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MANURES.

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Lime.—Lime is one of our most valuable manures, and its use constitutes one of the principal improvements in modern agriculture—we shall therefore devote a large proportion of the present number to the consideration of it. Our Provinces abound with it, and with soils that would be greatly enriched by the application of it. The cold clay lands, the unproductive moors, the moss-covered pastures and meadows, and the stunted growths upon many of our cultivated fields, prove that our farmers are either not aware of the value of this important fossil within their reach; or if aware of it, that they are culpably negligent in the use of it. The common lime stone of this Province is lime in combination with carbonic acid, forming a carbonate of lime. The plaster of paris, or *gypsum* as it is called, is lime in combination with sulphuric acid, forming a sulphate of lime. Lime may be used for agricultural purposes either by crushing the unburnt lime stone to a powder, or by burning it. But burning is the process generally preferred and adopted; because it gives immediate activity to its influence, renders it lighter to remove from place to place, and more easily reduced to powder, in which state it can be scattered more evenly over the soil, and more thoroughly incorporated with it. When carbonate of lime or common rock lime is exposed to a strong heat, the carbonic acid is expelled from it, the stone becomes lighter in weight although not apparently reduced in size, it forms a brittle mass easily pulverised, either by the addition of water, or

long exposure to the air. The lime when thus burnt is in many places called *lime shells* or *shell lime*, or simply *shells*. The expulsion of the carbonic acid is the only change which is effected upon the constituent principles of lime stone. The *setting* of lime in common mortar depends upon its again attracting carbonic acid from the atmosphere through the porous mass composed of lime and sand; when lime or mortar has been kept for a long time exposed to the air before it is used for building, it is said to be *spent*, as it has already become charged with carbonic acid, and cannot be set, or, act so well as a cement. Lime when burnt, and previously to its being slaked, is termed *quick lime*, which is caustic to the tongue, and speedily effects the decomposition of animal and vegetable substances. In this state either in powder or dissolved in water it is injurious to plants, but when it is reduced to powder with water, or by exposure to the air, it again attracts carbonic acid, loses its caustic properties, becomes mild, forms a valuable ingredient in soils, and prevents the too rapid decomposition of substances already dissolved.

When quick lime is mixed with any moist fibrous vegetable matter, there is a strong action between the lime and the vegetable matter, and they form a kind of compost together, of which a part is usually soluble in water; by this kind of operation it renders matters, which were before comparatively inert, nutritious, and as charcoal and oxygen abound in all vegetable matters, it becomes again converted into a mild carbonate of lime, and in becoming so, it prepares soluble out of insoluble matters.

When lime is *slaked*, the following