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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF PUBLIC WORKS TENDERS ADVANCE INFORMATION AND MUNICIPAL PROGRESS

EVERY THURSDAY

This paper reaches every week the Town and City Clerks, Town and City Engineers, County Clerks and County Engineers, Purchasers of Municipal Debentures and leading Contractors in all lines throughout Canada.

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Notice to Contractors

CANADIAN CONTRACTOR'S HAND-BOOK

A new and thoroughly revised edition of the *Canadian Contractor's Hand-Book*, consisting of 150 pages of the most carefully selected material, is now ready, and will be sent post-paid to any address in Canada on receipt of price. This book should be in the hands of every architect, builder and contractor who desires to have readily accessible and properly authenticated information on a wide variety of subjects adapted to his daily requirements.

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NOTICE TO CONTRACTORS

Tenders will be received by registered post only, addressed to the City Engineer, Toronto, up to 11 o'clock a.m. of SATURDAY, THE 15TH of FEBRUARY, 1896, for the supply and delivery of

2360 Feet of Steel or Cast Iron Pipe,

6 feet in diameter, with the necessary flexible joints.

Specifications and plans may be seen at the office of the City Engineer, Toronto, on and after Wednesday, the 11th inst.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 2½ per cent. on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained.

Tenders must bear the bona fide signatures of the contractor and his sureties or they will be ruled out as informal.

Lowest or any tender not necessarily accepted.

DANIEL LAMB,
Chairman Committee on Works.

Toronto, Dec. 3rd, 1895.

Notice to Contractors

Sealed Tenders addressed to either of the undersigned will be received until noon on the 29th inst. for building

TWO STONE OR CONCRETE ABUTMENTS

for a bridge to be built over Kettle Creek, about one mile from Belmont Station, C. P. Ry. If built of stone quantities will be about 51 cut yards stone work and 8 cut yards concrete for each. If built of concrete about 60 cut yards each.

Plans and specifications can be seen and forms of tender obtained at the offices of the undersigned. A marked cheque payable to the Treasurer of either the County of Elgin or Middlesex must accompany each tender.

The lowest or any tender not necessarily accepted.

JAS. A. BELL,
Co. Engineer,
St. Thomas.

F. B. TALBOT,
Co. Commissioner,
London.

TO CONTRACTORS

Sealed Tenders, endorsed "Tenders for House of Refuge," will be received by the undersigned up till noon on

Tuesday, the 28th day of January,

1896, for the erection of a House of Refuge for the County of Lambton. Tenders may be en bloc or separately for the various branches, including heating by steam or hot water.

Plans, specifications and details may be seen at the office of Mr. J. C. Robson, Architect, Sarnia, at any time (Sundays excepted) between the hours of 9 a.m. and 8 p.m., after Thursday, the 2nd day of January next.

Printed copies of specifications may be had on application to Geo. A. Proctor, Esq., Reeve, Sarnia.

Satisfactory security equal to the contract price must be furnished for the due completion of the work.

The lowest or any tender not necessarily accepted.

Napier, December 26th, 1895.

ARCH. McINTYRE,
Reeve of Brooke,
Sec. of Committee.

Yonge Street Wharf

Tenders addressed to the undersigned will be received through registered post up to noon on

MONDAY, 3RD FEBRUARY

next, for the erection of three warehouses on the city wharf at the foot of Yonge street.

Plans and specifications may be seen and all further information obtained upon application at the office of the City Commissioner, City Hall.

Every tender must be accompanied by the names of two responsible parties to act as sureties in the event of its acceptance. Also by a marked cheque for or a cash the deposit of $150, which will be forfeited by the city in event of the party whose tender is accepted failing to execute the necessary contract and give a satisfactory bond for the due fulfillment of his tender.

The deposits of unsuccessful tenderers will be returned.

The lowest or any tender not necessarily accepted.

JOHN BLEVINS,
City Clerk.

City Clerk's Office, Toronto, January 21st, 1896.

TENDERS WANTED

Sealed Tenders, whole or separate, will be received by the undersigned, up to and including

Saturday, February 15th, 1896,

for the various trades (except painting and glazing) required in the erection and completion of a Residence in the Town of Smith's Falls, according to the plans, specifications, contract, etc., of JAMES A. ELLIS, Architect, 4½ Adelaide St. E., Toronto.

Said plans and specifications may be seen at the offices of the Architect and the undersigned.

Satisfactory security will be required. No tender necessarily accepted.

F. T. FROST,
Smith's Falls, Ontario.

CONTRACTS OPEN.

PROVIDENCE BAY, ONT.—An hotel will be erected here.

FLEMING, MAN. E. McConnell proposes remodelling buildings in the spring.

ELMVALE, ONT.—Jno. Hughes will erect a house in the spring to cost $2,000.

ST. MARYS, ONT.—The by-law to establish a county poor house has been carried.

BERLIN, ONT.—By-laws have been passed to issue debentures for $8,000 and $12,000.

ARNPRIOR, ONT.—The by-law to establish a system of waterworks was recently defeated.

GOLDEN, B. C.—F. W. Aylmer is preparing plans for the proposed new Kicking Horse bridge.

NORTH ELMSLEY, ONT. — David Featherstone intends erecting a brick residence in the spring.

COUNTY HARBOR, N. S.—The New Glasgow Gold Company propose erecting a crusher at their mine.

PORT ARTHUR, ONT.—The by-law to provide $15,000 for waterworks and electric light has been defeated.

SARNIA, ONT.—W. T. Murray & Co. propose erecting a large saw mill. Operations will be commenced in May.

WOODSTOCK, ONT. — By-laws have been passed providing for the issue of debentures for $947, $936, and $7,000.

RICHIBUCTO, N. B.—A company is being formed to erect a pulp mill. Particars may be obtained from the Mayor.

PETROLEA, ONT.—The by-law to provide for constructing a system of waterworks will be voted on by the electors on Friday next.

KINGSTON, ONT.—Steps are being taken to select a site for the proposed new school, after which the preparation of plans will be ordered.

BROCKVILLE, ONT. — The proposed electric railway to be built by the Electric Street Railway Company will be commenced before October.

GREENFIELD, N. S.—The parties who have bonded the mill property propose building a pulp mill, also a railroad from Greenfield to Port Medway.

DUNDAS, ONT.—James More, clerk, writes that the by-law for the proposed

brick fire hall, to cost from $1,400 to $1 600, has not yet been voted upon.

CHATHAM, ONT.—The City Council will appoint a permanent City Engineer.

