that they do not warn off the foot passengers and insist on a protecting hoarding. There is this to be said against a hoarding, namely, that it would not be of very much use if the buildings in question chose to come down with a run. A short time ago on King street opposite the cathedral, Toronto, the cornice and freize of an old shop front was removed, and behind it was discovered, not the usual horizontal beam, but a laminated beam cambered to a foot or fifteen inches and tied in with a tie rod at the feet. Whether any test was applied or not to the tie rod, which was in place for a number of years, we do not know, but we are inclined to think not. In a couple of weeks, a two-story brick wall was built on the top of the "beam." Every one knows that the rust gets at iron, even under paint, and we are inclined to question very much whether, if the houses on either side of the one in question were removed, the cambered beam would be held in by the rod. We should expect to see it "kick," and the whole construction descend. At the time of writing there is an exposure of even more alarming character, because absolutely unaided in its ability by neighboring buildings, this is where a shop front has been removed on the north side of King street between Toronto and Yonge streets. Here we see a 12" × 12" beam of about 18 ft. long, with one end resting not more than 2" in a brick wall, and that not on a plate or cushion, but upon a single brick; the other end of the beam is not seen. Two 4" iron columns support the beam at say 5 ft. or 6 ft. intervals, and on the top of the beam is some of the roughest brickwork, laid anyhow, some bulging out to the street, some canted, and all apparently loose, which description answers also to the pier into which the end of the beam is supposed to be "built." Over this miserable brickwork rises two stories of better brickwork, but although the danger is so excessive and so apparent, nothing is done day after day to prevent what may perhaps be a serious calamity. There is a tie rod running at right angles from the end of the beam through about eight joists set parallel with the beam, which appears to have its end in a trimmer arch, but there can be no great help expected from this tie rod, as it is passed through the joists on a curve and is not by any means tight. No doubt now that the discovery of this weakness has been made, its defects will be remedied, but how about those buildings concerning which no alterations are contemplated? Surely these exposures should warrant our inspectors making an examination of all our old buildings, which, so far as we can see, is the only way to avoid some serious accident. The need of a vigilant system of inspection has been further emphasized since the above was written by the falling in of the roofs of a row of five houses on Florence st., Toronto, on July 30th. Only three of the houses were occupied, and fortunately the inmates escaped with but slight injuries.

PROVINCE OF QUEBEC A. O. A.

The annual meeting of the Province of Quebec Association of Architects will take place in Montreal on Thursday, the 29th of September.

The following are the names of the successful candidates in the recent examinations of the above Association: L. Lemieux; Fred. Loomis; M. W. Hogle; D. MacFarlane.

TEMPERING STEEL TOOLS FOR STONE WORK.

The matter of tempering drills and other tools for stone work is one of so much interest to quarrymen, that we may be pardoned for giving at length the very able paper on the subject presented by the *Northwestern Mechanic*. We add to it only this advice, "Stick to a single brand of steel," and let your blacksmith get thoroughly acquainted with its properties. There may be several brands of equally good steel, but they must be worked separately, and with a full knowledge of their peculiarities. That failures occur are more often due to the peculiarities of the steel than to the ignorance of the blacksmith, and if the blacksmith is ignorant in a specific case, it is because he cannot know the properties in every brand of steel. However the article contains its own comment:

In sharpening drills for stone work, the first thing to guard against is not to heat the steel too hot. All the books treating upon this subject say, "never heat above a cherry heat." This is certainly a safe rule to work to, but it does not apply to all varieties of steel. Some kinds will bear heating to a bright red heat, and still others will bear a yellow color without detriment to the metal. In all cases the steel should be worked as hot as it will bear, notwithstanding the old advice "to forge at as low a heat as possible." The forging should be done at as high a heat as the steel will bear, but the finishing should be done at a very low heat, and it is better to hammer the drill until the heat is out of sight and the metal becomes black. For such hammering the blows should be light, and very little drawing of the metal should take place. Heavy blows upon a cold or nearly cold piece of steel will cause the particles of the metal to move over each other, ending in disintegration of the metal.

Cracks often develop after steel has been hammered too cold, or rather after it has been hammered too much while nearly cold.

Suppose that a common ½-inch drill is to be made for use in making holes for plug wedges. Select a piece of ¾-inch octagon steel; cut off a piece 24 inches long, which is just enough to make two good drills. Heat one end of the piece for about six inches in length, drawing it down to ⅝ of an inch; then hammer it octagon, and still further reduce to a little over one half inch. A swage should next be placed upon the anvil, the drill placed therein and operated upon by a top swage and sledge hammer. Draw down to a little more than ½ inch. Take care to make a fine taper at the point where the octagon shape merges into the round part of the drill. This taper should be about two inches long. Take care that the round part of the drill is exactly central with the large part; an overcast at this point will result in making a poor tool. All instruments to be used by percussion must be perfectly straight from one end to the other, otherwise they will spring when struck by a hammer, and a large portion of the force of the blow will be lost, to say nothing of jarring the fingers of the operator and the damage to his temper.

The drills should now be about 18 inches long, 6 or 7 inches of one end being octagon, 2½ ins. taper and 9 or 10 ins. ½ in. in diameter, and round. After finishing as many drills in this manner as it is desired to make, allow them to cool slowly; under no pretence whatever quench them in water or let them lie upon an iron surface while cooling. It is best to throw them upon the coal and dust on top of the forge, or, if it is desired, stick them into dry dirt and ashes in any convenient place.

To sharpen the drill, hammer one inch on one end of the drill to a square section; then flatten out to a flat point, so that the bevel will be about 1½ inches long. Hammer the edges frequently, so that the drill will not spread in width. Upset the end of the drill occasionally so that it asumes and retains a slight diamond shape when drawn down to 1/16 of an inch in thickness at the extreme point; the corners of the drill will be about 1/12 of an inch in thickness. Revolve the drill upon the anvil so that one side of the diamond-shaped end lies true with the outer face of the anvil. With light, true blows thin this side of the diamond point down to 1/16 of an inch, allowing the drill to spread sidewise at the same time. Treat the other side of the drill in the same manner, and after a little truing up of the edges of the drill, it has assumed a correct shape and is ready for hardening.

Heat about two inches of the drill to a dull red; for some steel the cherry red will be sufficient, but other varieties require a little more heat Heat slowly so that the heat is uniform and the color alike all over the heated portion. Lower the drill slowly into a pail of cold water, the point first, and do not hold the drill still for an instant while it is in water. If two inches of the end have been heated, lower the drill into the water about one inch, passing it down slowly and steadily as stated; the end of the drill will then be as hard as "fire and water can make it."

Remove from the water immediately after it has reached the desired depth and polish by rubbing upon a piece of board, on top of which a little sand or dirt has been sprinkled. The polishing process is merely to allow the color to be seen as the temper runs down from the heated portion of the drill. During the drawing process, skill and judgement are the only guides to obtaining a drill that is just hard enough to do the work, and not hard enough to break. The color necessarily varies with different qualities of steel. The steel that will not bear heating harder than a cherry red must have a temper drawn to a purple or blue color. Steel that stands a higher working temperature will stand a straw color for temper and perhaps even lighter.

The instant that the red color is noted the drill must again be plunged into the water.