

& Son, one three-story brick store on King street, between Walnut and Catharine streets, cost \$2,400.—Wm. Stuart & Son, architects, invite tenders until the 18th inst. for the erection of a house on Bay street north.

LONDON, ONT.—The City Engineer has issued the following building permits: C. W. Austin, brick residence on Waterloo street, cost \$1,900; W. Fairburn, brick veneer cottage on Horton street, cost \$1,000, R. Angus, brick veneer residence on Princess avenue, cost \$1,000.—Mr. Keefe, C. E., of Toronto, has presented his report to council on the water-works system. It recommends the placing of additional steam and hydraulic pumps with a capacity of 6,000,000 gallons, and the laying of a new supply main, at a cost of \$68,000.

TORONTO, ONT.—A deputation composed of Mr. Booth of the Ottawa and Arnprior Railway; Mr. W. C. Caldwell, M. P. P. for North Lanark; Mr. J. P. Whitney, M. P. P. for Dundas, and others, recently waited upon Hon. A. S. Hardy, Commissioner of Crown Lands, asking that the Ottawa and Arnprior Railway Company be permitted to build a mill upon the corner of the Algonquin National Park, through which its line passes.—Mayor Dagg and Mr. R. B. Cumming, of Selkirk, Man., are at present in the city for the purpose of floating a scheme to build an electric railway between Selkirk and Manitoba, a distance of twenty miles.—Building permits have been granted as follows: Reinhardt Brewery Co., brick addition to brewery on Mark street, cost \$10,000; Trustees Parkdale Society New Jerusalem, one story and basement church, corner Elm Grove and Melbourne ave., cost \$2,000.

OTTAWA, ONT.—It is said to be in contemplation to build crib work along both sides of the deep cut on the Rideau canal in this city during the coming winter.—The City Council is considering the question of doing its own lighting, and the fire and light committee has recommended that an expert be appointed to ascertain what available water power could be secured.—The medical faculty held a meeting last week to discuss the plans prepared for the proposed contagious disease hospital. It was decided to have new plans prepared for a cottage hospital, having a small building for each type of contagious disease.—Mr. J. H. Balderson, Secretary Department of Railways and Canals, invites tenders until Thursday, the 28th inst., for the construction of a steel bridge, composed of 1 swing span of 250 feet and a fixed span of 75 feet, over the Sault Ste. Marie canal. Plans may be seen only at the office of the Chief Engineer of Railways and Canals in this city.—Mr. E. J. Chamberlain has purchased four lots at the corner of Metcalfe and Ann streets and will erect a new brick house, to cost \$10,000. Mr. Tomlinson will prepare the plans.—J. H. Balderson, Secretary Department of Railways and Canals, invites new tenders until the 28th inst. for constructing and setting in place of five pairs of lock gates at the Sault Ste. Marie canal.—Plans are now being prepared for a new club house at Rockcliffe for the Ottawa Canoe club.

FIRES.

A planing mill at Westport, Ont., owned by W. B. Derbyshire, was destroyed by fire on Sunday morning last. Loss, \$2,500; insurance \$1,500.—P. Devine's hardware store on Main street, Renfrew, Ont., was badly gutted by fire on the 11th inst. Loss, \$15,000; partially insured.—The flour mill, elevator and engine house of the Bell farm at Indian Head, N. W. T., was destroyed by fire last week. Loss \$25,000.—A. C. Gordon's sash and door factory, Dutton, Ont., was burned to the ground recently. Loss, \$5,000; insurance \$1,000.—Mount St. Louis College on Sherbrooke street, Montreal, was damaged by fire on Sunday last. Loss, between \$50,000 and \$40,000.—Mr. Thomas Garside's residence on Briscoe street, London, was burned last week.—

Mr. W. Govenerek's elevator and engine house at Griswold, Man., was destroyed by fire on Sunday last.—The residence of R. Wiggins, at Rat Portage, Ont., was burned last week.

CONTRACTS AWARDED.

SARNIA, ONT.—The contract for building the new Caughell bridge in Elgin County has been awarded to Mr. Laing Anderson, at the price of \$1,240.

CUELPH, ONT. The contract for tearing down the old buildings and preparing the foundations for the proposed new opera house has been awarded to Messrs. D. Kennedy & Son. The contract for the building proper will be awarded as soon as the plans are approved of.

