

No matter how well designed the machinery, or how perfect the installation, from time to time repairs will be required. The larger the installation, the more complex the work, and the more difficult it is to keep on hand the necessary repairs. The firm that can point to a factory close at hand with a full line of repairs or a shop where repairs can be made quickly, excite reasons other than sentimental for the accepting of tenders.

The strongest element in business to-day is the personal equation, and the salesman of strong personality, with a large number of friends and a knowledge of local conditions and the peculiarities of the men with whom he is dealing, is sure to take advantage of every legitimate opportunity to close the contract.

Secret commissions and rebates have not now or ever had any prominent place in Canadian business. Canadian business may be peculiar, but it is clean. The outside firms, who are anxious to do business in Canada, may for a time have to pay for the experience that they will get, but Canada is a growing country—a country that last year sold nearly \$100,000,000 worth of wheat. The day is not far distant when the development and the demand of the country will be greater than the factory output. British and foreign firms who cultivate and examine Canada now will be ready for that business.

### SPLIT-LOG DRAG.

The Split-log Drag as an implement for the maintenance of earth roads is becoming more popular and more valuable. For the maintenance of earth roads it is replacing the grading machine, not that it can take the place of the grading machine, but supplementary to the good work this machine does in road-building.

Some of the chief advantages of the Split-log Drag over grading machines and wheel-graders are cheapness of construction and cheapness of operation, costing about one-half, and because of its two blades and method of construction it does not dig deep down into the holes, like the single-blade scrapers, but passes over and fills them up.

The Split-log Drag should be used on earth roads just as soon as the top is dry in the spring. It is not necessary to wait until the spring rains are over and the frost is all out to get good results from this implement, for by levelling down the road and properly crowning it the later rains are quickly shed to the ditch, and wash-outs prevented and quicker drying secured after the rains are over.

To smooth out the surface of the road; to assist in drying roads some days earlier than the undragged roads; to keep the road free from ruts; to maintain the crown; to assist in surface drainage; to make a firmer roadbed; to prevent an accumulation of dust—these are the functions of the Split-log Drag.

To use a Drag but once in the year will give good results, but the systematic use of the Drag will give results far in advance of the additional cost. Roads should be dragged from eight to ten times during the season, depending upon their condition, and better results will be secured if this dragging is done when the surface of the road is soft, but not sticky, so that the unevenness may be planed down, but the clay not rolled together in balls.

A light Drag is preferable, as it can be used on softer roads with less expense, so that the same allowance will

provide for more dragging. In this way it is possible at a small cost, not exceeding \$7 per mile per year, to keep an earth road always in good repair. The light Drag makes it possible to give the road a more rounded contour, thus preventing a sharp peak that occurs when the heavy Drag is used.

Good results must not be expected from the very first, for to get the very best results one must study road material and the effect different weights of Drags has upon it, but by studying the conditions of soil and season and road one will quickly become skilled in the best way to use this cheap but efficient good roads implement.

### THE CANADIAN GENERAL ELECTRIC ANNUAL STATEMENT.

The annual report of the Canadian General Electric Co. for the year ending December 31st, 1909, was this week submitted to the shareholders. The report indicates a very busy year for this company during 1910. Large outlay has been made for raw material, and, although a large banking overdraft is shown, yet this indicates large expansion of business.

The company has recently secured some very important contracts for electrical apparatus. These contracts total nearly three hundred thousand horse-power.

At a time when foreign companies are entering so strongly the Canadian field, it is gratifying to know that this Canadian company has its shops working to capacity.

### ELEMENTARY ELECTRICAL ENGINEERING.

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This series of articles will be continued for some months. They will be of particular interest to the student of electrical work and the civil engineer anxious to secure some knowledge of the simpler electrical problems.

**Potential and Difference of Potential.**—Electric potential is simply electric pressure; and electric pressure is the tendency of electricity to escape from a body, just as mechanical pressure exerted on a tank into which air is compressed is the tendency of the air to escape. Every gas tends at all times to occupy a larger space; i.e., its atoms tend to separate. Electricity possesses a similar characteristic in that it tends at all times to spread itself over other bodies; i.e., it repels itself. To elucidate this idea the analogy may be studied a little further. In Fig. 1, A and B represent two tanks into which air has been pumped, the pressure as indicated by a gauge being 150 pounds per square inch in A, and 100 pounds in B. (Since this pressure is measured by an ordinary gauge, it represents pressure above that of the atmosphere.) The two tanks are connected by a pipe, which is closed by a valve,  $v_1$ . A second pipe, also with valve, leads from tank A to the atmosphere. If, now, the valve,  $v_1$ , is opened, air will flow from A to B, and the tendency to flow depends directly on the difference of pressure in the two tanks. If, for example, the flow of air is five cubic feet per second when the valve is first opened, with 50 pounds difference of pressure, the flow would be ten cubic feet per second, with a difference of pressure of 100 pounds. The flow in either case will continue (at a diminishing