HENRYVILLE, QUE.—Tenders are invited until the 3rd of February, for alterations and additions to the church here. For plans, etc., address L. H. Trudeau.

RAT PORTAGE, ONT.—It is said to be the intention of the Ontario Government to proceed in the spring with the erection of a steel traffic bridge over the west branch of the Winnipeg river.

ORILLIA, ONT.—The Thompson-Lipping block will be rebuilt. Kennedy & McVittie, architects, Barrie. —W. H. Croker, architect, is preparing plans for a residence for D. Quail. The cost will be $3,000.

TRAIL, B. C.—Application is being made to the Legislature for the incorporation of a company to construct a railway from Trail to Penticton, and another railway from Christiana Lake to Copper Creek.

ST. THOMAS, ONT.—James A. Bell, C. E., is preparing plans for a new steel bridge, with concrete foundation, to be built west of Belmont. The cost will be borne equally by Elgin and Middlesex counties.

VICTORIA, B. C.—The supreme court has refused to grant the injunction applied for by the Kaslo and Slocan railway to prevent the Nakusp and Slocan Railway Company from building between Three Forks and Sandon.

SANDWICH, ONT.—A by-law to raise the sum of $16,000 for the purpose of remodelling and repairing the court house and jail, and to issue debentures therefor, will be considered by the Council on the 16th of March.

OTTAWA, ONT.—Geo. White, C. E., has gone to Calgary, N. W. T., to consult over a proposed waterworks scheme.—It has been decided by the school board to replace the structure on Cedar street with a new building.

DIGBY, N. S.—Engineer Farnsworth has presented his report on the proposed pier. The work is a large drop 120 feet long, and about 15 feet wide. It will be built in one piece and of sufficient strength to stand railway traffic.

SAULT STE MARIE, ONT.—Mr. T. H. Elliott, government fishery inspector, proposes to erect a brick residence to cost about $3,000. It will be heated with hot air. Mr. J. A. Ellis, architect, Toronto, is preparing the plans.

LITTLE CURRENT, ONT.—Application will be made at the next session of the Ontario Legislature to incorporate the Manitoulin & Pacific Railway Company, with power to construct a steam or electric railway from a point in Manitoulin Island to Little Current, also a bridge connecting the two points.

HULL, QUE. T. Viau, of the Hull Electric Co., which proposes to construct an electric railway between Hull and Aylmer, writes that he has a first-class water power, and is forming a joint stock company to build the line, which will be seven miles in length. In the electric lighting 3000 incandescent lights and 100 arc lamps will be used. Probable cost of the work, $65,000.

VANCOUVER, B. C.—W. Blackmore, architect, has prepared plans for the Griffith block on Cordova street, and work will be commenced immediately. The front will be of cut stone and pressed brick, with iron trimmings. Ground floor will contain two stores, one 23 × 100 feet, and the other 20 × 100 feet. The contract for the stone and brickwork only has been let.—The Board of Works is considering the question of constructing a number of wood block pavements.

HAMILTON, ONT.—W. A. Edwards architect, has in hand the erection of three houses on Barton street.—A company is being formed to open a summer resort at Cheddike Park and to build a double track electric railway on Herkmer and Queen sts. The capital stock will be $10,000.—E. Depew has been granted a permit for two two-storey brick dwellings on Kinrade ave., to cost $1,600.—The special committee on sewerage disposal has recommended that the scheme outlined by engineer Kuichling, of Rochester, be endorsed.

WINNIPEG, MAN.—J. J. Golden will offer for sale by public auction on Saturday, 8th February, bonds to the value of $100,000.—T. H. Livingstone has returned from Ottawa, where he interviewed the Dominion Government on the question of improving Red River navigation by building a lock at St. Andrews. The Government has declined to undertake the work as a public improvement, but will give substantial aid to any private company prepared to go on with the enterprise. A company is now being organized of Winnipeg citizens.

ST. JOHN, N. B.—H. C. Secord and F. R. Bossel, of Toronto, are promoting a colonization railway in this province, to extend from Campbellton across the counties of Restigouche, Victoria and Madawaska, giving a through line from Bay Chaleur to Bangor, Boston, etc. It will be about 106 miles in length.—T. McAvity & Sons contemplate making some extensive additions and improvements to their buildings.—The local Government intends during the coming summer to replace the present bridge at College Bridge, Memramcook, with a new steel one.

NIAGARA FALLS, ONT.—Charles H. Mitchell, Town Engineer, writes that he is the engineer for the proposed sewerage extension, having made all the preliminary plans and estimates. He is now preparing the plans with a view of commencing the work as soon as possible. $60,000 of the $109,000 will probably be spent this present year, in which two of the trunk sewers will be included.—Dr. McGarry is having plans prepared by Messrs. Ellis & Co., architects, for an office and residence to cost about $4,000. The exterior will be built of pressed brick, with plate and art glass windows. Hot water heating will be employed and electricity for lighting and call signals.

QUEBEC, QUE.—The Great Northern Railway Co. is contemplating the construction of two new sections of ten miles each, one running west from St. Flore and the other east from Montcalm.—Mr. Beemer, the promoter of the electric railway scheme, is said to have made arrangements for the immediate construction of the road.—The Cold Storage Co. have appointed Mr. St. George Boswell as their engineer, and he will shortly visit the different refrigerating systems in Montreal, Toronto and elsewhere.—It is probable that an iron bridge will shortly be erected to replace Scotts bridge.—The question of renewing the heating apparatus and putting in new pews in the church of Cacouna is talked of. Building permits have been granted as follows: M. Giroux, restorations on St. Peter street, Athletic Association of St. Roch, brick veneering; E. Rochon, 2 story building, St. Vallier st.; G. O. Grenier, two story building, St. Octave street.

TORONTO, ONT.—Specifications are being prepared by the City Engineer's Department for the island waterworks. The pumping house will be erected on the shore crib near the Sick Children's Hospital and the water will be taken from the intake pipe.—The T. Eaton Co. has secured possession of the two-story building on Queen street immediately west of their present premises, and are having plans prepared to increase their frontage by the addition of this store.—The Toronto Electric Light Co. have invited tenders for pile driving and excavating necessary for the foundation of their new power house.—The sum of $20,000 has been given to the Board of Works for the purpose of opening the Rosedale ravine from the Don to Yonge street.—A new steam fire engine will be purchased for the western section of the city, the cost not to exceed $4,400. —The improvements to the Yonge street wharf will be carried out immediately, at a cost of $8,650.—An asphalt pavement on Berkeley street, from Gerrard street to Carlton street, has been sanctioned.—Twenty-one English manufacturing firms are said to have examined the specifications for the new steel conduit to extend across the bay.—The mayor-elect, in his inaugural address, calls attention to the necessity of immediately carrying out the following works: The reconstruction of the buildings on Yonge street wharf, the completion of filling in on the water front, the construction of Harbor square to the Windmill line, and the erection of a bridge across the Don river at the intersection of King and Queen streets. (A low level bridge, 66 feet in width, would answer all purposes) the widening of the Queen street subway, and the erection of the York and John street bridges.—The plans for the widening of the Queen street subway will be completed this week at the Engineer's Department. The work will cost about $130,000.—McKendry & Co., dry goods merchants, are having plans prepared for enlarging their store, taking in the store to the north adjoining.

