

position to gauge the effect of the introduction of extraneous material in the harder brick piers. It is, unfortunately, not an uncommon experience in dealing with hard bricks, to find that some workmen make no endeavor to cut closers, but substitute bricks which can be more readily manipulated. This defective work would be almost entirely obviated if brickmakers would produce king and queen closers of all the harder varieties of bricks.

An interesting series of photographs was taken of all the piers under different stages of compression, from which some of the most instructive and typical forms of failure may be studied. At early stages of pressure, the mortar and cement joints begin to fail—they squeeze out, and portions drop off. This is followed by the cracking of some of the bricks, and spalling off at the angles. Longitudinal seams, in most instances, were opened out in a line with the



FIG 4.

vertical joints or closers, and finally, in many instances, the piers bulged out on all sides and collapsed.

The differences in the behaviour of the piers while under compression were accurately noted in each case.

It is stated that, "all through the series it was evident that the vertical line of joints formed by the closers was a plane of weakness, and it was generally at this line that the serious cracks first showed themselves." In the discussion which followed the reading of the report, Professor Unwin said: "If the structure is one that has special vertical planes of weakness, like the joints in a pier which has not been built very long, then the crushing load develops vertical fissures, due to the tension acting horizontally." We may point out that in the brick piers experimented upon by the American Institution of Civil Engineers at Watertown Arsenal, the normal type of failure was this vertical splitting of the pier, as in nearly every instance longitudinal cracks and seams were opened up. In the American examples, so far as we can judge from the sketches and diagrams appended to the Official Report, no closers were used, the bricks in all cases being whole bricks, so disposed as to break joint. Various types of bonding were also employed; in some instances as many as five or six courses had the vertical joints in one plane, the alternating five or six courses breaking joint in another plane. Yet, even in these cases, the same vertical fissures appeared, emanating from the vertical planes of weakness.

It seems, therefore, fair to infer that there is little evidence to show that the closer method of bonding is more defective than the whole-brick bond. Moreover, as the American piers were much older than any of the piers tested by the Royal Institute of British Architects, the age ranging from 15 to 24 months, the newness of the pier does not, in this respect, appear to be of the importance suggested by Professor Unwin.

TALKS ON HOUSE PAINTING.

It is doubtful whether the average carpenter and builder or general contractor gives the subject of painting the attention it deserves, says Mr. Seymour Jennings, and this is especially the case with those who carry on business in a comparatively small way. If the amount of painting to be done forms a very considerable part of the work, as in the case of repairs, they will, as a rule, either decide not to tender at all, or else will obtain a tender from a painter as sub-contractor. This is all very well for the painter, but the builder, of course, has to make his price somewhat higher, to cover his own trouble, and so he stands but little chance of getting the work.

In new work, as in old, the painting is an important item, and it behooves the contractor to see that it is executed in the most economical manner possible. Now there is no part of work in the building trade that is so easy to "scamp" as the painting. If the brickwork is wrong, or if the woodwork is inferior, it shows itself at once, and besides, as far as the actual structure itself is concerned, the district surveyor or his equivalent will look after that, to say nothing of the architect. But when it comes to the paint the case is very different. The local authority, whoever he may be, doesn't care twopence about it, and in ninety-nine cases out of a hundred the architect himself knows little concerning it—in fact, excepting so far as the actual appearance of the work when finished is concerned, he as a rule has no idea whether it is good or bad.

These facts must be borne in mind by the carpenter who gives his work out to a sub-contracting painter to do. Unless he has made a study of paints and painting, he is in the painter's hands almost entirely. Not that I have a word to say against painters as a class; considering the temptations they have to contend with, they are, I, think, in integrity not a little above some other trades I could mention. The point that I do want to insist upon is, it never pays to scamp the painting. The defects will soon become obvious. Suppose, for instance, that you have some work to do at a low price, and, in order to make it pay, it is impossible to use the best materials. You must economize somewhere. Very well, but don't do it to any extent in the painting. If you use, for instance, a common resin varnish at a few shillings a gallon, and after a few months it cracks in all directions, what sort of a reputation do you think you will get for yourself? I do not mean to say you should use 20s. varnish, but do use fair quality, honest goods.

If I have convinced you that it always pays to let the painting be done as well as possible, within the price to be paid for the work as a whole, it will, of course, follow that if you do give it out, you should, under no circumstances, let it to any one who is not known to you to be an honest, straightforward man of his word. Again, if you decide to do the work yourself, you should for your own protection, only deal with a first-