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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.

VOL. 6.

AUGUST 15, 1895

No. 28.

THE CANADIAN CONTRACT RECORD,
PUBLISHED EVERY THURSDAY
As an Intermediate Edition of the "Canadian Architect and Builder."

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Notice to Contractors

Tenders will be received by registered post, addressed to the City Engineer, Toronto, up to 11 o'clock a.m. on WEDNESDAY, AUGUST 21ST, 1895, for the following works:—

CONCRETE SIDEWALKS

On Adelaide Street, north side, from Yonge to Bay Street.

On York Street, east side, from Wellington Street to Rossin House lane.

On Isabella Street, both sides, from Jarvis to Sherbourne Street.

Specifications may be seen and forms of tender obtained on and after Monday, August 12th, 1895, at the office of the City Engineer, Toronto.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. on the value of the work tendered for up to \$1,000 and 2½ per cent. on the value of the work tendered for over that amount, must accompany each and every tender, otherwise it will not be entertained.

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

The lowest or any tender not necessarily accepted.

DANIEL LAMB,
Chairman Committee on Works.

Committee Room, Toronto, August 6th, 1895.

TENDERS FOR STEEL BRIDGE

Tenders will be received by the undersigned up to 1 o'clock p. m., TUESDAY, AUGUST 27TH, 1895, for the erection of a

STEEL BRIDGE

over the Sauble River, 1 mile from Tara; length of bridge 112 feet, C to C of end pins, to be placed on 4 cylinders, 3 feet 6 in. in diameter, filled with concrete, and protected with a cedar cribwork filled with stone. Moving load 100 lbs. per sq. foot. Roadway, 16 feet clear width, no sidewalk. Detailed plans and specifications to be furnished by tenderers, and state earliest date for completion. Particulars obtained from James Warren, Engineer, Walkerton. The lowest or any tender not necessarily accepted.

J. M. MONKMAN,
Tp. Clerk, Arkwright.

Arran, Aug 12th, 1895.

TENDERS FOR STEEL BRIDGE

Tenders will be received by Mr. Archibald McRae, Tara P. O., up to 1 o'clock p. m., August 28th, 1895, for the erection of a

STEEL BRIDGE

over the River Sauble in the village of Tara. Length of bridge, 84 feet C to C of end pins, to be placed on 4 cylinders, 3 feet 6 in. in diameter, filled with concrete and protected with a cedar cribwork filled with stone. Moving load, 120 lbs. per square foot. Roadway 18 ft. clear width. Needle beams to extend on each side for two 5 ft. sidewalks. Tenderers to state price with sidewalk completed, also without being completed. Detailed plans and specifications to be furnished by tenderers, and state earliest time for completion. Particulars obtained from James Warren, Engineer, Walkerton. The lowest or any tender not necessarily accepted.

Tara, Aug. 12th, 1895.



NOTICE TO CONTRACTORS

Tenders will be received by registered post, addressed to the City Engineer, Toronto, up to 11 o'clock a.m. on WEDNESDAY, AUGUST 21ST, 1895, for the following works:

TRACK ALLOWANCE

On Station Street, from York Street to Simcoe street. (Scoria setts.)

On York Street, from Station Street to Front Street. (Granite setts.)

On Simcoe Street, from Station Street to Front Street. (Granite setts.)

Specifications may be seen and forms of tender obtained on and after Monday, August 12th, 1895, at the office of the City Engineer, Toronto.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. on the value of the work tendered for up to \$1,000, and 2½ per cent. on the value of the work over that amount, must accompany each and every tender, otherwise it will not be entertained.

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

The lowest or any tender not necessarily accepted.

DANIEL LAMB,
Chairman Committee on Works.

Committee Room, Toronto, August 7th, 1895.

TENDERS

Will be received by the undersigned until p. m. FRIDAY, THE 23RD INST., for the various works required for

Two Houses on Carlton St., Toronto.

Plans may be seen on and after Saturday, the 17th inst. The lowest or any tender will not necessarily be accepted.

GORDON & HELLIWELL, Architects.
26 King St. East.

NEW TENDERS CALLED

FOR

Drainage Work

Sealed tenders endorsed "Tender for Drainage" and addressed to James Burton, Osnabrock Centre, Ont., will be received up to the hour of 6 p. m. SATURDAY, 24TH AUGUST, 1895, for the deepening, widening, straightening, etc., of Hoople Creek and Tributary, in the 5th, 6th, 7th and 8th concessions of the Township of Osnabrock, Stormount County.

Estimated quantity earth excavation, 56,209 yards.

Estimated quantity rock excavation, 470 yards.

Plans and specifications to be seen and forms of tender to be had at the offices of Saunders & Wiggins, Engineers, Brockville, Ont., and at the office of James Burton, Clerk of Osnabrock, (near the site of proposed works) on and after 12th August, 1895.

