

is found to come from material of different kinds that occupies the interior. Salt water will soak through the wall, making a stain which no paint will counteract as long as the building is used for storing salt. It would be a difficult matter to enumerate all the causes of stains that appear on painted brick walls. The only safe plan is for the painter to discover the cause, and, if possible, remove it.

In rare instances, the paint turns black a few days or weeks after its application. Why it should do so is one of the mysteries of painting. Although there are several reasons advanced, there seems to be none of them plausible. Probably the nearest approach to an explanation is, the brick contains some kind of a caustic alkali which compounds with the fat of the oil enough to discolor it. Coal oil is also recommended as an alleviation for this aggravation, applied the same as for efflorescence.

#### TO REMOVE RUST.

A mixture of rosolic acid, sulphuric acid, tartaric acid, ferrous sulphate, potash-alum and mucilage has been patented by Dr. August Buechner, Heidelberg, Germany. The invention consists in the production of a compound of various substances which not only serve for the extirpation of rust, but also for preventing the metal surface from becoming again covered with rust, as is the case wherever chloride, organic and inorganic acids are employed. As regards these, it was necessary to wash the surface of the metal off carefully after use, with clean water, to remove the said substance. But this could only be accomplished in an imperfect manner, as a certain quantity of moisture or diluted acid would remain in the pores of the metal, which caused the rust to return quickly. It was also observed that objects of iron and steel, from which the rust had been removed, by the use of acids or chlorides, showed a still greater formation of rust after a short time than before, and that even thorough rubbing off and greasing could not prevent that. Therefore, the use of acids and chlorides has been abandoned, and rubbing down with emery and other polishing materials substituted to remove the iron mould present, but by this latter method the parts not attacked by rust of the article are usually injured at the same time. On the other hand, it is not always possible to get at the rust with emery, owing to the shape of the articles. By the use of the liquids composed as described below, this evil is obviated, inasmuch as all rust can be removed at once by applying the liquid, and a reappearance of the rust does not take place. Any anti-rust preparation can only be of practical use if the condition be fulfilled. The medium used consists of the six ingredients named above.

The mixture should be prepared as follows:

1. Melt 5 grams (77 grains) gumtragacanth entirely in 200 water and liquify in a dish on the water bath.

2. Dissolve 3.5 grams (54 grains) of tartaric acid in 50 parts water and mix with 0.5 parts of chemically pure sulphuric acid by shaking. Into the acid mixture, when still warm, put the finely pulverized rosolic acid and leave alone until dissolved.

3. Both substances enumerated under 1 and 2 are united by pouring the latter into the former. Stir the whole until a homogeneous mass ensues.

4. Finally add a solution of 10 grams (144 grains) of pure ferrous sulphate and 5 grams (77 grains) of potash alum in 100 parts water to this mixture. Shake the whole well in a bottle and filter over spun glass.

For removing rust from larger objects, coat the oxydized spots repeatedly with the liquid, leaving the remedy to act for some time. Smaller articles that cannot be treated singly, such as rusty sewing needles, thimbles, knife blades, steel pens, bottle stoppers, screws, etc., should be laid into the liquid diluted with a little water, until all rust has become loosened. The goods are then taken from the bath, rinsed off well and finally agitated for some time with a mixture of 6 parts dry sawdust, 3 parts fine chalk and 1 part pulverized burnt lime. The iron or steel itself or their polish is not attacked by the remedy.—Painters Magazine.

#### ARTIFICIAL STONE COMPOUNDS FOR BUILDINGS.

The following formulæ, by "W. C. S." in the Building News, gives the methods of preparing some of the best known products used as artificial stones, concretes, etc.:

No. 1.—Ingredients: 10 parts of hydraulic lime which has fallen to a powder, with water to form a paste; 25 parts of gravel, 5 parts of coal ashes or wood ashes, water q. s. Preparation: Thoroughly mix the mass and add sufficient water to make the mass equal to 50 parts bulk, then pour the mass into moulds made of wooden boards and allow it to set.

No. 2.—Ingredients: 125 parts of hydraulic lime which has fallen to a powder, mix with sufficient water to form a paste, then add 250 parts of ground oyster shells and 150 parts of ground peat ashes and sufficient water to make the whole

equal to 500 parts in bulk. Then pour into mould until set, as in No. 1.

No. 3.—Ingredients: 100 parts ground quartz sand, 2 to 10 parts finely ground plumbic oxide, water-glass (silicate of soda) q. s. Mix the solids together, and then moisten with water-glass until thoroughly mixed, and firmly press into moulds. When set, the stone mass thus formed should be burned.

No. 4.—Ingredients: 1 part of cement (Portland), 3 parts of sand, dilute sulphuric acid (1 part acid to 50 parts water). Preparation: Mix the sand and cement into a dough with the acid fluid and submit to a strong pressure. Then dry the stones in the air for two days and afterwards steep them for 12 hours in water and acid (3 of acid and 100 of water), and finally dry them.

No. 5.—Ingredients: 2 parts of Portland cement, 1 part of sand, 1 part of cinders, solution of green copperas q. s. Preparation: Dissolve the green copperas in water until no more will dissolve. Separately mix the three solids together in the dry state, and then moisten them with the solution of copperas; press the mass into molds and allow them to dry in a warm place for two weeks; then take the blocks out of the moulds, steep them in water for 24 hours and finally dry for four weeks.

No. 6.—Ingredients: 10 parts unslaked lime, 3 to 4 parts of water, 40 to 60 parts of dry sand, 2½ to 10 parts of hydraulic cement. Preparation: Mix the lime with the 3 or 4 parts of water and then mix in the sand, and finally the cement. Afterwards grind the compound and press into moulds.

No. 7.—Ingredients: 1 part of alum, 15 parts water, 2 parts hydraulic lime, 10 parts sand, 1 part cement. Preparation: Dissolve the alum well and then add the other ingredients and work up to the required consistency; press into moulds and allow to remain for 24 hours. The blocks of stone thus prepared will not be fit for use for at least 14 days; but to be thoroughly hard requires longer drying.

No. 9.—Ingredients: 4 parts of coarse sand, 1 part of cement, gravel q. s., lime-water q. s., 2 parts of fine sand, 1 part of cement, 1 part of dry metallic coloring matter. Preparation: Mix the sand, cement and gravel with sufficient lime-water to form a paste; press this into moulds and cover the surface with a composition made up of the fine sand, cement and coloring matter. When the surface is nearly dry brush it over with a solution of water-glass.

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