working of the clutch. With the rack and pinion lamps this point is not of such importance, and the difference in the running of the two kinds of lamps sometimes observed may, to some extent, be due to the cleaning of the Thomson-Houston lamp rod having been neglected.

In regard to the rating of arc lamps some change seems to be desirable. At present lamps taking 48 volts and 9.6 amperes, lamps of the same voltage taking 10 amperes, and lamps of 50 volts and 8 amperes, are all compared the one with the other, and each is called 2,000 candle power, which is manifestly absurd. The current and pressure, or watts per lamp, should be given in all specifications, tenders and contracts.

STREET WIRING FOR ARC LIGHTS.

In wiring for arc plants, as is generally known, one wire of uniform section is carried from the machine to the lamps, where it is cut, and one end placed in the first binding post and the other in the second binding post, and so continued, the pressure falling on an average about 48 volts for each lamp in circuit, where the lamps, as in the general practice on this continent, are always run in series.

For lamps of 2,000 nominal candle power No. 6 wire American gauge, and for lamps of 1,200 nominal candle power No. 8 American gauge wire is used for the leads. Up to within the past two years, the insulation known as "Underwriters wire" was used, but lately this has given place to much superior quality. Unfortunately, there is still room for improvement even on the best which has yet been supplied in Canada.

SYSTEMS OF DISTRIBUTION FOR INCANDESCENT LIGHTING.

In the distribution of current for incandescent lighting from central stations the multiple arc two-wire system with low tension continuous currents was first used during 1882 and 1883.

In private installations at that time the tree system of wiring was usually followed, and it has not yet been entirely abandoned, although used in very few installations at the present date. In one station in the Maritime Provinces wired on this principle, the pressure varies from 125 volts at the lamps nearest the dynamo to 110 volts at the furthest point of distribution. But since 1884, very few stations indeed and few isolated plants of more than moderate size have been constructed on other than the feeder system of distribution.

A very short experience of distribution of the multiple arc system demonstrated that lights singly controlled could not be furnished economically by it at a greater distance from the central station than a quarter of a mile radius. The three-wire system, invented by Dr. John Hopkinson, and elaborated by Mr. Edison, was a temporary and partially successful solution of the difficulty, but this system, although it greatly reduced the quantity of copper necessary, only increased the radius of distribution on a paying basis by another quarter of a mile, and, while satisfactory for thickly populated towns, still left the distribution of light in suburban districts or openly built country towns as far from attainment as ever. The adoption of the alternating current system of distribution solved the difficulty.

The method of regulation first employed for the maintenance of equal pressure at the ends of the feeders in the three-wire system consisted of placing adjustable resistances or feeder equalizers in each circuit, more or less resistance being inserted by hand, according to the indications of the pressure indicators. Where the frames of such equalizers were made absolutely fireproof, such a system of regulations in small stations having only three or four sets of feeders radiating from it was in a measure unobjectionable, but when it came to the distribution of several hundreds, perhaps thousands, of amperes of current, through dozens of sets of feeders, the loss in these equalizers became a serious matter, and perfect regulation was difficult of attainment. In several cases also the heating of the equalizers was the origin of fires which resulted in the burning down of the stations, the destruction of the Edison stations in Boston and New York being a case in point. In recent practice these equalizers have not been used, but a method of interlacing the feeders as well as the distributing mains has been adopted, necessitating a somewhat larger outlay in conductors, but not involving, as in the other case, a loss of energy by the heating of useless resistance. With this