The work is divided into 4 sections and tenders will be received for the whole or for one or more sections.

The lowest or any tender not necessarily accepted.

SAUNDERS & WIGGINS, A. W. AUIT, Reeve
Engineers. J. BURTON, Clerk.

Osnabrock, 12th Aug., 1895.

CONTRACTS OPEN.

MOUNT FOREST, ONT.—A system of waterworks is agitated.

DUNTRON, ONT.—The Sons of Scotland intend building a hall.

SIMCOE, ONT.—The construction of a system of waterworks is being agitated.

BEETON, ONT.—Two new elevators are to be built here, at a cost of \$10,000 each.

NORTH BAY, ONT.—James Halfpenny's residence was wrecked by lightning on the 7th inst.

PARRSBORO, N. S.—The ratepayers have refused to provide funds for a system of waterworks.

PEMBROKE, ONT.—It is probable that a large saw mill will be erected here by local capitalists.

NIAGARA FALLS, ONT.—The town is offering for sale one second-hand Amos-keag fire engine.

FREDERICTON, N. B.—J. A. Ruel, C. E., has commenced the survey of the city for a sewerage system.

WOODSTOCK, N. B.—The by law to provide \$10,000 for the extension of the sewerage system was carried by the ratepayers on the 8th inst.

GANANOQUE, ONT.—An addition is to be erected to the Thousand Island Carriage Company's works here.

INGERSOLL, ONT.—Tenders are asked for lighting the town by either gas or

electricity. Address Thos. H. Noxon, Chairman Fire, Water and Light Committee.

BRUSSELS, ONT.—The Council have passed a by-law to raise \$7,500 for the erection of a new school.

WINGHAM, ONT.—The by-law to assist the Union Furniture Co. in rebuilding their factory has been carried.

ST. THOMAS, ONT.—Geo. T. Claris will remodel his opera house here. The seating capacity will be increased to 1100.

BIENVILLE, QUE.—Rev. Mr. Ganvrau having received an offer of land for a chapel, steps will be taken at once to erect the building.

BLenheim, ONT.—The Council has passed a by-law providing for the erection of a \$6,000 town hall. The question will go to the ratepayers.

MOOSE JAW, N. W. T.—Tenders are invited until the 26th inst., addressed to Seymour Green, for the erection of an addition to the school house.

PARRY SOUND, ONT.—W. W. Armstrong invites tenders until the 21st inst., for the supply of 150 to 200 cedar poles, 30 feet in length and not less than six inches at top end.

ALEXANDRIA, ONT.—The by-law to borrow \$23,000 for the construction of a system of waterworks was carried by the ratepayers on the 9th inst., and work will be commenced at once.

ST. JOHN, N. B.—The Board of Works have decided to ask the City Council to expend the sum of \$5,000 in erecting a new warehouse on the pier for the accommodation of steamers.

BUCKINGHAM, QUE.—Hewitt & MacLaren, architects, will receive tenders until the 16th inst. for erecting an 85 x 60 foot block of stores for C. W. Pearson, at whose store plans may be seen.

ST. HYACINTHE, QUE.—The Advisory Board of Management of the Provincial Dairy school have recommended that the school here be enlarged to about double its present capacity, or about 60 ft. by 40 ft.

MONTREAL, QUE.—Building permits have been granted as follows: E. Brabant, three 3 storey tenement buildings, Charron st., cost \$6,000; Estate Jules Labine, one store building, cor. St. Catharine and Crescent street, cost \$4,000.

ELMVALE, ONT.—The rebuilding of many of the burned buildings is about to be commenced, including two brick hotels for Geo. Hunt and John Tweed, a new post-office, a brick block for Jno. Crawford, a new rink for John Tweed and numerous others.

PERTH, ONT.—The ratepayers have ratified the steps taken by the Council in respect to waterworks, and will support them in establishing a complete system, including two stand pipes. A drainage system in all probability will be constructed later on.

BRANTFORD, ONT.—In the last issue of the CONTRACT RECORD it was stated that \$6,000 debentures were offered for sale by this town for waterworks extension. The item should have appeared under the heading of Bracebridge, as no debentures are being offered for sale by the city of Brantford at the present time.

HUNTINGDON, QUE.—At the last meeting of the Village Council, it was stated that a report on the proposed system of sewerage and waterworks had not been received from Mr. W. McLea Walbank, of Montreal, and a committee was appointed to interview Mr. Walbank.

CHATHAM, ONT.—The Dominion Public Works Department has ordered the work of Deepening the channel at the mouth of the River Thames to be proceeded with at once.—The School Board desire to secure a site on Queen street for

the proposed central school, which is estimated to cost \$30,000.