FIRES.

The York Woolen Mills near Harvey Station, N. B., were destroyed by fire on January 14th Loss $7,000; insurance $1,500.—Z. B. Dunphy's dwelling house and out-buildiugs at Keswick, N. B., have been burned.—C. F. Smith & Co.'s hardware store at Belleville, Ont., was seriously damaged by fire recently. The loss is covered by insurance.—At Winchester, Ont., on the 15th inst., Washburn and Brownell's furniture factory was burned. The building was owned by Jacob Erratt, of Ottawa. Loss, $5,000. — Theophile Plondin's residence at St. Polycarde, Que., was consumed by fire on the 19th inst. Loss partially covered by insurance.—An hotel at Odessa, Ont., owned by Mr. Storms, has been burned.—The grist and carding mill of Benjamin Asslin, Barachois, N. B., was burned recently. Loss $4,000.—At Newmarket, Ont., on the 13th inst., the Friend's Meeting House was destroyed by fire. Insurance $2,000.— McDonald's hotel, at Greenfield, Ont., has been burned.—On the 21st inst. fire at Newcastle, Ont., destroyed property to the value of $50,000. The owners of buildings were: Daniel Allen, loss $5,000; James Parker, loss $2,000; Thos. McClung, loss $4,000. The Royal hotel, valued at $6,000, was also burned.

CONTRACTS AWARDED.

QUEBEC, QUE.—The Quebec Central railway have given a contract to Rhodes, Curry & Co., of Amherst, N. S., for the construction of 100 25-ton box freight cars.

MONTREAL, QUE.—Mr. P. B. Williams, architect, has awarded the contract for the masonry, brickwork, roofing and plumbing of a large five-story factory for the Standard Shirt Co., on Delorimier ave., to Heggie & Stuart.

WINNIPEG, MAN.—The contract for a granolithic walk on east side of Main street, from Banatyne to Water streets, has been awarded to the Crystal Ice Co., at the price of $6,928,10, or at the rate of $2.55 a square yard.

HAMILTON, ONT.—The contract for the new swing bridge at the Beach is said

to have been let to the Dominion Bridge Co., of Montreal.—The Board of Works have awarded contracts as follows: wire spikes, Peter Bertram, $2.91 per keg; lumber, Robert Thomson & Co., $12.97 per thousand feet.

OTTAWA, ONT.—The contract for the construction of 47 miles of the Ottawa, Arnprior and Parry Sound railway has been awarded to E. F. Farquhar, of Toronto. The amount of the contract is said to be about $450,000. It is probable Mr. Farquhar will sublet the contract for bridges and culverts along the line.

NEW COMPANIES.

WOODSTOCK, ONT.—The new Barnes Bicycle Co., applying for incorporation; capital $25,000; to manufacture the new Barnes wheel.

ROSSLAND, B. C.—Great Western Mining Co., capital, $1,000,000; promoters, John M. Burke, Chas. E. Barr, H. M. Stephens and others.

HAMILTON, ONT.—Doherty Process Co., applying for incorporation; capital, $125,000. Promoters, Adam Zimmerman, P. D. Crerar, M. A. Hunting, J. M. Gibson, J. Muir, and Alexander Campbell.

OTTAWA, ONT.—Ottawa Graphite Co., asking incorporation; capital, $200,000. The parties interested are Messrs. Geo. P. Brophy, C. E., S. H. Fleming, C. E., J. B. Brophy, C. E., J. W. McRae and Hector McRae.

MONTREAL, QUE.—A company is seeking incorporation as the Taylor Co., Ltd., to take over the business of J. & H. Taylor, iron merchants and manufacturers, Montreal. The company is composed of John M. Taylor, and Philip S. Rose., of Montreal, George A. McLean, of Pittsburg and Wm. H. Beatty and George Gooderham, of Toronto. — The International Dredging & Construction Co., applying for incorporation; capital stock $100,000; applicants, Nicholas K. Connolly, Quebec; James Swift, Kingston; John Connor, St. John, N. B.; Michael Connolly, Montreal; and Felix Carbray, Quebec.—Standard Gas Co., applying for incorporation; capital, $100,000. Applicants, Robert Beckerdike, G. N. Ducharme, F. J. Freese, and others.

BUSINESS NOTES.

Benjamin Files, painter, Enterprise, Ont., has sold out.

Jacob Randall, painter, Ottawa, Ont., has assigned to W. A. Cole.

Hill & Forbes, wholesale paints, Montreal, are dissolving partnership.

Joly & Gaucher will do business as contractors in Montreal under that style.

Theobald & Co., painters, etc., Union, B. C., have dissolved, G. H. Scott retiring.

E. A. Spencer, builder, Rossland, B. C. is reported to have left the country; assets, nil; liabilities about $4,000.

Dunlop & Heriot, architects, have dissolved partnership. Mr. Dunlop will continue to do business alone under the same style.

Barry & Ross, sub-contractors for the stony Creek section of the T. H. and B. railway, have entered suit against Good and Company and Engineer Wingate for $10,000 damages for withholding the final estimate of work done.

The assets of the estate of Wm. Clendinneng & Son, Montreal, were sold last week. The whole property, with the exception of the St. Anne's property was taken over by the Bank du Peuple. The total price realized was $199,550.

Five cent telegrams are to be tried in Italy. The government is also trying to have the tariff with other European countries reduced.

HOW TO MAKE THIRTY-TWO KINDS OF SOLDER.

