## THE CANADIAN ENGINEER

## THE KEYSTONE MANUFACTURING CO.

The accompanying cut shows the plant of the Keystone Manufacturing Co., makers of ratchet drills and Westcott adjustable "S" wrenches. The building is situated at 41 to 51 Chandler St., Buffalo. It is 80 by 138 feet with an L 18 x 18 feet, and is all of one story, 15 feet in height. It is on a lot 180 x 140 feet, leaving room for additional buildings when required.

The building is constructed of stone, brick, iron and steel, the roof being of expanded metal and concrete fireproofing, the only wood used being in doors, windows, partitions and floor, the latter of which is of oak and maple, 3<sup>1</sup>/<sub>4</sub> inches thick, and resting on oak sleepers on solid ground, filled in with cinders, practically fire-proof. The plant is divided into seven departments—machine shop and tool-room, blacksmith's shop, polishing room, shipping and stock-room, boiler and coal-room, storage-room and offices. The machine shop is 60 x 138 feet, taking up the entire western side of the building. It contains the electric plant, composed of transformers, switchboard, etc., where current is received from Niagara Falls, and distributed for power J. H. Fowler, a painter, was killed at the Hamilton Tool and Bridge Works by coming into contact with an unprotected wire carrying 2,200 volts as he was descending from a scaffold. While there is no need to minimize responsibility in these cases, such accidents should be impossible. In view of the rapid development of long distance power transmission it is very desirable that some legislation should be enacted which would compel electric light and power companies to provide against fatalities from electric shock.

In Great Britain, where there is an entire immunity from accidents of this nature, electric light and power companies are controlled by the Board of Trade, a Government department, and all work has to be carried out in accordance with the rules laid down by that body. The following are some of the more important rules, and we would point out that, had these regulations been in force in Toronto, the unfortunate victim of the Parkdale fatality would be alive to-day:

Rule 1.—"An aerial conductor in any street shall not in any part thereof be at a less height from the ground than twenty feet, or where it crosses a street thirty feet, or



and lighting; also 68 special, automatic and other machines, all run by one 40 horse-power motor, suspended from the ceiling. The blacksmith shop is 20 x 48 feet, and is separated from the rest of the departments by brick walls. In it are the forges, annealing and tempering furnaces, and the stock of heavy raw materials used. The polishing room is 20 x 30 feet, and contains the grinding and polishing machinery, run by a 15 horse-power motor. The shipping and stock room is 20 x 30 feet, in which finished stock is kept, and from which shipments are made. The offices occupy 20 x 30 feet, and are conveniently and well fitted up. The entire plant is well lighted and ventilated throughout by large windows and a lantern running the entire length of the building, so that every foot of the interior is equally well lighted and ventilated. The heating system employed is what is termed the "over-head system," all the pipes and radiators being suspended from the ceiling, and out of the way. It is a comparatively new system, and worked very well in this plant during the trying winter past. The company now employ sixty-five men.

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## PROTECTION OF LIFE FROM HIGH-TENSION CURRENTS.

The death, on July 7th, of Percy Smith, a Grand Trunk fireman, as the result of grasping a live wire belonging to the Toronto Electric Light Co. brings into prominence the danger from wires carrying high tension currents. The verdict of the coroner's jury in this case, charging the company with culpable negligence, was a serious indictment. Another similar accident followed on August 19th, when within six feet of any building or erection other than a support for the conductor, except where brought into the building for the purpose of supply."

Rule 9.—"Every high-pressure aerial conductor must be continuously insulated with a durable and efficient material, to be approved by the Board of Trade, to a thickness of not less than one-tenth part of an inch, and in cases where the extreme difference of potential in the circuit exceeds 2,000 volts, the thickness of insulation must not be less in inches or parts of an inch than the number obtained by dividing the number expressing the volts by 20,000. This insulation must be further efficiently protected on the outside against injury or removal by abrasion."

Rule 10.—"The material used for insulating any highpressure aerial conductor must be such as will not be liable to injurious change of physical structure or condition when exposed to any temperature between the limits of 10° F. and 150° F., or to contact with the ordinary atmosphere of towns or manufacturing districts."

Rule 11.—"The insulation resistance of any circuit using high-pressure aerial conductors, including all devices for producing, consuming, or measuring energy, connected to such circuit shall be such that, should any part of the circuit be put to earth, the leakage current shall not exceed 1-25th of an ampere in the case of continuous currents, or 1-50th of an ampere in the case of alternating currents. Every such circuit containing high-pressure conductors shall be fitted with an indicating device, which shall continuously indicate if the insulation resistance of either conductor fall below the conditions required by this regulation."