WINNIPEG, MAN.—The Parsons Produce Co. have decided to erect a new cold storage warehouse on McDermott street. The foundation and basement will be built this fall, and the superstructure completed in the spring.—Notice has been given by the Council that it is proposed to construct a sewer on Argyle street, from Point Douglas avenue to Henry avenue, at a cost of \$2,700.—The Free Press is strongly advocating the scheme for the improvement of the Red River navigation by developing St. Andrew's Rapids.

COLLINGWOOD, ONT.—Plans are being prepared by Fred. T. Hodgson, architect, for a cottage to be built by J. Cooper. It will be frame, and is estimated to cost \$1,200.—It is stated that the Dominion Government are considering the question of deepening Collingwood harbour to a standard of twenty feet. The department asks if the town is willing to grant one-fourth of the cost. A by-law was passed by the ratepayers more than a year ago offering to spend \$25,000 for this purpose if the Government would grant the remaining \$75,000 necessary to make the required harbor improvements.

HAMILTON, ONT.—Robert Clohcy has taken out a permit for a two-storey brick dwelling on Emerald street south, to cost \$2,500.—The Hamilton, Grimsby and Beamsville Railway Company have decided not to complete the road from Grimsby to Beamsville this year. The cost of building the extension is estimated at \$55,000.—The Education Department of Ontario has decided to remove the Ontario School of Pedagogy from Toronto to this city, where it will be associated with the Collegiate Institute, and as a result a new school will be built by the Collegiate Institute Board to cost about \$75,000 and to accommodate 600 pupils.

LONDON, ONT.—Twelve sets of plans have been received by the Y. M. C. A. Board in the recent competition for the proposed new building here. Those of Messrs Moore & Henry, local architects, have been accepted. They provide for a three-storey white brick structure 110 ft. x 118 ft., containing a gymnasium, lecture hall, library, etc. The building will cost in the neighborhood of \$25,000.—McBride & Farncombe, architects, are asking for tenders until the 19th inst. for the erection of a brick residence.—A report from Engineer Keating on the question of water supply was presented at a special meeting of the Water Commissioners held last week. The report states that the supply at Springbank cannot be materially increased, and the Thames river is suggested as the best means of obtaining an ample water supply. The question will again be considered at an early date.

OTTAWA, ONT.—It is said to be the intention of James Linton, boot and shoe manufacturer, of Montreal, to erect a large warehouse in this city suitable for his purpose.—A plan has been filed in the city registry office showing the route of the O. A. & P. S. railway, north of Maria street. The line will cross the canal basin over a swing bridge at the foot of Little Sussex street. The site for the central depot will probably be on the other side of Dufferin bridge.—The by-law authorizing the asphaltting of Rideau street has received its third reading in Council.—The Ottawa Improvement Co. have a scheme on hand to build a dam at the head of the Chaudiere rapids, above Masson's mill, by which they expect to develop 10,000 horse power. The Public Works Department is also having plans prepared for the construction of a second dam between the present one on the south side of the river and the falls, about half way. It will be arranged with sluiceways, so as to allow anchor ice to be carried through the main channel.

TORONTO, ONT.—The Country and Hunt Club contemplate the immediate erection of a club-house and kennels at Scarborough Heights, east of Victoria park. A half-mile track will also probably be laid. Plans for the club-house and kennels are now said to be in course of preparation.—The Ontario Government invite offers until the 22nd inst. for operating the Central Prison binder twine plant. For particulars address John Noxon, Inspector.—Tenders are wanted for laying about 180,000 bricks, about 30 miles from Toronto. Particulars may be obtained by addressing box 291, Telegram office.—The John Eaton Co. are asking for tenders for excavating, plumbing, steam heating and gas fitting. Plans may be seen at the office of the architect, A. R. Denison.—The School Board of East Toronto have decided not to undertake the erection of a new school building this fall.—The difficulties between the railway companies regarding the Queen street subway have been practically settled, and the plans have also been accepted by the Railway Committee of the Privy Council. It has been decided that the cost of the girders of the subway will be borne by the railways, and that the city will build the masonry. The subway will be the full width of the street, namely, 66 feet.—Plans are being prepared by the city for the York street bridge, and the work will probably be proceeded with at an early date.—Engineers Speight and Van Nostrand have filed in the Crown Lands Department at Ottawa, the plans for the first half of the first section of the Georgian Bay Ship Canal & Power Aqueduct Company. This section includes a course of seven miles, from the mouth of the Humber to Weston. The plans filed take in the first half, from Lake Ontario to Lambton.—A building permit has been granted to F. T. Burgess, for a new shop front and brick addition, cor. Queen and Strange sts., to cost \$1,300.

FIRES.

