

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 account somewhat, however.

The alternating system has, however, a very decided advantage over the direct three wire system, requiring much less copper in construction.

If the lighting extends through a thickly settled district and a great distance from the station, the alternating system would unquestionably be selected.

If for street lighting alone, when large lights are to be placed at intervals only, the arc light system would be most desirable for this work; however the alternating system has of late come into prominence because of its flexibility. Small lights at shorter intervals give a more satisfactory distribution of light than does any system of large lamps, unless the large lights are multiplied so as to cover the territory sufficiently to prevent shadows. Of late the electrical accumulator has come into prominence as a method of storing electrical energy. While this system has become a valuable adjunct to systems already in place, I refer to isolated plants alone—it has not as yet proven economical enough to recommend itself for economical lighting. It is safe to say, however, the further development of this system of storage of power will undoubtedly be a valuable assistance to the electrical engineer.

Some figures as to the number of electric lights of various kinds in use in the United States may be interesting. The last estimate places the incandescent lamps at 1,750,000, an increase of 29 per cent. in the last year, and the arc lamps at 175,000, an increase of 29 per cent. also in the last year. This number of lamps are contained in 1000 central station and 3000 plants of various kinds, representing approximately \$125,000,000 invested in a business that has been developed since 1878.

In concluding, allow me to express a sentiment I know you will echo, that is that evolution is a natural law, and applies no less to electrical inventions than in other branches of science. Every inventor has had his device or method improved by some one following him. Evolution is the guiding factor. The newly invented machine is never the perfected one. It was ever so and ever shall continue to be.

The present outlook for the future development of Electric Lighting and kindred Electrical appliances is very bright.

Astonishing strides have been made in the ten years since the Electric Light and Telephone have been given to the world, and who can say what developments in electrical research as great and better await us in the future.