

the office of the City Commissioner, City Hall. The cost of the work is not to exceed \$4,000.—At a recent conference of the Council of the Board of Trade with several city representatives, regarding the feasibility of building the Nipissing and James Bay railway, a resolution was passed urging the Nipissing and James Bay Railway Company to proceed with the speedy construction of the road. Mr. A. Kent has purchased a lot on Walmer road.—The Metallic Roofing Co. of Canada are contemplating the removal of their Montreal factory to Toronto, and have written to the Property Committee asking for a lease of a site on the north-east corner of King and Dufferin streets.—It is stated that a Masonic temple, costing upwards of \$250,000, is to be erected in this city, on a central site. The Committee of Management will be composed of three representatives from each local lodge.—In his fortnightly report presented to the Board of Works on Monday last, the City Engineer recommended the construction of a 12-foot cement concrete walk on the east side of Church street, from King street to Front street. Permission was also asked to ask for tenders for the crib work necessary for the extension of the city dock at the foot of Frederick st.—Mr. A. A. Dickson will erect a large residence on Walmer Road. Mr. F. H. Herbert, architect, will prepare the plans. Mr. Herbert has also in charge the erection of 3 pair of semi-detached residences at Cote St. Antoine, Montreal.

FIRES.

A building at Kincardine, Ont., owned by the Merchants' Bank of Canada, was destroyed by fire on Tuesday last.—The carriage shop and dwelling house of W. H. Todd, at Goodwood, Ont., was burned to the ground a few days ago. Loss, about \$10,000; insurance, \$4,000.—Geo. Hunter's drug store at Sault Ste. Marie, Ont., was gutted by fire on the 12th inst. Loss covered by insurance.—Jas. Elliott's house at Ameliasburg, Ont., was destroyed by fire recently: insurance, \$1,500.—The Robinson Fish Company's large warehouse at Selkirk, Man., was consumed by fire on the 15th inst. The loss will reach \$40,000, which is mostly covered by insurance.

CONTRACTS AWARDED.

OTTAWA, ONT.—The tender of Torney & Geogeson has been accepted for heating the Maternity Hospital with steam.

AYLMER, QUE.—R. & W. Conroy have awarded the contract to Ahearn & Soper, of Ottawa, for supplies and the necessary dynamo for an electric light system.

TORONTO, ONT.—Messrs. D. McIntosh & Sons, of this city, have been awarded the contract for the erection of the pedestal for the statue of Sir John A. Macdonald in Queen's Park.

KINGSTON, ONT.—Contracts for James Brown's new house, corner William and Wellington streets, have been let as follows: masonry, A. Gallinger; carpentry, O'Reilly & Hooper; plumbing, McKelvey & Buch; painting, T. Milo.

HAMILTON, ONT.—Brace Bros. & McNair, of Chicago, have been awarded the contract for the grading, trestles, culverts and masonry for the Toronto, Hamilton and Brantford railway from Brantford to the site of the west end station in this city.—The following tenders were received last week by the Board of Works for the construction of sewers, the lowest tender in each case being accepted. J. W. Blasdel—Young street, 34c.; Victoria ave., 48c.; John street and Alma ave., 90c.; Dominion and Markland streets, 61c. E. C. Murton—Victoria ave., 59c.; Young street, 44c.; Dominion street, 78c.; John street, \$1.43. David Newland—Young street, 55c.; Dominion street, 53c.; Victoria ave., 34c. J. J. Armstrong—Young street, 29½c.; Dominion street, 90c.; Victoria ave., 32½c. Wm. Spence—Dominion street, 75c.; John street, 99c.; Victoria ave., 32c.; Young street, 75c.—David Baird—Young street, 28c. Thomas Law-

son—Dominion street, 52c.; Victoria ave., 37c.; Young street, 32c.

