

phenomena take place: the lime has a powerful attraction for water and absorbs it with avidity, the absorption is attended with a hissing noise, the lime heats, swells, and falls into a powder. The *water* uniting with the lime becomes *solid*, and therefore evolves its latent caloric, the heat generated dissipates part in vapour, and by its expansive power separates the particles of the lime into a powder. If the process be conducted in the dark light is emitted; and if the quantity slaked be great, the heat generated is sufficient to cause ignition, and instances have occurred in which leaky ships loaded with lime have been set on fire. In preparing the burnt lime for agricultural uses, some farmers lay the shells upon a fallow in small hillocks of about a bushel and a half in each, which they cover up immediately with some fresh soil made very fine and laid on moderately thick, clapping it down with the spade so as to exclude rain or air; it remains a few days in this state, when it will be found that the moisture of the earth will have completely slaked it; this favours the thorough reduction to powder, and prevents the crusts and cakes which exposure to rain for slaking generally occasions. When thus fitted for use, it should be scattered over the field, and well mixed with the soil immediately, with shallow ploughing and thorough harrowing. 200 bushels may be applied to the acre from such heaps placed six yards from centre, to centre. The quantities of lime per acre will be governed by circumstances and the quality and condition of the soil. Other farmers again lay the lime down in a long heap or mound on one side of the field upon which it is to be applied, two labourers are then employed to turn the mound, and a third waters it, when the whole has been thus gone over, it is allowed to remain for four or five days, when it is again turned to discover any unslaked portions, which are then reduced with water. When it is duly prepared, it is then spread over the field and

ploughed in, or prepared by combination with earth in the manner which we shall presently describe.

The principal advantage derived from the burning of lime in fitting it for a manure is the facility with which it can be reduced to powder: the prevailing idea, that calcination (or burning) is requisite for other purposes is incorrect.

Experience has established the utility of Lime as a manure, although some of its peculiar actions are not satisfactorily understood.

From what has been already stated respecting the properties of quick lime, and mild or slaked lime, it will be obvious that their respective operations depend upon principles entirely different; and the solution of the question, whether quick-lime ought to be applied to a soil, depends upon the quantity of *inert*, vegetable matter that it contains, as quick-lime renders such inert matter nutritive; and the solution of the question whether mild lime, marls, or powdered lime-stone, or calcareous shells, should be applied, depends upon the quantity of calcareous matter already in the soil. All soils, which do not effervesce with acids are improved by mild lime—and ultimately by quick-lime, which in process of time becomes mild lime. We may here observe that the effervescence of a soil when mixed with an acid implies the presence of a carbonate in them, which is decomposed by the additional acid. The carbonic acid is disengaged in air bubbles, which will be either few or copious according to the quantity of the carbonate and acid: the boiling or bubbling of the mixture is termed its effervescence.

When the circumstances of the soil require the application of quick-lime—the lime should be applied whilst in its powdered and caustic state, so that it might come in immediate contact with the minute particles of the soil—a less quantity at this time would be required, and it would act most powerfully upon the original matter lying undecomposed in the soil, viz.