The residence of Hugh Spencer, at Mount Pleasant, Ont., was destroyed by fire last week. Insurance, \$1,200.—At Eganville, Ont., on the 9th inst. fire destroyed the McIntyre-Pilatkie planing mill, the Bridge block, owned by John Bridge, of Renfrew, and the store and residence of John Casey. The buildings were totally destroyed. Loss between \$6,000 and \$8,000; nearly covered by insurance.—The residence of Rupert F. Bent, at Amherst, N. S., was burned recently. Insurance, \$4,000.—The Lake of the Woods Milling Company's elevator at Ninga, Man., was burned on Monday last.—The buildings and stock of the Cookshire Mills Company, at Sawyerville, Que., were destroyed by fire on the 10th inst. The loss is estimated between \$50,000 and \$60,000.—The Mona steam saw mills on the Lachine Canal, at Brewster Bridge, Que., were consumed by fire on Tuesday last. Loss, \$50,000. The proprietor is Hon. J. K. Ward.

CONTRACTS AWARDED.

GODERICH, ONT.—Harper & Lee have secured the plumbing contract for the House of Refuge, now in course of erection.

COLLINGWOOD, ONT.—The whole contract for building addition to house of A. Hamilton and making alterations to old building has been awarded to Abram Phillips.

ALVINSTON, ONT.—The contract for the outlet to the No. 1 ditch has been awarded to Jenkins & Nickleson, of Port Huron, by Brooke township council, for the sum of \$10,000, to be completed in 90 days.

WINDSOR, ONT.—The Council have awarded the contract for an engine and boiler for the electric light works to E.

Leonard & Son, of London, at the tender of \$2,685. The Thompson Electric Co. will supply the dynamos.

ALEXANDRIA, ONT.—Clark & Connolly of Toronto, are the lowest tenderers for the construction of the waterworks system, the price being about \$20,000. The scheme is to build a standpipe 100 feet high by 14 feet in diameter, into which water will be pumped from the River de Lisle.

OTTAWA, ONT.—E. L. Horwood, architect, has let the contract for the brick and stone work of the Cousens-Davidson building on Bank street to Patrick Kennedy. The building will be four stories high, the first of cut stone and the remainder of pressed brick, and will cost \$10,000. The ground floor will be fitted up for six stores.

HAMILTON, ONT.—It is said to be the intention of the Dominion Government to proceed at once with the construction of the new bridge over the canal at Burlington. The lowest tenderer for the masonry is Geo. Webb, of this city, whose price is about \$15,000.—The Dominion Bridge Company, of Montreal, have been given the contract for the bridges on the Welland line of the Toronto, Hamilton and Buffalo railway. There are two big steel bridges and two viaducts to be built.

TORONTO, ONT.—The Commissioners of York and Peel have awarded contracts for a bridge at Craig's as follows; masonry, W. J. Irwin, Toronto Junction; steel superstructure, Central Bridge and Engineering Co., Peterboro'. The work will cost about \$2,000.—The Northey Mfg. Co., of this city, have received an order from the Dominion Coal Co. for a compound mining pump, with capacity of 800 gallons per minute against a head of 300 ft., water cylinders and plungers to be lined and covered with special composition to resist action of mine water. The same firm have also received the contract for a complete outfit of boilers and compound pumps for the Alexandria waterworks.—The Central Bridge & Engineering Co., of Peterboro', have been given the contract for the iron and steel work of new Globe building in this city and for the new store for the John Eaton Co.

(Continued on page 4)

WILLIS CHIPMAN, B. A. Sc.,

M. Can. Soc. C. E.; M. Am. Soc. C. E.;
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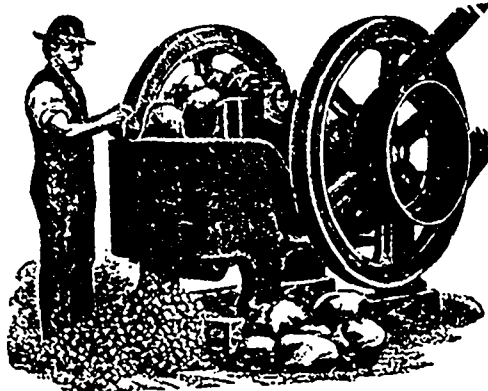
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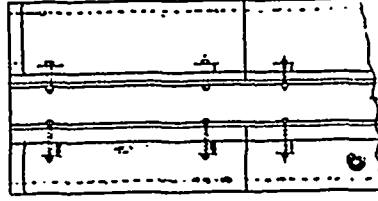
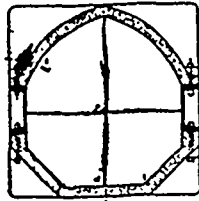
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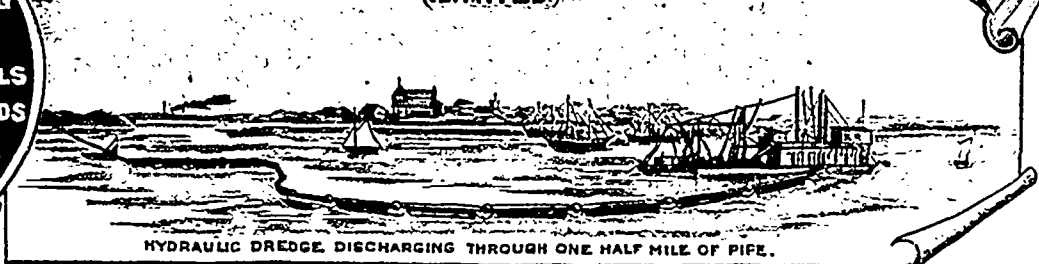
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MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