MONTREAL, QUE.—The Road Committee last week accepted the following tenders: special castings, Wm. Rodden & Co., \$38.90 per ton; cast iron water pipe, Canada Pipe and Foundry Co., \$35.95 per ton; drain in St. Ignace street, from Rivard to Carrieres street, A. Benoit, \$5.27 per yard for ordinary work and \$4 for rock; drain on Panet street, from existing sewer to Sherbrooke street, P. J. Murray, \$5.14 per yard and \$4 for rock.—Mr. C. St. Jean, architect, has awarded contracts as follows:—Furnishing of church at St. Césaire, D. A. Beaulieu; floor tiling at the "Hospice Auclair," G. Baccarini. For a three storey stone front tenement building on Amherst street for Mr. Desforges as follows: masonry, M. Paquette; carpenter and joiner's work, H. Chagnon; brickwork, O. Deguise; painting and glazing, A. Garière. Fireproofing to the Deaf and Dumb Institute, A. Rousseau.—Messrs. Dunlop & Heriot have awarded the contracts for Mr. Hugh Graham's residence, corner Sherbrooke and Stanley streets, as follows: excavation and masonry, J. H. Hutchison; brickwork, T. W. Peel.—Mr. W. McLea Walbank has awarded contracts for the erection of a stable in rear of Drummond street for the Taylor estate as follows: masonry, J. B. St. Louis; carpenter and joiner's work, Beckham & Scott; roofing, G. W. Reed; iron work, R. Donaldson & Sons.

HOW TO MAKE AND LAY FLOORS, ROADS AND PATHS.

Floors.—Portland cement is used to a great extent as the chief material for making floors, and there is little doubt of its answering well for that purpose, if laid sufficiently thick and the material gauged in a proper manner.

For this purpose the cement ought to be gauged with an equal quantity of sharp sand, free from clay, both for first coat and for the second: for if the first coat is gauged with a greater quantity of sand than the second they will not bind together. Besides, pure cement swells more in setting than cement mixed with sand; therefore, if the finishing coat is made finer than the first coat it will be liable to blister, and so destroy the floor. The sand for the last coat should be well washed, and the two coats need not exceed 1 inch in thickness.

In many parts of England, where there are plaster mills near at hand, it is usual to lay plaster floors. But this plaster is of a much rougher kind than that which is generally used: in fact, it is a sort of dross from the mills. These floors are laid about 2 inches or 2½ inches in thickness, and finished at one operation. A plaster floor of Welsh lime is thought to be as good as grey plaster, and can be done at a third less cost.

Plaster as a Substitute for Wood Floorings.—M. Julhe has brought before the notice of the French Academy of Sciences a number of experiments made by him regarding the more extensive use of plaster, by such means as substituting it for wood in the construction of flooring.

His idea is based upon the augmentation of volume which takes place in plaster, after its application, while other mortars or cements, as well as wood, are liable to shrinkage or cracking as consequences of desiccation. When applied in layers

of sufficient thickness to resist breaking, it is unaffected by time and atmospheric changes, provided it is not exposed to water.

Two properties are, however, still needed before plaster could be used in the general manner indicated—hardness and resistance to pressure from above—and these M. Julhe considers he has found a method of supplying. He thoroughly mixes 6 parts of superior plaster with 1 part of fat lime, recently slaked and finely sifted. This composition is applied in the same manner as ordinary plaster. When dried, the object produced is steeped in a solution of any sulphate with a base capable of being precipitated by lime and an insoluble precipitate. Sulphate of iron and sulphate of zinc are the most suitable agents. The lime in the pores of the plaster decomposes the sulphate, and two insoluble substances are produced—sulphate of lime and oxide—which fill the pores of the object treated.

With sulphate of zinc the plaster remains white, and with sulphate of iron it passes through a greenish stage, by the action of time and desiccation, into the tint which characterises sesquioxide of iron. By using sulphate of iron greater hardness of surface is produced, and the resistance is twenty times that of ordinary plaster.

The proportions of lime and plaster are not exactly fixed, but may be varied in accordance with the results sought to be obtained. Still, the proportion of 1 to 6 has been found by M. Julhe to give the most satisfactory results. It is also recommended not to pass and re-pass the trowel for too long a time, the quickest workmen being the most suitable for this operation.

By using sulphate of iron an aspect of rust is obtained, but if there is passed over the surface some lithargized linseed oil (a little browned by heating), a mahogany tint is produced, while a certain superficial elasticity is likewise gained. The shade is improved by the use of a layer of hard copal varnish. A layer of plaster, 2½ inches to 3¼ inches in thickness, treated in the manner indicated, will make a perfectly smooth flooring, quite applicable as a substitute for oak, and at a quarter the price.

Gravel Walks.—Fifteen bushels of gravel, from 3 to 5 bushels of sand, and from 1 to 1½ bushels of lime. Coarse gravel requires more sand.

PAVING.

