

TORONTO, ONT.—Tenders are invited until the 26th inst. for the brick and stone work of a building for the Pukdale Society of the new church. Plans may be seen and particulars obtained at 26 Lyndall avenue.—Mr. J. Francis Brown, architect, Board of Trade building, wants tenders for erecting the Chester Baptist mission building.—Tenders are wanted at 181 McCaul st. for the erection of a stone front on private dwelling.—It is expected that the old wooden conduit from Hankin's crib to the south side of the Island will have to be replaced by a new steel pipe, costing about \$30,000.—Building permits have been granted as follows: G. T. Ry Co., 7 story bk. and stone union depot bet. York and Simcoe Sts., s of Front st., cost \$170,000; Liederkrantz Society, 3 story bk. society building, 257 Richmond st. w., cost \$16,000.

HAMILTON, ONT.—The Sewers Committee will urge upon the council that the Crooks street sewer be constructed this year.—Mr. J. J. Moorehouse has stated that the only building operations to be done in connection with the smelting works this year would be the excavation for the foundation.—Building permits have been granted as follows: Wood, Vallance & Co., alterations to their warehouse on King street, cost \$4,000; Roman Catholic Corporation, new brick church at the corner of Locke and Herkimer streets, cost \$10,000; to William Hendrie & Co., brick stable on Napier street, between Bay and Caroline streets, additions to a stable on Caroline street, between Bay and Market streets, cost \$1,300; Wm. Russell, two-story brick dwelling on Locke street, between Peter and Napier streets, cost \$1,100; O. Horning, two-story brick store and two dwellings corner of John and Young streets, cost \$5,000; Joseph Powell, four two-story brick dwellings on Young street, corner Ferguson avenue, cost \$8,000.

MONTREAL, QUE.—Mr. Ernest Marceau will receive tenders at the Lachine Canal office until the 26th inst. for supplying timber, lumber, coal, hardware, etc., required on the Beauharnois, Lachine, Chambly, St. Ours, Carillon, Grenville, and St. Anne canals during the next fiscal year.—Tenders will be asked for at once for the construction of the proposed incinerators.—The Royal Electric Company has offered to establish works in the municipality of Coteau St. Louis, in consideration of a bonus of \$30,000.—Ald. Prefontaine is about to construct a summer villa at St. Jerome.—Plans have been prepared for the six new stations for the patrol waggons. They will be built of brick having stone foundations.—It is reported that the Grand Trunk Railway Company has decided to build a new bridge across the St. Lawrence river. It will be built on the old piers, which will be extended, and will be two miles in length.—Messrs. Taylor & Gordon, architects, have prepared plans for extensive alterations to the Montreal General Hospital, which will consist of the remodelling of the whole interior of the old building and a new system of heating and ventilation, and wiring throughout. The cost will be about \$40,000.—Messrs. Mignault & Belanger, Civil Engineers, have received instructions from the Corporation of Roch de l'Archeveque to prepare plans and specifications for the construction of a highway bridge of 140 feet span.

FIRES.

Messrs. Leger & Co's furniture factory, a three story building situated at the corner of St. James street and Marin avenue, St. Henri, Que., was totally consumed by fire last week. Loss, \$15,000; insurance \$5,000.—Mr. Walter Hall's carriage and blacksmith shop at Merlin, Ont., has been destroyed by fire, loss, \$3,000.—Dean's block on Main street, Dundalk, Ont., was burned on the 15th inst. It was occupied by Dean's drug store, Gardner's stove and hardware stores, and G. H. Dean's fruit and confectionery store, the upper flat being used as a dwelling. Mr. Dunnean's dwelling adjoining was also destroyed. Loss on buildings, \$6,000; insurance, \$4,575.—The roller flour mill at Duart, Ont., owned by A. J. O'Brien & Co., was consumed by fire recently. Loss, \$6,000.—The woollen factory at Williamsford, Ont., was burned down recently. It was owned by A. S. Elliott, of Chesley, and was rented by Mr. Charles Kennedy.—A block of eight dwellings at Newmarket, Ont., was destroyed by fire on the 19th inst. The houses were owned by Mr. Thomas Flanagan, and were insured for \$1,500.—The Oxford roller flour mills at Norwich, Ont., were totally consumed by fire recently. The mills were owned by Walker, Harper & Co., and were valued at \$40,000.—Insurance \$22,000.—The Royal hotel and Mrs. Brown's residence at Luan, Ont., were burned on Monday last. Loss on hotel \$2,000.—Messrs. Stairs, Son & Morrow's brick and stone building on Lower Water street, Hali fax, N. S., was completely destroyed by fire on the 21st inst. It was valued at \$25,000, and was insured.

