrically-Made Cake of Ice.



Interior of the Plant, Showing Tank to the Right with Cake of Ice Being Lifted by the Electric Crane.



Carrying a Cake of Ice to the Tip Table with the Electric Crane.

ICE-MAKING BY ELECTRICITY.