1. Plumber's solder, lead 2 parts, tin 1 part. 2. Tinman's solder, lead 1 part, tin 1 part. 3. Zinc solder, tin 1 part, lead 1 to 3 parts, 4. Pewter solder, lead 1 part, bismuth 1 to 2 parts. 5. Spelter solder, equal parts copper and zinc. 6. Pewterers soft solder, bismuth 2, lead 4, tin 3 parts. 7. Another, bismuth 1, lead 1, tin 2 parts. 8. Another pewter solder, tin 2 parts, lead 1 part. 9. Glazier's solder, tin 3 parts, lead 1 part. 10. Solder for copper, copper 10 parts, zinc 9 parts. 11. Yellow solder for brass or copper, copper 32 pounds, zinc 29 pounds, tin 1 pound. 12. Brass solder, copper 61.25 parts, zinc 38.75 parts. 13. Brass solder, yellow and easily fusible, copper 45, zinc 55 parts. 14. Brass solder, white, copper 57.41 parts, tin 14.60 parts, zinc 27.99 parts. 15. Another solder for copper, tin 2 parts, lead 1 part. When the copper is thick, heat it by a naked fire, if thin use a tinned copper tool. Use muriate or chloride of zinc as a flux. The same solder will do for iron, cast iron or steel: if the pieces are thick, heat by a naked fire or immerse in the solder. 16. Black solder, copper, 2, zinc 3, tin 2 parts. 17. Another, sheet brass 20 pounds, tin 6 pounds, zinc 1 pound. 18. Cold brazing without fire or lamp, fluoric acid 1 ounce, oxy muriatic acid 1 ounce, mix in a lead bottle. Put a chalk mark each side where you want to braze. This mixture will keep about six months in one bottle. 19. Cold soldering without fire or lamp, bismuth ¼ ounce, quicksilver ¼ ounce, block tin filings 1 ounce, spirit salt one ounce, all mixed together. 20. To solder iron or steel or either to brass, tin 3 parts, copper 39½ parts, zinc 7½ parts. When applied in a molten state it will unite metals first named to each other. 21. Plumber's solder, bismuth 1, lead 5, tin 3 parts. 22. White solder for raised Britannia ware, tin 100 pounds, hardening 8 pounds antimony 8 pounds. 23. Hardening for Britannia, to be mixed separately from the other ingredients, copper 2 pounds, tin 1 pound. 24. Best soft solder for cast Britannia ware, tin 8 pounds, lead 5 pounds. 25. Bismuth solder, tin 1, lead 3, bismuth 3 parts. 26. Solder for brass that will stand hammering, brass 48.26 parts, zinc 17.41 parts, silver 4.33 parts, add a little chloride of potassium to your borax for a flux. 27. Solder for steel joints, silver 19 parts, copper 1 part, brass 2 parts; melt all together. 28. Hard solder, copper 2 parts, zinc 1 part; melt together. 29. Solder for brass, copper 3 parts, zinc 1 part, with borax. 30. Solder for copper, brass 6 parts, zinc 1 part: melt all together well and pour out to cool. 31. Solder for platina, gold with borax. 32. Solder for iron. The best solder for iron is good tough brass with little borax.

In soldering, the surfaces to be joined are made perfectly smooth and clean, and then covered with sal ammoniac, resin or other flux; the solder is then applied, being melted on and smoothed over by a tin soldering iron. In soldering fluid, take 2 ounces muriatic acid, add zinc till bubbles cease to rise, add ½ teaspoonful of sal ammoniac.

USEFUL HINTS.

PAINT FOR WATER TANKS.—Oxide of iron paint, mixed with boiled linseed oil, is the only suitable paint for water tanks, wood or iron. For iron tanks there should be not less than two coats, the first well dried before the second is put on. Use no turpentine. For wooden tanks a coat of boiled oil should be put on before the paint, and well dried. Water standing in galvanized iron tanks becomes impregnated with and tastes of zinc, and is poisonous. Such tanks should be painted with the oxide of iron paint.—Decorators' Gazette.

For the harbour works at Bremen, Mr. Neukirch has made use of his process of forcing powdered cement into the sand, which may be under water, by means of compressed air. A pipe, 1½ inches in diameter, perforated at its lower end, is driven several yards into the sand, withdrawn if any greater obstacle should be met with, and replaced. The pipe communicates with a cylinder for compressed air (which is heated before passing into the tube), and, through a side branch with the cement chamber. Sand charged with about one-fifth of its mass of cement occupies a smaller volume than before. According to Le Genie Civil, Mr. Chemin has by the same process refixed a length of about 150 yards of a sewer, which had gradually sunk in loose sand.

THE MORTISE AND TENON.

The mainstay of constructive woodwork is the mortise and the tenon. A piece of woodwork which can be put together without glue, nails, or screws, and serves its purpose, is an ideal work of construc tion. But this is not always possible. Another principle of construction is that every piece of wood should be so placed that it can swell or shrink without injuring itself or displacing any other piece. This is maintained in an ordinary panelled door, provided no mouldings are inserted. Still another principle is that mitre joints should be avoided, whether for moulded work or not, for the reason that shrinkage causes all mitres to open. No piece of wood should be used unless the straight grain of the wood can be seen through its full length. Inserted mouldings should be avoided as far as possible, and all mouldings for panel work should be worked on the stiles and rails. It is a general principle, observed in the best Mediæval joinery, that all mouldings on rails (which are horizontal) should butt against the stiles, and that stiles should be either plain or should have mouldings stopped before reaching the joints with the rails. In practice, all rail mouldings may be worked the length of the stuff used, and if munton (which are middle stiles) are used, the moulding may be cut away to the square wood before the mortise is cut which is to receive the tenon of the munton. Thus the mouldings will butt against the square sides of the munton. All the parts for a door thus made can now be got out by machinery, and the door will be fully constructive in every sense of the word. There is no obstacle to this in the way of cost. The dovetail is a constructive device, and the dowel is admissive in places as a substitute for the mortise and tenon. Tongue and grooving is a legitimate device, both for ends and sides of boards. Bevelling the edges of the pieces just joined is better than beading. The best way to construct large panels is to make them of narrow strips tongued and grooved, and bevelled at the joining edges. Such panels will never "draw." The shrinkage will be divided between all the joints. Solid table tops should never be fastened with glue or screws, but should be secured with buttons fastened to the under-side of the top, which travel in grooves cut in the framework to allow for expansion and shrinkage. These are but a few of the principles to be observed in doing the best woodwork.

In all kinds of timber the heart should be rejected. All boards cut out on a radius from the centre to the periphery of a tree will remain true, while all others have a tendency to warp or check. The first are called "quarter-sawed." It is a peculiarity of oak that the best grain is found in quarter-sawed boards. It is only in these that the "silver grain" is seen. This consists of a ribbon of very hard substance which grows out from the centre of the tree. It is for this reason that oak is the most enduring wood; it has a grain two ways. All woods check in the direction of a radius from the centre. Quarter-sawed oak cannot check.