CONTRACTS AWARDED.

SELBY, ONT.—Mr. J. R. Booth has secured the contract for the mason work of the new Methodist parsonage, to be built on the Gunyou property.

BROCKVILLE, ONT.—The contract for the erection of the cold storage warehouse and factory for Mr. John L. Uphan has been let to Mr. F. H. Fitzgibbon.

WINNIPEG, MAN.—The contract for artificial stone pavement has been awarded to the Winnipeg Excelsior Pavement Co., at the price of \$3 15 per square yard; curbing, \$1.15 per lineal foot.

FALLS VIEW, ONT.—Messrs. Waugh & Robinson, of Niagara Falls, Ont., have been awarded the contract for the excavation and stone work for the foundations and cellar walls of the proposed Carmelite Hospice building.

FREDERICTON, N. B.—The City Council has accepted the tender of the Brush-Swan Company to light the city with 50 arc lights, each of 12,000 candle power, for \$2,000 a year. The work of putting in the plant will be commenced at once.

PORTAGE LA PRAIRIE, MAN.—The contract for the Imperial Bank building has been awarded to Messrs. Head & Bossons. The building is to be two stories in height with stone foundation and brick superstructure, and will cost about \$10,000. Mr. George Brown, of Winnipeg, is the architect.

MONTREAL, QUE.—The contract for the extension of No 11 fire station in accordance with plans prepared by Messrs. Perrault & Lesage, has been awarded to Mr. L. Beaudry.—R. Findlay, architect, has let contract as follows for a residence for Mr. Geo. Wain: carpentry, Laid, Paton & Son, brickwork, M. Lynch, plumbing and heating, R. Mitchell & Co., roofing, Geo. W. Reid, plastering, John McLean, painting, Geo. S. Kumber; architectural iron work, H. K. Ives & Co.

TORONTO, ONT.—The Dominion Bridge Company, of Montreal, have been awarded the contract for supplying the trusses, iron columns and beams for the new Massey music hall now being erected on Victoria street in this city.—Mr. G. F. Bostwick, of this city, has been given the contracts for metallic v.h.t fittings for John Macdonald & Co., Gooderham & Worts, McCarthy Osler & Co., and new Registry office, Toronto, and the new Court House at Woodstock, also for mosaic flooring, furniture, and metal screens for the Canada Central Loan Co., Toronto.

THE STRENGTHS OF MATERIALS.

By FRANK J. RUTH.

The science of the strength of material gives us the information of the resistance of solid bodies against forces acting upon them. The herewith used expressions of such a science have the following meaning.

1st. Surface pressure. The pressure upon the unit of surface, square inch or square foot.

2d. Strain. The pressure of the unit of surface returned stresses of the molecular fibers; in general: Force against the unit of surface.

3rd. Strain modulus. The strain, equivalent to the elastic limit. The tensile and compression strength is equal to the tension and compression modul.

4th. Breaking coefficient or break modulus. The stresses by which the molecular fibers release the cohesion.

5th. Elasticity modulus, the measure of the elastic yielding of a material, the stresses by which a prismatic body in its length is being stretched or compressed, without changing its form after the release of the stresses.

6th. Theoretical strength is the strength in which the material or body may be subjected to tensile, compression, torsional or transverse stress in the highest strained fibers equals a stress of the strain modul, hence: the strength of the body being exposed to its elastic limit.

7th. Practical strength of the material. We call such, when such stresses are only for safety brought to bear upon such material to a fractional part of its elastic limit.

8th. Factor of safety. This is the proportion between the theoretical strength and the practical load or strain, or between the breaking strain and the stresses applied.

9th. Breaking strain. This is the strain which pulls apart, crushes, shears, twists or breaks transversely.

CEMENT FOR STEAM PIPES.

Another cement of specially valuable properties for steam pipes in filling up small leaks, such as blow holes in a casting without the necessity of removing the injured pipes, has been compounded. The cement in question is composed of 5 lbs. Paris white, 5 pounds yellow ochre, 10 lbs. litharge, 5 pounds red lead and 4 pounds black oxide manganese, these various materials being mixed with great thoroughness, a small quantity of asbestos and boiled oil being afterwards added. The

composition as thus prepared will set hard in from two to five hours, and possess the advantage of not being subjected to expansion and contraction to such an extent as to cause leakage afterwards, and its efficiency in places difficult of access is of special importance.

