James Hutcheon, city engineer, Guelph, Ont., was up some 50 feet in the old rolling mills to superintend the fixing of a block and tackle to take down railroad rails, when he caught hold of a loose board and fell to the floor below, but fortunately escaped serious injuries.

George Coates, son of John Coates, president of the Ottawa Gas Co., blew off his arm by the accidental discharge of a gun and died in a few hours. The accident happened at Shaganaga Lake, near Hunter's Island, Algoma. Mr. Coates was 21 years of age, and a student in the Kingston, Ont., School of Mines.

William Cooper, contractor of Clinton, Ont., fell about thirty feet from a scaffold on Aug. 17th, and died in about 20 minutes. Mr. Cooper was one of the best known men in the county of Huron and very highly respected. He leaves a widow and family, one of whom is John A. Cooper, editor of The Canadian Magazine and secretary of the Canadian Press Association.

Wm. Fraser, engine driver on the Springhill and Parrsboro Railway, was instantly killed at Springhill station, recently. He went under the locomotive to do some work and while under accidentally struck the brake with his hammer. The throttle of the engine had been left open, and the striking of the brake released the wheels of the engine, which gave a jump and went about eight feet along the track.

W. F. Robertson, the new provincial mineralogist of British Columbia, graduated in 1880 with honors in natural science from McGill. His first practical work was at the Capleton copper mines in Quebec province. He afterwards went to Pennsylvania as superintendent for the Chemical Copper Company, and next assistant in New Jersey to H. M. Howe at the Orford Copper Company. Mr. Robertson after this became superintendent to James Douglas' copper works at Phoenixville, Pennsylvania, and after some time there went back to the Orford Copper Company as engineer and put up their large works for that company, which, it may be mentioned, smelts the Sudbury nickel ore. Mr. Robertson later on was engaged as engineer of the Spring Hill collieries in Nova Scotia. He then went to Spain in the employ of the Minas Sotiel Coronada, and after returning to this continent put up a large smelter for the Osceola Smelting Company in the Lake Superior district, and had also charge of the smelting works at Great Falls for the B. & M. Co. Having gone back to the Orford Company as superintendent, he finally settled down in New York in private practice as a consulting mining engineer and has given reports on mines in various parts of the continent.

FIRE-PROOF BUILDINGS.

BY FRANCIS C. MOORE.

(Continued from last issue).

All buildings over 125 feet high should be provided with 4 inch, or, better still, 6 inch vertical pipes, with Siamese connections at the street, for the use of the fire department, extending to the roof, with hydrants at each story and on the roof. This would save the time of carrying hose to upper floors—a difficult task in the case of high buildings. Ample tanks of water should be provided on the roof, supported by protected iron beams resting on iron templates on the brick walls, to supply the building's inside pipe system for fire extinction, and secure pressure by gravity or by some other method constantly operative, especially on holidays and at night. Stone templates should not be used, and care should be taken to secure strong supports, so that, in the event of fire below, the tanks will not come crashing through the building to destroy it and endanger the lives of firemen. Two such disasters in "fire-proof" buildings within a year show how true is this proposition. Tanks in the basement, under air pressure are also a great advantage, and recent invention has perfected them to the point of reliability. Fire Marshal Swenie, of Chicago, urges that standpipes should not be less than 6 inches internal diameter, and that a check valve should be provided, so that when steamers are attached, their force will be added to that of the local pumps. Each floor should have hose connections with the standpipes, and sufficient hose to reach to the most remote point of the floor above, and this hose should be frequently inspected to see that it is in order. He recommends that a code of signals, by which communication can be established between the firemen and the engineer of the building, is essential.

All high buildings should have constantly present, night and day, some competent person understanding the elevator machinery, fire appliances, etc., so as to aid the firemen in reaching the upper levels; and there should be sufficient steam in the boilers, at all times, to run one elevator.

Marble, slate, and other stones are certain to disintegrate or crumble when subjected to the joint action of heat and water. For this reason 90 per cent. of the staircases in modern "fire-proof" buildings would be found utterly unreliable in the event of fire, either for the escape of the inmates or for the use of firemen—a serious consideration. Stone treads are usually let into iron rabbet frames, and as these stone treads would give way in case of fire, it would be impossible for a person to find a footing on the stairways; 2 inch oak treads might actually last longer; but a safer staircase would be one the framework of which is of iron, the tread having an iron web or gridiron pattern, the interstices or openings of which should be small enough to prevent the passage of a foot, underlying the stone or slate, so that if the stone tread should disintegrate, the staircase still remains passable. It is possible to have the supporting tread of open work cast iron in an ornamental pattern, which, in relief against the white marble tread resting on it, would present a tasteful appearance from the underside or soffit of the staircase, with this great advantage, that in the event the action of fire and water should pulverize the marble or slate tread, it would still afford a safe support for the foot. It is generally supposed that it is not necessary to be careful as to stone treads in buildings occupied solely for offices separated in "fire-proof" hallways in which, it is claimed, there is nothing to burn; but in the case of one large "fire-proof" building of this kind in New York, I found the space under the staircase in the basement story was used to store the waste paper rubbish of the building—material particularly likely to cause a fire by concealed matches, oily waste, cigar or cigarette stumps, etc., and to make a lively and quick fire, quite sufficient to destroy stone staircase treads. Even where there is no combustible material in the hallway, if the staircase is near windows, stone treads may be destroyed by exposure to burning buildings and by the combustion of window frames, dadoes, and other wooden trim.

No building should exceed in height the width of the street on which it is located, from the view point of light and health; nor, in any case, in excess of 95 feet for mercantile occupancy, nor a height in excess of 200 feet for office occupancy.

It should be remembered that merchandise, furniture, etc., are combustible, no matter whether located in 'fire-proof" buildings or in ordinary buildings. This obvious fact seems generally to be ignored. In fact, combustible material will sometimes be more effectually and thoroughly destroyed in a "fire-proof" building than in an ordinary building, since the early collapse of the latter may smother the fire and effect salvage, whereas "fire-proof" floors support the contents of the former, and distribute them so that they are more certain to be destroyed.

Enclosing walls should be of brick, the brickwork of the lower stories especially, if not of all, being laid in cement mortar. In fact, the specifications for a building in the compact part of the mercantile section of a city, ought to be drawn in contemplation of the possible cremation of its contents, and the generation of heat considerably greater than 2,000 degs. Fahr. The heat of a wood fire is from 800 to 1,140 degs.; charcoal, about 2,200 degs.; coal, about 2,400 degs. Cast iron will melt at between 1,900 and 2,800 degs.; wrought iron, 3,000 to 3,500 degs.; steel, 2,400 to 2,600 degs.; and if an architect should be required to draw specifications for a building adjoining others, with the knowledge beforehand that its entire contents, from cellar to roof, were to be totally consumed, and he were under a bond to pay damages to surrounding property, he would not be more severe in his exactions than should a building law protecting neighborhood rights in the enjoyment of property; for a mercantile or manufacturing building sometimes generates a greater heat in combustion than a smelting furnace. It is hardly necesary to deal with the foundations of buildings. The question is an engineering problem which hardly requires suggestions from a fire standpoint, and I shall not deal with it here, other than to touch again upon the im-