WINNIPEG, MAN.—The construction of the drainage work from the Pembina Mountains to the Boyne marsh, in the Morden district, has been awarded to S. Gandaur, of St. Boniface.

MONTREAL, QUE.—Dunlop & Heriot, architects, have awarded contracts for a house and stable for Geo. Bridgeman, cor. Berthelet and Aylmer streets, as follows: masonry, Nicholson & Stuart; brick, A. Wand, carpenter and joiners' work, Labrecque & Mercure; roofing, Geo. W. Reed; plumbing and heating, McRae & Watson; plastering, F. Lefebvre; painting, Poirier & Arcand. For a warehouse for Massey Harris Co., Ltd., contracts have been let as follows: masonry and brickwork, P. Lyall & Son; carpenter and joiners' work, A. Strang; painting, Castle & Son. For a residence at Westmount: masonry, Whighton & Morrison; brickwork, John Bulmer; carpenter and joiners' work, A. Sharp; roofing, Montreal Roofing Co.; plumbing and heating, McCrae & Watson; plastering, J. Lefebvre; painting, Poirier & Arcand.—The Bell Telephone Co. have been awarded the contract for putting in a new fire alarm system for the municipality of St. Henri.—The Road Committee last week awarded the following contracts: Columbian street sewer work, Mr. L. McDonald, at \$5.29 per square yard and \$3 for rock excavation; Stanley street work, Mr. Goselin, at \$5.45 per square yard, and \$3.75 for rock excavation.—Howard, Leamy & Murphy have received the contract for the twelve miles of the Belt Line Railway from Hochelaga to Bont de l'Isle.

NEW COMPANIES.

OTTAWA.—Ottawa Novelty Co., applying for incorporation; capital \$10,000; to manufacture lamps, electroliers, lamp brackets, etc.

MONTREAL, QUE.—Central Light and Power Co., applying for incorporation; capital, \$50,000; to construct and operate works for the manufacture of electrical machinery and apparatus; applicants, Richard White, E. H. Barker, and others.—Chanteloup Manufacturing Co., incorporated; capital, \$10,000; to carry on business as contractors and dealers in iron and brass goods and other metals; incorporators, David Yulle, J. E. King, Wm. Robinson, D. W. Ross, and John Watson.

BUSINESS NOTES.

The assignment is announced of John Whitfield, chain and iron works, Toronto.

Robert Thexton, contractor, of Lindsay, Ont., was drowned at that place on the 11th inst.

The dissolution is announced of the partnership existing as Arnoldi & Calderon, architects, Ottawa.

On behalf of Edward New, contractor, of Hamilton, Staunton & O'Heir have issued a writ for \$1,600 against the East End Improvement Company, for grading and building walls for the new incline railway.

THE bridge built by the Central Bridge and Engineering Co., of Peterboro, for Brancroft and Irondale Railway is thus referred to by Engineering, of London, Eng.: "A noteworthy feat has been accomplished in the case of a 90 feet truss bridge for the Irondale, Brancroft and Ottawa Railway, Canada. The structure in question was shipped complete from the works of the builders, the Central Bridge and Engineering Co., Peterboro, Ont., to its site. The principal dimensions of the structure as placed in the cars were: Length over all, 90 ft.; height of trusses, 12 ft. 6 in.; width over all, 11 ft. 9 in.;

and the weight was 65,000 lbs. The distance between the works and the bridge was 70 miles."

