limited duration. A few examples will suffice to illustrate this argument. The student is made aware of the circumstance that the substances of which plants consist are divided primarily into two classes, one termed organic, the other inorganic. The inorganic portion is that which remains after the vegetable has been submitted to the action of fire ; and a reference to tables similar to those given in the preceding number of this *Journal* informs him that it is composed of several substances, six of which are oxides of metals. The question naturally arises in his mind, How do these metallic substances enter into the constitution of vegetables ? Can the water which plants absorb by means of their roots convey them into the interior of the vegetable ? the only mode in which they can be supposed to enter through the exceedingly small pores at the extremity of their roots. He may satisfy himself of that fact by taking a small quantity of pure rain water, and throwing into it a few grains of lime, (oxide of calcium). The clear supernatant liquid is then poured off into another clean vessel, and the operator breathes into the fluid through a straw or tube of glass ; after a short period, the liquid assumes a turbid appearance, in consequence of the carbonic acid contained in his breath chemically combining with the dissolved lime, and constituting insoluble carbonate of lime : if he still continue to breathe into the liquid, the turbid appearance will gradually decrease, since the water becoming impregnated with carbonic acid is capable, in that state, of dissolving carbonate of lime—a phenomenon occasionally producing much inconvenience in those parts of the country where lime stone abounds. The spring or river water in such localities absorbing carbonic acid from the atmosphere, is rendered capable of dissolving a small portion of the lime stone with which it may come in contact, and when, by the application of heat, the carbonic acid is driven off, the water can no longer contain the lime stone in solution, which consequently falls to the bottom of the vessel. Hence the cause why cooking utensils are frequently coated on the interior surface with carbonate of lime. Again, in the composition of grain growing plants, and of many grasses, he observes a large amount of silica or pure flint (oxide of silicum). If a small portion of that substance, in a powdered state, be placed in a phial containing water, and into the mixture a drop of common ley be allowed to fall, after the lapse of a few weeks, a portion of the flint will be dissolved, and may be easily exhibited by exposing the phial to the action of heat, until the fluid contained in the phial assumes a jelly-like consistency. The dissolved fluid is the cause of the gelatinous appearance.

In swampy tracts of country a reddish looking substance is frequently observed around the mouths of the small springs, usually met with in such situations. Let a small quantity of the spring water be placed in a phial, just as it issues from the soil, and then excluded from the atmospheric air by means of a tightly fitting cork ; when at any future period the bottle is opened, a reddish pelicle will be observed to form on the surface of the fluid and soon sink to the bottom. The red substance is called the peroxide of iron (common rust), and was formed by black oxide of iron contained in solution, absorbing oxygen from the atmosphere, and being converted into the comparatively insoluble peroxide, which from its greater specific gravity fell as it was formed.

It will not however escape the observation of the sagacious student that, generally, the quantity of metallic substances dissolved is exceedingly small, and consequently the actual amount of water which must pass through the various