

of Stonewall, Man., has been destroyed by fire.—The establishment of Stevens, Clark & Stevens, wholesale boot and shoe makers, London, Ont., was entirely gutted by fire on the 13th inst. The machinery, valued at \$5,000, was completely destroyed. The total loss is placed at \$15,000, on which there is an insurance of \$12,000. The loss on the building, which was owned by Mr. J. A. Childs, of South London, is fully covered by insurance.—The business portion of the village of Norwood, Ont., was damaged by fire on Tuesday last to the extent of \$25,000. The buildings destroyed were owned by Mr. H. S. Moore, and were insured for \$12,000, which will cover the loss. The plate glass front of J. C. Henderson & Co.'s store was destroyed.—The public school building at Essex, Ont., together with furnishings, were totally destroyed by fire on Wednesday last. The loss is placed at \$11,000, about half of which is covered by insurance.—The residence of Thomas C. Ross, at London, Ont., was burned to the ground a few days ago. The insurance is said to be very small.—The following buildings at Caledonia, Ont., were destroyed by fire on Thursday. Mr. Taylor's boot and shoe store, Dr. Burn's office, Atkinson Bros' dry goods house, Hull & Old's flour and feed store, and a three-story frame hotel owned by E. T. Hind. The total loss is placed at \$30,000, insurance \$20,000.—Mr. Wm. Partridge's residence at Plattsville, Ont., has been destroyed by fire, the loss on which is covered by insurance.—The flour, saw and shingle mills at Norland, Ont., were burned to the ground on Wednesday last. The loss is as follows: flour mill, \$6,000, saw and shingle mill, \$2,000.

#### CONTRACTS AWARDED.

**KINGSVILLE, ONT.**—Mr. Thos. Jenner has received the contract for building the new Methodist church.

**DERRY, N. B.**—The contract for the erection of a new Methodist church at this place has been awarded to Mr. James Troy, at the tender of \$1680.

**OTTAWA, ONT.**—The Department of Public Works has awarded the following contracts for supplying heating apparatus in the various public buildings. Petrolea, to Maguire & Bird, of Toronto; Port Arthur, to Purdy, Mansell & Mashinter, of Toronto; Laprairie P. O., to A. Chanteloupe, of Montreal; St. Hyacinthe, to A. Blondin, of St. Hyacinthe.

#### STEAM OR HOT WATER FOR GREENHOUSE HEATING.

In order to determine whether steam or hot water were the best for heating greenhouses, a series of experiments have been made at the Agricultural Experiment Station in connection with the Cornell University (New York, U. S. A.), in which the following conclusions were arrived at:—  
1. The temperatures of steam pipes averaged higher than those of hot-water pipes throughout the entire circuit for the entire period of test. 2. The higher the inside temperature in steam pipes the less is the proportionate warming power of the pipes at a given point. The heat is distributed over a greater length of pipe, and as steam is ordinarily carried at a higher temperature than hot water, it has a distinct advantage for heating long runs. 3. When no pressure is indicated by the steam gauge, the difference between the temperatures of the riser and the return is greater with steam than with hot water. 4. Under pressure the difference is less with steam than with hot water. 5. There is less loss of heat in the steam risers than in the hot water risers, and this means that more heat in the steam system is carried to the farther end of the house, and more is spent in the returns as bottom heat. 6. This relation is more uniform in the steam risers than in the hot-water risers, giving much more even results with steam than with hot water. 7. When the fires are operative the fluctuation in the temperature of the risers at any given point is much greater with hot water than with steam. 8. An increase in steam pressure raises the temperature in the entire circuit, but the temperature does not rise uniformly with the pressure. 9. The

first application of the pressure increases the temperature of the returns much more than that of the risers. 10. Steam is better than hot water for long and crooked circuits. 11. Pressure is of greater utility in increasing the rapidity of circulation of steam and in forcing it through long circuits and over obstacles. 12. Unfavorable conditions can be more readily overcome with steam than with hot water. 13. Hot water consumed more coal than steam, and was at the same time less efficient. This result would probably be modified in a shorter and straighter circuit with greater fall. 14. Under the conditions here present steam is more economical than hot water and more satisfactory in every way, and this result is not modified to any extent by the style of heaters used.

