

THE ELECTRIC LIGHT.

All the different kinds of apparatus by electric energy is transformed into light may be arranged into two leading classes, namely :

- 1st. The Voltaic arc, or great light.
- 2nd. The incandescent or divided light, for use in the interior of houses.

This general classification nevertheless admits of some systems which may properly be classed between the Voltaic arc and the incandescent light, as they are related to each of these.

THE VOLTAIC ARC.

The apparatus to produce the Voltaic arc are of two kinds, namely :

- 1st. Carbons placed *in prolongation* one of the other ; these are the *lamps or regulators*.
- 2nd. Carbons placed *parallel* to each other ; these are the *candles*.

Candles such as Jablockoff's are not much in fashion.

The name of *regulator* is given to all systems employing more or less complicated mechanism to keep the carbon points apart at their normal distance from each other. A distinction might be drawn between regulators fed by continuous currents and those fed by alternating currents ; this, however, is relatively a secondary feature, and it is better to look to the light itself to establish subdivisions. An important characteristic, which establishes a well marked division, is the number of lights fed by one machine *on the same circuit*.

The following are distinguished, namely :

(a.) Voltaic arc *monophotic* regulators, that is to say, those which admit of only one apparatus being placed on the circuit.

(b.) *Polyphotic* regulators, or, as they are often called, *dividing regulators*, with which 2, 3, 4 and even 40 lights may be placed on the same circuit. It may be observed in passing that a dividing regulator may be used as a monophotic regulator, by placing one light on a circuit of appropriate power, but that a monophotic regulator cannot be used reciprocally. These work poorly, or not at all, when several are placed on the same circuit.

The light of the Voltaic arc is best adapted for exterior illumination, because the rays of the electric lamp are identical with those of the sun. A solar ray, falling upon a given space, is equivalent to 5,774 candles at the distance of one foot ; an electric lamp emits precisely one half of this light ; and it is a singular fact that the electricians of Europe have applied the electric light with the greatest success to promote vegetation during the night. The celebrated Dr. Siemens, a member of the firm of that name who manufacture all the Transatlantic cables and by whom an electric railway has just been opened near Berlin, has demonstrated the fact that plants and fruit exposed to the action of electric light conti-