

to \$3,124,000. A railway from Newport or Windsor to Tiuro and for a railway bridge over the Shubenacade river, \$300,000; Nipissing and James Bay Railway Co., \$217,000; Lotbiniere and Megantic Railway Co., \$48,000; Drummond County Railway Co., \$96,000, a railway from Lime Ridge, in the County of Wolfe, Quebec, northerly through the County of Wolfe and into the County of Megantic, \$160,000; Strathroy and Western Counties Railway Co., \$80,000; Parry Sound Colonization Railway Co., \$64,000; Manitoulin and North Shore Railway Co., \$32,000; United Counties Railway Co., \$102,400; Johette & St. Jean de Matha Railway Co., \$38,400; Great Northern Railway Co., \$70,400; Quebec & Lake St. John Railway Co., \$44,800; Pontiac & Ottawa Railway Co., \$73,600; Ottawa & Gatineau Valley Railway Co., \$64,000; Canada Eastern Railway Co., \$32,000; railway from Cross Creek station, \$19,200; Restigouche & Victoria Railway Co., \$64,000; Central Railway Co., of New Brunswick, \$4,800; Tobique Valley Railway Co., \$48,000; towards the restoration of the railway bridge on the South-Eastern railway, over the Yamaska river at Sorel, \$50,000; Boston and Nova Scotia Coal and Railway Co., \$113,600; a railway from Port Hawkesbury towards the Cheticamp, \$80,000; Manitoba Northwestern Railway Co., \$320,000; for a line of railway from the junction of the Elk and Kootenay river to Coal Creek, \$108,800; railway from Abbotsford station on the Moosem branch of the Canadian Pacific railway to the town of Chulivack, \$67,200; Nicola Valley Railway Co., \$89,600; Nacusp & Slocum Railway Co., B. C., \$121,600; Pontiac & Kingston Railway Co., \$70,000; New Glasgow Iron, Coal and Railway Co., \$4,000; South Shore Railway Co., \$112,000; Cape Breton Railway Extension Co., \$96,000; for a railway from a point on the Intercolonial railway between Norton & Sussex towards Havelock, \$64,000; for a railway from St. John to Hatneville, \$32,000; for a line of railway from Cape la Magdaline, to connect with the Piles branch of the Canadian Pacific railway, \$9,600; Canada Eastern Railway Co., \$3,200; Great Northern Railway Co., \$96,000; Lindsay, Bobcaygeon and Pontypool Railway Co., \$102,400.—Tenders are being received by the Department of Railways and Canals for the construction of a sewer pipe drain between the town of Valleyfield and the municipality of Belleville.

FIRES.

Sills roller flour mills at Meyersburg, Ont. were totally destroyed by fire on the 22nd inst. Loss, \$17,000 to \$20,000; insurance, \$10,400.—The Works of the Owen Sound Portland Cement Co., at Shallow Lake, Ont., seven miles from Owen Sound, including their expensive plant, were consumed by fire on Sunday morning last. The building was a stone structure. The loss will reach \$50,000. It is said the works will be rebuilt.—The large stove and hoop mill situated on the Lake Erie and Detroit Railway, in Romney Township, owned by Sutherland, Innes & Co., of Chatham, was destroyed by fire on Friday of last week. Loss \$20,000. The company will erect two new mills, one on the site of the building destroyed, and one at Coatsworth station.—Buildings at Wallaceburg, Ont., owned by J. W. Steinhoff, have been destroyed by fire. Insurance of \$1,700.—Twenty-eight houses on Arcade and Emile streets Montreal, were destroyed by fire on Tuesday last. Twelve of the houses were owned by Mr. Grothe and two by F. A. McKae. The total damage to buildings is estimated at \$50,000.

CONTRACTS AWARDED.

INGERSOLL, ONT.—The contract for the new curling and skating rink has been let to W. C. Bell. Contract price, \$3,475.
BELLEVILLE, ONT.—The City Council has awarded the contract for paving Front and Bridge streets to the Canadian Granite Co., of Ottawa.

