The economy of many stations could be increased by the intelligent use of the indicator, instead of trusting to the valves of engines being properly set by guess work, as is now so frequently the case.

BOILERS.

With the exception of the Royal Electric Co.'s east end station in Montreal, the ordinary horizontal fire tubular steam boiler has been used in every station. In that case the Babcock and Wilcox water tubular boiler is employed. In some cases the Jarvis setting has been adopted, but not to any great extent.

WATER POWERS.

At Quebec, power is obtained at the Falls of Montmorency, nine miles distant, to drive the Thomson-Houston arc dynamos and Thomson-Houston A. C. incandescence machines.

At Peterboro, water power is used to drive Thomson-Houston arc dynamos, from which 137 arc lights and a number of Bernstein incandescent lamps in series are supplied. At Barrie, Ont, a stream five miles distant from the town furnishes the power for both the arc and Brush A. C. incandescence plants.

Also in Ottawa, Cornwall, Smith's Falls, St. Catharines, Welland, Dunville, Thorold, Sault Ste. Marie, Sherbrooke, Joliette, Valleyfield, Almonte, for both factory and central station lighting, water furnishes the motive power.

ATTACHMENT OF DYNAMOS.

The dynamos are not coupled direct to engines in any of the Canadian stations. Ordinary double leather belting, made without seams or rivets, is generally used. In a few cases link leather belting has been tried, but the results have so far justified the opinion that this belting has been invented chiefly to find a market for scrap leather. Belting should not be overtaxed. One inch width of double leather belting running at a speed of 750 feet per minute will easily transmit one horse power, and at this tension will last a long time. Some dynamo manufacturers, in order to impose the belief that their machines use but little power, are in the habit of providing a much smaller margin than this per horse power. The only advantage, of which the contractor receives nearly the whole benefit, is that the first cost is decreased. The disadvantages, which affect the purchaser, are the necessary excessive tightness of the belt, and the consequent heating of journals, rapid wear of the belt, and large oil consumption. Rope driving may eventually be used as it has many advantages, but so far, with one exception in an isolated plant, the method has hitherto not been tried in Canada.

ARC LIGHTING SYSTEMS.

The arc lighting systems in use in Canada are the Thomson-Houston, Ball, Brush, Reliance, American or Fuller Wood, Hochhausen (Wright's improved) and Weston. The large majority of machines and lamps is of the Thomson-Houston and Ball systems.

As already mentioned, the Brush system was the first to be tried in the Dominion, but its sale was never pushed, and others took possession of the field. In the Thomson-Houston, in the Brush and in the Fuller Wood or American systems a current of 9.6 amperes is used, with a pressure varying according to the number of lamps in circuit. In the Ball system a current of 8 to 8½ amperes has been the standard, but lately that company have supplied several plants having a current of only four amperes, the lamps for which are nominally of 1,000 candle power each. In the Hochhausen-Wright system, a current of 10 amperes is used. In the Weston system the current is about 18 amperes, and the P. D. between the terminals of each lamp 25 volts. On account of the short arc and the consequent hissing the Weston lamp has not found general favour in this country. The regulation of the Thomson-Houston machine is excellent. The lamp also has the merits of simplicity of construction and steadiness in running. The feed is purely gravitational like the Brush feed, controlled by electro-magnetic action, there being no clock-work or gearing. It is not, however, quite so steady as some clock-work arc lamps, and requires the feed rod to be kept very clean in order to secure the proper