RELIABILITY OF DIFFERENT PAINTS USED ON BRIDGES.

A careful investigation of the reliability of different paints used on bridges has been made by E. Gerber, of the American Society of Civil Engineers, with some important practical results. It appears that in all cases rust was found to a greater or less extent, occurring always in spots in the center of clean metal, most of this, however, being thin and as bad in new structures as in old. It was, nevertheless, found that the iron oxide paints adhered more firmly to the metal than the lead paints, only one case being found in which the latter adhered well and was tough, though much of this brittleness, it is suggested, may be due to adulteration of the oil by turpentine, benzine, or other petroleum products, there being more likelihood of such adulteration with lead paints than with iron, as they are more difficult to spread and consequently dilution of the oil is resorted to. In some cases bridges coated with iron oxide eleven or twelve years ago were found to be still in good condition without having to be repainted. Only two of the bridges examined had been painted with carbon or asphaltum paints, but the condition of things in these two cases was found to be not altogether satisfactory, as the coating was not tough or adherent. Too little attention, Gerber remarks, has been paid to thoroughly cleaning the metal before the first coat of paint is applied.

TO PREVENT PITTING OF PLASTER.

A correspondent of the Engineering Record writes as follows: In several cases where lime was used for plastering I had trouble with the surface being injured by the slacking of small particles of lime, in the wall instead of in the mortar bed, even after the mortar had been made and lain four to six weeks before being put on the walls. I then tried the expedient of making my plastering mortar by a new method, which succeeded beyond my expectation in remedying the defects and also improving the quality of the plastering.

I had all lime to be used run out of the lime box through a small sieve into a large putty box and kept well covered with water for about two weeks, then mixed with the sand and the hair. To get the ingredients well mixed the mortar had to be well tamped or you would see the streaks of lime and sand. The mason at first objected strongly to making the mortar by this method because of the increased cost of mixing, but he afterward said it was offset by the less labor required by the mason to make a good wall, and it certainly made a stronger and harder wall than by the old method on account of the increased labor or better tempering which the mortar received.

LIQUEFACTION OF CLAY BY SODA.—In Sprechsaal a practical man describes his experiments in this line which have already brought out one interesting fact. He dealt with very dilute soda solution, perhaps 0.2 per cent. of soda of the whole mass, and observed that a certain plasticity can be imparted to the clay by soda. On heating, the mass becomes more fluid, to assume its consistency again on cooling. He found no evidence of chemical action, and agrees in this and other points with Zebisch. When the soda is decomposed, by acids or calcium chloride, the mass becomes thick again. If then large quantities of water have been added to a clay for some purpose, the solid particles can easily be gathered again by admixing first a little soda and then calcium chloride, which is cheap enough, when the clay will settle; no filter press is needed. Experiments with cement have, as yet failed.

R. J. Hovenden, painter, King street West, Toronto, has assigned to S. E. Townsend.

MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

MUNICIPAL DEPARTMENT

HOW BRITAIN IS PAVED.

The following data will form interesting reading for municipal officers :

Belfast has 11 miles of granite-paved streets, 100 miles pebble-paved, 50 miles of ordinary macadam, and no tar. The watering of the streets takes place from three to five times a day. About 57 men are employed watering in summer, and 224 in cleaning the streets, the number of cleaners being increased in winter to 270. Salt is used by the tramway company, and it is sometimes used even on footpaths. In Birkenhead there are two miles of granite paving, a certain amount of wood, fully seven miles of boulder paving, 67½ miles of ordinary macadam, and here there are 13¾ miles of tar macadam. The watering of the streets takes place twice a day. In this case 15 men are employed in the watering of the streets, and 44 men in the cleaning—a number which is increased in the winter to about 50. The salting on the tramway lines is also allowed in Birkenhead. Then we come to the large town of Birmingham. Here there are 23 miles of granite paving, 6 miles of wood paving, and about 220 miles of ordinary macadam. The borough surveyor looks after the watering and cleaning of the streets, and employs in this work 303 men and 22 boys. Watering takes place two or three times a day in the city, and once or twice in the out-districts. The tramway companies are not allowed to put salt on the streets, and in this case the occupiers clear the pavements. Bournemouth uses only one kind of material for street paving—ordinary macadam, of which there is 55 miles. Watering takes place two or three times a day. In this case the local authority and occupiers join in clearing the footpaths of snow in winter. Bradford is a specially interesting case. In this town there is 78¾ miles of granite paving, half a mile wood, 57¼ miles of ordinary macadam, and four miles of tar macadam. The watering aud cleaning are under due control. The watering and cleaning of the macadamised streets are in the hands of the borough surveyor, while the case of the other streets is in the hands of a separate department. Twenty-two men are employed in watering and 100 in cleaning the streets. All the principal streets are watered twice a day.

In Bradford salt is occasionally used on the tramways, and the local authority clears the pavements of snow in winter. Brighton comes next on the list, and, like the other fashionable watering place of Bournemouth, it has only ordinary macadam as a street-paving material. The streets are "constantly" being watered. No salt is used on the streets, and the householders are charged with the duty of clearing the pavement of snow. In Cardiff it is the same thing. There also the use of salt is prohibited. Cardiff paves 98 miles of its streets with local stone. It uses asphalt for 1½ miles, and ordinary macadam for 100 miles, but neither granite nor tar macadam, and it waters its streets three times a day. Dublin has 50,000 yards of granite paving, 56,000 yards of local stone, 615 yards of asphalt, 4,381 of wood, and 1,658 yards of ordinary macadam. It waters its streets once to four times a day, with a staff of 50 men—the cleaners numbering 258—a figure which in winter is increased to 308. Salt is used extensively on the tramways, and occupiers clear the pavements. In Edinburgh 5 miles of streets are laid with granite pavement, 67 with whinstone, 2 miles with wood, about 60 miles with ordinary macadam. The streets of Edinburgh are watered two or three times a day, salt is used frequently on the tramway lines in winter, and the responsibilty of clearing the pavements rests with householders.

Leicester, so far as concerns the tar macadam, is a pioneer town. It has 75½ miles of granite paving, half a mile of wood, and one mile of tar macadam. Watering takes place twice a day, by a staff of 11 men, the cleaning staff numbering 53 men and six boys, with an increase in bad weather. Salt has been used on tramways, but a special system is to be adopted, and in Leicester the occupiers clear the pavements of snow. Next on the list is Liverpool, with 237½ miles of its streets paved with local stone, 17½ miles with ordinary macadam. Exclusive of carters, the cleaning staff consists of 375 men. The streets are watered on an average three times a day.