#### THE ECONOMIC HANDLING OF ENGINEERING MATERIALS.

To the contractor for any piece of engineering work the question of handling materials, both in transportation and erection, is one of not a little importance, often largely affecting the cost of the work, besides safety and expedition. Novel methods are, therefore, frequently brought into requisition, being suggested by special conditions, and a complete record of these would be decidedly interesting and instructive reading. The matter has been more particularly brought to mind in recently looking over some four or five year old accounts of the great Forth bridge in Scotland, one of them dealing with the method adopted in sinking the caissons for the pier foundations. It may not be amiss to repeat that a specially designed hydraulic shovel was used in digging through a stratum of very tough boulder clay, and some means had to be provided for getting rid of the waste water from the machine which accumulated in the caisson. In order to avoid distressing the workmen, the air pressure in the caisson, after the latter had been made tight against the entrance of water around it by sinking the edges into the clay, was allowed to fall to a point much below the hydrostatic pressure due to the head of water above it. It, therefore, was doubtful whether, with an atmosphere relatively so attenuated, the pumps on the surface would lift the waste water through the sixty or more feet of rise. The very simple expedient was accordingly adopted of setting the suction pipe of the pumps in such a manner that air was drawn in with the water. In passing into the pipe together, the air and water were churned into a sort of emulsion, of course lighter than water alone, and this mixture was easily discharged from the upper end of the delivery pipe without resorting to force pumps.

This notion of taking advantage of the reduced weight of a mixture of water and air, as compared with water alone, is, however, not so very new, and has been applied in many instances in lifting water through heights ranging from about twenty-eight to thirty-six feet. The noteworthy feature in the case of the Forth bridge caissons was the comparatively great height of from sixty to seventy feet.

The circumstance, however, recalled the method which was used at one time, we believe, in the New Jersey end of the Hudson river tunnel in removing the excavated material from the tunnel headings. The material to be disposed of was soft mud. This was thinned to a putty fluid consistency by adding water to it, and in this state it was forced by the air pressure in the heading through a pipe line leading from a receiving trough to a suitable place for deposit on the surface, some distance away from the mouth of the tunnel. The length of the pipe line was quite considerable, but no difficulty was encountered in the working of the scheme. Its simplicity and convenience were certainly striking. There was, as will be readily understood, no machinery necessary. The pipes were simply laid down, and a slight additional tax was put on the air compressors already in use for supplying air to the headings. A somewhat similar plan of

conveying semi-liquid matter is now, we believe, in operation in some places in connection with the manufacture of earthenware; the clay, in a properly prepared state, being conveyed through pipes over short distances, from one building of an establishment to another.—*Mechanical News.*

#### HOW TO POLISH FRET AND CARVED WORK.

Great care is required to put a bright, level body of polish on fine fretwork, owing to the liability of the rubber catching some delicate piece and breaking it off. Great care is required in making a flat rubber, and many place a penny-piece inside to help to keep a flat face. If the fretwork is open, and the edges much seen, varnish the edges, using a small camel-hair pencil, taking care not to smother the back or face with varnish. To prevent the fretwork from warping or curling up it is a good plan to give the back a good wet rubber of polish, which fills up the pores of the wood. Lay the fret down on a board and fasten it down with pins. No filling is required, in place of this add a little varnish in the rubber polish. Polish in the ordinary way, and do not have the rubber too wet, or you will be liable to get fat edges, and spirit off as in ordinary polishing.

#### MUNICIPAL DEPARTMENT.

##### LEGAL DECISIONS AFFECTING MUNICIPALITIES.

**MR. MCLEAN v. CITY OF ST. THOMAS.**—Judgment in special case stated for the opinion of the court pursuant to rule 554 in an action for a declaration of the rights of the plaintiff and the defendants under a deed dated 17th July 1874, and made between the plaintiff and the defendants. By the deed the plaintiff conveyed to the defendants certain lands and a right of way for the purpose of building and other purposes connected with the water works of the city, subject to the conditions of the deeds. The defendants have now ceased to use the property in question for water works, but claimed that under the deed they took and now hold an absolute estate in fee simple in the lands, with the right to use the same for any purposes they may desire, and have the right to use the right of way in the deed mentioned for ingress and egress to and from the lands for the purposes of using and occupying the lands for such purposes as they desire. The questions submitted were whether the defendants were right in these contentions according to the true construction of the deed. The plaintiff contended that the grant was a conditional one for the purpose of the water works only, and that upon the non-performance of the condition the land reverted to the plaintiff, or at least he could restrain the defendants from using it for any other purposes. The court held that under the terms of the conveyance the defendants acquire an absolute estate in fee simple free from any condition, that the grant of the right of way was more restricted, and did not confer a right of way to persons to whom the defendants might lease the lands, etc. judgment accordingly. Plaintiff to have his cost against the defendants.

