

glass has not come into general use, and is not looked upon with favor by many. Ordinary glass may answer where iron shutters are used.

A. A. Allan & Co., wholesale furriers, saved a large quantity of valuable goods by storing them in what are usually coal areas under the sidewalk. These had been converted into fire-proof vaults by means of iron doors. The less valuable coal is likely to give way to the more valuable goods in such places in the future.

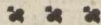
Many of the burnt-out firms lost their books and papers, which were supposed to be safe from fire in their vaults. This is, of course, the result of faulty construction, for stone, brick and iron vaults are fire-proof under almost any circumstances, if proper precautions are taken in their construction. The ordinary fire-proof safe seems to have done its work well in the midst of what was a very hot fire.

As has been demonstrated before, iron construction of buildings does not prevent their destruction by fire. Instead of being consumed the material becomes warped and twisted out of all shape. Only when fire-proofed by the use of terra cotta or concrete will iron stand the intense heat without injury.

On the question of general construction the remarks of Foster Warner, architect of the Granite Building, Rochester, may be quoted. He says: "I believe that the only fire-proof building is the one that has been constructed of material that has been created by fire. In other words, brick and terra cotta are made by fire. Consequently it stands to reason that these materials will better stand an extreme degree of heat than stone or concrete, which have never been subjected to a high temperature." The cement men dispute this opinion, and claim that concrete should be included among efficient fire-proof materials.

It would be a great protection if elevator shafts and stairways were inclosed in fire-proof walls. How often do we hear of flames running up elevator shafts, which serve as great draft tubes. The Toronto fire spread in the building where it broke out in this manner.

The Toronto fire spread with remarkable rapidity. Notwithstanding the substantial character of most of the buildings in the fire-swept area the flames leaped from one to another with irresistible fury, being driven along by a high north-west wind, which at times approached almost to the velocity of a gale. Almost nothing was saved. Buildings, machinery, stocks, all were swept away. But the sufferers are facing the situation bravely. Under the direction of the city engineer the walls of the burned buildings are being blown down with dynamite, and preparations for rebuilding are going on rapidly. A better and more substantial city will rise from the ruins of Toronto's great fire.



ELECTRICAL SMELTING.

If Canadians as a nation had the education in chemistry which the Germans have they would in a single generation lead the world in electro-chemical industries. Canada has the water powers, thousands of which are running to waste as yet. Combine this great natural asset with the German aptitude for chemistry, and industrial miracles would be wrought all over the country. Cheap water power brings within the range of commercial success hundreds of products which without such cheap power would forever remain curiosities of the laboratory or the lecture-room. A glimpse of the industries now carried on at Niagara Falls in the electro-chemical field opens up a vista of enormous

possibilities wherever large water powers exist with raw materials near at hand. The large and steady increase in the production of carbide of calcium for the manufacture of acetylene gas is one example among others of the successful developments that have already taken place in Canada in this branch of science as applied to industry.

The smelting of ores by electricity is another application of the cheap electrical power which this country possesses in unique abundance; and the foresight which prompted the Dominion Government to send a commission to Europe to investigate the electro-thermic processes in development there is likely soon to be demonstrated in a practical way. The commission, consisting of Dr. Haanel, of the Geological Survey, C. E. Brown, electrical engineer, and a secretary were joined in England by Prof. F. W. Harbord, of Cooper's Hill, Surrey, metallurgist to the Government of India, and proceeded to Sweden, where the electric smelting of iron is carried out upon a commercial scale. They also visited Germany and France, where smelting by electricity is carried on. The experiments at Livet, in the Pyrennes, were considered the most important. A sample lot of ninety tons of Spanish ore was put through for the benefit of the Canadian Commissioners, who brought away samples of the pig iron, which was smelted, it is said, at a cost of \$8 a ton. It was demonstrated here that both pig iron and steel could be made by the electrical process alone. The commission will report on the cost of these processes, and upon this will depend the applicability of the method to those portions of Canada where coal is not to be had cheaply for smelting. Dr. Stansfield, of Montreal, in a recent lecture before the Canadian Society of Civil Engineers, expressed his doubts as to the commercial advantages of the processes he had examined, except in cases where water power was very cheap, and where both the raw material and the market for the finished product were close at hand. Dr. Haanel, however, appears to be much more hopeful of the processes he investigated, and if the electrician's report is equally favorable, we may soon see in various parts of Canada the reduction of other metals besides iron by electricity.



—At the meeting in Montreal, last month, of the wire nail manufacturers of Canada to consider the question of renewing their contracts with the United States Steel Trust for wire rod for the year's supply, several features of interest developed. One was that the Dominion Iron and Steel Co. expected to be in a position to manufacture steel rods within the month, and the American Steel and Wire Co., one of the branches of the United States Steel Trust, had not, it was claimed, lived up to their agreement during the past year, as they had not sold rods as cheaply to Canadians as they could be imported by Canadian firms from Great Britain, Germany or Sweden. It is claimed that the difference in price was between \$4 and \$5 per ton. The United States Company were anxious to have their agreement renewed at this meeting, and succeeded in obtaining contracts from some of the Canadian manufacturers for six to twelve months' terms. It is said that one of the arguments used was a threat to enter the Canadian market with manufactured wire nails and compete with the Canadian manufacturer if he did not agree to the terms they imposed for the purchase of wire rod. Another meeting was held later in Toronto; and it is understood that one prominent manufacturer in the East refused to be coerced, and that his example would