

capacity, which supplies the marl pug-mill. From here it is conveyed to a battery of nine marl storage tanks, at the bottom of each of which a series of pipes delivers compressed air through bent nozzles. This imparts to the fluid a swirling, boiling motion, completely preventing settlement. These tanks stand on a series of step-like piers that gravity may assist the flow of marl to the "mixing pug-mill," where the marl and clay first come together. The tanks are further supplied with floats, enabling the operator, in accordance with the chemist's instructions, to draw any depth of fluid marl to mix with a known quantity of clay. The output of the mixing pug-mill is automatically transferred by the Harris compressed air devices to the tube mills, of which there are four. It is then transferred by the same method to eight steel slurry tanks. From an open "header," supplied by compressed air from these tanks, the kilns are fed. A revolving disc carrying a number



ORANGE PEEL DIPPER.

Part of the Plant of the National Portland Cement Company.

of buckets, which alternately fill from the header and discharge into the tube supplying the kiln, accomplishes this step. The speed of the disc varies with that of the kiln.

There are eight rotary kilns, 70 by 6 feet, which are capable of being run at different speeds. The clinker drops into pits built beneath the kilns. Here it gives up a portion of its heat to air, which is in turn mown with the ground coal into the rotaries. The clinker then passes by chute into the water-tight buckets of a McCausland conveyor, which is at this point moving horizontally in a bath of water rising nearly but not quite to the edge of the pans. This conveyor completely surrounds the clinker storage room, passing through a tunnel underneath, up a vertical shaft at one end, along the roof, and down again at the other end. A movable tripping device at the roof is so arranged that clinker may be emptied at any point desired. Further, there

are hopper-shaped openings in the roof of the tunnel, so that clinker may be drawn from any part of the building. In this way, when the conveyor is not bringing fresh clinker to the room, it is feeding cold clinker into the hoppers supplying the ball and tube mills. The necessary quantity of gypsum is added after the material comes from the ball mills and before it goes to the tube mills.

A belt conveyor carries the cement to the store-room, and a tripping device similar in its purpose to the one previously described, is employed to fill any one of the eighteen bins in which the cement is stored.

Packing is done by three automatic machines of five hundred barrels each per day. Bags are employed almost exclusively, eighty-seven and a half pounds constituting a bag, and four bags being the equivalent of a barrel of three hundred and fifty pounds. The capacity of the plant is one thousand barrels per day. Ontario and the Canadian West absorb the output.

Coal for fuel for the rotary kilns is dried in rotary driers and reduced to a flour in improved Griffin mills. The power-house is equipped with suitable engines and generators, driving by individual motors being the method generally adopted throughout the plant.

A most complete laboratory, equipped with all the requisite appliances for making analyses and tests is maintained, and is in charge of Mr. S. H. Ludlow, a specialist in the chemistry of cements.

This plant, which undoubtedly is representative of the best modern practice, was designed by W. B. Bogardus, of Cornell, N.Y.

The Ontario Portland Cement Company.

President	E. L. Goold.
Vice-president	W. S. Wisner.
Secretary-treasurer	E. D. Taylor, Brantford, Ont.
Authorized capital	\$450,000.
Works	Blue Lake, Ont.
Brand	"Giant."

Blue Lake is about three miles from the town of Paris, and is reached therefrom by electric railway. The plant stands on the shore of the lake, and at present the marl is being obtained not 600 feet from the works, to which it is brought in dump cars by locomotive. There are in this one deposit 100 acres, running all the way from thirty-five to fifty feet in depth. A dredge will shortly be installed to supplant the present method of raising by manual labor. Fifty acres of clay of a depth of ten to twenty feet are available in one deposit beyond the lake. It is brought in by cars as is the marl.

In the process of mixing the wash-mill is employed. As is usual in such cases, the marl is measured and the clay weighed. The mix passes from the mill through a grating to a large rotary double agitator. A well adjoining receives the slurry, from which by a large duplex pump it is conveyed to a hopper above the tube mill.

After the process of grinding it is collected in two large concrete storage tanks, reinforced by expanded metal. Compressed air is employed in these tanks to keep the slurry in a state of constant ebullition. Before