them more *dense*. By the *mass of a body* we understand *the quantity of matter in it;* and by its *density*, the *mass in the unit volume of it*. For example, the density of cast-iron is about 450 pounds per cubic foot.

§ 8. **Simple and compound substances.** — Place a small quantity of sugar on a hot stove. In a few minutes it changes to a black mass. This black substance is found to be charcoal, or carbon, as chemists call it. Evidently the sugar must have contained carbon, for the carbon came from the sugar. Chemists are also able to obtain water from sugar. The heat, in our experiment, expels the water in the form of steam, and leaves the carbon. Carbon can be extracted from sugar in another way. Prepare a very thick syrup, by dissolving sugar in hot water, and pour upon the syrup two or three times its bulk of sulphuric acid. You will quickly obtain a bulky, spongy mass of carbon.

By suitable processes, there may be obtained from marble three substances, each one of which is entirely unlike marble. One of the substances is carbon; another is a metal called calcium, which looks very much like silver; the third is a gas called oxygen, which, when set free from its prison-house in the solid, expands to many times the size of the marble from which it was liberated.

If we should grind a small piece of marble for many hours in a mortar, we should reduce the marble to a very fine powder, but should fall very far short of reducing it to its molecules. Still, each little particle of the powder is as truly marble as the original lump. If we should continue the division, in our imaginations, till the marble were reduced to molecules, we should expect to find all the molecules just alike. Now, since our smallest piece, our molecule, our unit of marble, is *marble*, and since marble is composed of the three substances, carbon, calcium, and oxygen, we conclude that our molecule itself must be capable of division. No one has been able to separate any one