

## THE LONDON SPECIFICATIONS.

TORONTO, ONT., Dec. 17th, 1898.

Editor CANADIAN ELECTRICAL NEWS:

DEAR SIR,—Replying to yours of 29th August, I have been out of Toronto since then, but if of any interest at this late date, would comment on the London specifications as follows:

I don't think it right to call for tenders on work that has not been previously sanctioned by the ratepayers; it is simply intended as a menace to the existing company, and is not a proceeding creditable to the London corporation.

The specifications do not interest Canadian manufacturers, as they distinctly call for a Brush machine and an Adams-Bagnall lamp. To specify a particular efficiency is beyond the scope of an engineer's duty. Efficiency is of value merely in relation to price. A high efficiency machine may be held at so high a figure that one of lower actual efficiency and less cost may be the better investment. There is many a good machine made that will not reach 86%; these are all excluded. The amount of belting required is not mentioned, although a detail so important might be expected in a specification that considers it necessary to specify that "armatures shall be electrically and mechanically balanced." I do not believe in any such fancy tests as short-circuiting a machine for five minutes. Its imposition shows that the engineer does not understand the operation of an automatic current regulator.

As to lamps, no engineer has a right to specify any particular apparatus, more especially when, as is abundantly evident in this case, he knows nothing about it. The Adams-Bagnall lamp contains certain patented features, which the London engineer, probably after "expert" investigation, decided would render it superior to any other. And yet his investigation, while convincing him of its superiority, leaves him in the dark as to whether it contains complicated clockwork mechanism or even the usual cut-out device! This is evident, for he states it must not have the one and must have the other. The London engineer's opinion on such a point is evidently of value. Having demanded a particular lamp, can he justly hold a contractor responsible for its "flaming or hissing"?

The rest of the specifications illustrate the general principle that when amateurs go into details they are sure to leave out as much as they put in, and to leave loop-holes everywhere. It is a pure waste of time to specify the dimensions of cross-arms. I should say that the clauses covering everything but machines and lamps represent the result of a careful study on the part of the engineer of the outside work of the London Electric Co. On the whole, the specification appears to be largely composed of sentences copied out of manufacturers' catalogues descriptive of their apparatus, held together by words and conditions representing the knowledge of one who had to measure a cross-arm. It is about the most bare-faced confession of ignorance and partiality that could be decently made, and I do not for one moment believe that it is the work of the London city engineer. It is the result of collaboration between the agents of a manufacturing company and some pushing lineman.

Yours truly,

GEORGE WHITE-FRASER.

## LARGE SALE OF RAILWAY APPARATUS.

MR. W. A. JOHNSON, of the W. A. JOHNSON Electric Company, reports the recent sale of Westinghouse apparatus to the Metropolitan Railway Company of Toronto, to be used in connection with the extension of the present railway to Lake Simcoe. In the power house at Bond Lake will be installed two 60-cycle, three-phase A.C. D.C. generators, each of about 400 h.p.; and a full complement of switchboard apparatus, step-up transformers, lightning protection, etc., will be provided. The transmission voltage will be 16,500. There will be two rotary transformers, 60 cycles, three-phase, giving 570 volts on direct current side. These will be located at sub-stations about 14 miles from the generating station, step-down static transformers being provided to reduce the voltage to that suitable for the rotaries. The generator switchboard will consist of eight marble panels, the sub-station switchboards of five marble panels, with non-arcng and tank lightning arresters. In addition to the above, there will be passenger and freight car equipments, including one quadruple equipment for heavy freight car and double equipments for two-light freight cars, two double equipments for ordinary passenger cars, and two quadruple equipments for heavy passenger coaches; the motors being used in these will be 38 B. 50 h.p. each. We believe this is the first installation in Canada to use a generator delivering

both direct and alternating current from the same machine, as well as the first application of rotary transformers. The sale includes one 45-ton Baldwin-Westinghouse electric locomotive.

## AN INCORRECT ADDRESS.

A MISLEADING error occurred in the reference to the new quarters of Messrs. Ness, McLaren & Bate, Montreal, which appeared in our last issue. Their factory, office and show-rooms are located at 419 St. James street, corner of Craig, instead of at the corner of Seigneurs and Craig streets, as given. Persons desirous of purchasing telephones, telegraph instruments, annunciators, switch-boards, fire alarm apparatus and other electrical supplies are requested to note this correction.

## WARNING AGAINST ACETYLENE.

THE Rat Portage Miner & Rainy Lake Journal quotes as follows from the Boston Herald: Edward Atkinson, President of the Boston Manufacturers' Mutual Fire Company, in view of recent renewed efforts to introduce calcium carbide and acetylene gas into commercial and manufacturing establishments, has published a cautionary circular in which he says:

"The purpose of this caution is to call upon each and all of our members not to make use either of calcium or acetylene gas without full advisement and consultation at the time the proposed application is to be made. It may happen that the use of these materials may be made safe. At present they are not deemed so. Therefore the introduction of either, without the consent of the underwriters, would make an alteration in the condition of the risk not contemplated in the original contract. It is therefore suggested that no new method of lighting shall be permitted, even for experiment, without consultation."

## ENGINEERING NOTES.

A rule by which to estimate the power of a double belt is given as follows: Divide the number of square feet that passes over one of the pulleys in a minute by 40. The result will be the power that it can develop. The authority which gives it says that it does not contain many fine points, but the results are just as reliable as those obtained by more complicated methods. Probably this is true.

**OIL FOR BOILER SCALE.**—The use of oil as a scale remover in steam boilers is treated in an article in a recent issue of The Locomotive, the conclusions of which are summed up as follows: Mineral oil is often useful for the prevention or removal of scale, when it is properly applied; in the prevailing method of introduction, it gives good results in many cases; but when it has not proved as effective as desired, we recommend that the boiler be dried out and that the kerosene be sprayed upon the plates and tubes. It is important to avoid the use of open lights in or about a boiler that is being so treated; incandescent electric lights are the safest to use. Finally, kerosene is very serviceable for removing lubricating oils from plates and tubes.

**ROPE TRANSMISSION.**—In a paper on power transmission by ropes and belts, read before the French Society of Civil Engineers, V. Dubreuil states that one great advantage possessed by ropes is that cyclical variations in the speed of the driving pulley are "damped" by the ropes, so that the speed of the driving pulley is much more uniform than that of the driver. Ropes are also useful when the two lines of shafting are not perfectly parallel. The velocity of the rope should not be less than about 4,500 feet per minute, nor more than 5,000 feet, while with belts a velocity of as little as 600 feet per minute may be used, but the maximum should not exceed 4,000 feet per minute, above which the centrifugal force prevents the proper adhesion of the belt to the pulley. For great distances between the lines of shafting ropes should be used; though in exceptional cases they may be employed with as little as 12 feet between shaft centres, in general the distance should not be less than 20 feet. Spans of as much as 328 feet have been worked by ropes with only intermediate support. Under no circumstances should the diameter of the smallest pulley be less than 30 times the diameter of the rope, and in general the pulley ratio should not be greater than four to one. Three standard ropes of manila, hemp or cotton may be used. Hemp is much cheaper than cotton, and usually wears longer, but is less pliable. To facilitate estimates, the approximate weight of a rope pulley may be taken as  $5\frac{1}{2}$  pounds per groove for each inch of diameter, though single groove pulleys will weigh double this amount.