Reluctance of third section = .2/ (6 × 1) = .03333 oersted.

Reluctance of whole circuit = .03908 oersted.

M = ϕR = 60,000 × .03908 = 2345 gilberts.

The same result is obtained by determining the m.m.fs. required for each portion of the circuit. This method is instructive in that it shows the distribution of magnetic potential as follows:—

The m.m.f. required for the cast-iron = 60,000 × .00416 = 250 gilberts.

The m.m.f. required for the wrought iron = 60,000 × .00159 = 95 gilberts.

The m.m.f. required for the air = 60,000 × .03333 = 2000 gilberts.

The m.m.f. required for the circuit = 2345 gilberts.

It will be noted that, while the length of the air portion of the circuit is relatively small, the m.m.f. required for this portion is relatively large. This is due to the difference in the permeabilities.

The principles above stated are directly applicable to all kinds of electrical machinery, such as motors, generators, transformers, etc., each of which has its magnetic circuit (or circuits), as well as its electric circuit. A general knowledge of the underlying principles of the magnetic circuit is, therefore, essential to any study of electrical work.

"REDUCING THE COST OF HANDLING MATERIAL IN POWER PLANTS."

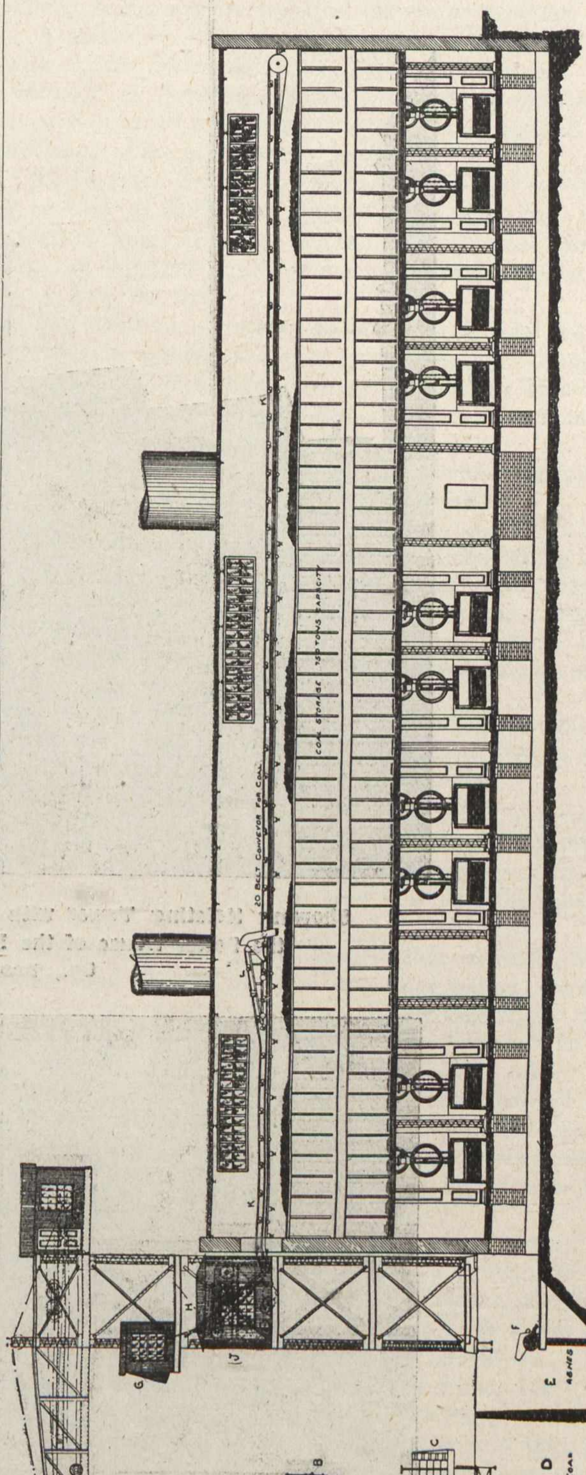
Reducing the cost of labor and minimizing the handling of materials in power plants is becoming more necessary every day and consulting engineers situated in every part of this country are constantly on the alert to adopt the simplest and most practical methods for keeping down the operating costs.

The unusual conditions prevailing at the power house of the Peoria Gas and Electric Co., a corporation operating over 4,100 h.p. boilers supplying the light and power at Peoria, Ill., necessitated a special type of mechanical equipment for the conveying of their coal directly from the cars to the fires under the boilers and handling the ashes from the ash pits.

The accompanying illustrations comprising three photographic views, show how this is accomplished, and on account of limited space we describe only briefly the distinctive features about this mechanical equipment, which was designed to handle 50 tons of either coal or ashes per hour, but, as a matter of fact, it is frequently handling double that tonnage.

The fuel that is being used is run of mine coal, which is delivered alongside the plant in 30-ton railway cars. Figure 1 shows a plan and elevation of the entire power house and with the equipment in place; it will be seen that the cars may be either dumped into the track pit or unloaded direct from the car by the grab bucket, which is operated by cable, and electrically driven double drum hoist situated on the cantilever tower, as will be seen in photograph Figure 2.

Figure 3 shows the receiving hopper placed in the tower where the coal is dumped from the bucket to a 2-roll crusher, electrically driven. This is accomplished by means of a reciprocating plate feeder, equipped with a perforated bottom, which allows the fine coal to bi-pass around the crusher, delivering only the lump coal to the crusher rolls. The coal passing through the rolls is delivered to a belt conveyer, which deposits the crushed coal into the storage bunkers by means of a travelling tripper. The bunkers, having a capacity of over 750 tons coal storage, are so constructed that they feed the coal direct to the automatic stokers by gravity.



Sectional Drawing Power House, Peoria Gas and Electric Co., Peoria, Ill.

Figure 4 shows a photograph of the belt conveyer house above the bunkers. The conveyer is 225 feet between centres and is 20 inches wide, and is 6-ply Jeffrey Standard Canvas Belting. The top strand of this belt is carried on