

in Toronto might be cited. Of course it was a small boiler, yet it had only a small fire grate and burned ordinary soft coal. In it, when steam was being got up, it required 5¹/₂ minutes to get steam to 15 lb pressure from cold water, and only 4 minutes to raise the pressure from 15 lb to 100 lb, and only one minute to raise it from 50 lb to 100 lb.

At Detroit the oil would give a much hotter fire and there is no doubt the pressure rose with great rapidity after it once got past 100 lb.

THE G. T. R. SHOPS AT STRATFORD.

THESE shops, which a representative of the News recently had the pleasure of inspecting, are the main shops in Western Ontario to which "sick" engines are sent for repairs. In the machine shop two 78 h.p. engines run the greatest amount of machinery in one room in Canada. The "V" belt is greatly used here, and the superintendent, Mr. Barnet, took great pride in showing its merits. The belt is about four inches wide, with cleats of leather like a heel of a shoe, though in the shape of a V, cut off at the apex, rivetted on to the belt at intervals of six inches. The belt runs over concaved pulleys, and is said to be the best belt for use in places where it is necessary to run a vertical and a horizontal wheel with the same belt.

In the erecting shop, between two lines of locomotives in process of repair, is a track on which a traverser runs, being propelled by an endless chain in the centre of the track. When an engine comes in for repairs it is dead (i.e., no steam in it). The yard engine takes it in tow and shunts it on to the track which leads into the erecting shop. An engine (stationary) stands at the opposite side of the shops, and the engineer by pulling a cord sets the drum in motion; a rope from the drum is fastened to the dead engine and the drum pulls the engine into the shop on the traverser. By the engineer pulling another cord the engine allows four large chains to descend from the ceiling above the dead engine. Two large bars are then shoved through each pair of chains, and another cord is pulled, making the engine gradually raise the dead engine clear of its trucks. Then another of the cords is pulled, setting the endless chain in motion, which carries the traverser with the trucks to the end of the shop, where the trucks are unloaded for renovation, and wooden trucks placed on the traverser, which travels back to its former position. The dead engine is lowered on to the wooden trucks and the traverser carries it down to an empty track, where it is shunted alongside of its fellows on other tracks ready for repairs. All these different motions from its coming in till its going out are done with a little 25 h.p. engine.

Compressed air plays an important part in this part of the shops. The air is compressed in the boiler room. The engine in the boiler room is 75 h.p., and the piston rod runs clear through the cylinder into the cylinder of the air compressor, passing also through this, but when the rod comes out of the cylinder of the compressor it is hollow, to allow the air to enter the cylinder of the compressor. Air is brought in from the outside through a common tin pipe. The piston head in the cylinder of the compressor is hollow and is fitted with valves. As the rod recedes the valves close, and on its return stroke the air is compressed leading up through a pipe into an air main which extends all through the shops. Formerly when it was necessary to do machine work

on any part of the dead engine, the part had to be taken from the engine to the machine, whereas now, by the use of compressed air, a little compressed air engine is run on wheels to the dead engine and the work is done right there. Another advantage of these little engines is that they are as well adapted to steam as to air.

A 14 in. steam main runs parallel with the air main the whole length of the shops, supplying 7 stationary engines and 3 immense steam hammers. The last part of the main shop is the boiler room, where the best machinery is used and where noise is a prominent feature. In another building is the carpenter shop and model room. The boiler tube room is one of the most interesting parts of the shop. When a locomotive's boiler tubes get so dirty that it is not economical to use them any longer, they are taken out and placed in a large cylinder, where scalding water and chemicals are forced through them, cleaning them out thoroughly. The ends have been damaged in taking them from the boiler, so they are heated and the ends sawed off, leaving burred ends. A man soon fixes that with the aid of a machine for the purpose. By reason of the ends having been sawn off, they have become somewhat short, and so are passed on to another man who has small pieces of tubing red hot. He slips a piece on each end and passes them on to another man, who welds them, when they are again ready for use.

An isolated building is used for the fitting of the tires on the driving wheels, gas being used to heat the rims. The boiler room and brass foundry are in another building. A battery of 9 boilers supplies the steam for the shops. The exhaust steam is led by pipes into a cistern in the boiler room, from which it is used over again. The boilers used are railway boilers and the ashes are drawn into a pit beneath the boilers.

A fire hall is one of the many useful institutions connected with the shops, and steam is at the steam pump at all times. A fire department is made up of the men and they are given occasional drill. If the city mains should give out by accident, a reservoir of 60,000 gallons is at hand, and by connecting the steam pumps with the nearest hydrant, a direct force of water can play on any part of the shops.

The large building on the street comprises the library, lounging room and manager's offices.

CORRECTION.

IN the description of the long distance power transmission plant at Portland, Ore., published in our last issue, an error occurred in the last sentence of the first column on page 201. It should have read: "The four-wire system is worked at 133 volts between any two wires, and by means of feeder regulators a variation of 7¹/₂ in either direction is covered."

One of the severest wind storms for years prevailed over this continent on Nov. 26th. Telegraph, telephone and electric light wires were down in every direction, entailing great interruption to business and loss. The gale reached a velocity of 60 or 70 miles an hour in some places.

Chief Engineer Perry of the United States navy recently returned from a tour of 2,000 miles on the great lakes, made on the steamships Zenith City and Victoria, for the purpose of observing the working of the Babcock & Wilcox Scotch boilers. The Navy Department is considering the advisability of fitting the six new gunboats with these boilers, and engineer Perry was detailed to inspect them. His report will be favorable in both cases, and if the present plans of the department can be carried out three of the six new boats will have Scotch boilers and three the Babcock & Wilcox.