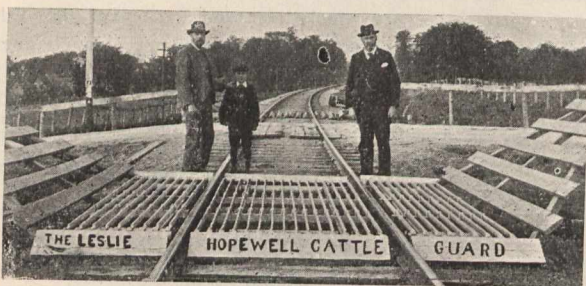


Whatever may be said in favor of a State owned telegraph and long distance telephone system, and on a properly organized basis there is much to commend it; it is an actual fact that the most successful local telephone systems are those which are owned and controlled locally, either by independent companies or municipalities; while the reverse is the case where they are subject to the rigid methods and highly centralized management of either a government department or a monopolistic corporation.

The question of municipal ownership of local exchanges opens up another phase of the telephone problem, which will be dealt with in a subsequent article.

THE LESLIE-HOPEWELL CATTLE GUARD.

The cattle guard shown in the accompanying engraving is the joint invention of Joseph Leslie, of Ottawa, road master of the Canada Atlantic Railway and J. A. Hopewell, of Arnprior, Ont. This cattle guard, together with hundreds of others, was submitted to the test of the now famous one-eyed steer in Lansdowne Park, Ottawa, and was the only surface guard which really succeeded in arresting his progress. In view of this, the Leslie-Hopewell cattle guard



has been chosen by the commissioners lately appointed to investigate the cattle guard question as the most suitable for use in Canada. The guard is constructed of bar iron and is a platform working on rollers. The platform and rollers are so placed that the weight of the animal attempting to pass over pushes the platform outwards more or less to the extent of 15-in. horizontally. The tests made showed that this was sufficient to cause cattle to desist from any attempt to cross over. As soon as the animal's weight is removed, the platform returns to its first position and is ready for duty again. The guard appears to be simple in construction and action, and the inventors claim that it will prove durable and not liable to get out of repair. The cost, it is estimated, need not be more than \$25 a crossing, that is \$12.50 for one side, as shown in the engraving. Its durability has been variously estimated by railroad engineers at from thirty to fifty years, when kept properly painted. The guard can be removed each fall by displacing eight hooks which hold the guard to a similar number of staples in the ties, and can be replaced again the following spring in a few minutes at no cost.

CANADIAN WESTINGHOUSE CO., LTD.

Reference has already been made to the plans of the Westinghouse Electric and Mfg. Co., of the United States, for an up-to-date electrical works to handle their Canadian trade. A Dominion charter has been obtained with a capital of \$2,500,000, under the name of the Canadian Westinghouse Co., Limited, the incorporators being George Westinghouse, Herman Westinghouse, Frank H. Taylor, Loyall A. Osborne, and George Carter Smith, of Pittsburg; T. Ahearn, and Warren Y. Soper, of Ottawa, and Paul J. Myler, of Hamilton.

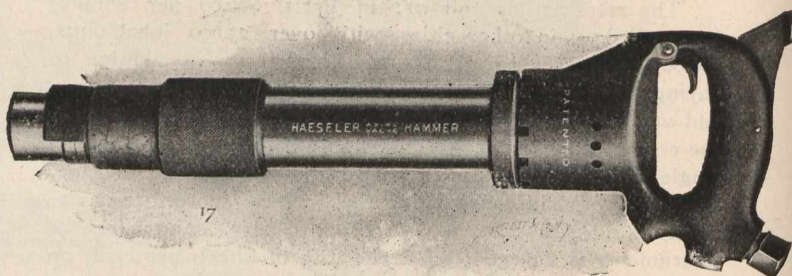
The works of the company will be in Hamilton, and will embrace the manufacture of Westinghouse electrical apparatus and Westinghouse air brakes. The works will be of the most modern type, and will have the advantage of affiliation with the larger Westinghouse industries of the United States. These comprise the Westinghouse Electric & Manufacturing Co. the Westinghouse Air Brake Co., Westinghouse Machine Co., Union Switch & Signal Co., Sawyer-Man Lamp Co., Nernst Lamp Co., and the engineering firm of Westinghouse, Church, Kerr & Co. The output of the

aggregate Westinghouse companies in the United States alone is fifty million dollars (\$50,000,000) per year in actual shipments from the works. The shipments of the Westinghouse Electric & Mfg. Co. to Canada have reached the value of \$2,000,000 annually. With the starting of the works in Canada, the Westinghouse interests will be represented in almost every country in the world. The English company, having its works at Manchester, employs 5,000 workmen, and has a capital of \$15,000,000, and there are Westinghouse companies in France, Germany and Russia, each with large and prosperous manufacturing establishments. The employees of the Westinghouse companies in the United States number 13,000.

The plans for the new Canadian buildings are now under way, and the work will be begun almost immediately. The company has twenty-six acres of land conveniently situated in Hamilton, upon one corner of which the Air Brake Works are already erected and have been in operation for several years. The new works will be located on the rest of the land, almost opposite the new Deering works, and convenient to the main lines of the Grand Trunk and Canadian Pacific railways.

IMPROVED PNEUMATIC HAMMER.

Among the improvements lately noted in all kinds of machinery, those made in pneumatic hammers are not to be forgotten. Certain marked advantages, as compared with the other pneumatic hammers, are to be found in the entirely new line of these useful little tools, which have just been brought out by the Ingersoll-Sergeant Drill Co., for the Haeseler-Ingersoll Pneumatic Tool Co. In two particulars these pneumatic hammers differ from the others. They possess a new valve mechanism for reciprocating the piston and a simple but very effective locking device for taking up wear and securely locking the handle valve boxes and cylinder together.



Riveting Hammer.

The valve is a radical departure from the various forms of straight line reciprocating valves originally used. Its strength of construction, steadiness of action and freedom from wear, avoid the recognized difficulties which have been noticed in valves employed in other pneumatic hammers. As its name, "Axial Valve," suggests, its movement is around a fixed axis, which is in a line with the centre of the piston, and consequently transverse to the direction of the piston movement. Its travel backward and forward, to alternately open and close the admission and exhaust ports, is caused by constant air pressure upon the short wing or projection of the valve, and intermittent air pressure upon the long wing. The accompanying illustrations show the valve in the interior of the valve box.

The ports in the valve, as well as those in the valve box, are relatively of equal area, and are located diametrically opposite to each other, so that any pressure on one side of the valve is secured by the corresponding one on the other side, supplying a balanced valve with the constant absence of friction and wear on the axis upon which the valve moves. Owing to the difference in the movements of the valve, and the direction of the travel of the piston the vibration of the entire tool in lessening the action of the valve is not disturbed when the hammer blow is struck. This fact and the fact that the bearing is small results in a considerable reduction in the friction and consequently wear.