prizes are $20,000, $15,000 and $10,000. In addition, a premium of $40,000 will be given to the winning competitor in case his project should not be executed by himself, provided the works prove satisfactory. Details and conditions are contained in a circular issued by the Ministry of Commerce, copies of which may be had from the Austrian Consul-General, Montreal. Here is an opportunity for some of our Canadian engineers to win a handsome prize and distinction.

BRITISH EXPORTS TO CANADA.

The British Board of Trade returns show the following exports to Canada for May, as compared with those of last year:

	May, 1902.	May, 1903.
Iron—		
Bar, etc.	£ 5,866	....
Railroad	14,586	£95,025
Hoops, sheets, etc.	11,818	26,358
Galvanized sheets	8,439	33,964
Cast, wrought, etc., iron	10,927	....
Steel—		
Unwrought	39,591	....
Bars	....	19,281
Tinned plates	18,743	56,121
Sheets and plates	....	19,408
Lead	5,304	5,250
Tin, unwrought	3,604	3,279
Cutlery	5,598	7,788
Hardware	2,894	3,626

For the five months up to 31st May, there was also a substantial increase.

ELECTRIC TRAIN LIGHTING.

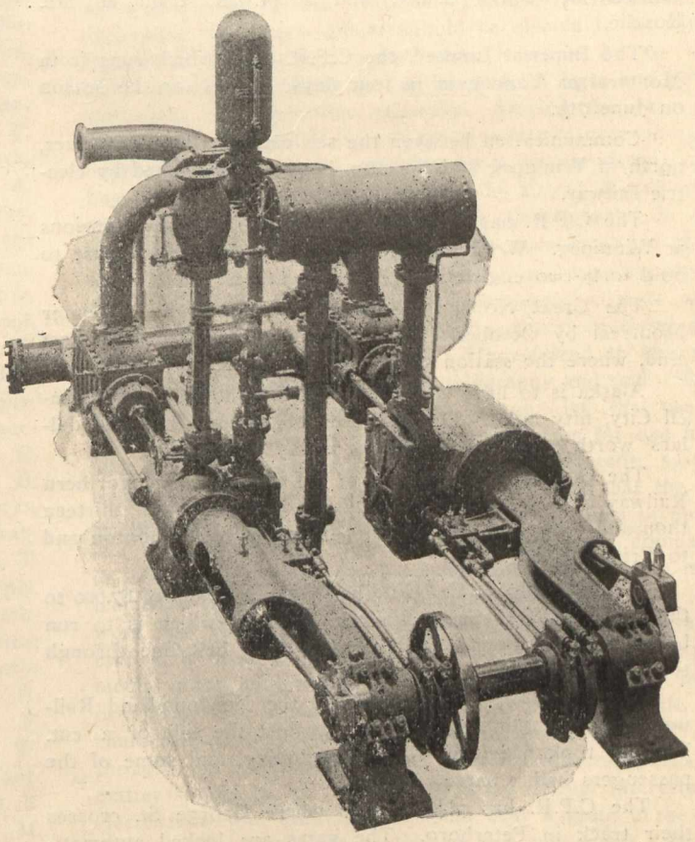
A novel idea in lighting trains by electricity, says the Railway and Engineering Review, is the Gullott system, which has been experimented with successfully on a small scale on an important road, and is now to be applied to an express train. As in the case of the axle light, the motion of the train is used to generate the electricity. Instead, however, of taking this power from the car axle, it is furnished by a rotary fan attached to the front end of the locomotive. The fan is close to the boiler head and presents a moving and cutting surface to the air pressure, causing the air to travel to the outer end of the fan's blades until discharged. No air pressure is massed on the flat surface of the boiler head, but the curved surfaces of the fan blades utilize the travelling air and thereby generate power. The fan cutting through the air revolves swiftly, and does not add to the resistance of the air nor retard the speed of the train. No gale of wind is required to cause the fan to operate, the ordinary pressure of the train moves and generates the electrical energy required to light any train and leave a large surplus for ventilating fans and other purposes. The apparatus does not obstruct the view of the engineer or offer any objectionable complications. The dynamo is either on or under the pilot and is directly connected with the fan by a special device. A storage battery is on the tender or underneath each car, and so equipped automatically with cut outs as to properly govern the flow of current from dynamo to battery. It is evident that the cost of illumination will be only the expense of installing and maintaining this apparatus.

Recent tests on a train running forty-five miles an hour resulted in the development of 4.5 K.W. per hour, which amount of energy is sufficient to charge the storage battery so that it will illuminate a train of five cars seven hours per night and leave the battery with nearly its maximum charge, due to the continuous operation of fan. On high speed trains greater power and efficiency are obtainable.

A new industrial centre, to be known as Clarke City, is to be established on the Labrador coast by the North Shore Railway and Navigation Co. A pulp mill and other works are to be built.

PICTOU PUMPING PLANT.

The town of Pictou, N.S., has recently completed a very efficient high duty pumping plant. The work was carried out under the supervision of Lee & Coffin, consulting hydraulic engineers, of Boston, Mass., and the machinery was made by the Smart-Turner Machine Company of Hamilton. The pumping plant consists of one cross-compound, condensing, high duty pumping engine, having a capacity of a little over a million United States gallons per day, against a vertical head of 225 feet; one auxiliary Underwriters' Fire Pump of 700 gallons' capacity. The pumps were so arranged that either or both could be operated at one time, drawing through a common suction pipe, which was connected with a number of artesian wells located in the neighborhood of the pump house. The general arrangement is shown by the accompanying cut. The engines are fitted with Meyer's adjustable cut-off, which can be so adjusted as to cut off steam at any portion of the stroke while the engines are in operation. The size of the engine is 14-in. high pressure cylinder, 25-in. low pressure cylinder, 22-in. stroke, water plungers, 8-in. diameter. On account of excessive high water, it was necessary that all pipes should be above the floor of the engine room. The exhaust from the low pressure cylinder was therefore carried overhead through the feed water heater, and down into the surface condenser, which condenser was placed in the suction pipe of the pump. The exhaust from the air and boiler feed pumps, as also that from the Underwriters' Fire Pump, when



in operation, was carried through a secondary heater. The feed water for the boilers is drawn from the wells, and pumped through the primary heater, then through the secondary heater, so as to increase its temperature to a maximum.

During the duty test of twelve hours' run, the engines were shown to develop a duty of 105,097,000 foot pounds. The steam pressure during this test was in the neighborhood of 105 pounds. The average head under which the pumps operated was 220.09 feet. In a letter on the operation of the pumps on regular service, the Mayor of Pictou says: "Our Smart-Turner pumps are as near perfection as can be made; at least we think so. . . We have about 400 water consumers now, and are burning between eight and nine tons of coal per month. We expect to supply from 500 to 600 consumers, and feel confident that we can do it on not more than ten tons per month. The Smart-Turner Company car-