

dam, where it is sometimes weeks before the water becomes clarified, and where there is a loss by evaporation, leakage, etc., of never less than 25 or 30 per cent., and often more. Moreover, heavy pumping charges have to be incurred for the purpose of returning the still somewhat turbid water from the slimes-dam to the mill, as well as for the purpose of making good the serious loss by evaporation, etc.

For THE CANADIAN ENGINEER.

FIRE FIGHTING.

BY EXTINGUISHER.

Having some experience in the business of extinguishing fires, handling, drilling, and leading fire brigades in one of the British towns, and having for about a dozen years resided opposite one of the Toronto fire halls, I feel that I am in a position to make comparisons between the two systems. I have noticed that in nearly every large fire there is an unnecessary destruction of property, and damage to the extinguishing apparatus, and either through carelessness, recklessness, or questionable management, there is a large number of accidents and considerable loss of life, which offsets the good done by the brigade in staying the flames.

The system adopted in Toronto of compelling men to loaf their time away in a lazy fashion reduces their energy and efficiency, causing them to do their work, when it comes along, in a jerky, impulsive way, and when the brain is most needed it is often dull and inactive, on account of being underworked or undisciplined. Some five years since I was at a convention in London, Ont., when the mayor gave a show by calling the brigade to the square opposite the Boswell House. The roads are wide, but too narrow for one of the reels, which struck the curbstone and pitched off the men, one striking his head against a sharp corner of the hotel wall. This was called an accident, but I am sure it was one that could have been easily avoided by proper drill.

There appears to be small chance in Toronto of proving that a fire has been started purposely to defraud, because of the custom of our firemen of breaking open doors and windows and letting in the air in large volumes, which at once turns a smoky, smoldering mass of burning material into a fierce and destructive flame; and where a few gallons of water intelligently sprayed on the smoldering mass would have destroyed the fire without injuring other goods, the fact of letting in more air than is necessary to do the work, often causes the gutting of the building.

When a fire is started by illuminating gas a small quantity of air let into the building will cause a fierce flame throughout the whole premises. Many valuable buildings have been destroyed by allowing unlighted gas burners to be turned on at full near the bottom of air hoist or staircase well, and a small light burning near the top. If the building be a large one, it may take a few hours to get the well or hoist shaft sufficiently charged with gas to ignite, when a sheet of flame will start on every flat, and if a good volume of air be introduced to feed the flame, the whole building is sure to be destroyed, together with the evidence of the way the fire started.

Steam is the best extinguisher of fires when soda, salt water, or other chemicals cannot be used. A volume of water is of little value until split up into small particles and made into steam by the fire on to which it is discharged. In all cases the water should be sprayed on under strong pressure, and wherever practicable, forced under or into the centre of the burning materials, because

by so doing, the water will more quickly be turned into the steam needed to extinguish the fire, and no useless water will be discharged to run off and damage the surrounding goods and premises.

The men selected for the best brigades in the old country are mechanics, who thoroughly understand the details and construction of buildings; who are used to work and climb to giddy heights; men with nerve sufficient to walk across a fifty foot beam suspended high up in the air with safety. They are trained to attack a fire at points where the water will have a telling effect, and to avoid discharging useless water, or damaging property or goods unnecessarily.

Factories where they use steam boilers can put out the most dangerous fire by steam in about two minutes without damaging any machinery or goods.

Extinguishing fires is a fine mechanical science, and a good team of practical men can put out fires without hurry, fuss, or losing their wits. They have no preventable accidents or loss of life, nor do they damage any of the surrounding goods by flooding. In Canada a good team cannot be got. We require a good show in the street, and we are prepared to let a small blaze spread and destroy a whole block if our stations are carpeted and surrounded with costly appliances. The men engaged are the last consideration. We want to see spirited horses tearing through the street. It is of little importance whether good judgment and care is used by the men when in action. We are sympathetic when a fireman is lamed or killed, and never blame the men who placed him in danger, though his manifest unfitness for such a calling was a sure guarantee that his life and limbs were in constant jeopardy.

The old story can with reference to firemen be re-told, that a good workman or mechanic is very valuable, and of service to his fellow man, but a person who is wrongly placed and ignorant of the points and details of his work, is worse than useless, for he not only destroys the valuable appliances that are entrusted to him to use, but he endangers the lives of others as well as his own.

ACETYLENE.

The formation of a company in Montreal for the manufacture of calcium carbide and the extension of the works of the Willson Carbide Co., of St. Catharines and Merritton, are among the evidences that acetylene gas—at present the chief product of the carbide—is steadily making its way as an illuminant in Canada. Of course prejudice remains to be overcome and it is evident that the board of underwriters who have framed the code of regulations for the use of acetylene in insured buildings have much to learn about the nature of this gas. These regulations, which are quoted elsewhere, are vexatious without any apparent reason, unless they are designed to prevent the use of acetylene altogether. It is carefully provided that there shall be no chance to heat a building, and as all generators have some form of water seal, how is a building to be kept from frost in a Canadian winter?

One of the most comprehensive and instructive articles on acetylene we have seen in a long time is that in the *Engineering Magazine*, of New York, for August. After tracing the first discoveries of acetylene the writer, Henry Harrison Supplee, gives an account of some of the experiments made in liquefying the gas for commercial use. This method of using acetylene for lighting would seem to be unsafe in ordinary hands, but when the gas is made direct from the carbide with water it is as safe as any other gas. "It is probably no more poisonous,"