to the stores on Princess street occupied by Messrs. John Oakley & Sons.

WINNIPEG, MAN. — Messrs. Carscaden & Peck, wholesale clothing merchants, have purchased the Watson property on the northwest corner of Princess and McDermott streets, and next spring will erect thereon a brick and stone block, three stories high.—The city council have decided to grant the franchise for an electric street railway to Messrs. James Ross, of Montreal, and Wm. McKenzie, of Toronto.

TORONTO, ONT.—Mr. James Smith, of the Walker House, is endeavoring to obtain a renewal of lease of a lot adjoining the hotel, on Front street, with the object of enlarging the present building.—Mr. Richard West intends erecting four or five houses on the corner of Wilson avenue and King street, Parkdale, in the spring.—A building permit has been granted to J. Bedford & Sons for a detached 2 story and attic brick dwelling, west side Glen Road, north of Maple ave., cost $12,000.

MONTREAL, QUE.—Mr. R. B. McConnell, Superintendent Waterworks, will receive tenders until Tuesday, the 5th inst., for 550 tons of cast iron water pipes.—The Harbor Commissioners invite tenders until the 5th inst. for the supply of lumber for the hulls of three floating derricks and for rebuilding one dredge.—The City Clerk will receive tenders until Wednesday, the 13th inst., for the excavation, masonry and steel superstructure for a bridge over the Canadian Pacific Railway tracks on St. Catherine street.

FIRES.

The Canadian Pacific railway station at Calgary, N.W.T., was destroyed by fire on the 26th December.—The residence of W. Carmichael, Collingwood, Ont., was burned on the 27th inst. Insurance $1,000.—The Continental hotel at Berlin, Ont., owned by Walper Bros., was burned on the 28th inst. Insurance $2,500.—Court's block, St. Johns, N.B., was destroyed by fire on the 29th inst. Insurance $4,000.—The Michigan Central freight depot at St. Thomas, Ont., was entirely gutted by fire on Wednesday last.—A house and outbuildings at Zurich, Ont., owned by Wm. Klapp and occupied by Mrs. Alexander Bosomberg, was burned on Tuesday last.—Sykes & Ainsley's woolen mill at Glenwilliams, Ont., was partially destroyed by fire on the 29th inst.

CONTRACTS AWARDED.

MONTREAL, QUE.—The Harbor Commissioners have awarded the contract for the supply of hemlock planks to Mr. W. H. Kelly.

PHILADELPHIA'S NEW CLOCK TOWER.

The clock-tower to surmount the new Public Building in Philadelphia, which is entirely of metal, rests on the marble-work of the tower, which rises to a height of 337 feet 4½ inches from the ground. Set in the stone base are eight composite columns rising vertically to a height of 67 feet 8 inches above the marble work, and above that converging towards the centre to receive and support the cast-iron base-plate of the figure of William Penn, at a height of 173 feet 3 inches above the marble-work base. The whole of the outside shell, to a height of 67 feet 8 inches above the marble-work, is of cast-iron sectional plates of an average of one inch in thickness. Not to be included in this are the four figures, the four eagles, and the clock-face. These, together with the whole of the external covering of the dome, from the level of 67 feet 8 inches above the marble-work, upwards and including the central figure of William Penn on the apex, which rises to the additional height of 36 feet 8 inches, are, states the *Jewellers' Circular*, to be made of aluminum bronze. All portions with large plain surfaces are made of sheet metal not less then one-eighth of an inch in thickness. The face of the clock is to be 23 feet in diameter and its altitude from the ground 250 feet. The clock will be wound by a steam engine. The bell is to weigh between 20,000 and 25,000 pounds, and will be second in weight to the great Montreal Cathedral bell, which weighs 28,000 pounds, and it is expected that its peal will be heard even in the most distant part of the city. Chimes similar to those of Westminster clock will be used, ringing at the quarter, *half, three quarters, and hour. To distinguish* the time at night, the dial will be illuminated by electricity, so that the position of the hands can be seen from any point of the city. The minute hand is to be 12 feet and the hour hand 9 feet in length, while the Roman figures on the dial will measure 2 feet 8 inches in length.

