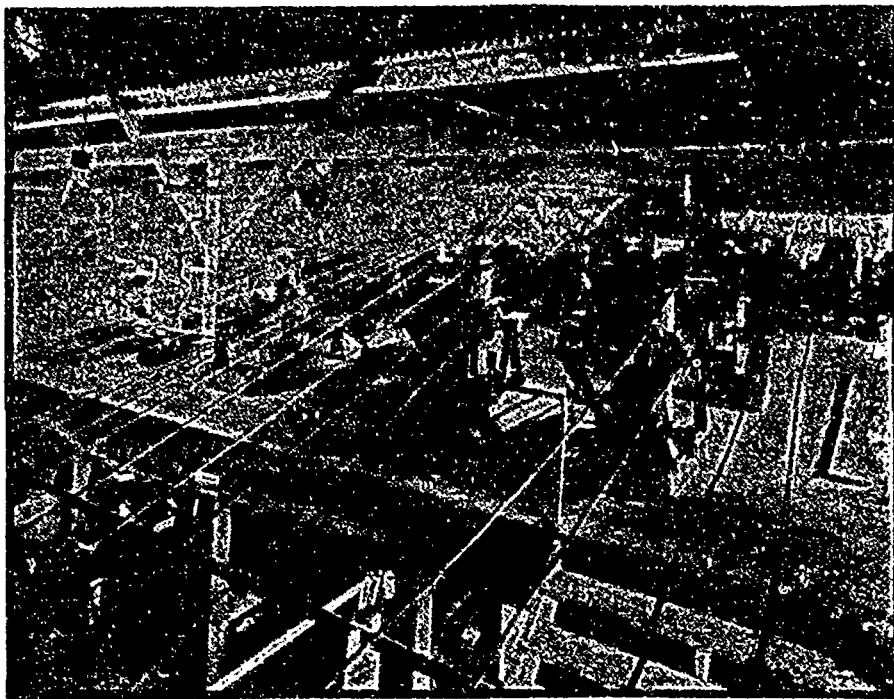


A NOVEL FORM OF MEASURING INSTRUMENT.

IN a recent issue of *La Lumiere Electrique*, M. F. Leconte gives a brief account of some experiments carried out by him at the Liege University with a view of testing a curious form of electrical measuring instrument. M. Leconte's idea is to make



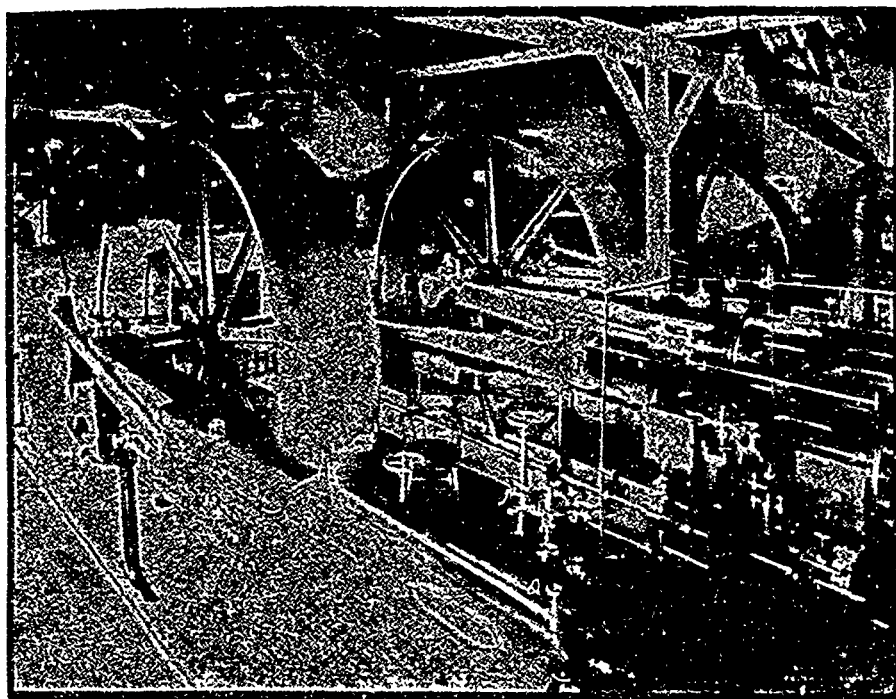
TORONTO ELECTRIC LIGHT COMPANY—VIEW OF DYNAMO ROOM.

a pile of circular iron discs, interposing some springy substance, between each disc, and to place this pile inside a solenoid. When the solenoid is traversed by a current, the pile of discs tends to contract owing to the formation of unlike magnetic poles at the opposing surfaces of the discs. This contraction is resisted by the springs, and by means of a suitable magnifying device the movement of a pointer along a suitably graduated scale enables one to read off the volts or the amperes. M. Leconte employed discs ranging in number from 18 to 60, in diameter (1 mm.=40 mils) from 20 mm. to 65 mm., and in thickness from .2 mm. to 8 mm. Some of the substances employed as springs were watch-spring steel, blotting paper, packing paper, ordinary paper, flannel and black indiarubber. The tendency of the discs to move sideways was checked by punching holes through them and slipping them over vertical glass rods. The sensitiveness of such an apparatus can be increased either by adding to the number of the discs, augmenting their surface, or by providing the solenoid with a core of iron wire. M. Leconte gives curves of the scale readings obtained with a voltmeter arranged with 18 cast-iron discs, 8 mm. thick, and 65 mm. in diameter, and provided first with indiarubber springs and then with steel springs. The curve in the first case was fairly regular between 27 and 53 volts, with steel springs the curve was very irregular, with indiarubber springs the deviation of the scale index was only 18 mm. for 57 volts, and the actual contraction of the column of discs was only 2 mm.; with steel springs the index deviation was only 8 mm. for 50 volts.

THE LUBRICATION OF STEAM ENGINES.

THE following is extracted from an interesting article on this subject which appeared in a recent issue of the *Engineer*. Engineers very commonly pay scant attention to the cost of oil used in lubricating steam engines. They regard it as an insignificant item. Even those who pay for the oil take small pains to ascertain whether they are paying more than need be paid. The results of an inquiry into the question of oil bills in any district would, we venture to say, give highly startling results. Not long since we were shown an American engine of the horizontal high speed type. It was indicating about 13 or 14 horsepower. Coal was very cheap, and we were told that the cost of fuel was as nearly as might be 1s. 6d. per day. The oil bill was 3s. 6d. a day, or more than twice the cost of coal. In another instance we found an engine indicating about 1,500 horse power and using 120 gallons of oil per week. Again we find in some cases that oil costing 2s. 6d. per gallon is used, in others, for just the same class of work, about 9d. a gallon is paid. It will readily be seen that a lavish use of oil at 2s. a gallon runs into a

great deal of money. It is high time, we think, that more attention was given to this subject than has hitherto been devoted to it by users of steam machinery. The chief causes of excessive oil consumption are says our contemporary firstly, that engineers or drivers in charge of engines care nothing about oil waste, secondly, badly designed or badly kept engines, thirdly, unsuitable oil, fourthly, running in dusty places, fifthly, defective lubricating apparatus.



TORONTO ELECTRIC LIGHT COMPANY—VIEW OF ENGINE ROOM.

The G.T.R. Co. have recently commenced to heat their Lachine train with steam from the locomotive.

Messrs Phippen & Graham, Belleville, intend compounding the engine of the steam barge Saxon and putting it into a new hull, to be built at Picton at a cost of 22,000.