In London, Clerkenwell has twenty miles of wood paving, which is cleaned at night under the supervision of the Wharf Superintendent. Watering takes place twice a day. Salt is used on the tramways, and here, as in every one of the Metropolitan districts, the local authority clears the footpaths of snow in winter. Chelsea has 1½ miles of granite paving, ¼ mile of local stone for foot traffic only, 1 mile of asphalt, 4 miles of wood, and 24½ miles of ordinary macadam, and 8½ miles of tar macadam. Watering takes place about three times a day on the paved and ordinary macadamised streets. There are no tramways. Hammersmith has 100 feet of granite, 3 miles of wood, and 43 miles of ordinary macadam paving. Watering takes place twice a day. Salt is used in the winter. The Holborn district has 8¼ miles of granite paving, 2¼ miles of asphalt, a small piece laid with wood, and a similarly small piece laid with macadam. Watering on the stone paved streets takes place twice or thrice a day. Salt is used on the wood paving at night to clear away snow. Kensington has 90 miles of wood paving, which is watered sometimes as often as six times a day. Salt is used at night in winter. St. Giles district has 7¼ miles of granite paving, 6¼ miles of asphalt, 1 mile of wood, and 1½ miles of ordinary macadam. The streets are watered four times a day, and on all paving except macadam salt is used in winter.

The other districts of London run thus: —Poplar: Streets granite pitched, ordinary macadam and gravel, watered once to three times a day, salt used in winter; St. George's district: Streets chiefly wood paved and ordinary macadam, watered as often as possible, salt used ; Paddington: 6½ miles granite paving, ¼ mile asphalt, 8½ miles wood, 20½ miles other material (no tar macadam), 16 miles ordinary macadam, watered three times a day, salt used on wood paving only; St. Martin's-in-the-Fields district: 1,750 yards granite paving, 1,700 yards asphalt, 6,055 yards wood, 935 yards ordinary macadam, watered as required, salt used; Stoke Newington district: 17 miles of wood paving, watered twice and three times a day, salt used ; Westminster district: 27 miles asphalt paving, watered as often as necessary, salt used.

Of the other important towns, Nottingham stands out as the town where tar macadam has been most extensively adopted. It has 85 miles of granite streets, 38 miles of ordinary macadam, and 30 miles tar macadam. Sheffield is also notable as a tar macadam town. It has 20¼ miles of granite streets, 20 miles of local stone, 41 miles of wood, 47½ miles chiefly boulders, 189½ miles of ordinary macadam, and 14 miles of tar macadam. The watering varies. Scarborough has been regarded as conspiciously a tar macadam success. It has 20½ miles of asphalt streets, 1 mile of Yorkshire setts, 8 miles of ordinary macadam, 2½ miles of tar macadam. Here watering takes place five times a day on the main streets, but very little is required on the tar macadam. Southport has 11½ miles granite paving, 26½ miles laid with local stone, a quarter of a mile wood, 3¾ ordinary macadam, and 9½ laid with tar macadam.

A SEWERAGE SYSTEM FOR FAR ROCKAWAY, N. Y.

The report and recommendations of Mr. Alexander Potter, Assoc. M. Am. Soc. C. E., upon a sewer system for Far Rockaway, L. I., have been accepted by the village President and Board of Sewer Commissioners, says The Engineering Record, and the construction of the works proposed is expected to be immediately undertaken. It will involve the division of the area into four districts, three of which will drain by gravity into a collecting tank, the contents of which will be pumped into the most convenient part of the system of the fourth district, and will thence be collected in a main receiving tank and pumped again to the disposal grounds, where it will be subject to intermittent filtration. All the power is derived from steam generated at a central station, where it drives the large pumps and dynamos. Electric motors at the auxiliary stations actuate the primary pumps, thus effecting an economy of supervision and plant without detriment to the intermittent and comparatively light service. It is also proposed to use a special form of boiler which will burn all the village garbage and refuse. The plant is designed to have a capacity sufficient to dispose of the sewage from some adjacent villages, and to be constructed at a cost of about $70,000. This particular combination of features is intended to promote economy, and to be adapted to the requirements of a summer resort place, where a simple gravity system is not feasible, where the duty is far greater in summer than in winter, and where the disposal cannot be by a simple outfall.

INDEX TO ADVERTISEMENTS

In the "Canadian Architect and Builder."

Prices of Building Materials.

CONDITION OF THE MARKET.

TORONTO: The trade in builders' supplies for this season of the year is satisfactory, owing to the mild weather, which has permitted building operations to continue. Plate glass will probably advance at an early date. Cement is moving freely, at unchanged quotations. An improvement is noticed in galvanized iron and iron pipe.

MONTREAL: Trade is steady, with little change to note in prices. Plate glass is in a satisfactory condition, and prices have advanced 5 per cent. Cement is dull, but English advices state that prices are higher. Firebricks are selling at $16 to $22 per thousand. Paints and oils are firm, and a fair demand is reported.

LUMBER.

CAR OR CARGO LOTS.

	Toronto.		Montreal	
	$	$	$	$
1¼ to 2 clear picks. Am ins	33 00@36 00		4[illegible]00@45 00	
1¼ to 2 three uppers, Am ins.	37 00		40 00	45 00
1¼ to 2, pickings, Am ins	26 00		27 00	30 00
1 inch clear			40 00	45 00
1 x 10 and 12 dressing and 1 better	20 00	22 00	18 00	20
1 x 10 and 12 mill run	16 00	17 00		19 00
1 x 10 and 12 dressing	20 00	22 00		18 00
1 x 10 and 12 common	13 00	14 00	8 00	10 00
Spruce culls	10 00	11 00	8 00	10 00
1 x 10 and 12 culls	9 00	10 00		9 00
1 inch clear and picks	28 00	3200	35 00	40 00
1 inch dressing and better	20 00	22 00	18 00	20 00
1 inch siding, mill run	14 00	15 00	12 00	16 00
1 inch siding, common	12 00	13 00	10 00	13 00
1 inch siding, ship culls	11 00	12 00	10 00	11 00
1 inch siding, mill culls	9 00	10 00	8 00	9 00
Cull scantling	8 00	9 00	8 00	9 00
1¼ and thicker cutting up plank	24 00	26 00	22 00	25 00
1 inch strips, 4 in to 8 in. mill run	14 00	15 00	14 00	15 00
inch strips, common	11 00	12 00	10 00	12 00
1¼ inch flooring	16 00	17 00	12 00	15 00
1¼ inch flooring	16 00	17 00	12 00	15 00
XXX shingles, sawn, per M 16 in.	2 40	2 50	2 60	2 60
XX shingles, sawn	1 40	1 50	1 60	1 70
Lath	2 00			1 50

YARD QUOTATIONS.