E. Benoit & Co., contractors, Montreal, have assigned, with liabilities of \$12,000.

J. B. Malhoit & Fils, contracting plasterers, Montreal, have assigned, with liabilities estimated at \$6,577.

MUNICIPAL DEPARTMENT.

SEWER VENTILATION.

That great differences of opinion exist in regard to sewer ventilation is well known, but the question is so important that the least light thrown upon it is valuable. Of late years we have run bacilli and germ mad. Almost every disease is said to be traceable to a special bacillus. In laboratories these bacilli are propagated and displayed under glass cases. Attempts are made to kill them, and these attempts are always more or less successful in the laboratory. What the professors and doctors have not yet told us is the precise condition of things in the human frame which admits of the bacilli obtaining a lodging therein. So far as we can see, half-a-dozen healthy bodies pass through the same atmosphere—an atmosphere, if you like, laden with bacilli, but only one of these bodies sickens. The bacilli are harmless with the other five—why? It has ever been held that prevention is better than cure, and it would be well if professors paid more attention to the prevention rather than to cure. We may be allowed to digress a little as to this prevention, and say that in a measure the use of disinfectants is a means to that end. Most of the disinfectants sold are put forward as deadly enemies to bacilli, and we believe this is so. Not long since we had forwarded for examination a few samples of Messrs. Jeyes' disinfectants. These have been carefully used and examined, and so far certainly seem to be preferred against carbolic. The latter is dangerous, and always must be so; while the former may be used without fear. So far as personal infection is concerned, we think that all authorities ought to use Jeye's fluid or something equivalent in compulsory baths. Bacilli in contact with skin would thereby be destroyed, and the propagation of certain diseases rendered more difficult. There is nothing unpleasant in such use. We would go further even, and suggest a few drops of the fluid put into all our baths. Such a course could do no harm, and might prevent evils we see not. But to return to sewer ventilation. It is admitted that decomposing sewage matter is dangerous, and thereby several questions arise. In the first place, can sewage, and how, be rendered absolutely harmless? Nature does in the course of time render it harmless, but our artificial methods of life do not permit us to adopt Nature's plan. Briefly, Nature's plan seems to be to dilute sufficiently by means of air, so that the oxygen of the air may combine with the deleterious gases, germs, or food of the bacilli and render them harmless. Following this view, it seems but natural that all who had to do with sewers would say, Plenty of air, no stagnation. Mr. Brown in his report says:

"From time to time the public mind gets very much disturbed in connection with the question of sewer ventilation, and this is not to be wondered at since so many appear to know so much about the subject while they really know so little. The best informed is not in a position to dogmatise as yet. There are, however, certain principles well known, and if acted upon relief is obtained—viz., the sewers should be constructed with the best impervious materials, the workmanship should be of the best style, the sewers should be so designed as to be self-cleaning, regular

flushing should be practised and a sufficient number of ventilators at the street-level combined with an equal number of upcast pipes to maintain a regular movement of the air in the sewers. If the above be well attended to the evils complained of will be largely removed; I say largely removed, because it seems impossible to wholly do so, since manufacturers and others continually permit heated water, steam, chemicals and other matter to pass into the sewers instead of dealing with them on their own premises. The more heated a sewer becomes, either through chemical change or by the introduction of heated water or steam, the more rapidly is the foul air evolved. We have made many experiments during the year with the anemometer, and while we do not always find an outward flow from the upcast pipes when there is no observable movement in the atmosphere, we do always find a rapid flow during a slight breeze, and have recorded as much as 15 cubic feet per minute from a 4in. pipe 3 feet high."

The admission that the evil is not fully removed, makes it necessary to do more. We may say that flushing with disinfectants is too costly, and flushing with air is not satisfactory, because air steam will not always go in the direction required. No ventilators in the street, and a current of flushing air obtained passing through a furnace has been tried, but does not seem to have found great favour. The method is probably effective in getting rid of noxious germs. We have not heard of any trial of a modified plan of Webster's. He treats the sewage electrically. Why not ventilate the sewers themselves by means of electrolytically-obtained oxygen? It might be found fairly cheap and effective. — *Contract Journal.*

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