SEAFORTH, ONT.—The Johnson Electric Co., of Toronto, have been awarded the contract to supply the Seaforth Electric Light Co., with a 1,000 light incandescent plant.

MONTREAL, QUE.—The following tenders were received last week by the Market Committee for repairs to the St. Antoine Market: James Shearer, \$1,565; Bourgoin & Cadieux, \$1,485; R. Chartand, \$1,455. The contract was awarded to Mr. Chartand.

WINNIPEG, MAN.—Tenders were received as follows by the Committee on Works for the superstructure of the Maryland street bridge for an iron bridge: Hamilton Bridge Co., \$12,500; Central Bridge & Engineering Company, Peterborough, \$15,200; Dominion Bridge Co., Montreal, \$14,375; Chicago Bridge and Iron Co., \$14,994; King Bridge Co., Cleveland, \$15,044.83; Gillette-Herzog Co., Minneapolis, \$14,300; Milwaukee Bridge and Iron Co., \$15,779; less painting, \$350; Wooden bridge: J. W. Buchanan, \$11,995; Rourke & Cass, \$10,160; Milwaukee Bridge and Iron Co., \$12,876. The tender of the Hamilton Bridge Co. for an iron bridge has been recommended to Council for acceptance.

HAMILTON, ONT.—The Board of Works received the following tenders for the construction of asphalt pavements on King and James streets: Construction & Paving Co., Toronto, Pitch Lake asphalt, \$2.98 per square yard, No. 1, Trinidad, \$2.74; Warren Scharf Asphalt Paving Co., Toronto, Pitch Lake asphalt, \$3.21; Kramer-Irwin Rock, Asphalt & Cement Paving Co., Pitch Lake asphalt, \$2.59; No. 1, Trinidad, \$2.40; Connolly & Co., Toronto, Pitch Lake asphalt, \$2.82½; No. 1, Trinidad, \$2.69. The Board have accepted the tender of the Kramer-Irwin Co., a local concern to supply the Pitch Lake asphalt. The other figures in the tender are: stone curbing, 89 cents; scoria blocks, \$3.50; re-cutting and re-setting old curbing, 60 cents; new curbing without concrete, 70 cents; old curbing re-dressed and with concrete, 50 cents. The total cost of the work, according to the tender accepted, will be \$149,425.

TORONTO, ONT.—The Scarborough Council received the following tenders for a new steel bridge over the River Rouge at Milne's mill: Hamilton Bridge Company, \$1,474; Dominion Bridge Co., Montreal, \$1,150; Canadian Bridge Co., Montreal, \$1,103 and \$1,250—two designs; Central Bridge Co., Peterboro, \$1,114 and \$1,086, two designs. The contract was awarded to the Central Bridge Co., at \$1,114, the first design being accepted. The contract for pile abutments was given to William Haig, of Markham, at \$400.—The tender of the Canadian General Electric Co., for the installation of a small electric light plant at the pumping station at the price of \$2,582, has been recommended for acceptance by the City Engineer.—The contract for enlarging the driving shed at the Lombard street fire hall has been awarded to Self Bros., at \$1,270.—The following pavement contracts were awarded by the Committee on Works on Saturday last: cedar block pavement on Blount street, from Dufferin street to Lansdowne avenue, D. L. Van Vlack, \$11,669; concrete sidewalk, on north side of Queen street, from Dundas street to Dovercourt road, Elcelsior Paving Co., \$2.48 per square yard.

DIFFERENT WOODS COMPARED.

