## CHEMISTRY

To a fresh lump of quicklime, add a little water so as to make slaked lime; lead the pupils to comprehend that the quicklime has not merely *absorbed* water, but that it has *united* with the water to form an entirely new substance which is quite dry, white, and powdery. Let them heat it over a water-bath to see it does not lose its water. Let it be tested for water with sodium or burnt copper sulphate.

Explain the difficulty of collecting the gas that is driven off when limestone is heated, and state that the same gas can be driven off by adding an acid to the limestone. Then have the pupils prepare some of this gas as the second constituent of limestone. To find the constituents of this gas—carbon dioxide—use the same method as for finding those of air and steam; get a bottle of the gas collected over water, and plunge into it burning magnesium ribbon; test the white ash formed to show that it is the same as when the magnesium burns in air or water. A black deposit will be left in the jar; if this black deposit is tested, it is found to be insoluble and to burn when heated on mica; hence it is carbon. So the gas is proven to contain carbon and oxygen.

Show the effect on lime-water, and use as a test. Show the relation between this last experiment and the first experiment performed on limestone. In the first, the limestone is broken up into lime and carbon dioxide; in the second, these substances are united to form limestone again.

Test the burning of a candle, of wood, or of charcoal, for the production of earbon dioxide. To do this, burn in a large glass bottle each of these till extinguished; then add a tablespoonful of lime-water and shake.

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