

station. If a greater distance is found to be necessary for locating the station, the alternating system would most likely be selected.

These considerations apply to incandescence lighting alone. The limit of 1000 feet does not apply to what is termed the multiple series system.

In this system the pressure is constant, but four or five times as high as in the direct system.

The disadvantages are that when one lamp of a series of fire is wanted, the current for fire is consumed, creating something of a loss in power over the direct system.

If the system selected is to be an arc light system, the loss of power is not so serious a consideration. The arc light system and the alternating system are somewhat upon the same footing in that respect, in that both systems are run at high pressure. Everything remaining equal the higher the pressure the smaller the wire required to do a given current. The current into the pressure is a measure of the capacity for work.

One of the practical difficulties to be met is that of insulation; that is, to prevent a loss of current by leakage caused by moisture or contact of the wires with the limbs of trees, or other obstruction, capable of absorbing moisture. When it is impossible to clear shade trees, a specially covered water-proof wire is used. Carelessness or negligence in this respect has caused the burning of many fine shade trees in some instances of buildings.

In the early days of Electric Lighting cheapness in construction was the ruling feature. Electrical companies are to-day awakening to the fact that cheapness does not pay. Cheap construction means heavy maintenance, charges and a consequent reduction of profit. Cheap insulation means heavy leakage of the current and consequent loss of power, with danger, to life and property, and is almost altogether an absent feature of an Electric Light system as constructed to-day. The tendency is toward the more expensive methods in every branch of the work, enlisting more public confidence in the utility of Electric Lighting in general.

The cost of maintenance is naturally of prime importance, and to the end that this item shall be as low as possible the most improved system of furnaces for the consumption of cheap fuel should be put in place. Leakages of every kind should be reduced to a minimum, economy in the lamp itself is of the greatest importance. Economy in this direction means economy at the coal pile. The decision as to the manufacture of lamp that shall be used will depend on the life and economy of the particular lamp, and on its capacity to maintain its candle power. Some incandescent lamps, retain more of the secluded gases than other makes, and consequently blacken in much less time.

The system to be adopted for any particular kind of lighting will depend upon the conditions under which it is to be operated. If the lighting is to be in a thickly settled portion of the city and near the station, the direct system would undoubtedly be selected. In direct lighting the three wire system has been adopted very largely, and results in a great economy in copper for conduction, increasing the construction