

Rees Abraham (1819) The Cyclopaedia or Universal Dictionary of Arts, Sciences and Literature Vol XXXIII. London Longman, Hurst, Rees, Orme & Brown

SOURING Lime for Mortar and Plaster, in Rural Economy, the practice of macerating and rendering it proper for these uses. It has been stated by the writer of an Essay on Quicklime as a Cement, that when lime is to be employed for making plaster, **it is of great importance that every particle of the limestone be slaked before it is worked up**; for, as the smoothness of the surface is the circumstance most wished for in plaster, if any particles of lime should be beaten up in it, and employed in work before they have had sufficient time to fall, the water still continuing to act upon them after the materials have been worked up, will infallibly slake such particles, which will then expand themselves in a forcible manner, and be productive of those excrescences upon the surface of the plaster, which are commonly known by the name of **blisters**.

Consequently, if it be intended to have a perfect kind of plaster, which is capable of remaining smooth on the surface and free from blisters, **there is an absolute necessity for allowing the lime of which it is composed, to lie for a considerable length of time in maceration with water, before it is wrought up into plaster, which is a process or operation that is here termed souring.**

Where the limestone is of a pure quality, and has been very perfectly calcined or burnt, there will seldom be any danger of the whole of the lime falling at first; but where it has been less perfectly burnt, there will be many particles, which will require to lie a long time before they will be completely reduced into powder. This macerating process or operation is consequently **more necessary with impure than pure lime**; but still it ought on no occasion to be omitted or neglected, as there is not the smallest probability, but that some blisters would appear on the surface of plasters made with even the purest lime, **when worked up and applied immediately after being slaked, without undergoing this souring process in some degree.** The practice is also common of souring the lime when it is intended for being used in mortar; but although it is not so indispensably necessary in this case, as in that where it is designed for plaster, yet, when properly performed, it is evident, it is said, that it must even in this instance too be of utility; as any dry knots of lime that may fall after the mortar is used, must have a tendency to disunite the parts of it, which have already been united, and to render the mortar or cement much less perfect than if the whole had been properly mixed up with the materials and allowed to sour before using. More circumspection is, however, requisite, it is said, in souring lime for mortar than for plaster; for, as it is not necessary that plaster should be endowed with a stony degree of hardness, there is no loss sustained by allowing a great proportion of the lime which is designed for that purpose to absorb its air before it be used; for a very small quantity of caustic or quicklime will be sufficient to unite the whole into one slightly coherent mass. Consequently, the only circumstance which is necessary to be attended to in souring lime for plaster is, that it be allowed to macerate long enough, as there is no danger of ever erring on the opposite extreme. It is indeed necessary, it is said, on some occasions, it should lie a very long time, before any certainty can be had, that all

the particles are thoroughly slaked, as pieces of lime-shells have been known to lie upwards of six months exposed to all the changes of the winter weather, and fall after that period. . Such slightly burnt stones are indeed, it is said, usually separated **in sifting the lime for plaster**; but as some small chips may escape, it is **always the safest way to allow lime to lie in the sour a very considerable length of time**. Another advantage of some consequence likewise, it is said, attends this practice; as, if by such means a large proportion of the lime be allowed to absorb its air, and become in the mild or effete state, when it is wrought or beaten up for use, the water can have no sensible effect upon this mild lime; it will only separate the particles of the caustic lime more perfectly from each other, so as to permit it to dry without cracks of any kind, and render the surface of the plaster a great deal more smooth and entire, than could have been the case, if the whole had been made use of while in the perfectly caustic state. By this means too, those crystalline exudations, which are so common on walls newly plastered, will be the best and most effectually prevented. **On all which accounts, the practice of suffering lime, which is designed for plaster, to macerate or sour a long time with water, should never, it is said, except in cases of necessity, be neglected or overlooked.**

However, as lime, from the moment of its being fully slaked, begins to absorb air, and continues to take up more and more every minute from that time until it becomes perfectly mild or effete, so as to be rendered **gradually less and less proper for forming mortar of any kind**, it necessarily follows, that where lime designed for this purpose is permitted to lie long in the sour, a great part of it will be converted into chalky matter, or uncrystallized mild or effete lime, in which state it will be capable of having so much sand added to it, or of forming so good a mortar as would have been the case, **if a larger proportion of the sandy material had been made use of in the first place, and been wrought up as speedily as possible, without so much souring, into mortar**, and immediately made use of. The evil will also be increased where the lime has been but slightly burnt, consequently the best burned lime should always be preferred for this use, which, **when carefully sifted after slaking**, will soon fall sufficiently for this purpose; as the main point here is to have the mortar firm and binding; and the falling or bursting of very small unslaked particles of lime in the mortar afterwards, will not be productive of such evident inconvenience as is the case in the making and using of plaster.

In the making of good mortar, it will consequently be necessary to get the best burnt lime, and to only suffer it to macerate or sour with water a very short time before it is wrought and applied. The best burnt lime, however, mostly requires some days to macerate and sour with water, before the whole becomes fully slaked and fallen for this use.

This doctrine of the nature and utility of the souring process in the making of these substances is supposed to receive additional proof and support from the practice which was followed by the ancients, which is very similar to this, if the accounts given of it by Vitruvius and Pliny can be depended on. The former, it is said, expressly recommends that the lime should be macerated or soured in water, for exactly the same reasons that have been already seen, as it is only by that means, he asserts, that the plaster can be prevented from blistering. His

words are these: “ tunc de albariis operibus est explicandum. Id autem erit recte, si glebae calcis optime, ante multo tempore quam opus fuerit, macerabuntur. Numque cum non penitus macerata, sed recens fumitur—habens latentes crudos cuculos, pustulas omittit. Qui calculi dissolvunt et dispersant tederii politiones.” Wit. lib. vii. c. 2. t –

The latter points out, it is said, in a still more clear manner, the difference between the quality of the lime, which is necessary for making mortar and plaster:—a certain proof, it is conceived, that the ancients had been very accurate in the observing of facts, as they could have no idea of the reasoning by which those facts might have been corroborated or explained.

furto, calcis sine ferrumine suo camenta componuntur.. In trita quoque quo vetustior, eo melior. In antiquarum (anti quis) arduis invenitur, ne recentiore trita uteretur redempter; id est nulla (nullae) tertiae rimae faedaverit.” Plin. Hist. lib. xxxvi. c. 23. –

In this passage, the writer strongly contrasts, it is said, mortar (camenta) with plaster (intrita). The first, he contends, by implication, ought always to be composed of lime cum ferrumine suo; that is, lime which still retains its gluten, cementing or adhering principle; lime that still keeps or possesses that quality, by which it is enabled to unite detached matters into a solid body, and glue them, as it were, together. In other places of the same work, the author, it is said, describes it as calcis quam vehementissima,; lime in its most acrid state; that is, perfectly caustic lime. And this quality he plainly hints, it gradually loses by time, so as to come at length to be sine ferrumine suo: in which state, as it is impossible to become a good firm mortar or cement for building with, those who make use of it as such are severely reprehended. But although the practice of **using old and inert lime for mortar is condemned**, it is immediately added, as has been seen above, that for plaster it is better than new, because it is not so subject to crack in the work. Thus it would seem, that the importance of the souring operation or process, for these different purposes, was well known at an early period, though the principles on which its utility depended, were probably far from being understood.