Mill cull boards and scantling		10 00	10 00	12 00
Shipping cull boards, promiscuous widths		13 00		13 00
Shipping cull boards, stocks		16 00		16 00
Hemlock scantling and joist up to 16 ft	11 00	12 00		10 00
Hemlock scantling and joist up to 18 ft	12 00	3 00	12 00	13 00
Hemlock scantling and joist up to 20 ft	13 00	14 00	13 00	14 00
Cedar for block paving, per cord		5 00		5 00
Cedar for kerbing, 4 x 14, per M		14 00		14 00
Scantling and joist, up to 16 ft		14 00		14 00
" " 8 ft		15 00		16 00
" " 20 ft		16 00		16 00
Scantling and joist, up to 22 ft		17 00		17 00
" " 24 ft		19 00		19 00
" " 26 ft		20 00		21 00
" " 26 ft		22 00		23 00
" " 30 ft		24 00		25 00
" " 32 ft		27 00		27 00
" " 34		29 50		29 50
" " 36 ft		31 00		31 00
" " 38 ft		33 00		33 00
" " 44 ft		34 00		36 00
Cutting up planks, 1¼ and thicker, dry	25 00	28 00	25 00	30 00

B. M.

1¼ in. flooring, dressed, F M.	26 00	30 00	28 00	31 00
1¼ inch flooring, rough, B M.	18 00	22 00	18 00	22 00
1¼ " dressed, F M.	25 00	28 00	27 00	30 00
1¼ " undressed, B M.	18 00	19 00	18 00	19 00
1¼ " dressed	18 00	20 00	18 00	22 00
1¼ " undressed	12 00	15 00	12 00	15 00
Beaded sheeting, dressed	20 00	35 00	22 00	35 00
Clapboarding, dressed		12 00	8 00	12 00
XXX sawn shingles, per M 18 in.	2 60	2 70		3 00
Sawn lath	2 50	2 60	2 50	2 60
Cedar		2 90		2 90
Red oak	30 00	40 00	30 00	40 00
White	37 00	45 00	35 00	55 00
Basswood, No. 1 and 2	28 00	30 00	18 00	20 00
Cherry, No. 1 and 2	70 00	90 00	70 00	80 00
White ash, No. 1 and 2	24 00	35 00	30 00	35 00
Black Ash, No. 1 and 2	20 00	30 00	18 00	30 00
Dressing stocks	16 00	22 00	16 00	22 00
Picks, American inspection		30 00		40 00
Three uppers, Am. inspection		50 00		50 00

BRICK—₱ M

Common Walling		6 50		6 00
Good Facing		8 00		8 50
Sewer	8 50	8 00	8 50	9 00

Pressed Brick, Per M:

Red, No. 1, f.o.b. Beamsville	16 00
" " 2	14 00
" " 3	9 00
Buff	21 00
Brown	24 00
Roman Red	30 00
" Buff	35 00
" Brown	40 00
Sewer	7 50
Hard Building	6 00

	Toronto.		Montreal	
Roof Tiles		22 00		
Hip Tile (each)		20		
Ridge Tile "		60		
1st quality, f.o.b. at Port Credit		14 00		18 00
2nd " " " "		12 00		15 00
3rd " " " "		8 00		12 00
Hard building brick		6 50		
Ornamental, per 100	3 00	10 00		

F. O. B. DON VALLEY.

Red A		18 00		24 00
Red B		16 00		20 00
Red C		13 00		17 00
Trojan and Corinthian		21 00		28 00
Pompeian		22 00		29 00
Athenian and Egyptian		25 0		31 00
Tyrian		35 00		41 00
Sicilian		40 00		45 00
Roman		35 00		40 00
Carthaginian		40 00		45 00
Ornamental	30 00	100 00	30 00	100 00
Common insides		6 00		
Hard sewers		7 50		
Vitrified pavers		16 00		22 00

SAND.

Per Load of 1½ Cubic Yards		1 25		1 25

STONE.

Common Rubble, per toise, delivered		14 00		14 00
Large flat Rubble, per toise, delivered		18 00		18 00
Foundation Blocks, per c. ft.		50		50
Kent Freestone Quarries Moncton, N. B., per cu ft., f.o.b.		1 00		
River John, N. S., brown Freestone, per cu. ft., f.o.b.		95		
Ballochmyle	80	90	65	75
New York Blue Stone				1 05
Granite (Stanstead) Ashlar, 6 in. to 12 in., rise 9in., per ft.				25
Moat Freestone			70	80
Thomson's Gatelawbridge, cu. ft.			75	80
Credit Valley Rubble, per car of 15 tons, at quarry		8 00		
Credit Valley Brown Coursing, up to 10 inch, per sup. yard, at quarry		1 75		3 25
Credit Valley Brown Dimension, per cu. ft. at quarry		60		75
Credit Valley Grey Coursing, per superficial yard	1 50	2 00		2 15
Credit Valley Grey Dimension, per cubic foot		60		75
Clark's N. B. Brown Stone, per cubic foot, f.o.b.		1 15		1 00
Brown Free Stone, Woodpoint, Sackville, N.B., per cub. ft.		1 15		1 00
MadocRubble, delivered, per toise	14 00	14 50	14 00	14 50
Madoc dimension floating, f. o. b. Toronto, per cubic ft.	30	32		

OHIO FREESTONE, FROM THE GRAFTON STONE CO.'S QUARRIES.

No. 1 Buff Promiscuous		70		85
No. 1 Buff Dimension		75		90
No. 1 Blue Promiscuous		55		70
No. 1 Blue Dimension		60		75
Sawed Ashlar, No. 1 Buff, any thickness, per cub. ft.		90		1 05
Sawed Ashlar, No. 1 Blue, any thickness, per cub. ft.		75		90
Sawed Flagging, per sq. ft., for each inch in thickness.		06½		07½

Above prices cover cost freight and duty paid. For small lots add 5 to 10 cents per cubic foot.

Quebec and Vermont rough granite for building purposes, per c.ft. f.o.b. quarry	33	1 50		
For ornamental work, cu. ft.	35	2 0		
Granite paving blocks, 8 in. to 12 in. x 6 in. x 4½ in., per M		50 00		
Granite curbing stone, 6 in. x 20 in., per lineal foot		70		

SLATE.

