

contain within them chlorophyll, a green coloring matter; and that, in particles so minute, as scarcely to be resolved by the highest power of the microscope. Of these we shall have something more to say when we come to another point of inquiry. We have thus described what this plant is; or, in the language of science, have given its Morphology, or a description of the *forms* which it presents to careful observation.

II. We now would inquire, What does it? It has a work of its own to do. Life and work go together. It lives, therefore it works. When it ceases to work, it ceases to live. This is the law of plant life,—the condition of its being. This plant can scarcely be said to have organs. It is one organ in itself. In the one cell of which it consists, all its work is done. Whatever vital force it possesses works all the varied operations of vegetation in this one chamber. Life is here a maid-of-all-work, and has no help; now doing this, now doing that: and, contrary to the wise proverb, it does several things at once.

One thing this plant does: it absorbs the elements which it finds in the water, and on which it feeds. How it does this we cannot tell; but the fact we see and know. It especially absorbs carbon, which it finds in the form of carbonic acid gas. This it decomposes, and setting the oxygen, one of its elements, free, it keeps the carbon to itself. It does this for its own growth and increase; but while it does so, we see the beautiful economy of nature, in that, as it thus lives, it also acts as a purifier of the water in which it dwells. It is well known to chemists that the decomposition of animal and vegetable substances produces, among other compounds, this carbonic acid gas,—a substance injurious and often destructive to animals. An illustration of carbon, we have in the fumes of charcoal. These combine with and absorb the oxygen, the healthy part of the atmosphere for animals, and so poison the air or the water as to render life impossible. See, then, the effect which our plants have on this poison! They absorb the injurious carbon, and set

free the healthy oxygen. They feed on the carbon which would kill animals, and release from its prison-house the oxygen, without which animals could not live. All this, too, they do by the direct action of light and heat. These quicken them into activity. When the sun goes down, the plant sleeps; by rest it consolidates its own acquisitions, and repairs its waste. When the sun rises it too awakes, and works “while it is day,” and its work is proportionate to the gift and grace of light which it receives. While thus our plants live, they work not only for their own increase, but also as beneficent purifiers of the water, that it may be a fit element for animals to live in. In doing this work they, besides, make themselves beautiful. Look at them when the sun shines, and you see them, even with the naked eye, covered with innumerable globules that sparkle like the purest brilliants. These are particles of pure oxygen which have been set free, and, as they acquire volume, rise to the surface and escape into the atmosphere.

Our plants further assimilate the food which they find in the inorganic water, into their own organic substance. By a chemistry secret and wonderful, in a laboratory infinitely little, and destitute of the complicated apparatus of the modern chemist, they convert what they find in the water into mucilage, which may be called the “jelly of water,” into dextrine, starch, chlorophyll, oil, and vegetable tissue,—all that they may be suitable food for the little animals, whose house is in the waters. Our plants are their cooks; and admirable cooks they are. They neither go to market nor spend money. With the aid of the sun alone, they compound dishes of delicious food for their voracious guests; and besides go on propagating cooks for the use of their fast-increasing offspring. In thus describing what this plant does, we have been showing what science calls its physiology.

III. We now come to answer the further question: What was it, and how from what it was it came to be what it is? To make