

intends to rebuild as soon as possible. The interior of this building was gutted, but the walls are still standing, and reconstruction will be comparatively light. Nothing has as yet been decided on regarding the Globe building.—Messrs Post & Holmes, architects, are preparing plans and specifications for enlargement of R. C. church at Walkerton, Ont.—Building permits have been granted as follows: W. Stitt & Co., mansard roof and additions near 9 and 11 King st. e., cost \$3,000; Geo. Pears, additions to dwellings, 3, 5 and 7 Caer Howell st., cost \$3,000.

**FIRES.**

The store and dwelling of G. J. Manning at Lefroy, Ont., was burned on the 27th inst.—James Bell's brewery at Portage la Prairie, Man., was destroyed by fire last week. Loss \$15,000; insurance, \$6,300.—Mr. Palmer's hot house at Corleyville, Ont., was burned recently. Loss \$1,500.—The Bird block on Main street, Winnipeg, owned by J. A. McKeracher & Co., has been completely gutted by fire. The loss is about \$15,000 and the insurance \$8,000.—David Bell's residence at Leskard, Ont., was burned on the 23rd inst., loss, partially covered by insurance. The workshops and engine house connected with Anderson & Nugent's furniture establishment at Lindsay, Ont., were last week completely destroyed by fire. Loss \$4,000. Building and machinery insured for \$1,300.—The Hudson Bay Co's store and Stewart's hotel at Manitou, Man., have been burned. Loss, \$20,000.—The Disciples' church at Aylmer, Ont., was destroyed by fire a few days ago. Loss, \$1,500; insurance, \$700.—The Mechanics' Institute building on St James street, Montreal, was almost totally destroyed by fire on Monday last. It was owned by the Mechanics' Institute, had recently been enlarged, and was valued at \$100,000. The loss is said to be covered by insurance.—The flouring mills of Joseph Pratt, at York Mills, Ont., were consumed by fire recently. No insurance.

**CONTRACTS AWARDED.**

TORONTO, ONT.—The contract for elevators for the new Union railway depot has been awarded to the Fensom Elevator Works, of this city.

LONDON, ONT.—The tender of Osler & Hammond, of Toronto, for the purchase of \$50,000 of waterworks debentures, has been accepted by the City Council.

BELLEVILLE, ONT.—Mr. Walter Alford, contractor for the new St. Andrew's church, has awarded to Mr. John Quinlan, of Montreal, the contract for the cut stone work on the building.

MONTREAL, QUE.—Mr. Chas. Bernier, architect, has awarded contracts for two three storey stores and dwellings for Mr. P. King as follows: masonry, Surocher & Parent; other trades, Kelly Bros.

**BIDS.**

TORONTO, ONT.—On Saturday last the Fire and Light Committee opened tenders for the supply of two steam fire engines. The following were the bids received: American Fire Engine Co., of Seneca Falls, N. Y.—capacity 1200 U. S. gallons per minute, \$5,800 for one, or two for \$11,500; J. D. Ronald, Brussels, Ont.—1000 Imperial gallon engine, weight 6850 pounds, \$5,000, or two for \$9,500; a 1200 Imperial gallon engine, \$6,000, or two for \$11,500; Merryweather Company, Greenwich, Eng., 3780 U. S. gallon engine, \$5,400, weight 2450 pounds; 960 U. S. gallons, weight 4700 pounds, \$6,000; 1200 gallon engine, weight 5550 pounds, \$7,000; 1680 U. S. gallon engine, weight 6,700 pounds, \$8,400; La France Fire Engine Co, Elmira, N. Y.—1000 U. S. gallon engine, weight 8,800 pounds, \$5,265, or two for \$10,530; Manchester Locomotive Works, New Hampshire,—900 U. S. gallon engine, weight 8000 pounds, \$6,220; 1100 gallon engine, weight 9,000 pounds, \$6,990, or two at \$6,550 each. The committee decided to refer the tenders to experts for a report.

**MUNICIPAL DEPARTMENT.**

**BEST METHODS OF BRIDGE INSPECTION.\***

In my opinion the best method of bridge inspection is as follows:

**PIN-CONNECTED SPANS.**

1. Look over pins and see that they are not bent and fit perfectly
2. See that all connecting members also fit perfectly.
3. See that all rivets at all connections and inter sections are tight and not corroded, and at all other points where they are used as well.
4. Examine turnbuckle connections on counter- rods, for when not properly adjusted they are liable to strip.
5. Inspect painting.
6. Examine iron for defects
7. Inspect ties and rail fastenings.
8. Examine masonry or substructure, especially for some time after it is built to see if there is any undue settling

**RIVETED SPANS.**

1. Inspect rivets at all connections and the inter sections. As a usual thing loose rivets show a stain of rust.
2. Examine iron for defects
3. Inspect painting.
4. Examine ties and rail fastenings
5. Examine masonry or substructure.