WINNIPEG, MAN.—The City Council has accepted the tender of Kelly Bros. & Co. for the construction of a sewer on Logan street, from Ninth street to Knox street, at the price of \$26,652.50, and that of Dobson & Jackson for a sewer on Broadway street and Broadway place, at \$3,979.

MONTREAL, QUE.—The Road Committee of the City Council has awarded the following contracts for the construction of sewers: On Bourgeois, Rochelle and St. Etienne streets, to Mr. Murray, Richmond street and St. Michael's lane, to Mr. McDonald; Peel street to Messrs. Sheridan & Hefferman.

PORT ELGIN, ONT.—G. A. Allan, architect, of Brockville, has awarded the contract for seating the new Methodist church being erected here to Messrs. Pennington & Baker, of Dundas, Ont.—The plumbing for J. R. Dargavel's residence has been secured by Barsalou & Whitehill.

TORONTO, ONT.—The following contracts have been awarded by the Board of Works: Construction of the western jetty at Ashbridges Bay to Robert Grant, at \$15,000; asphalt pavement on Linden street, from Sherbourne to Huntley street Constructing and Paving Co., \$15,000; cedar block pavement on Mansfield avenue, from Bellwoods avenue to Grace street, H. M. Cathro, \$497.

BROCKVILLE, ONT.—G. A. Allan, architect, has awarded the following contracts recently: alterations to Weatherhead block, masonry and brickwork, A. Hagerty; other trades, C. Simpson; dwelling on Sherwood street for James Dnnham, all trades, A. Hagerty; brick addition to Cossit Bros. foundry, stone and brickwork, A. Price; other work being done by day labor, under the superintendence of J. Vandusen.

BIDS.

MONTREAL, QUE.—Seven tenders have been received for the construction of three incinerators, which have been handed to the sanitary engineer for a report.

OTTAWA, ONT.—The contract for ten miles of the Ottawa and Parry Sound Railway from Indian Point, Golden Lake to Killaloe, will be awarded this week. Seven tenders have been sent in.

BUSINESS NOTES.

Messrs. A. R. McKinlay & Co., window shade manufacturers, Toronto, have assigned to E. R. C. Clarkson. The assets are estimated at \$25,000, and liabilities about the same amount.

Incorporation has been granted to "The William Clendinning & Son Company, Limited," of Montreal, for the purpose of manufacturing and dealing in pipes, fittings, castings, steam boilers, plumbers' supplies, etc.

Tile-faced concrete walls are described in a late issue of *Indian Engineering*. In this case the tiles are made L-shaped. Two rows of tiles are laid parallel to each other and the thickness of the wall apart, and the space between, to the tops of the tiles, is filled with concrete. Another row of tiles is laid on each side and the filling repeated, until the wall is high enough. With superior tiles a good, strong wall is the result, with a smooth tile surface.

LEGAL DECISIONS.

IN RE SPEAR AND WOODS.—The words used in the Mechanics' Lien Act, "the price to be paid to the contractor," and other like expressions in the same section, all mean the original contract price, and not that part of the contract price to the extent of which the contractor has done work or supplied materials. And where the owner has in good faith and without notice of any lien, paid the contractor the full value of the work done and materials furnished, and the value thereof does not exceed eighty-seven and a half per cent. of the contract price, and the contractor has abandoned his contract and no money is payable to him in respect thereof, no lien can exist or be enforced against the owner in favor of any one. Wage-earners are not entitled to twelve and one-half per cent. of the contract price if it never becomes payable by the owner to the contractor; giving priority to the lien of the wage-earners is not equivalent to enact that the owner shall pay the percentage whether the contract price ever becomes payable or not. Persons who have registered liens, but have taken no proceedings to realize them, cannot have the benefit of proceedings taken by other persons to enforce liens against the same lands where the liens of such other persons are declared not to be enforceable. Judgment of Court of Queen's Bench.

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MUNICIPAL DEPARTMENT.

METHOD OF SOLIDIFYING QUICKSAND.

A new method of dealing with quicksand, so as to make it possible to form a firm floor on it and to sink a shaft through it has been invented by Mr. Robert L. Harris, of New York. It is a very ingenious process and has great promise. It has been applied in the construction of a sewer through the quicksand surrounding Providence, R. I., and great satisfaction has been expressed with the results.

