floating their vessels now, as formerly. More recent news comes to hand, to the effect that the great Salt Lake, Utah, is rapidly drying up, and causing great anxiety to that region of the State, and still more recently we learn of the recession of the Sea of Azof, leaving vessels high and dry at their docks.

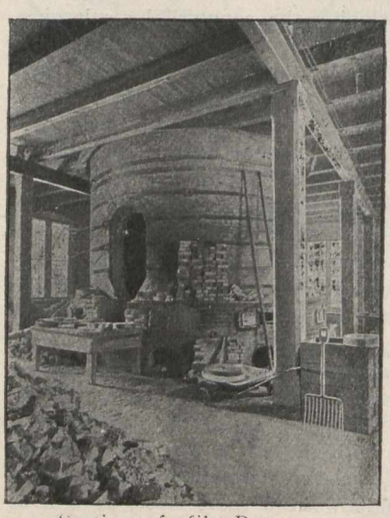
Many other instances might be cited, which tend to affect the welfare of the community in many lands, and render the returns from the expenditure of vast capital and labor nugatory.

The Toronto Globe of the 9th Dec. contained an editorial regarding the periodic lowering of the water level of the Great Lakes, "thus practically showing a continual and permanent lowering of the level." During the past year, spending some time at Collingwood, on the Georgian Bay, I was assured by an old resident that the water level there had fallen over seven feet during the past thirty-six years, say on an average of 2½ inches per year. It should then be fairly calculable how long it will take to deplete the Great Lakes below the level requisite to float a 14-ft. draft boat in the connecting channels, canals, etc.

Hamilton, Ont. J. W. PAYLER.

CARBORUNDUM—ITS MANUFACTURE AND USES.

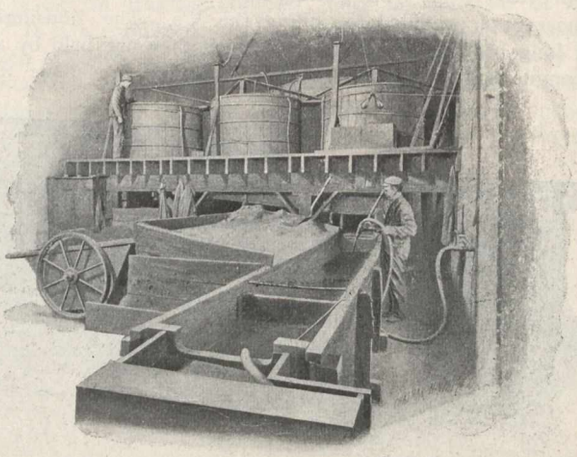
Of the many wonderful applications of electricity, none are of greater importance than that of the electric furnace, for the reason that it renders possible the production of a heat far greater than can be obtained by any other means. Under the heat of the electric furnace, steel, nickel and platinum burn like beeswax, and the best firebrick known to furnace makers is consumed like lumps of resin. It works, in short, the most incredible chemical transformations, one of the most marvellous of which is the conversion of sand and coke into a compound nearly as hard as the diamond, and even more indestructible, being less inflammable, and wholly indissoluble in the strongest acids. This compound, which is the invention of E. G. Acheson, is known as carborundum, and is manufactured at the works of the Carborundum Company, Niagara Falls, N.Y., and Ontario, Canada.



Section of Kiln Room.

The crude materials for the manufacture of carborundum are sand, coke, sawdust, and salt. These are ready for immediate use, with the exception of the coke, which must be reduced to kernels of a certain size to be used as "core" and ground to a fine powder to be used in making the charge for the furnaces. The coke is first passed through a grinder, which breaks it up into small pieces, and is then conveyed to the upper part of the building, where it is passed successively through two cylindrical screens. The first of these removes all particles of coke which are too small to form the core, while the second allows kernels of the requisite size to pass through the meshes and fall into the core bin, conveniently situated, as regards the other constituents of the mixture. Below this bin are the scales on which the materials are weighed out in proper proportions, after which they are conveyed by an elevator to a mechanical mixer, from which the mixture, ready for use, is emptied into a bin.

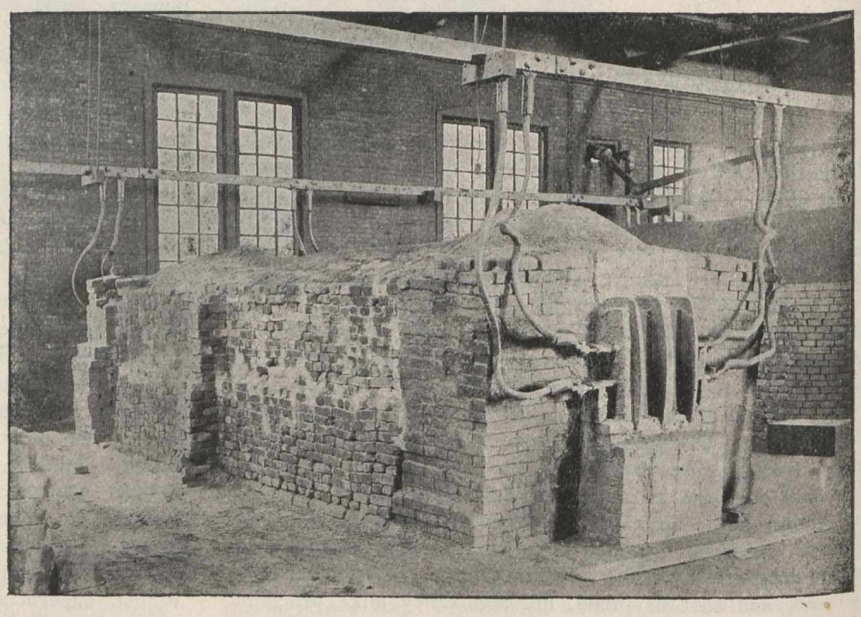
The furnace room contains fifteen furnaces built of brick in the form of an oblong box, 16 feet long and 5 feet wide and deep. The ends, at the centre of which are the terminals of carbon rods, are two feet in thickness. The



Washing Carborundum Powder.

side walls of the furnaces are built four feet high, then the mixture is thrown in to a height of just over two feet, after which a semi-circular trench is formed, the bottom being a little above the level of the lowest row of carbons. The core is then put into the trench, and the top is rounded off by hand, thus making a solid cylinder 21-in. in diameter and 14 feet long, composed of small pieces of coke, extending from either end of the furnace. The walls are now built up to five feet, the mixture thrown in and heaped up to a height of about eight feet.

All that is now required is the electric current, which is supplied from the Niagara Falls Power Co., the 2,200 volt current being transformed to 185 volts. In combination with



Carborundum Furnace Burning.

the transformer is a regulator, by means of which the voltage can be varied from 100 up to 250. The mains from the transformer to the furnace room are two copper conductors having a sectional area of eight square inches each. Heavy cables from these mains are bolted to the plates of the furnace. The circuit is completed by means of a water rheostat consisting of a circular iron vessel, containing salt water, into which can be lowered a large iron plate. To close the circuit the plate is lowered into the water until it rests on the bottom of the vessel. To break the circuit the plate is lifted out of the water. This device avoids the danger in-