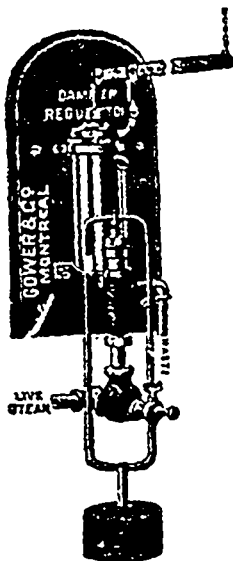


AUTOMATIC DAMPER REGULATORS.

Hitherto the high price of these and the cost of delivery and high customs duty have all tended to prevent the spread of this useful appliance in Canada that it deserves. Gower & Co., Montreal, are now, however, introducing on to this market a damper regulator for steam boilers at the reasonable price of \$60, which is somewhat about half the price of those that have been put before the steam users up to the present. The advantages of a damper regulator are manifold. It adds to the life of the boiler, keeping the expansion and contraction more uniform. It keeps a steadier stroke on the engine. It can be absolutely relied on as a safety valve. It saves coal and can always be depended upon at night or by day, and eases the mind of the fireman, who, in many cases, has his coal pile many yards away from his boilers. Messrs Gower & Co.'s regulator is warranted to operate the dampers of any size on a variation of but one pound pressure. So that if the damper is of ample size the boiler pressure will never vary more than one pound. It is actuated entirely by steam and has but



one connection to the boiler and no water connection. There are no complicated parts, the only movable parts being two pistons; one small, controlling steam to the larger one. The regulator can be taken apart and cleaned by any fireman or engineer. Messrs. Gower & Co. are well known as the Canadian engineers and representatives of the celebrated Green's Fuel Economizer, and we feel sure that the firm make sure of the excellence of any machinery they put on to the market.

WATER DRIVEN PLANTS.*

BY JOHN MURPHY.

As close regulation is the most important point in the operation of any electrical plant. I will endeavor to show how this can be accomplished best in a water-driven plant, and, as so much depends on the manner of installation, I will dwell for a moment on the importance and method of properly equipping the water wheel gate. I take it for granted that the water wheel itself was placed in position by a competent engineer, due provision made to cope with low water, anchor ice, and the many other troubles inherent in the use of water power. This having been done the gate and all its connections, from the water wheel to the hand wheel in the dynamo room, should be so constructed as to move quickly, positively and easily, so that the instant the regulator is actuated by a variation in speed the water wheel will receive its greater or lesser supply of water and thus be enabled to maintain a constant speed. An arc plant with its automatic current controllers, driven by a water wheel equipped as indicated above, will run for an indefinite period with little or no attention, but incandescent lighting and power machinery require somewhat more supervision. I hold it is a mistake to attempt to supply power from a lighting circuit except in very small units. One of the greatest recommendations for the glow-lamp as an illuminant is its steadiness, but this quality is almost unknown when motors which are frequently started and stopped are run on the same circuit. The separately driven exciter is a great boon to water power users whose loads are subject to great

variations. Its many advantages are so apparent that it seems unnecessary for me to do more than merely mention it in passing. Another arrangement, the utility of which speaks for itself, is the automatic field controller, which strengthens or weakens the generator field circuit according as the potential on the line falls or rises.

An incandescent lighting plant requires a certain amount of hand regulation, although the apparatus just referred to is useful, within certain limits. All hand regulation necessary on a lighting circuit should be done, figuratively speaking, as far away from the lamp as possible; in other words, it is the field circuit of the exciter that should be varied when it is necessary to change the potential on the line. The exciter field rheostat should be of large range and divided into a great many sections, so that the movement of the rheostat-arm from one point to another would cause such a slight change in field current as to make a scarcely perceptible difference in the brilliancy of the lamps. Where large generators are used and many circuits are run, the use of the individual circuit regulators becomes imperative.

I wish to call your attention to two pieces of mechanism. The first device is an automatic speed indicator and alarm, which points out the speed at which the machinery is running, and also rings a bell at every change of speed. The other is to close the water wheel gate the instant the speed rises above a predetermined point. It consists chiefly in a pair of friction pulleys mounted on a frame. One of the friction pulleys is continuously driven from the machinery to be controlled, and the other is connected to the gate-closing apparatus. These friction pulleys are normally placed apart and are brought into contact by a weight or spring, which is released by a lever attached to a pair of governor balls. The instant the speed rises a certain percentage above the normal, the governor balls move the lever, and the weight or spring being released, the frictions are pulled together and the gate is immediately closed.

It would hardly seem correct to leave the subject of the operation of water power plants without at least mentioning that bane of water power users—anchor ice. If wheels are favorably situated, that is, if they are supplied from a large pond in which there is little or no current, and if there is an overflow or by-wash into which most of the floating ice can be diverted, by extreme watchfulness a complete shut-down can be prevented. But, if the wheels have no still pond from which to draw their water supply, it is prudent to resort to the auxiliary steam plant as soon as there is the least suspicion of anchor ice.

JUBILEE FOUNTAIN FOR MONTREAL.

It was a happy inspiration which moved Mr. Macaulay, of the Sun Life Assurance Co., to present a drinking fountain to the City of Montreal, as a memorial of the Queen's Jubilee. The accompanying illustration is a sketch reproduced from the *Witness*, of the proposed



SUN LIFE ASSURANCE CO.'S FOUNTAIN.

fountain, which will be a granite block surmounted by the figure of a sleeping lion, and having the inscription, "A tribute to Her Majesty, Queen Victoria," with the dates 1837-1897.

* Abstract of a paper read before the Canadian Electrical Association.