

Electric Lighting.

Scientists are generally agreed that there has been in each period of the world's history, certain predominating features, which have eminently characterized each period from all others. The same general statement, might with due propriety, be made as regards the intellectual development of the world.

With each advancing step there has been a thought, a movement, a work accomplished, that has stood a living monument to all future time. And we who are blessed with the rich heritage of all that has preceded, are now to be immortalized by a period of growth that will be known to all posterity, as the "Age of Electricity."

As broad, and useful as this gigantic power has, and will become, but few of its uses will prove of greater interest, I think, than that of Electric Lighting. It has since its first introduction, made unprecedented progress, and to day, when operated on a large scale, challenges all

other methods of illumination; in brilliancy, purity of light, and in safety and economy of time and money.

It has been but a little more than a generation since Sir Humphrey Davy succeeded in producing the first electric arc, and since that time, that meagre flicker has been taken from the secluded laboratory and used as an illuminant for the harbor, the city, and to a remarkable the individual home.

That it has successfully rivaled gas is shown by the constant decrease in all gas enterprises, with a gradual increase in electric plants, throughout the civilized world.

That it is making a hard chase for the kerosene can, is proved by the fact that thousands of men are daily employed circuiting the homes with incandescents.

The Kerosene can will soon become an antiquated part of the household furniture, and the coal-oil miner must needs, seek semicivilized markets, or else "shut up shop".

It would be impossible in so short an article to enter into all the interesting details connected with this system of lighting, and yet each step of advancement, has seemed essential to the next following. It has been a field of constant experiment, perfected at present to such a degree, as soon to make electricity the illuminant for all purposes, and for all places. Not alone for the manufacturer, the opera, and the shop; but in reach of the home of the artisan, mechanic and farmer.

Both ends of the circuit have ~~have~~ grown with time. The generator, as well as the conductor, and lamp. And each have been a source of constant change, by the simplification of more improved methods. We find the magneto-electric induction machine, to be the first improvement over the old galvanic, or chemical way of producing an electric flow. We find this soon culminating in the dynamo-electric machine of to day, by which mechanical energy of the steam engine, of wind, of a water fall, or

any like motor, can be converted into an electric current - and thus secure electric energy, of high efficiency, with comparative cheapness. All further improvements at this end of the line, are to be looked for only, in the better construction of the dynamo. And this alone furnishes an extensive field for eager scientific electricians, whose aim is so to construct a machine, that it will reduce the loss from mechanical, to electric energy, to zero.

As to the conductors and the lamp. In regard to the former - the "copper wire" that which so horrifies the public generally, by the unnecessary danger sometimes attending it, is the one great obstacle I believe, that this system of lighting has to contend with. Even though the danger be entirely removed, the public prejudice now kindled, will materially retard its growth. The high pressure currents, 1000 volts and over, which have become, with three large

electric companies, the popular way for distributing the current over large areas and long distances, has undoubtedly, been a menacing danger to the public. And there continued use can only be explained on the grounds of economy, and that alone to the companies. The cost of the conductor, depending upon the size of the wire, the insulation, and the length, amounts to no small item. In fact it is the distribution of the current, that constitutes the major part of the expense - and such an attempt to reduce to a minimum this factor of expense, by forcing a high pressure current over a small wire, has endangered both the growth of the system, and the life of the individual. There are faults not in the system of lighting, but of those greedy companies, who are eager to reap rich returns from their investments.

Like all of man's schemes some good results from this. The electrician stimulated to further investigation finds

that to obviate these dangers, is not to "under-ground the wires", as is the cry; but to reduce the pressure in circuits where danger is likely, to 500 volts (This for continuous currents) — such pressure is found to be perfectly harmless and exceeds by 300 volts the pressure necessary for incandescent lighting. It has

It has also hastened development in another direction — that of conducting the current to secondary, or storage batteries, by which the electric energy available, can be used at any time, independent of the source of the current. This is found exceedingly advantageous, and especially when the light is wanted only occasionally. And now, as the current can be divided ad infinitum, the incandescent globe may soon be seen taking the place of the gas jet, the kerosene lamp and the candle, throughout every home.

The improvements on arc and incandescent lamps are as marked, as is the other end of the line. The simplification of structure, and difference of material used has diminished the weight, cheapened the entire lamp - and extended its range of usefulness to a remarkable degree. The platinum loop twelve years ago, was an essential to the incandescent. Now the carbonized vegetable filament takes its place, not only reducing the cost, but adding to the life of the lamp, - also giving more pleasing and softer shadows. The life of the carbonized filament varies from 700 to 900 hours. At an average use of five hours per day, one lamp lasts nearly six months.

The arc light once separate, now self regulating, is forever destined to be the beacon light of our cities.

Some other advantages of this system over any other are first; that the surrounding atmosphere is not vitiated by the consumption of oxygen, and the giving off of carbon dioxide.

With lights of equal brilliancy, twelve candle power, the amount of oxygen consumed, as compared with gas is as 1:5.45. While the amount of carbon dioxide given off is as 3.21 cubic feet, for gas, and nothing in the case of the incandescent.

Secondly - The heat evolved is reduced to an almost inappreciable amount, being only to that of gas, of equal brightness.

Third - The danger of fire is diminished to a minimum - and insurance rates from 20 to 40 per cent less on buildings lighted by electricity.

In short, the limit of economy, simplicity, and practicability are nearly to an end. The most careless and ignorant from the child to the aged can manipulate the lamps with safety and impunity - And the poor as well as the rich may hope soon to enjoy, alike the advantages afforded by the electric light.

George Nirk Thompson.