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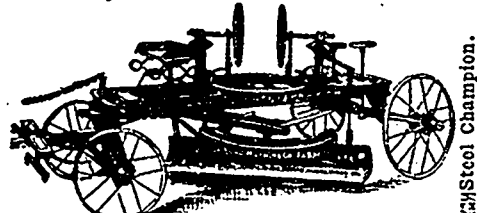
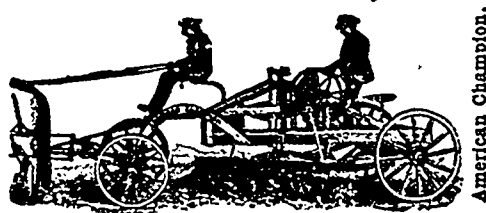
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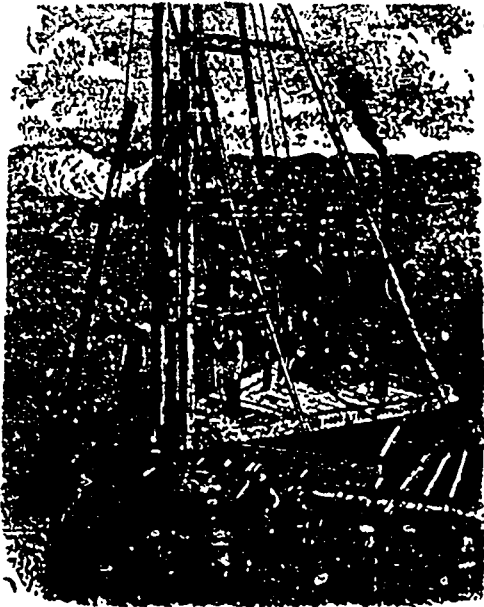
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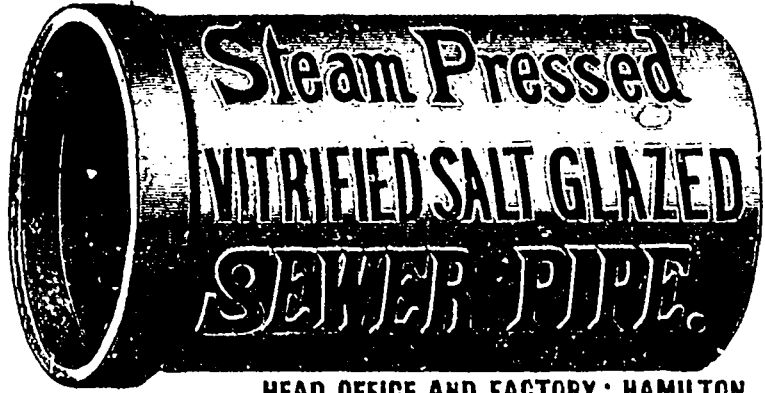
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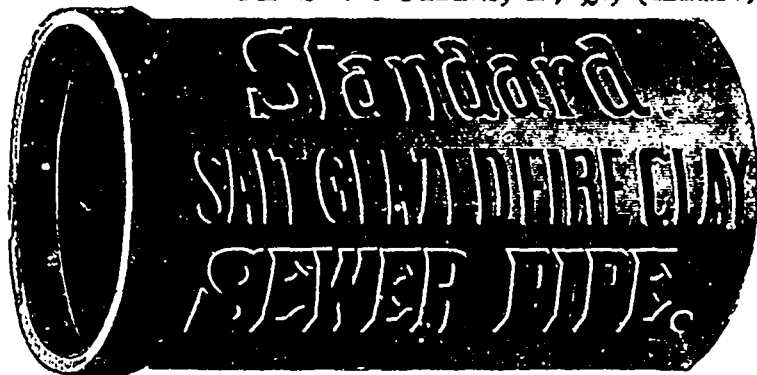
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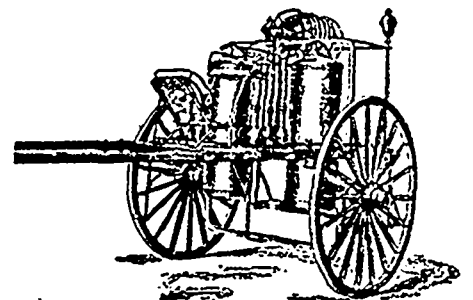
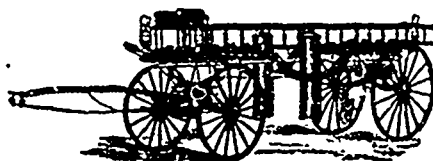
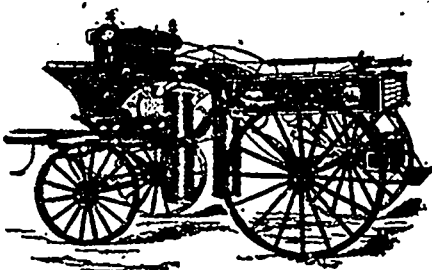
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(Concluded.)

Then the spigot-ends are examined the same way. They, too, must be truly round, of correct diameter inside and out, to enter sockets, and the metal should be of the same thickness within the allowed variation. It is necessary to repeat all the measurements at each end, as a pipe may be truly round at one end and oval in shape at the other, and a core may be truly centred at one end and oval at the other. The beads must not overrun prescribed diameters, and if they do in places, must be trimmed to correct size. Spigot-ends require generally a freer use of the hammer than the bell, and a closer watch for blow holes, because, as a rule, this end is uppermost in the flask, and is apt to contain slag, cinder pockets and scoria. If the metal is inferior at the spigot end, it will often break under the blow of a two-pound hammer. If, however, the metal is good and sound, it is not considered necessary that the beads should be as clear in outline as the bells. As long as there is a distinct bead and it is trimmed clean to enter any socket freely, it should be accepted.

