## Electrical Department.

## GAS AND ELECTRIC WIRES.

Prof. John Trowbridge draws attention to the danger attending the carrying of electric wires along gas fixtures. He once noticed during a thunderstorm that some incandescent lamps "blinked" at every flash of lightning, though the interval which elapsed between the blinking and the peals of thunder showed that the storm was somewhat remote. The effect was doubtless due to induction, produced by the surging of the lightning discharges. On the occasion of a heavy discharge, the lamps became extinguished, although no fuse was burned. This provided an opportunity for an attendant to discover that a jet of gas from a pinhole leakage in the gas fixtures had become ignited (doubtless by a minute electric spark) and the flame was impinging upon some adjacent woodwork. The discovery averted what would have been, perhaps, a scrious and mysterious conflagration. The moral of the story is, of course, to be found in the reflection that had the electric light wires not been carried along the gas fixtures, as they were in this case, ignition would probably not have occurred. This practice is fraught with danger, for if there is a leakage of gas (and what gas fixtures do not leak?) at the joints of the pipes or through a sandhole or other flaw in the casting, then tiny electric sparks arising through resonance effects or from the passage to earth of an electric charge brought into the building by the wires, may, if they happen to form in contiguity to the leak, readily ignite the escaping gas without being discovered in time to prevent disaster. If people will cling to their gas when they lay down an electric lighting system, then it behooves the electrical engineer who superintends the work to see that the wires and the pipes are never contiguous, for no lightning guard or protector yet invented can insure that minute sparks, due in some cases to resonance effects, may not arise.

THE process recently referred to in THE CANADIAN ENGINEER of lighting cars from the axles is described as follows: There is a passenger coach with seventyfive eight-candle power incandescent lamps. The dynamo by which the electricity is generated obtains its power from the axle by means of a series of sprocket wheels, chain belts and two shafts between the axle and the direct connecting shafts of the dynamo. One of the intermediate shafts is movable or swinging, and makes the chain belts conform to every movement of the car at whatever speed. The power taken from the car axle has, heretofore, gone to waste, and the process by which it is being used to make electricity is called equalizing of power, and by the mechanical contrivances the ill effects of oscillation and vibration have been overcome. While the train is in motion the lights are made directly from the electricity generated, up to a certain limit of speed, which is fixed. When higher speed is obtained the superfluous electricity generated is stored in batteries under the cars, so that at any given time there is sufficient electricity on hand to supply the lights four hours without the train moving. The machinery, complete, weighs about 900 pounds.

ELECTRICITY is a wonderful thing, but it has its limits. The Electrical World, in speaking of this subject, refers, as an instance, to the fact that to obtain more than 746 watts from a horse power is as much of an impossibility as perpetual motion. Some persons, however, who have a dangerously small knowledge of electricity, seem to have the idea that this figure is based on experiments in which only our present machinery is used, and therefore by inventing an entirely new system of conversion there is a way of obtaining an entirely new and much greater equivalent between electrical and mechanical power. A little study will show them that this is not the case, but that the figure 746 is obtained by simply converting one system of units by calculation into another; it is a calculation which is as purely mathematical as to find the number of cubic inches in a pint, if we know the weight of a pint of water, and that of a cubic inch; there may be a slight error in our knowledge of the weight of a cubic inch of water, but there is nothing radically wrong in the determination of this empirical constant. It is no more possible for anyone to obtain more than almost exactly 746 watts from a horse power than there is a possibility [of obtaining more so-and-so many cubic inches from a pint. The sooner would-be inventors recognize this the better it will be for their capitalists and for the development of legitimate electrical industries in general.



A TELEPHONE line now connects New Hamburg with Wellesley.

An electric street railway is talked of for Charlottetown, P.E.I.

THE telephone line between Quebec and St Michel is now in working order.

THE Vankleek Hill, Ont, Electric Light Co. are increasing their capital to \$10,000.

THE Peterborough Electric Street Railway Company have ordered an electric sweeper to guard against snow blockades

THE first sod of the Hamilton, Grimsby and Beamsville Electric Railway was turned on the 7th ult., and construction work is now proceeding.

THE Hamilton Electric Light and Power Company's buildings are being thoroughly overhauled, under the superintendence of architects Stewart & Son.

THE Bell Telephone Co. are constructing a telephone line between Danville and Dudsville, Que., taking in St. George, Wotton, St Camille, and South Ham.

THE Light and Power Company at Peterborough, says the *Review*, are putting in a steam engine of 150 horse-power to replace water-power, which has been irregular of late.

COL. BAKER, of Nanaimo, announces his intention of constructing an electric trams ay from the Golden Eagle Mine to the head of China Creek, ne. which a smelter is shorly to be built.

THE Hamilton street railway, says the *Times*, will likely commence the building of their proposed extension to the Beach early next season. It is not yet decided whether the track will be single or double.

JAS ARMSTRONG, real estate agent, is applying for an injunction to restrain the Richmond Hill Street Railway Co., Toronto, from making use of Forest Hill road. He also asks leave to quash a township by-law granting the company a bonus of \$20,000.