

soggy and not drying out in proper time is to cause it to lose its set or strength, and in consequence it does not become hard. In other words the result is the same as if the plaster has been retempered. It is a well known fact that with plasters or Portland cements when they are retempered their strength is lost.

As time goes by, therefore, the plaster that has been allowed to remain wet and soggy dries out, but it is very apt to fall from the wall or crumble away like so much sand.

2. Staining Due to Dampness.—The scratch and browning coats of plaster should be perfectly dry before the finish coat is applied. If the finish coat is applied before the scratch and browning coats are dry, any staining from the wood lath (sap) or from brick or terra cotta walls will be carried by the dampness through to the surface of the finish coat, leaving a discoloration or stain. All moisture in the scratch and browning coats, and for that matter in the brick walls as well, dries out through the finish coat, with the result that the latter remains damp until all this moisture has entirely dried out. This seriously injures the finish coat and it is liable to remain soft. In large office buildings where the walls are massive, the dampness remains in the plaster for a long time, and beads of water are frequently seen standing on its surface. In case of brick walls when the water evaporates it leaves long, fine crystals of substances that have been brought to the surface in solution. Usually these substances are crystals of carbonate of soda, chloride of soda or other soluble salts. The use of damp-proof paints on brick or terra cotta walls, before plaster is applied, prevents much dampness coming through the plaster and should be used whenever possible.

3. Effect of Frost on Scratch and Browning Coats of Plaster.—The general effect of frost on plaster is to seriously injure its binding qualities or strength. The plaster becomes soft and does not set hard, and the plastered wall that has been frozen, is liable to fall. If the frost has gotten into the first or scratch coat of plaster and causes it to lose its strength, it will not be strong enough to hold up the two succeeding coats (browning and finish), even though no frost has gotten into these last two coats; but should the scratch coat not be injured to such an extent as to cause it to fall, the frost will thaw out and in this process push off the browning and finish coats.

It is not an uncommon thing to see the browning coat separate from the scratch coat in large sheets where frost has affected the latter. In like manner, if frost gets into the second or browning coat, this will be damaged, as in the case of the scratch coat, and if the third or finish coat is applied while frost is still in the browning coat, the finish will be pushed off in sheets when the frost thaws out, just as was the case of frost in the scratch coat.

4. Effect of Frost on the Finish Coat of Plaster.—Frost causes the finish coat of plaster to become soft and chalky and without strength or hardness. The finishing coat rubs off like whitewash and is a constant source of annoyance to the occupants of the house.

5. Plaster Appears Dry.—Scratch and browning coats of plaster appear to be dry on the surface when, in reality, underneath the surface they are still wet. This appearance is often misleading and the finish coat is applied too soon, with the result of having the finish coat remain damp until all the moisture has dried out from the under coats. As the finish coat is less porous than the scratch or browning coats, it naturally takes longer for a wall to dry that has had the finish coat applied while the under coats are still wet, than if the moisture in the under coats were allowed to dry out before applying the finish coat. This dampness in plaster is the cause of the disfigurement of decorations.

6. Staining and Cracking Due to Use of Salamanders and Coke Pots.—The sulphur and smoke from the coke or coal used in the salamander disfigure plaster. The smoke blackens the wall, but the sulphur of the coke unites with the lime in the finish of the plaster and forms sulphide of lime, which is yellow. These are the yellow spots or blotches that appear so often on the

surface of plaster that has been applied in winter time. As the sulphur only unites with lime when it is damp, these yellow stains appear in round spots, the moisture drying out in small circles, just as if water were dropped on blotting paper and were allowed to dry. These small damp spots absorb the sulphur of the coke and cause an unsightly wall. The small furnace used by the plumber also adds to this yellow staining. Coke pots, when placed to near the recently plastered wall, are apt to dry it too quickly, and, in consequence, draw the wood lath, causing the lath to twist or buckle and the plaster to crack.

7. Decorating on Plaster that is not Thoroughly Dry.—When plaster is damp, as shown above, the lime which is a constituent of the finish coat of all plasters (there is no exception to this rule) acts as a bleaching agent. Paper applied on damp plaster, therefore, will fade or discolor, and paint or kalsomine will be similarly affected. Naturally the more delicate the tints of paper or kalsomine the more liable they are to be affected. Often rooms are repapered and repainted, and even the second application of paper or paint is spoiled. If the dampness in the wall is excessive, the paint is pushed off from the plaster and peels off in spots several inches in diameter.

Walls should be thoroughly dried before they are decorated and this takes time. If proper care has been taken in heating the building when the plaster was being applied, and this heat has been kept up until the trim is on and the walls are hard and dry, there is no reason why with proper precaution the walls cannot be decorated. Paint is very much less affected than kalsomine or paper. Delicate shades of either are more liable to damage, but if the walls are properly sized they can be decorated with satisfactory results. If very expensive decorations are to be made directly on the surface of the plastered walls it is best to allow the walls to become seasoned for at least one year. When decorations are on canvas or if burlap is used instead of wall paper little trouble is experienced. The trouble lies in the mistake that plaster that is hard and does not feel wet to the touch is considered by most persons to be dry, but this is far from the truth.

As poor drying conditions in winter are the cause of the troubles of plastering in winter, replace them with proper drying conditions and there will be no trouble. This can be easily brought about by observing the following simple precautions:

First, a building should be well enclosed. Nothing is gained in time by starting plastering before a building is properly ready to be plastered.

Second, a building should be well heated by furnace, steam or hot water heat. Salamanders, coke pots, stoves or open fires should not be used. They are not necessary and their use does not hasten the work. If, however, they are used their bad effects can be materially lessened if care be taken in their use. In case of coke pots or salamanders have them lighted out of doors, so that the first smoke will pass away and the coke become well ignited before they are placed in the house. Coke should always be used and not coal, as there is less sulphur in coke and less smoke than in coal.

Third, a building should be well ventilated. The windows should be opened from the top in the daytime and closed at night. This allows the current of air to circulate through the building and carry out the dampness. It is a great mistake to keep the building tightly closed during the time it is being plastered. Fresh air is a good dryer.

Fourth, if the precautions in regard to properly enclosing, heating and ventilating a building are looked after carefully, there will be little trouble with winter plastering. It is not well to paper or paint too soon on new plastering. Even under the best conditions, the plaster finish acts as a bleaching agent, and it should be well seasoned before it is decorated. When it is necessary to decorate quickly, the precaution should be taken of using canvas or an extra heavy coat of sizing before either papering or painting.—D. L. Haigh in Engineering Record.