The Sheriff has placed the municipal books and property of the County of Pontiac under seizure, including the county buildings, for the bonus voted to the Pontiac and Pacific Junction railway some ten years ago, of which no portion has been paid. The bonus was for \$100,000, with interest at six per cent. The county disputed the legality of the debentures on account of the refusal of M. W. J. Poupore, then warden, to sign them, although they were afterwards signed by Warden McNally. The case has been carried through all the courts up to the Imperial Privy Council, with decisions against the county. The debentures, which were held by the estate of the late Senator

Ross, of Quebec, with interest and costs, now amount to \$183,000. Mr. John Bryson, M. P., who sits as Reeve of Mansfield township, has resigned his seat in the County Council. Mr. H. M. McLean, ex-Warden of Pontiac, has gone to Quebec to try to effect a settlement with the Ross estate.

#### HOW TO TEAR UP A STREET.

One of the most marked things in European cities to the American traveler is the frequent evidences of the employment of highly skilled labor upon work which would be done by unskilled labor in this country. A city official of New York said a short time ago it would be impossible to keep the streets of New York in a state of cleanliness and repair similar to the boulevards of Paris, because of the expense, which the tax-payers would not stand. And he went on to say that, granting the tax-payers were willing to stand the expense, the needed number of skilled laborers could not be found. But in Paris such things can be done quickly and skillfully, because a large force, an indefinitely large force of highly-skilled laborers may be hired for a small sum. The result is that even the humblest work is done with an exercise of skill and intelligence which amazes an American. When a street or building is to be repaired a great force of trained laborers is gathered, the materials for labor come with them, and the work goes forward swiftly, quietly, in an orderly manner, with so little muss and fuss that passers-by are hardly conscious that anything is doing.

An American drinking a small bottle at a little table in front of the Cafe de la Paix one day last summer saw an illustration of this. As he discovered later on, a gas-pipe four or five feet below the level of the asphalt, not far from the curbing, was in need of repair. Toward 10 o'clock a man with a spade, a hammer and a chisel appeared with an assistant, who carried two great baskets. The two laid down their tools, and one of them took from one of the baskets a rope and a number of iron standards, sharp at the lower ends. Quickly the men drove these standards into the asphalt and stretched the rope around them so that a square space eight feet by four was enclosed. The assistant took from the basket a big placard and leaned it against one of the standards and went away. The placard announced that the laborers had permission to take up the asphalt and repair a gas-pipe.

The other laborer climbed over the rope and marked out upon the asphalt a square six feet by two and a half. Following this mark he chiseled through the asphalt, and when he had separated the piece inside the mark he carefully lifted it out and laid it to one side. Then he took his spade and dug up the gravel and other stuff that formed the immediate foundation of the asphalt. This material he put into one of the baskets. Then he attacked the earth underneath, and soon had his hole dug to the required depth, with the gas-pipe exposed. All the dirt he had taken from the hole was in the other basket. If there had been a fine carpet up to the edge of the hole on all sides it would have been only slightly sprinkled with soil and not at all injured.

When he had done he gathered up his tools and looked impatiently up the street. His face cleared away at once and broke into a smile of greeting as two laborers, armed with tools and a basket, appeared. He left them and went away. They were evidently plumbers and understood their business, for in almost no time at all the pipes were fixed and the plumbers were standing outside the rope looking about them. They did not have long to wait. The laborer who had dug the hole reappeared and they went away. He proceeded with the greatest care, but very swiftly, to put back the earth and to ram it down with a rammer he had brought with him.

Just about the time he began to put back the gravel a roller and engine appeared. Another laborer climbed over the rope and helped him with this last work in which hot tar was used. They laid