

CONTRACTS OPEN.

MILLBANK, ONT.—The Presbyterians are preparing to erect a new church.

FORT WILLIAM, ONT.—A petition is being signed urging the Government to erect new Government buildings.

WINNIPEG, MAN.—The Duluth and Winnipeg Ry. Co. will endeavor to build their line through to St. Boniface this year.

SUSSEX, N. B.—It is understood to be the intention of the Roman Catholic authorities to erect a new church shortly.

PERTH, ONT.—The county council will ask the town to co-operate in the erection and maintenance of a House of Industry.

LENNOXVILLE, QUE.—Bishops college, chapel and rectory, were destroyed by fire on the 5th inst. Loss, \$50,000, covered by insurance.

BROGRIEVE, ONT.—The county councils of Leeds and Grenville will petition the Government to compel the counties to provide poor houses.

WOODSTOCK, N. B.—Plans are being prepared at the Department of Public Works, Fredericton, for a new bridge 2,000 feet in length at this place.

WOODSTOCK, ONT.—The county council of Oxford has decided to proceed with the erection of a County Poor House, at a cost of about \$15,000.

PETERBORO, ONT.—The Street Railway Co. is negotiating for the purchase of five electric street cars, and expect to have its line in operation the present year.

QUEBEC, QUE.—Several of the shoe factories are to be enlarged, three blocks of stores built on St. John street, and a number of residences erected at Mount Pleasant.

KINGSVILLE, ONT.—The Public School building in this village was destroyed by fire a few days ago, the loss being about \$10,000 and insurance \$4,000. It will be re-built.

THREE RIVERS, QUE.—A delegation of cattle exporters from Montreal visited this place a few days ago with a view to securing a site for stock yards. No decision has yet been come to in the matter.

ST. THOMAS, ONT.—A site will probably be secured in a few days for the proposed new public hospital.—It is proposed to erect a building for the joint use of the Women's Christian Association and the railway Y.M.C.A.

BRUSSELS, ONT.—Plans and specifications have been prepared and are now in the hands of Mr. A. Koeny for the re-building of the American Hotel, recently destroyed by fire. The building will be 45 x 82 ft., with a wing 32 x 60 ft.

FOREST, ONT.—At a public meeting of citizens a few days ago, the sum of \$2,200 was subscribed for the purpose of putting down an oil well, and Mr. J. D. Livingston, the Secretary, was instructed to advertise for tenders for the work.

BRANTFORD, ONT.—The city council has arranged with the Ontario Government for the extension of the sewage system to the Institution for the Blind. The Government will contribute \$8,000 towards the cost of the undertaking.

KINGSTON, ONT.—Mr. J. B. Reid, architect, will receive tenders until this (Saturday) evening, for the various trades required for the erection of a building on the corner of Princess and Sydenham streets, for the Independent Order of Oddfellows.

BOWMANVILLE, ONT.—The County Council has made a grant towards the erection of a bridge at the north-east boundary of the town.—The question of who shall contribute the cost of the erection of a large bridge on King street is to be submitted to the Supreme Court.

HAMILTON, ONT.—Subscriptions to the amount of \$3,000 have been secured by the Rev. John Lavcock for the proposed Wesley Memorial Church in the east end.—The construction of a draw-bridge to take the place of the ferry at the Beach is being agitated.—It is reported to be the intention of the C.P.R. authorities to construct a line from Cooksville to this city the present year.

HALIFAX, N. S.—The members of the American Order of Oddfellows have purchased a site on Buckingham street, on which it is proposed to erect an Oddfellows Temple.

GUELPH, ONT.—Mr. Robt. Arms, Guelph, P. O., will receive tenders until Friday the 13th inst. for the erection of a stone school house in Section No. 2, Guelph township. Plans and specifications may be seen at the American Hotel in this city.—Wm. Scott, Mercury office, will receive tenders until Tuesday, the 10th inst., for the erection of a brick dwelling-house near the city, one tender to include the whole of the work. Plans and specifications to be seen at the above address.

OTTAWA, ONT.—A deputation composed of twelve members of the county council of Lanark and twelve members of the county council of Leeds held an interview Tuesday with the Minister of Public Works, asking aid for the reconstruction of a bridge on the Rideau canal connecting the two counties.—Mr. J. S. Hall, H. S. Beemer, and Frank Brenann, of Montreal, had an interview a few days ago with the Minister of Justice regarding the construction of the proposed bridge to connect this city with Hull. They are confident the undertaking will be carried out this year.

MONTREAL, QUE.—Mr. A. F. Dunlop, architect, has just prepared plans for the proposed new hotel to be erected by Mr. Geo. Carslake opposite the G.T. depot. The building will be 85 x 64 ft.; five stories high, with basement. Amongst the materials to be used will be marble, for staircases, stained glass windows, mosaic work and frescoed ceilings, and latest sanitary appliances. The building will be lighted by electricity.—Plans have been prepared by Mr. J. J. Brown, architect, and the foundation laid for a new Episcopal Church in Hochelaga to cost \$6,000.—The plans for the proposed new Protestant High School show a building facing on Peel and Metcalf streets, and enclosing a quadrangle.—The expert appointed to judge the designs in the Board of Trade competition is expected to visit the city for that purpose in a few days.—The Iroquois House Hotel Co. have decided to erect a new wing to the hotel and improve the existing building; also to erect an observatory on the mountain.—A building permit has been granted James Noakes for a 2-storey house on Charron street, to cost \$1,200.

