

SOME EXPERIMENTS WITH MORTARS.

It is a common belief amongst builders, especially amongst bricklayers and foremen, that it is much more advantageous to mix lime-mortar some days before it is wanted, rather than to mix it immediately before the bricks have to be laid.

To test this popular superstition—if we may be forgiven the expression—says the British Clay-Worker, samples of mortar have recently been taken on successive days from two separate heaps of larger size. Small cubes of bricks were moulded from these samples, and set aside for a definite period of weeks, and then broken, in order to estimate their tensile strength.

The following were the results :—

Sample	Days in heap after mixing.	Days exposed to air as a small brick.	Average breaking stress in lbs. per sq. in.
Mortar No. 1	3	50	34.6
" "	4	49	38.6
" "	6	48	38.1
" "	7	46	39.3
Mortar No. 2	4	48	36.0
" "	5	47	38.0
" "	6	46	41.2
" "	7	45	41.5

The amount of calcium silicate formed was found to be exceedingly small, even after very long intervals of time.

Another notion which is very common amongst those who have to deal with the building of bricks into brickwork is that sugar and blood are very good things to mix with the mortars, especially with hydraulic mortars. Consequently, experiments were undertaken to test these views.

Hydraulic mortar tempered with sugar and water, at the rate of half a pound of sugar to a gallon, was found to be considerably stronger than the same mortar tempered with water alone. This was found to be true only if the mortar were allowed to harden exposed freely to the atmosphere. If the mortar were used for sub-squares brickwork, no advantage was found to follow upon making the extra expenditure and taking the extra trouble with sugar.

The same mortar was also tempered with bullock's blood, diluted with one-third of its volume of water. The mortar was then moulded in a brick mould, and was found to set somewhat more quickly. It also showed a considerable increase in strength, both when exposed to the air as well as when laid under water.

Here are some experimental data :—

	lbs. per sq. in.
1. Tempered with water alone	63.00
2. " " sugar solution, and exposed to water during 38 days	62.75
3. " " sugar solution, and exposed to air during 38 days	65.4
4. " " diluted blood, and exposed to water during 37 days	68.3
5. " " diluted blood, and exposed to air during 37 days	69.8

So it seems that there is some truth in these old notions ; and those who hold them will now be able to give scientific reasons for their faith.

HOW TO PREPARE MORTAR.

MR. Edward Wolff writes on the above subject to Engineering, New York, showing defective methods of mortar making employed by builders, and giving the proper method of slacking lime, preserving it in good condition after slacking, and preparing from it strong, adhesive mortar :—

"The slacking operation should be done in a water-tight box made of boards, and so much water should be mixed in that the contents will never get dry, and a sheet of water will remain on top to prevent access of air. If the box will not hold the entire quantity of lime required, the contents may be emptied into a cavity made in the ground close to the pan, and this process may be repeated. This should be done at least two weeks before sand is added, or before the mortar is prepared for use. Slackened lime prepared and kept as stated has been found free of carbonic acid after many years, air and gas having not been able to find access. Instead of following the procedure in slacking lime recommended above, we see in this country, or at least in the neighborhood of New York, a faulty process adopted, which consists in loosely mixing the sand with the slacking lime immediately after water has been added, and forming a dry heap on the surface of the ground, which is left lying there several weeks to give time for complete slacking before the sand

is worked in evenly and the mortar considered ready for use. This heap arrangement is perfectly adapted to circulating air through a material which should be guarded against contact with air. The sun heats the surface of it, makes the air escape after it has given up its share of carbonic acid gas, while at the base of the heap and at the shady side, a fresh supply enters to fill up the vacuum after it has circulated through the heap and has been robbed of its share of carbonic acid gas. That this procedure really happens in such a heap we can easily see when we place a lump of freshly slacked lime in a wineglass, and in another glass place a small quantity of material taken from a heap such as described, and which has been prepared a few days before ; fill both glasses nearly up with water, and add a few drops of muriatic or sulphuric acid to each. In the first glass nothing can be observed, while in the second glass we will see in the shape of small bubbles the carbonic acid escape, which has been absorbed by the lime from the atmospheric air circulating in the heap."

THE TROUBLES OF INEXPERIENCED CONTRACTORS.

HERE in this northern country, writes Mr. Fred. T. Hodgson, of Collingwood, in the Brickbuilder, the winters are long and severe, and bricklayers and masons have necessarily a long spell of idleness, and of course when spring does set in they are anxious to go to work at the earliest moment possible, and in their anxiety frequently contract for work much below its actual value. A case in point has just come under the writer's notice, one of a great number, and was as follows : A strong company in town desired to erect a large brick building for a sort of annex to their extensive meat-curing factory. Plans and specifications were prepared during the winter, and the contracts were advertised to be let about May 1. Nearly all the legitimate contractors tendered for the work, and a bricklayer who had never had any experience with large contracts tendered also. His figures were so low that the company, who thought the regular contractors wanted to swindle them, gave him the work. Everybody knew, who knew anything about such work, that if the successful tenderer went on with the work it would ruin him. He commenced operations, however, engaged his men, and purchased some of his material, when all at once it dawned upon him that he had taken the work too low. Fortunately the papers had not been completed, and he threw the job up. The company tried to keep him to his bargain, and at last offered him a big sum more if he would go on with the work. He concluded to try it again, did so, this time under the knowledge that he was tied down on paper to complete the work. He discovered the other day that even with the additional sum allowed him he would lose money, so abandoned the work a second time. The company was obliged to have the work done, so were compelled to fall back on the regular contractors, who now command the situation, and the owners have to pay the piper. The first contractor has now got into trouble that may sweep away a lot of money, and he has missed several smaller jobs that were within his capacity as a contractor.

This is one of many like cases that I have met with in my forty years' experience. Men are too anxious to become contractors, and fail to recognize the fact that special qualities are required in a man to make a successful contractor.

PUBLICATIONS.

THE frontispiece of the June Review of Reviews—"Prince Bismarck in His Home"—is a striking representation of the family group at Friedrichsruhe.

"Property" is the title of a new monthly publication, the first number of which has reached us. It is declared to be published in the interests of investors in all lines. The publisher is Mr. H. Bragg, Montreal.

The Laughlin-Hough Drawing Table Co. has recently been formed in Guelph, Ont., with a capital stock of \$55,000, to manufacture patent drawing tables and boards for architects. The company have just completed arrangements for manufacturing, and the goods will shortly be placed on the market.

An association has been organized by the master painters and decorators of Montreal, with officers as follows : president, John Murphy ; French vice-president, A. Laurin ; English vice-president, J. B. Owens ; treasurer, C. T. Charlebois ; English secretary, W. T. Castle ; French secretary, F. E. Meloche.