HOOKS FOR HEAVY WEIGHTS.

(1) Assuming that a girder, such as is used in building elevated railroads, and weighing about eleven net tons, is to be lifted with a single hook, what size and thickness of iron hook would be required?

(2) If in lifting such a heavy weight a hook breaks square off without bending, would that indicate the quality of iron used to make the hook; if so, of what quality of iron would it indicate that the hook was made?

(3) If the quality of iron used in the hook was good and the weight required to be lifted was greater than the hook could stand, should not the latter bend before breaking? Would it, if made of good iron, break at all?

(4) Assuming that hook, such as described, broke, was it not practical and easy to discover, before the hook was made, whether the iron to be used in making the hook was good or bad? If so, what test would be required to discover this?

(5) Assuming that girders of from seven to eleven net tons weight are to be lifted, what should be done with respect to the hooks to be used in doing this work, to secure good and substantial hooks?

(6) Does not the fact that a hook broke off at the end in lifting a girder without the hook bending, prove absolutely that *the hook was made of bad iron?*

ANS. (1) Two and one half inch round iron having a tensile strength of 50,000 to 60,000 pounds per square inch; the bend in the curve having a radius of two and one-half inches. Or a somewhat smaller area of oval cross section in the curved portion.

(2) It would show that the iron was brittle, and of bad quality; perhaps 'cold-short' or containing phosphorus.

(3) A hook should open out if not strong enough to carry the load. It should bend and tear without breaking off short.

(4) The quality of the iron can be determined before making up into hooks, by two tests; by nicking the bar and cutting off a piece and observing the fracture; and by bending it cold to a very short radius. The very best iron will show a fine silky fibre, lustrous without glittering; not at all crystalline; and should bend back parallel upon itself, with a very small space between the two sides of the bend, or should even bend back flat upon itself without tearing open the outer side of the bend.

(5) The hooks should be made of "refined" iron known to be of the best quality; should be made by a competent blacksmith so as not to injure their fibre in working; should be of a practical shape and sufficient size; and the iron should be tested before making up into hooks. Two hooks might very well be used in order to lessen the probability of accident. Such precautions are necessary to be taken because chains are liable to be kinked and to drop their loads a slight distance, suddenly, so that the load is removed from the chain and then instantly applied. Such a sudden application of a load doubles its effectiveness in breaking the chain.

(6) The breaking of a hook at the bend without opening out at all is a proof in itself that it was made of bad iron, entirely irrespective of its dimensions and proportions.

Wax painting, the admixture of wax with the color, is growing in favor for the high grades of interior decoration, on account of the soft luster and the harmonious character of the work. In painting, the wax is dissolved in alcohol and is then ready to be mixed with any coloring materials. The mixture is not as plastic as ordinary paint and requires greater expedition in application to secure the best results.

PUTTY JOINTS V. INDIA RUBBER CONE JOINTS.—A correspondent writes to the editor of the *Decorators' Gazette and Plumber and Gasfitters' Review*, contending that putty joints for closet basins are superior, as far as durability goes, to rubber cone joints, especially those made of thin rubber, as they get perished out in about five years, more or less. He says: "As regards the arms bursting off closet basins in winter time, I have found just as many burst off with rubber cones as with putty joists." He gives the following advice to young plumbers: "Let the lead pipe fit inside the earthenware arm about three-quarter inch, so that there is a little play all round, say one-eighth inch. See that the work is thoroughly dry, then paint where the joint is to be made (there is not any better paint than red lead for the job); place the putty on and mould it; and press it tightly round with the hand (it does not require much; a piece about the size of an ordinary duck's egg will do for ordinary jobs); bind a slip of rag, about eighteen inches long and four inches wide, round the joint tightly; tie about two yards of string round the joint neatly, and if there is any surplus rag at the ends of the joint, cut it off. The joint should be well painted outside, because it makes the joint harder and preserves it from getting rotten with damp or mildew, also prevents rats, mice, beetles, etc., from eating it away.