TORONTO, ONT.—The estimates of the Public School Board contain the following appropriations for new buildings: Eight room school and site to replace Bathurst, \$35,000; to enlarge Borden street school, \$17,000; to add six rooms to Givens street school, \$15,000; to add six rooms to Bolton avenue school, \$14,000; for site and two room building, eastern part St. Lawrence ward, \$9,000.—An agreement has been made between the county council of York and the Mimico Electric Railway & Light Co., for the construction of a railway between Mimico and the city; also with the Metropolitan Electric Railway for the extension of its line to Richmond Hill.—Additions will be made to the Church of the New Jerusalem on Elm street.—It is understood that the Dominion Government has consented to hand over to the city the amount necessary for the enlargement of the cattle market.—The Gaelic Society of Toronto has appointed a committee to act with committees from other Scottish societies in devising ways and means for the erection of a memorial statue to Burns, the Scottish Bard.—At a meeting of the council of the Ontario College of Pharmacy held a few days ago, the Building Committee reported in favor of the erection of a new three-storey building containing pharmaceutical laboratory, to cost about \$10,000. The name of Mr. Sheard has been mentioned as the architect.—The county council of York is authorized to issue debentures to the amount of \$10,000 for the purpose of improving the South York Registry Office building.—The following building permits have been granted: Williams Bros., one det. 2-storey and attic bk. dwelling, Collier street, cost \$7,500, and pair 2-storey brick dwellings, south Macpherson avenue, near Avenue road, under the trusteeship of St. John

the Divine, 2-storey mission house, Johnson ave. cost \$1,500; J. J. Graham, five att. 2-storey bk. dwellings, south side Douro st., cost \$7,500; R. M. Scott, two det. 2-storey and attic bk. dwellings, Lamieson ave., cost \$9,000; Henderson & Cracknell, three s. d. 2-storey and attic bk. dwellings, Ossington ave., north of Arthur st., cost \$6,000.—The residents of Rosedale have petitioned the Public School Board to erect a new school north of the ravine.

CONTRACTS AWARDED.

VICTORIA, B. C.—The contract for the construction of additional buildings at C Battery Barracks, has been given to Mr. Geo. McFarland, of Thorold, Ont.

BEAVERTON, ONT.—The Department of Public Works, Ottawa, has awarded the contract for the construction of the proposed new wharf at this place, to Mr. D. Porter, of Warton, Ont.

THE STRENGTH OF COLUMNS.*

In testing any material under a compressive stress or under a load placed directly upon it, we very soon discover that the strength depends largely upon the shape and dimensions of the tested specimen, and not only upon its quality. A flat brick or a cube of any material will carry a much greater load per square inch than a tall and slender column of the same material. The resistance of the cube can only be overcome by crushing it or squeezing it flat; but the tall column gives way in a different manner by first bending and then buckling out of shape altogether; and the greatest load that it will carry is only a small fraction of its crushing weight.

It is necessary, therefore, to ascertain the strength of columns of every possible ratio of length to diameter; and if we proceed to test, in this way, the different qualities of iron and steel, and to arrange them in a list according to their compressive strength, we shall discover that the strength of the cubes is no guide at all to the relative strength of the long columns. The material which offers the smallest resistance to bending in the long column shows almost the greatest resistance to crushing; and neither the one nor the other of these measures of strength appears to bear any constant proportion to the tenacity of the material. In fact, these three aspects of the quality which we call strength are different things, and depend upon three distinct properties of the metal.

Beginning with the cubes, however, we may briefly notice the crushing resistance of each material, and the order in which they stand. The strongest of all will undoubtedly be the extremely hard grades of steel; and such grades may be used with advantage in the form of short and solid blocks, bearing plates, or roller bearings; but if we exclude the hardest grades of steel as being unsuitable for the more ordinary purposes of construction, we shall have to accord the highest, or nearly the highest place, to cast-iron, which was the lowest of all in the list of tensile strengths; and it will require a load of 35 or 40 tons per square inch to crush a cube or short cylinder of fairly good cast-iron.

Below this will come the medium grades of mild steel, then the softer and tougher grades, and the lowest place will be taken by wrought iron and the mildest steel—the metals which showed the highest power of resisting a sudden pull or blow. Of course these plastic materials cannot be crushed like cast-iron, but they give way by bulging or squeezing out, under a load which is about 16 tons per square inch in wrought iron, and in mild steel varies from 22 to 35 tons per square inch, or thereabout.

* From a paper read by C. Claxton Fidler, C. E., at a meeting of the Society of Architects, Jan. 13, 1891.