thing else. Electric wires from the generators are wound upon this circular magnet, and the wave-like currents which the wires carry produce similar magnetization travelling around and around through the magnet; and by this inductive effect to which I made allusion, electric currents are produced in the wires of the armature, so that it will be susceptible to the attraction of the magnet. The wires in the armature revolve, following the attraction of the magnetism circulating in the magnet.

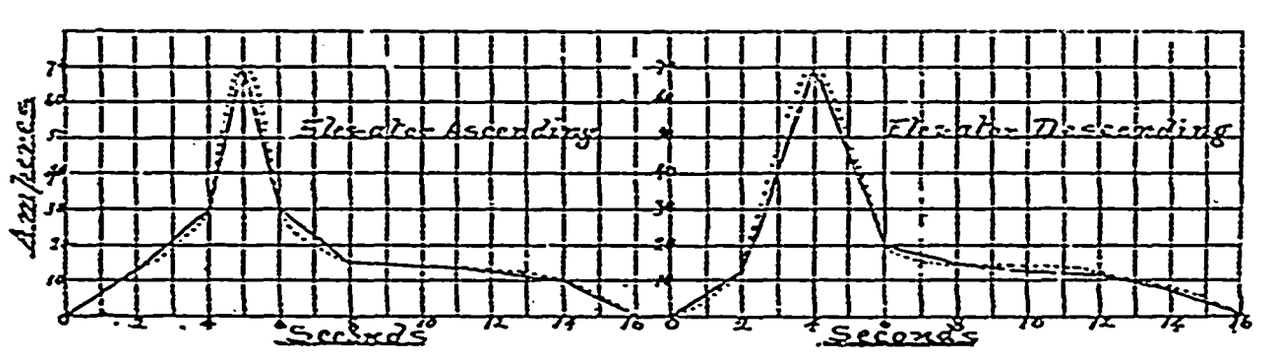
Dynamos similar in principle produce the waves of current which supply this motor, but for economy in transmission, both as regards the small amount of wire and the small loss by resistance, these currents can be generated at a high electrical pressure, which is increased by transformers for the main wires, and then at the motors reduced to a very low pressure by transformers, which answer the same purpose as the reducing valve for steam, except that they can act in either direction to increase or reduce the electrical pressure.

The other advantages of these multiphase motors are that being without any brushes or commutators, there is no sparking. There is hardly a possibility of a burned armature. The motor being operated by a succession of wave currents, will keep at a speed comparable to that of the generator as long as it can keep up. If overloaded, it will not run slower, but will stop. Under similar conditions of overloading, a continuous current motor will burn its armature, unless defended by its safety fuses. Its regulation is very close, the variability of some tests being only one and one half per cent. between no load and its full load. Such a motor will start under its full load or even a greater.

In connection with such a system of electrical transmission of power, it is feasible to use a portion of the current for incandescent lighting without any interference. These motors can be stopped and started without the exercise of any particular skill, and can be inclosed for protection against dust and dirt in a case which merely allows for the protrusion of the shafting carrying the driving pulley.

APPLICATION OF ELECTRICITY TO ELEVATORS.

IN a previous issue we presented to our readers a cut and a short description of an electric elevator, manufactured by the Fensom Elevator Works, Toronto, the electrical portions being specially designed for the Fensom Elevator Works by the Ball Electric Light Company, Limited, of the same city. We now present a diagram showing the current consumption of one of these elevators in operation in the Land Security Company's building, Victoria street, Toronto.



The Diagram here shown was made by John Langton & Co., Electrical Engineers, Toronto, and is the Mean Current Curve obtained from twelve tests, made May 6th, 1893.

	Ampere Seconds.
Current consumption per round trip of elevator...	588
One Electrical H. P. per hour (746 Watts per H. P.), supplied at 230 volts pressure, equals a current consumption of	11,676
At meter rate of 4c. per H. P. per hour supplied per electrical H. P. at 230 volts, cost of current per round trip of elevator equals $\frac{588}{11676}$ of 4c., or two-tenths of a cent.	

ELECTRIC HEATING.

Two Belgian scientists have just achieved a discovery in heating by electricity, which may likely lead to very important results. A glass or porcelain vessel of any size provided with a lead lining is connected with a conductor of positive electricity. The porcelain vessel is about three parts filled with acidified water. A pair of iron tongs with insulated handles is connected with the negative pole of an electrical current from a dynamo. A bar of wrought iron, for instance, is taken up by the tongs and plunged into the acidified water. In less than a second, the water begins to boil at the point of contact, and the part of the iron bar lying immersed rises quickly to a white heat, emitting all the while a brilliant white light. In a few moments the iron melts and falls off in bubbles and sparks, leaving a clear, glowing surface in perfect condition for welding. Neither the water nor the end of the bar held within the tongs becomes very warm during the operation, so rapid and local is the heating process. Indeed, it is quite possible, after the current has been switched off, to hold the bar, with its submerged end glowing with heat, in the naked hand. And yet a temperature of 4,000° Celsius has just been developed! The explanation of the process, says *The Water and Gas Review*, is that the hydrogen, one element of the water which has been decomposed by the passage of electricity, collects round the immersed portion of the bar, forming a close envelope. Hydrogen being a bad conductor of electricity, a powerful resistance is immediately created to the passage of the current, and this, as is well known, produces an enormous amount of heat.

The new process is said to be perfect for welding purposes. Owing to the heated metal being surrounded by a clean envelope of hydrogen, there is no oxidation, and the presence of sulphur and other impurities which distinguish coal fires is avoided. It is believed that the power of electricity to heat quickly any desired spot, leaving the rest of the metal cool, may eventually be turned to useful purposes in the tempering of armor plates, etc. With a view to its use in the hardening of steel cannon, Krupp & Co. are making experiments at the present time.