

thick. This saves money, and may or may not be justifiable, according to the use of the building. The succeeding coats may be applied later if desired.

The hollow type, with metal studs, having two layers of metal lath, is used wherever warmth is desired. The weatherproof qualities as compared with brick are fully as good as when constructed of wood. Whenever constructed with a steel or wood frame there is considerable saving as compared with brick in the cost of the foundation, which becomes a series of isolated piers instead of a continuous trench filled with concrete.

The construction also adapts itself readily to openings of any desired size. For example, in some of the buildings of the United Zinc and Chemical Co. the bottom ten feet was all opening, the wall only starting ten feet from the ground. Such construction would be impossible with brick except at a very great expense.

There has recently been patented in Canada by Mr. J. A. Jamieson, Montreal, a trussed fabric for use in cement siding construction. This will span four feet without the use of studs, and when plastered on both sides is about $\frac{3}{4}$ of an inch thick. It has been used in several instances, notably in the addition to the plant of the Dominion Bridge Co. and in the side walls of the Government grain elevator at Port Colborne.

In this discussion reference has been made several times to the herringbone type of metal lath. It is, of course, not to be understood that herringbone is the only metal lath that can be used, but it gives greater satisfaction on account of its superior stiffness. The studs are usually spaced 16 inches on centres, and there seems to be no metal lath unless it is ribbed that is stiff enough to span this distance without undue bagging. Other grades are cheaper per yard, but require more studs.

The only precaution necessary in constructing cement siding is that indicated in the discussion of the Winnipeg roundhouses; that is, there must be no great variation in the composition of the different plaster coats. It is very difficult to handle Portland cement mortar unless some lime is used, as it is cold and lifeless under the trowel. Sufficient lime can be added without danger if, instead of mixing it directly with the cement, it is dissolved in the water used in mixing the mortar. A bushel or so of lime should be put in the bottom of the barrel from which the water is taken and stirred with a spade from time to time as more water is added to the barrel, only being used when the lime has settled again to the bottom. This will give a perfectly uniform result without any danger of excess of lime or destruction of weatherproof quality.

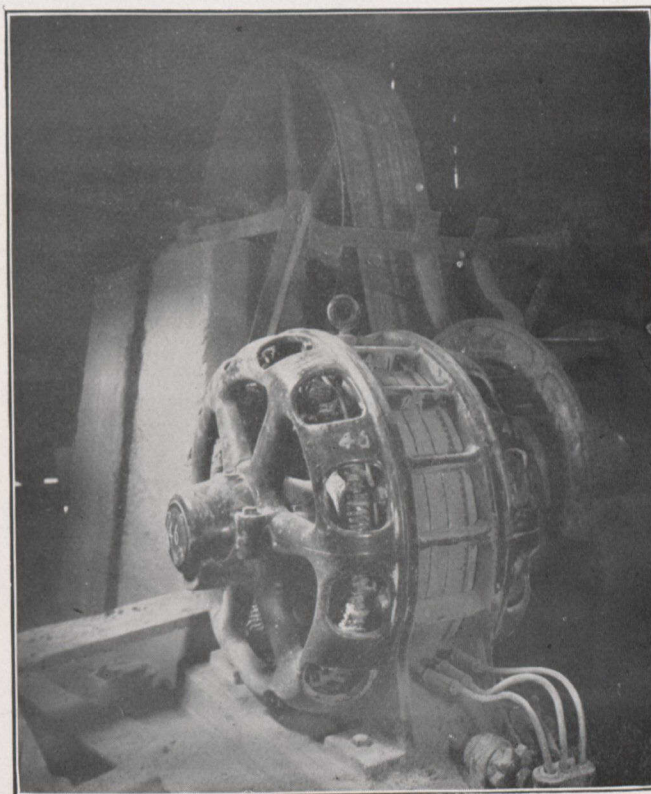
ELECTRIC POWER AS APPLIED TO CEMENT PLANTS.*

It is only within the last ten years that the manufacture of Portland cement has been attempted to any extent in Canada, and in its earlier stages was all made by what is known as the wet process. In 1905 a plant was erected at Point Ann, Ont., for the manufacture of cement from limestone and by the dry process, and since then there have been eight or more similar plants erected.

In most of the earlier plants the method of driving was solely mechanical, the only electrical apparatus being a small generator for lighting. In the modern plants, where hydro-electric power has been available, motor drive has been used throughout, and this practice

has been followed in a few of the mills generating their power by steam. Although the general practice at the present in plants having steam equipment is to drive the heavy machinery from line shafts having slow-speed Corliss engines, either belted or direct connected thereto and the outlying equipment and conveying apparatus electrically, an American company, owning ten mills in the United States and one in Canada, have incorporated this design in all their plants.

Cement mills as a rule are very dusty, and the usage that electrical apparatus gets in them is conceded to be the hardest possible. Although some of the later designers have made an attempt to protect the motors by means of motor sheds, most of the mills at present in operation do not have the least semblance of a cover or dust-guard. Motors will operate quite satisfactorily in the dust and dirt, but a careful pursuance of the maintenance and repair accounts of protected and unprotected motor equipments will show a marked difference in favor of the protected apparatus.



A 100 H.P. Motor driving Gates Tube Mill through Lenix Drive.

In some of the older plants the use of direct-current motors was attempted, but without much success unless the motors were well covered.

One American plant using D.C. equipment constructed canvas sheds around the motors, which were direct connected to short jack shafts projecting through the cover, having the pulley and one bearing outside. This allowed the motor to be completely enclosed and yet have enough space for ventilation. To-day, constant-speed induction motors of the squirrel-cage type are being used almost exclusively, and are giving excellent satisfaction.

On account of the lower cost 60-cycle apparatus has been installed in a number of mills, but in the writer's estimation this has been a mistake, because most of the drives require a large amount of excess

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