Mr. Harris' method depends on the great permeability of confined quicksand to water and other liquids. If two pipes are forced down vertically into a stream of quicksand, at a reasonable distance from each other, and water is forced down one of them, it will find its way along the line of least resistance until it ultimately reaches the bottom of the other pipe. The current thus formed gradually carries the sand up the second pipe until eventually there is a chamber in the earth full of water instead of quicksand. The walls of this chamber, of course, are prevented from falling in on account of the hydrostatic pressure. Mr. Harris' idea is to force a cement down the first pipe after the chamber has been thus formed, and when it has filled the chamber to exert hydraulic pressure on the body of cement, and so force the cement in the chamber into the surrounding earth. In this way a hard cement is made to take the place of quicksand. If the quicksand consists of materials that could be used as a constituent of a hydraulic mortar then it would not be necessary to take it out by the water current, and the process would consist in forcing in a cementing fluid which would combine with the sand and form a solid precipitate. The proper fluid to force in depends, therefore, entirely on the character of the material of the quicksand. If it is approximately a pure sand, the best fluid would be a pure cement grout, but if the material is muddy, a proportion of sand or plaster of paris would also have to be forced in. It will be seen that by variations and extensions of this principle, solid-wall shafts can be sunk through quicksands, floors may be formed for trenches through them, foundations for buildings can be made, and in other ways the bughbear of a quicksand can be successfully combated.

This method was put in practice for the first time in March last at Providence, R. I., for the purpose of obtaining a floor for the main out-fall sewer pipes that went through the quicksands surrounding the town. This quicksand, when dry, consisted of an impalpable power. When saturated with water it is very hard and compact until disturbed. Under the pressure of a thin layer of superimposed earth it becomes apparently solid. When agitated, however, it runs like mush and is almost irresistible. All sorts of methods of excavation had been tried, but all were unsuccessful, and an excellent opportunity thus offered itself to Mr. Harris for the demonstration of the correctness of his theory. The experiment was carried out at the bottom of an excavation, just where the quicksand was reached. Four two-inch pipes were driven into the quicksand four feet apart to the distance of 17 feet below the excavated surface, or one foot below the grade of the proposed sewer. After a circulation of water had been obtained from pipe to pipe, thinner pipes were inserted in the two-inch pipes, and through them the cementing material was forced. After three weeks' time the excavations for the sewer reached this point, and it was found that the quicksand had been made solid for some distance round the lower ends of the pipes, and a solid floor had thus been made for the sewer excavation. The rock, which has been formed, showed the lines of flow of the cement, and pieces taken out of the cutting presented a streaked appearance as shown.

Mr. Otis F. Clapp, assistant city engineer of Providence, R. I., in charge of the sewer department, thus indorses the process: "At the second attempt of the first experiment in April, 1891, Mr. Harris obtained channels, as desired, at 25 feet below the surface of the ground, between pipes driven at four, ten and 14 foot distances. At a trial of the method, as a whole, made under adverse circumstances in the middle of March, 1892, in quicksand and fine sand, there was found upon excavation for construction in April that he had cemented the natural material at ten feet below the surface into fair artificial stone three to six inches thick with horizontal strata, and at a depth of 17 feet, the original bottom of four pipes, there was a thin, hard continuous floor of cemented material embracing practically the area between the pipes driven; the above was done without further disturbance of the surface of the ground than that required by the introduction of four two-inch pipes placed four feet apart in diamond shape. He has demonstrated to my satisfaction that by his method, strong floors, inclosures, monoliths, etc., can be readily formed in and of the fine earthy materials, where and as he wishes underground and below water level, without serious disturbance of the surface.—*Engineering and Mining Journal*."

IMPROVEMENTS IN SEWER PIPES.

After numerous and somewhat costly experiments, a French clayworker, Mons. Laffont, has, we are informed, succeeded in producing pipes of various diameters which are quite impervious to water, and are therefore eminently suitable for sanitary purposes. They do not require any glazing, since they are of a semi-crystalline character throughout their entire mass, therefore a considerable profit is saved to the manufacturer. The pipes are made from a mixture of fire clay, mixed with some fusible clay (not marl) and a certain proportion of sand, ground slate or pulverized rock, such as syenite, basalt, obsidian, etc. The proportions are determined by preliminary experiments with the material chosen. The raw materials are finely powdered, moistened and intimately mixed; the product is then ready for being moulded into pipes, brick, slate, etc., in the usual manner. The goods are dried and heated gradually, to a temperature of 1,400° centigrade, with the result that the mass fuses slightly and becomes semi-crystalline throughout; in short, it corresponds in appearance and structure with natural igneous rock.