Roofing (₱ *square*).				
" red		18 00		20 00
" purple		00		10 00
" unfading green		9 00		6 00
" black		8 00		5 50
Terra Cotta Tile, per sq.		25 00		
Ornamental Black Slate Roofing		8 50		

PAINTS. (*In oil, ₱ lb.*

White lead, Can., per 100 lbs.	6 25	5 50	5 50	6 00
" zinc, Can., " "	6 50	7 50	6 50	7 50
Red lead, Eng	4 00	5 00	4 50	5 00
" venetian, per 100 lbs	1 60	1 75	1 60	1 75
" vermillion	90	1 00	90	1 00
" Indian, Eng	10	12	10	12
Yellow ochre	5	10	3	5
Yellow chrome	15	20	15	20
Green, chrome	7	12	7	12
" Paris	20	25	14	20
Black lamp	15	25	12	25
Blue, ultramarine	15	20	12	18
Oil, linseed, raw, *Imp. gal.*	54	59	58	59
" " boiled "	57	63	62	63
" " refined, "	78	85	75	75
Putty	2¾	2½	2¾	2½
Whiting, dry, per 100 lbs	75	1 00	60	75
Paris white, Eng., dry	90	1 25	90	1 00
Litharge, Eng	4	5	4 50	5 00
Sienna, burnt	10	15	12	15
Umber, "	8½	12	12	15

CEMENT, LIME, etc.

Portland Cements.—				
German, per bbl		3 25	2 55	2 65
London "	2 50	2 75	1 92	2 05
Newcastle "		2 50	1 85	1 95
Belgian, Josson, artificial	3 40	2 50	2 65	2 75
English, artifical, per bbl	2 60	2 90	2 55	2 65
Portland Cements.—				
Belgian, natural, per bbl	2 30	2 40	1 70	1 85
Canadian "	2 30	2 50	1 80	1 85
Roman "			2 00	2 25
Parian "	4 50	4 75	5 50	5 75
Superfine "	6 50	7 00	8 00	9 00
Hydraulic Cements.—				
Thorold, per bbl.		1 50	1 25	1 50
Queenston, "		1 50	1 50	1 60
Napanee, "		1 50		1 50
Hull, "		1 50		1 50
Ontario, "		1 25		
Keene's Coarse "Whites"	4 50	4 75	4 50	4 75
Fire Bricks, Newcastle, per M	27 00	35 00	15 00	21 00
" Scotch "	27 00	35 00	19 00	22 00
Lime, Per Barrel, Grey		40		
" " White		50		
Plaster, Calcined, N. B.		2 00		
" " N. S.		2 00	2 50	
Hair, Plasterers', per bag	80	1 00		

HARDWARE.

Cut nails, 50d & 60d, per keg		2 50		2 10
Steel " " " "		2 60		2 35

CUT NAILS, FENCE AND CUT SPIKES.

40d, hot cut, per 100 lbs		2 55		2 15
30d, " " "		2 60		2 20
20d, 16d and 12d, hot cut, per 100 lbs		2 65		2 25
10d, hot cut, per 100 lbs		2 70		2 30
8d, 9d, " " "		2 75		2 35
6d, 7d, " " "		2 90		2 50
4d to 5d, " " "		3 10		2 70
3d, " " "		3 30		3 10
2d, " " "		4 00		3 60
4d to 5d cold cut, not polished or blued, per 100 lbs		3 00		2 60
3d to 5d cold cut, not polished or blued, per 100 lbs		3 40		3 00

FINE BLUED NAILS.

3d, per 100 lbs		4 00		3 60
2d, " "		4 50		4 10

CASING AND BOX, FLOORING, SHOOK AND TOBACCO BOX NAILS.

12d to 30d, per 100 lbs		2 50		2 60
10d, " "		2 80		2 70
8d and 9d, " "		2 95		2 80
6d and 7d, " "		3 10		3 05
4d to 5d, " "		3 30		3 20
3d, " "		3 70		3 60

FINISHING NAILS.

3 inch, per 100 lbs		3 10		2 95
2½ to 2¾ " " "		3 25		3 10
2 to 2¼ " " "		3 40		3 25
1½ to 1¾ " " "		3 60		3 45
1¼ " " "		4 00		3 85
1 " " "		4 50		4 35

SLATING NAILS.

5d, per 100 lbs		3 35		2 95
4d, " "		3 35		2 95
3d, " "		3 75		3 35
2d, " "		4 25		3 85

COMMON BARREL NAILS.

1 inch, per 100 lbs		3 75		3 35
⅞ " " "		4 25		3 60
¾ " " "		4 75		4 35

CLINCH NAILS.

3 inch, per 100 lbs.		3 35		2 95
2½ and 2¾ " " "		3 50		3 10
2 and 2¼ " " "		3 65		3 25
1½ and 1¾ " "		3 85		3 45
1¼ " "		4 50		4 10
1 " "		5 00		4 60

SHARP AND FLAT PRESSED NAILS.

3 inch, per 100 lbs.		3 75		3 45
2½ and 2¾ " " "		4 00		3 60
2 and 2¼ " " "		4 20		3 75
1½ and 1¾ " " "		4 40		3 95
1¼ " " "		5 00		4 60
1 " " "		5 50		5 10

STEEL WIRE NAILS.

Steel Wire Nails, 75 % discount from printed list

Iron Pipe:

Iron pipe, ¼ inch, per foot		6c.		6c.
" " ⅜ " "		7		7
" " ½ " "		8½		8½
" " ¾ " "		12		12
" " 1 " "		17		17
" " 1¼ " "		24		24
" " 1½ " "		30		30
" " 2 " "		43		43

Toronto, 65 per cent. discount.
Montreal, 60 to 65 per cent. discount.

Lead Pipe:

Lead pipe, per lb	7c.
Waste pipe, per lb	7½

Discount, 30 % off in small lots; 30 and 10 % off in ton lots.

Galvanized Iron:

Adam's—Mar's Best and Queen's Head:		
16 to 24 guage, per lb	4½c.	4¾c.
26 guage, "	4¾	5
28 " "	5	5¼
Gordon Crown—		
16 to 24 guage, per lb	4¼	4½
26 guage, "	4½	4¾
28 " "	4¾	5

Note.—Cheaper grades about ¼c. per lb. less.

Structural Iron:

Steel Beams, per 100 lbs	2 75	2 50
" channels, "	2 85	2 60
" angles, "	2 50	2 30
" tees, "	2 80	2 65
" plates, "	2 55	2 35
Sheared stee bridge plate		2 35

(Corrected up to Jan. 22nd)