

Please read and send in as full a
discussion as possible at earliest date.

The Canadian Society of Civil Engineers.

INCORPORATED 1887.

ADVANCE PROOF—(Subject to revision.)

N.B.—This Society, as a body, does not hold itself responsible for the statements and opinions advanced in any of its publications.

SOME POSSIBILITIES OF THE ALTERNATING CURRENT SINGLE PHASE RAILWAY MOTOR.

By A. H. ARMSTRONG.

Read before the Electrical Section, Nov. 19th, 1903.

The electric railway motor has replaced the horse and cable on our city streets, the steam locomotive on overhead and underground rapid transit lines, and has conclusively proved its exclusive right to operate suburban cars over distances reaching more than fifty miles from the outskirts of larger cities. All this has been accomplished with the direct current series motor operating at a potential approximating six hundred volts and with alternating current distribution to suitably located rotary converter sub-stations. There are isolated cases where the electric motor has replaced the steam locomotive on steam lines, and where this has been done the increase in the dividend earning power of the road has been sufficiently great to warrant the extension of the electric service and the changing over of more steam operated lines. With the commercial development of the alternating current railway motor, new possibilities are introduced in electric railroading, owing to the much higher voltages for which the motor itself can be wound, and due also to the fact that alternating current is used directly as motive power without the expensive transforming apparatus required for the direct current series motor.

The alternating three phase induction motor has been applied to traction work with doubtful success, owing to its practically synchronous characteristic, its limited output making it sensitive to the heavy voltage drops liable to occur in railway work, and due, fur-