So much for the ends of pipes. The inside and outside surfaces have next to be looked over carefully. There are a number of defects to which pipes are subject. These may be enumerated as follows: Scabs: Lumps or patches of superfluous metal, due to defects in core or mould. Cold Shuts: Places where part of the metal has chilled before the adjacent metal has flowed over it; this makes a seam or weld in the casting. Sand holes: Pockets of sand. Checking: Shrinkage cracks, found usually in the top of the casting, and due to cold shortness. Blow Holes: Spongy Metal, due to froth and scoria in the iron. Gate shrinks. Hollows leading from the gate into the body of the pipe. Core Cut, Mould Cut or Socket Cut: These are places where the mould has been cut away by the flow of melted iron. This is most objectionable in the socket, which is spoilt by it. It is bad anywhere if there is much of it, because the sand is in the body of the pipe. Cracked Cores. Places where the core has cracked in long lines, leaving sometimes ridges, sometimes seams along the body of the pipe. Crushed or Swelled Cores or Moulds: These produce ridges or rings on the pipes, and are due to failure of cores or moulds to retain their shapes. Facing Washed: Places where the lamp-black facing has either cut the sand or covered it in lumps on the surface of mould or core.

All these defects in the castings a skill-

ful inspector must be on the watch for, and so skillful do the best men become that it is rare indeed that a defective pipe escapes their attention. The rejection of pipes for these causes is often made regardless of their ability to stand the hydrostatic pressure in the proving press. This is done, of course, because defects such as those noted above seriously affect the life or endurance of pipes.

When an inspector has finished his morning's work in the cleaning shed on the lines indicated above, his next duty is to go to the proving press and test, the pipes which he has previously examined, and which have, in the meantime, received a coating of tar. In the proving press all pipes are tested under hydrostatic pressure, generally 200 lbs. per square inch. The process is as follows: Each pipe is run, in turn, into position between the two heads of the press, and one of these heads, which is really the piston of a hydraulic ram, moves forward and secures the pipe firmly at the ends against gaskets of hemp. The pipe is then filled with low pressure water and, when quite full, the 300-pound pressure from the accumulator is turned on, thus requiring a comparatively small flow of water at high pressure.

When the pipe is being fitted in place between the gaskets and until it has filled, and the pressure has reached the figures required, it is always desirable to stand out of harm's way. If the pipe bursts, water, and sometimes iron, fly freely. After the pressure is on, however, the inspector must walk the length of the pipe, strike it several sharp blows with a hammer, and look it over carefully to see that it does not leak through blow holes, either slowly or in jets, and must be rejected for this cause. Plugging can not be allowed. The last step in the process of inspection now follows in weighing the pipes. The weight of a casting has always been regarded as an important indication of the soundness or unsoundness of its internal structure, and in all the specifications for water pipe the standard weight for each size is specified and the allowed variation carefully stated. The inspector, therefore, always witnesses the weighing of the pipes to see that they are within the standard requirements. The correct weight is then marked on the pipe and the inspector checks the weight, pipe number and size of all pipe accepted or rejected, in his note book, and those accepted are then ready for shipment by the manufacturer.

This statement presumes, however, that the physical tests required have proven satisfactory and as these physical tests are ordinarily made on the afternoon of the day before the pipes are proved in the press the work is generally completed at the scales. Of physical tests it is usual to require two kinds in specifications. The first of these is a direct tension test, in which the iron is required to show a tensile strength differing in different specifications from 14,000 to 18,000 lbs. per sq. inch, the second is a transverse test which has been adopted by the American Water Works Association. This test requires that a specimen bar, 2 inches by 1 inch in section, laid flat on points of support two feet apart, shall carry a centre load of 1,900 lbs. and deflect 5-16 inch before breaking. The tensile test proves the strength of the iron, and the transverse test proves its toughness and resilience. As iron may be strong without being tough, or may be tough without being strong, the two tests supplement each other very well and can be used together with advantage.

The test pieces are generally cast in the presence of the inspector. It is usual to

have the moulds for the test castings set up alongside the cupola, and at some time during the day the inspector in charge of the work steps into the foundry and asks the foreman to cast his test pieces. They are then immediately poured and the selection is thus made entirely at random.