In a lecture recently delivered before the Railway Institute, New South Wales, on the values of different timbers used for railway purposes, it was stated that timber, when perfectly dry, lost about one third of its weight and shrunk in drying, as follows:

English Oak	1-12
Riga fir	1-32
Dantric oak	1-33
Elm	1-34
Yellow pine	1-38
Pitch pine	1-40

In comparison, English oak was taken as the standard of measure of the qualities of strength, stiffness, and toughness, and

the following table presented as a result of the experiments:

Variety.	Wt. cu. ft.	Strength.	Stiffness.	Toughness.
British oak	45 to 58 lbs.	100	100	100
Baltic Riga oak	43 to 54 lbs.	108	93	125
Amer. oak	37 to 47 lbs.	86	114	117
Dantric oak	42 to 53 lbs.	1-7	117	117
Elm	35 to 46 lbs.	12	78	87
Pine or fir	26 to 42 lbs.	83	114	88
Poplar	33 lbs.	86	76	112
Mahogany	35 to 53 lbs.	95	93	99
Tamarac	42 to 40 lbs.	102	85	130
Walnut	50 lbs.	90	70	110

MUNICIPAL DEPARTMENT.

INCIDENTS OF WATER SUPPLY TESTS.

By J. T. FANNING, MINNEAPOLIS.

Only those who consider thoughtfully and broadly the duties of the builders and managers of public water supplies, whether he be city official or private citizen, will be deeply impressed with the responsibilities that accompany those duties. In building the works, the smallest part, and each part of the various details, even to the complete whole, must be planned and executed with cautious thoughtfulness and skillful workmanship, and afterwards, in their management there must be no relaxation from eternal vigilance. It is of momentous consequence that every part of the construction be not only adapted; but that each part shall be always ready to fulfill its function in a perfect manner. A stoppage of pressure in the public fire hydrants gives consternation in a city, but a shutting off of water from the kitchens, the steam boilers and the sanitary apparatus paralyzes the activities of the community.

All of those who have care of public water supplies are not alike capable of being impressed with the importance of faithfulness, carefulness and cautiousness in their duties, and when on rare occasions there are conspicuous neglects or oversights, such may with profit be made the basis of object lessons, for the information or the warning thereby suggested. A few selected instances briefly cited will suffice for the present purpose.

On inspection of a small steam pumping plant the gauge on its only boiler was found not indicating the pressure within the boiler, and on trying the lever safety valve of the boiler it was found stuck so fast that only with considerable difficulty it was tried loose so that it could act as a relief if the steam pressure became dangerous. The station attendant depended on the way his pumps worked for his information of the pressure within the boiler and was thus satisfied in protecting his own life from the danger of a boiler explosion and the village from a loss of its water supply.

In another case, a large cylinder, condensing engine with fly wheel was unable to do the work required and it was supposed that a new engine must replace it at once. The engine on inspection appeared to be of good workmanship and of capacity to do the work required. On applying an indicator it was found that its cut-off steam valves were so adjusted that three-fourths of its work was being done in one end of its cylinder. The valves were set in their proper positions, and although this was five years ago no further complaint has come from the proprietors of the plant.

In another instance some water works bonds were offered for sale. The prospectus scheduled an admirable plant. Included in this were three pumps, one a duplex, direct acting compound, condensing pumping engine, and the remaining two were single acting high pressure pumps. At time of examination of works, in the interest of supposed investors, the duplex pump was at work smoothly, and the other pumps were said to be reversed for fire purposes. The fire pressure was given direct from the pumps. When the attendant was asked to start up the two single acting pumps, he hesitated, and then explained that one of them was out of order and had not been used since he came to the care of the station, four months previously.

On being pressed to start the other pump, he secured a valve key and disappeared through a trap door into the basement. Soon he was heard laboring to start a valve in the force main that was shut and stuck fast, and cutting the pump off from distribution pipes. In time, he came up with bruised hands and turned on steam to start this one pump said to be in order. It resisted, then jerked two inches and resisted again, then jumped to about three-quarter stroke, and afterwards would not move in either direction. He apologized that he had not time to clean her up since he came, yet this point was trusted as a guardian angel, to save them from a conflagration.

DEBENTURES WANTED.

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