The alternating current method of generating power has been applied to the electric arc light and to electric motors, making it a complete system, leaving nothing else to be desired. A prediction was made at the last convention of Electric Light men, that the alternating system will eventually displace all other systems, by reason of the safety with which the current can be handled by the consumer. This is admitted of by reason of the conversion from a high to a low pressure entrance to house or workshop.

Having given you a brief outline of some of the attempts in Electric Lighting, allow me to state the conditions under which it is necessary to construct a successful Electric Lighting system.

The first consideration in any system is the source of power.

If steam power is to be used, high-class engines are necessary to obtain regularity of speed. Slight variations in speed affect the brilliancy of the electric lamp very materially.

A second consideration in adopting steam is to divide the power so that a break-down shall not cause a dead stop of all the machinery. To accomplish this, considerable judgment should be used to so proportion the power, that the greatest economy shall be obtainable with all the varying head. The favorite method has been and is still to a large extent to use high speed automatic engines of moderate power.

Large stations are, however, in many places replacing the high speed engines with slow speed and condensing engines, thus obtaining greater economy. Independent condenser pumps have been adapted to a limited extent.

The experienced Electrical Engineer recognizes the fact that electric light is power, pure and simple, and he therefore aims at the most economical method of producing power, per se.

When water power is used, economy of power is not taken so much into consideration. The observations I have made as to a division of the source of power are as applicable, however, in the case of water-power as in the case of steam-power.

Having determined the kind of power to be used, the next consideration is the cost of the wiring or conductor for carrying the current. This will be determined by the cost of power and by the location of the station in relation to the districts to be lighted.

Having located the station and determined what power (or coal) will cost, we then determine the amount of power that can be economically lost in transmitting the current or in heating the wires. The balance is found when the cast of power lost is equalled by the interest on the money invested in construction and in the copper conductors.

Having determined this to equal, say, 10 p.c. of the energy developed by the dynamos, the calculation as to cost of wiring is easy.

The consideration of loss in power is one that presents itself the moment a station is proposed. The limit of distance as between the direct and the alternating system is in the neighborhood of 1,000 ft. from the