

but a mitred bond is very much better, particularly in tall chimneys, where a thorough interlocking of the withs with the outside walls adds very greatly to the strength of the shaft. Stacks of chimneys having an irregular plan, may be bonded quite easily by running the withs through the walls every sixth course and allowing them to show outside as headers. The bricklayer should see that all flues are properly and smoothly parged from bottom to top, and the mortar used for this purpose should be of a little better quality than that used in laying the wall. A good draft depends very much on the smoothness of the interior of the flue. All flues should be cleaned out at the bottom before the bricklayer leaves them, for if the droppings of mortar are left in them for a time, it is next to impossible to clean them out, the mortar will have so hardened. If carried up smooth and fairly straight inside, and without twisting or narrowing up anywhere, a flue 8 inches by 8 inches will be large enough for any stove and for many furnaces, but, when space will allow, it is always better to have a flue for the furnace 100 inches in area. Stove pipes are usually seven inches in diameter. In no case should a flue have a less area than the pipe entering it, if a good draft is desired. If this rule was strictly observed, it will be seen that the customary method of making the area of a flue one brick long and a half a brick wide, would not be allowed; and it may be put down as a fact, that the smoking of one half of the chimneys is due to the flues not having sufficient area.

Foundations.

No part of a building is more important than the foundation and more cracks and failures in buildings will be found to result from defective foundations than from any other cause; and for such defects resulting from the neglect of the builder, the owner will have a fair claim for damages; therefore, if for no other reason, the builder should use every precaution to have his foundation substantial and sufficient to carry the load intended to be placed upon it. For ordinary two story brick buildings, such as one erected for domestic purposes, there should be no trouble whatever in putting down a foundation sufficient to carry it, unless the ground be a swamp or a swail. For a building of the kind named, if the bottom is sand, gravel, shale or sandy loam, footings two feet wide and five or six inches thick, will be ample to carry a fourteen inch wall two stories high. The footings should be of good, sound quarried stones, and should be laid below the frost line; on these footings build a good rubble wall not less than one foot six inches wide, and as high as required. If the earth is of clay, the builder must exercise his judgment in the matter, for if it is a soft yielding clay his footing will have to be much wider than two feet. Indeed, it may be that he may have to lay oak or cedar planks under the footings, making a foundation of five or six feet wide at the bottom; this, however, will depend on the nature and dryness of the clay. For dry, a width of two feet will be ample, but if wet or moist, the width and depth should be increased accordingly. It is quite safe to build on any kind of rock without extra footing, as the softest rock, if not shaley, is as good as the best earthy bottom. When building on a rock bottom, some measures must be taken to allow of water flowing away from under the foundation, as it cannot soak through the rock as it would

through soil. Builders living in certain localities should make it a point to discover the sustaining power of the soil in their several neighborhoods, and then they could build with a certainty of having their structures stay where they were put.

Proportions.

In estimating for brickwork it is quite necessary that the proportion of mortar required to lay the bricks should be known, and though it can not be given accurately, it may be got at sufficiently near on which to base an estimate. The better the brickwork, the less mortar will be required, for good brickwork means fine joints and little mortar, while coarse brickwork means great grinning joints and wide spaces. With bricks of $8\frac{1}{4} \times 4 \times 2$ inches, the following are the quantities of mortar as compared with the whole mass; and the number of bricks required for a cubic yard of massive work:

Size of joint.	Amount of mortar in mass.	No. of bricks in cubic yard.	No. of bricks in cubic foot.
$\frac{1}{8}$	$\frac{1}{8}$	638	23.63
$\frac{1}{4}$	$\frac{1}{4}$	574	21.26
$\frac{3}{8}$	$\frac{3}{8}$	522	19.33
$\frac{1}{2}$	$\frac{1}{2}$	475	17.60
$\frac{5}{8}$	$\frac{5}{8}$	433	16.04

From the foregoing, the bricklayer can easily figure out how much mortar he will want for each thousand bricks laid, knowing the price of lime and cement, for often he may be called upon to lay his bricks in cement.

Electric Bells.

NEARLY every house of any pretension is supplied with electric bells and annunciator in the kitchen, and perhaps other electrical appliances in various parts of the building. Where the carpenter does this work, he should make it a rule to have all wires running from the various bells to batteries, concealed either behind the lath and plaster or along the line of some woodwork where they will not be noticed. All wires used for this purpose, must of course, be of copper and insulated, that is, covered with some non-conducting material. In choosing bells, it should be seen to that no two bells have a like tone, or confusion will surely take place in answering them. There will be no trouble in procuring bells with different tones. Ordinarily five bells will be sufficient, and they may be arranged as follows: One from front door to kitchen; one from outside to inside of kitchen; a foot-bell from dining room to kitchen; one from parlor to kitchen; one from second story hall to kitchen. Of course there may be a greater or lesser number according to the size and character of the building. There is no trouble in placing and putting in working order these bells, and any country carpenter with any brains at all, may, with a half an hour's study, be able to install a set of bells such as is here described. All the material can be purchased from any dealer in electrical supplies, and books of instruction may be had for the asking when supplies are purchased. Electric bells are great conveniences, and should be more used in country residences than they are, and it is thought they would be if the country contractor was only able to put them in buildings cheaply and efficiently.

An old landmark in the city of Ottawa has disappeared in the removal of the old stone building, formerly known as the Globe Hotel, at the corner of Sparks and Kent streets. It was built upwards of sixty years ago by John Burrows, C.E., of the Ordnance Department, when there was but one other stone building in Upper Town.