

**Agriculture**  
Agricultural Science, No. 2

Oxygen, calcium, carbon, sulphur, phosphorus, nitrogen, hydrogen, chlorine, and fluorine, or other simple elements, never yet decomposed or rendered more simple. They all enter into lime formations. Oxygen and calcium are the elements of quick lime. Oxygen and carbon form carbonic acid. The oxide of calcium combined with carbonic acid, forms the carbonate of lime—the material of extensive mountain ranges, of limestone in all its varieties of texture, color, and other properties. Coral formations, extending many thousand miles in different parts of the earth, are the carbonate of lime, and used for the ordinary purposes of that mineral. Marble, existing in several hundred varieties, are also carbonate of lime. So is chalk. So are several hundred crystalline forms of this important element of our globe. These crystals, though presented under two or three hundred different shapes, can all be reduced to one shape, shown in rhombic spar, which, if broken into fragments smaller than the head of a pin, presents in every fragment a rhombic or diamond shaped crystal.

All the carbonates of lime are composed of three simple elements or ultimate principles, viz: Oxygen, the great supporter of combustion; carbon, the principal element of coal in all its varieties—whether mineral or vegetable, of course the most important combustible. The oxygeniferous exists in two combinations, viz: with carbon and calcium; these two compounds are also combined, of course will more compound, producing the most abundant carbonate, and one of the most abundant rocks and useful minerals upon our globe.

Next to carbonates of lime, the sulphates are the most abundant and useful of all lime formations. These are also composed of three elements, and the same as in the carbonates, except that sulphur takes the place of carbon. The oxygen and the sulphur form sulphuric acid; that, combining with the oxygen of calcium, gives the sulphate of lime. This abundant deposit of lime formation, also presents very numerous appearances. All the sulphates of lime, or nearly so, give to the thumb-nail. The carbonates yield to the point of the knife, but not to the thumb-nail. The carbonates effervesce with any strong acid; even vinegar, which effervescence shows what is called life in an eye-stone, which is the mouth-piece of certain shells; all the shells being the carbonate of lime. Sulphuric acid has a stronger hold in its various combinations than most other acids, and hence, is not displaced either by carbonic, muriatic, or nitric acid. Consequently the sulphate of lime does not, like the carbonate, effervesce with any common acid. The thumb-nail, the point of a knife, and any common acid, are hence sufficient tests, for ordinary purposes, to distinguish the carbonates of lime from sulphates. The sulphate, like the carbonate, appears in many beautiful crystalline forms.

**Experiments.**—By collecting such varieties of these two lime formations, as any one can easily procure, and arranging them upon the mantle-piece or in a case, a beautiful Calceolar Cabinet will be formed. These specimens, tested by each other, by the thumb-nail, the point of a knife, a piece of quartz or glass, any acid, even vinegar, also by the sight, feel or taste, will furnish much rich instruction and delightful amusement to the possessor; if any one doubts it, let him try the experiment. If he has no doubts, he will try it, of course.

**Depth of Covering Seeds.**—As to the proper depth which seeds should be covered, much depends on circumstances. Hard seeds such as onion, carrot, beet, parsnip, &c., that vegetate slowly, should be covered deeper than turnip, cabbage, mustard seed, and other kinds that vegetate quickly. If hard seeds are sown late in the season, on dry soil, and the covering is shallow, there is danger of the earth drying down to the seed before it starts.

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