1 yard super.	requires 35	stock bricks laid flat.
"	" 54	" laid on edge.
"	" 34	paving bricks laid flat.
"	" 88	" on edge.
"	" 13	tiles (10 in.)
"	" 9	" (12 in.)
"	" 70	clinkers laid flat.
"	" 140	" on edge.
"	" 75	" herring-bone.

Paving (York) for ordinary purposes, 2½ inches to 3 inches. A *step of soft stone*, rendered with ¾ inches thickness of 1 Portland cement and 1 sand, will wear very well.

Concrete Paving, for racquet court, 6 in. thick (1 cement, 2 sand, 5 stone) of which the upper 2 in. are fine, covered with ¾ in. asphalt.

For ordinary paving, 4 in. cement concrete is generally sufficient.

Tar Pavement is composed of gravel, Kentish rag, limestone, granite, etc., mixed with tar—twelve gallons of purified coal tar to every cubic yard of stone. If the local coal tar is too thin, pitch should be added.

For road pavement 6 in. to 9 in. thick, the bottom layer (three-fourths total thickness) is of stone, broken to pass through a 3 in. sieve; the remainder to pass through a 1½ inch sieve.

For pavement 3 in. to 4 in. thick, the bottom layer (five-eighths total thickness) is of stone, broken to pass through a 2½ in. sieve, then a middle layer (one-fourth total thickness), to pass through a 1 in. sieve; the remainder (one eighth total thickness) to pass through a ½ inch sieve.

For pavement 2½ in. thick and under, bottom half is of stone, broken to pass through a 1½ in. sieve; then a layer one-third whole thickness, to pass through a ½ inch sieve.

Laying Tar Pavement Floor, 6 in. thick—Lower course 3 in. thick, stone to pass through a 2½ in. sieve. Middle course 2 in. thick, stone to pass through a 1½ in. sieve. Upper course 1 in. thick, stone to pass through a ¾ in. sieve. To be finished off with a top dressing of clean coarse grit. A 6 inch bed of concrete is first made, and allowed to stand fourteen days.

Gravel is screened, washed and then burnt, as follows: An ordinary fire of coals and wood made on the ground, and a layer of stones added when the fire has become strong. As combustion goes on lumps of coal are added and again covered with fresh stones. As the heat increases the amount of coal may be lessened. It should be kept burning night and day.

After about two days it may be found convenient to rake down the heap and enlarge the base. Stones may then be wheeled on to the top in barrows, coal being added as before. The burning should be carried on about five or six days by the gradual addition of stone and coal. The mass may then be shoveled into a conical form, and the fire allowed to burn out, which will take twenty to twenty-four hours.

MUNICIPAL DEPARTMENT.

A recent issue of the Pembroke Observer furnishes us with some interesting particulars regarding the new water works of that town, which were planned by Mr. Willis Chipman, C. E., of Toronto, the contractors being Messrs. Wm. Murray & Co., of Pembroke. The source of supply is Lake Allumette, an expansion of the Ottawa river. The intake pipe will deliver 1,200 gallons a minute, and is 2,300 feet long. The pump is a compound duplex, non-condensing engine, with a high pressure cylinder of 12 inches in diameter, and a low pressure cylinder 18½ inches in diameter. It makes 50 strokes per minute, pumping 750 gallons, or at the rate of a million gallons per day. By means of a valve the contents of the sand pipe can be discharged back through the intake pipe, thus flushing the intake and clearing out the screens. The boilers are large enough to furnish power for an electric light plant if necessary. In all there are 34,167 feet of piping laid. The cost of the system was \$45,320.

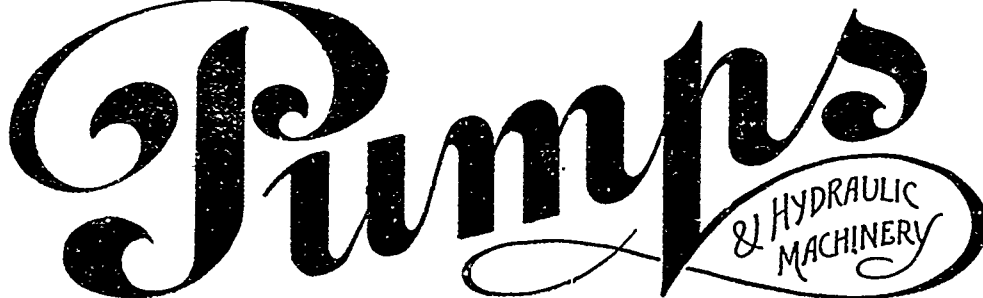
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