

cubic yard (accepted); rock excavation, \$2.89. George Henault, \$5.07 per cubic yard; rock excavation, \$3.35. A. C. Hutchison, architect, has awarded the following contracts for a house on Victoria street for Mde. D. McIntyre; Masonry, J. H. Hutchison; carpenter and joiner's work, L. Paton & Son; roofing, Montreal Roofing Co.; brick, W. H. Boon; painting and glazing, J. Thomas & Brothers; iron work, Dominion Bridge Co.

HAMILTON, ONT.—Messrs. Leitch & Turnbull have been awarded the following contracts: Electric passenger elevator for new Bank of Toronto bldg., London; twin elevators for Maritime Sulphate Fibre Co., Chatham, N. B.; hydraulic passenger elevator, Welland House, St. Catharines, belt power; two elevators for Cobban Mfg. Co., Toronto, Ont.; factory elevator for the Tudhope Carriage Co., Orillia; electric elevator for T. B. Greening, wholesale merchant, Hamilton; three Hale hydraulic elevators, for Kingston and Toronto Insane Asylums; elevator for Parsons Produce Co., Winnipeg, Man.; electric elevator for Mr. Crompton, Toronto.—The Hospital Board of Governors have awarded the following contracts for the construction of a steam and hot water boiler and a coal house; Adam Clark, boilers, steam fitting, plumbing and gas fitting, \$1,326; Boothman & Hutchison, painting and glazing, \$42; John E. Riddell, gravel roofing, coping and galvanized iron work, \$117; John Henry, carpenter work, \$67; George E. Mills, mason and brick work, \$820.—Contracts for grading and track-laying of the H., G. & B. extension to Beamsville have been let to Carpenter & Larson, of Grimsby.

BUSINESS NOTES.

Gibson & Wilcox, plumbers, have started at Rossland, B. C.

F. H. Ross & Co., painters, Victoria, B. C., have assigned to J. Issler.

Edward Morgan, plumber and steam-fitter, Ottawa, has made an assignment.

John Burns & Co., plumbers, Montreal, have dissolved, John Burns continuing.

Robert Forsyth, marble and granite dealer, and S. E. Crevier, plumber, Montreal, have assigned.

Perrault, Perrault & Co., contractors, and Banin & Roy, civil engineers, Montreal, are new partnerships formed.

DOOR FRAMES.

Too much care cannot be taken in setting door frames, though many think that all that has to be considered when setting a frame is, that the jambs should be plumb, as they depend on the bracing tacked on to the frame, to keep it square, and to maintain the opening parallel.

A door frame when ready to receive the trim or architraves should be, first, square at the head, from both jambs; second, the jambs should be perfectly plumb both on their face and their edges; third, the face of the jambs should be straight from head to floor. This may be accomplished by using a straight edge on the face of the jamb, making the latter conform to the former. Fourth, the head also should be straight or it will be impossible to "square up" the frame. If all these conditions are fully complied with, the following satisfactory results will follow: First the edges of the jambs—if the jambs are parallel—will be out of "wind;" second, the opening will be

equal width, top and bottom, third, if the floor is level, the door, if properly hung, will swing clear off the floor an equal distance at any point, and will remain stationary at any angle from the jamb, within the range of the swing of the door.

Care taken in setting frames will be well repaid when the doors are hung. Every workman knows how difficult it is to make good work in door hanging if the frames have been indifferently set. A sprung jamb may lead to no end of trouble, and when the door is hung, the chances are that it will be a sorry piece of work, as it is a difficult job to fit a door to a jamb whose face has as many evolutions as a snake fence. Where possible, it is always best to have the man who is to fit and hang the door set the frames, and if advised beforehand, he will take greater pains in setting them than if he expected other than he to hang the doors.

It is always a good plan to have the door frames put together and made ready for setting on the works. All the stuff could be prepared at the shop or factory and made ready to put together, it could then be loaded up on cart or wagon in piles and taken to the works. This would make it easier to handle and more could be taken at each load.

The hinge jamb, or, as some workmen call it, the "hanging stile," should be well secured to the "jamb stud," which should be reinforced, either to another stud, or by having this well nailed between the "jamb stud" and the adjoining one. All studs used alongside door jambs or window frames should be dry if it is possible to secure them in that state, for an unseasoned stud attached to a window or door frame will be sure to pull the jamb out of shape when it dries and trouble will be sure to ensue. The effects may not be much noticed in small doors, but in large doors and in windows the shrinkage of these studs often causes very serious consequences.

PILE DRIVING.

It is frequently necessary to drive a few piles to hold a machine or serve as a foundation for chimney or other structure. It is necessary for the mechanic to possess some simple rule which will tell him whether a pile is driven hard enough to hold the required weight. The best way

to ascertain this point is to let the hammer drop as far as possible, or as far as the pile will stand, and note the drop of the hammer, and also the penetration of the pile under that drop. Then rest the hammer a less distance, letting it drop as before, and again noting the height or drop and penetration of pile. Subtract these quantities from each other, the less height from the greater, and the less penetration from the greater. Divide the drop by the penetration and multiply the quotient by the weight of the hammer. The result will be the weight which that pile will sustain. Should the advanced mechanic require a statement of this formula he can obtain it as follows.

Let L = the weight bearing capacity of the pile.

Let h' = height of drop of hammer under which the foundation is d'.

Then make another test of a light blow of the hammer, calling this drop h'', and the foundation d''. Let W = weight of the hammer; then

$$L = \frac{h' - h''}{d' - d''} W$$

KEEPING THE CELLAR DRY.

A method frequently employed in various parts of the country for keeping the surface water away from the cellar walls of a building so as to insure a dry cellar is thus described by one of our contemporaries: About 1 foot or 16 inches below the finished grade line a space all round the building is paved with a layer of concrete, which is pitched outward from the walls. A heavy coat of tar, or natural asphalt, is applied to this surface and carried upon the outside face of the house walls to the grade. The earth is then filled in so as to allow planting up to the walls of the building. Any water which works itself down on the outside walls would be carried away from the building by the underground paving, and there would be little opportunity for the water to work through the walls. Being under ground, the construction would be protected from the action of the elements to a certain extent, and would be likely to endure a much longer time than a paving or stone work laid level with the ground. It is somewhat surprising that this construction is not more generally used, as it would seem to have many very manifest advantages.

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