**PLATE GIRDERS.**

1. Inspect rivets at lateral and brace connections.
2. Examine iron for defects.
3. Inspect painting.
4. Examine ties and rail fastenings.
6. Examine masonry or substructure.

**HOWE TRUSS SPANS**

1. Examine camber.
2. See if the top and bottom chords are in line.
3. Take off the nuts on top and bottom main roads, and see whether the threads fit the rods perfectly. I once saw a bridge that broke down on account of the thread in the nut stripping, the nut being too loose. I would however only advise this done once, and that just after completion.
4. See that the main rod have the proper tension.
5. See that all main and counter braces are in position.
6. Inspect timbers for defects.
7. Examine rail connections.
8. Examine masonry or substructure.

**FRAME BENTS AND TRETTLES**

1. Inspect ties and rail fastenings.
2. Inspect stringers and see that they have a fair bearing, observe knots, checks, and decays.
3. Examine caps for breaks and decays; also note bearing of caps on piling.
4. Examine frame bents closely—posts usually give way at the bottom.
5. Examine the sills.
6. When inspecting piles I dig the dirt away from around the piles for about 18 or 20 inches in depth, and if sap-rotted I move all decayed parts

\*A paper by G. J. Bishop, General Foreman of Bridges and Buildings, Chicago, Rock Island, and Pacific Railway lines west of Missouri River, read before the Association of Railroad Superintendents of Bridges and Buildings, Kansas City, Mo., Oct., 1894

so that I can see at a glance how much sound timber remains.

7. Inspect superstructure for straw, grass, leaves and other matter carried there by birds for nests, which largely increases danger by fire.

8. In inspecting the trestles and pile bents, I have a fieldbook in which I make a sketch of each bridge, and marked each defective part, and when a certain percentage of defective parts are not safe I mark the structure for rebuilding. I mark all the members of the bridge or trestle that have been inspected, and have to be replaced, in less than six months with a certain mark that indicates the fact; less than one year with another mark; one year and less than 18 months with still another mark which indicates the fact.

After pile or trestle bridges have been built four or five years, the timbers begin to decay and require constant watching and repairs in order to make them last the required time (seven to eleven years). The life of a bridge depends largely upon the location and traffic. Bridges on the eastern part of lines west of the Missouri River, where the physical features of the country are comparatively low and wet and traffic is heavy, have to be rebuilt from one to four years sooner than those near the mountains where the altitude is higher. In inspecting rivets I use a light hammer, for timbers, a small octagonal steel bar five-eighths inch diameter, 4 feet long, one end sharpened to a point, the other made like a punch bar. At members I sometimes bore with a half-inch bit.

My division is divided into six districts ranging from 140 to 220 miles in length, with a division foreman on each division, who is held responsible for the good condition of bridges and structures. The bridges are inspected by the foreman each month while he is working over his district with his men, and if not able to get over the entire district, he takes a velocipede car and runs over such parts as he has been unable to work over. It generally takes him from five to eight days, and I do not consider it economy for any road to have the foreman away from his gang that length of time, and would recommend a bridge inspector for all divisions over 500 miles long, especially where in that distance he may have 45,000 feet of trestle structure, as is the fact in my territory. A foreman in my opinion, should be with his gang and see that the work is properly done. In case he is away, and there should be a burnout, washout or a derailment, where repairs must be made quickly, he may be 150 miles away, and considerable time would be lost on account of men not having the experience, and not being properly governed to make the necessary repairs.

I make it a point, if possible, to be at all accidents or blockades. Once each year I inspect about one half of the bridges and structures on my division, and for those that are to be rebuilt I make a complete bill of material of each bridge showing length of piles and height of frame bents required. I number each bent in each bridge, commencing at the east end, 1, 2, 3, etc. I take the foreman and three men with me on a hand-car and give each bridge a very thorough inspection and decide what repairs are necessary for the year or immediate present, and then give my views on the work: also as to the best method to economically perform it. Our present mode of inspection costs about 9 cents per mile or 1 mill per lineal foot of bridge per month. In my opinion, particular care should be observed in inspection and maintenance of all structures in order to secure safety without regard to the practice of fictitious economy.

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