The percentage of rejections under skillful inspection, for both tests and surface inspection together, varies very much from day to day. In a foundry the unexpected is always happening. Sometimes the mixture of iron is not right. At other times the sand is not quite satisfactory. The condition of the sand varies somewhat with the weather, and requires different handling, depending upon the condition of the weather. There are occasions when an entire day's work will be spoiled in this way by some accident in the regimen of the foundry. On other days, and sometimes for days at a time, the pipes will nearly all be of a high standard. On an average, however, it is believed that something like one-third of the pipes cast in the pit will be condemned as unsalable for water mains for one cause or another by an inspector representing the purchaser. Quite a percentage of these can still be disposed of by the foundry for use as railroad and highway culverts.

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*From an article by Frederick H. Lewis in Cassier's Magazine.

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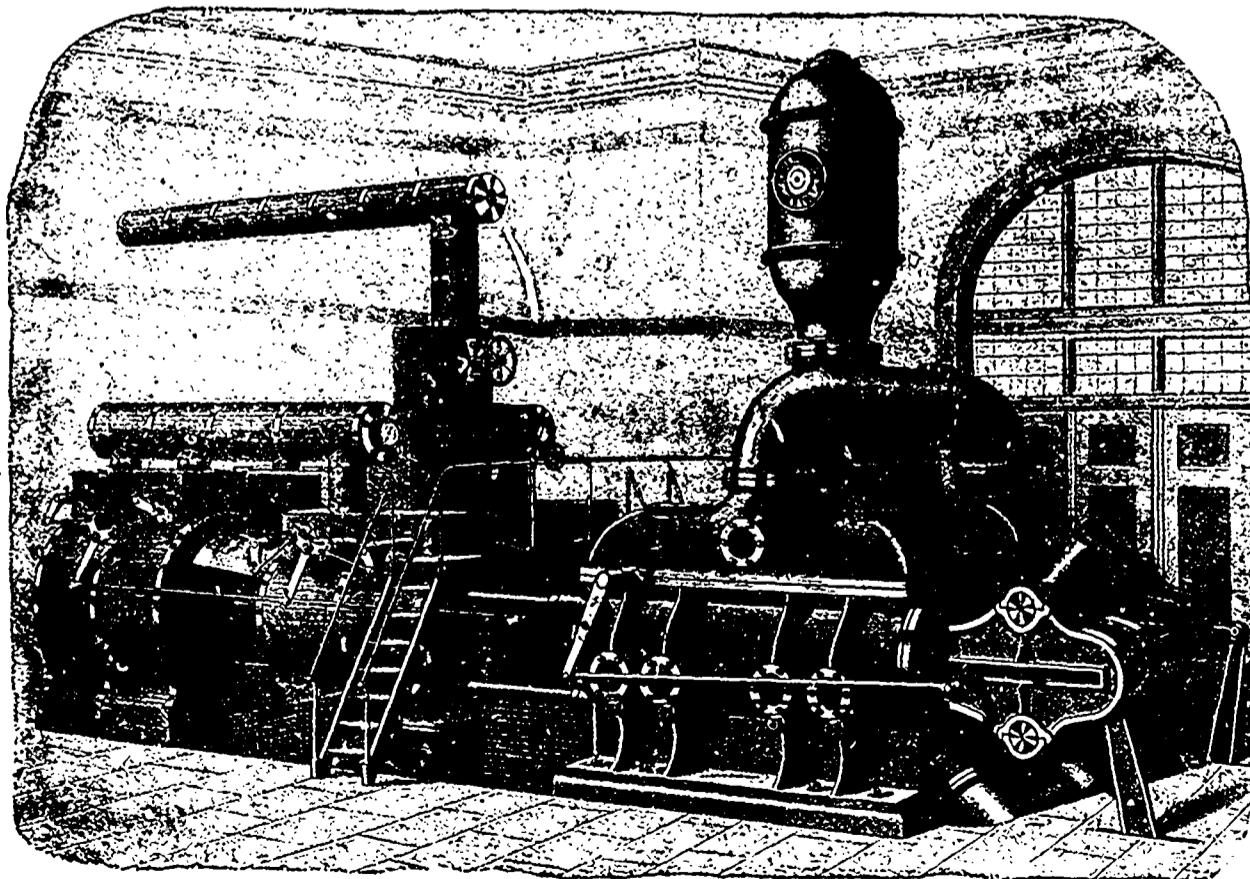
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CONDITION OF THE MARKET.

TORONTO: An advance in several lines of hardware is likely to take place within a month, as manufacturers are asking higher prices. A meeting of the Cut Nail Association was held in Montreal last week, but no change in quotations was made. Plumbers' supplies are in good demand, also Portland cement, which has advanced slightly in price.

MONTREAL: The situation in iron and metals is quiet, but the market is firm, as evidenced by the recent advances in prices. Cement is steady and prices unchanged. An importer reports the sale of 2,500 barrels on western account. The receipts last week were 3,300 barrels, English, and 2,400 barrels, Belgian, while that of firebricks were 60,000.

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