

MASQUERADE OF THE  
ELEMENTS

A LECTURE.

DELIVERED BY  
PROFESSOR YOU MANS.

(Concluded.)

HYDROGEN.

Next, nitrogen, an ungainly element; apparently unsocial and indifferent to the claims of society, and declining all advance to conversation. But, beware! that is scarcely what she means. She is a dangerous and wicked coquette; she pretends to fly that she may be pursued; but woe to the successful wooer, and alas for the house into which she enters. There is treachery behind that serene placidity. Trust not that quick lukewarm manner, that peaceful look; there is temper, fierce implacable temper there, and she is fickle as the wind. Persuaded to enter, she leaves the structure a heap of ruins; where dissolution is, there is she most active. She is a certain destroyer, and as the fabric goes down in death, she leaps forth to a new and resurrected life.—She is omnipresent in all explosive fulminates and in gunpowder; and the spark of fire is the key that opens her dungeon. Her carnival is the field of slaughter, and her motto is, *inconstant forever*.

OXYGEN.

Last of the sisterhood, oxygen comes—widest distributed of all elements.—Commissioned by the Creator far back in the beginning as ruler, viceroy of chaos, she is appointed to universal command of the elementary forces, with power to treat with and rectify from the chaotic to the orderly the condition of the world. She holds the goblet in her embrace, pursuing evermore, her destiny is to seize upon and conquer all things to herself. Everywhere she is at work, active in every change, hastening one race to decay, so another may spring into life—the genius of every conflagration, ever warring and subduing, her motto is, *conquest forever*. These three elements or gases exist in almost all the twenty-eight or thirty gases known; most of which abandon their forms and change, but these never. They have been subjected to tremendous tests—experiments; many thousand pounds of pressure to the square inch have failed to make them yield. Yet, in the vegetable leaf, these three pure, invisible essences are joined to a fourth—a hard, opaque and refractory solid; that is carbon, a fixed base. It is the foundation of living

structures, a solid nucleus, around which these ethereal airs are gathered and condensed in graceful life

CARBON.

And is this the only base upon which the highest living substances are built up? Is this chemical harmony, to which I have alluded, produced on so few notes, without either flats or sharps? Certainly not. The foundations of life's changes, they are widened and made pliable by the principle of allotropism. This very carbon, which is the very hardest element known, has yet a variety of allotropic disguises, and plays quite a round of characters in the chemical drama. Thus, we have charcoal, plumbago, anthracite and lamp-black; these are all distinct and marked forms of carbon, separated further from each other than many metals, and varying in their electricity, chemical and molecular forces. But are these sooty physiognomies, these Ethiopisms, to be exhibited ever? By no means; as the poor, despised colored family may yet emerge transformed into angels of light, so our shrouded and muffled friend King Coal, or whoever he may be, drops his ebony features and bursts upon us the prince of gems, the brilliant, incomparable diamond—another of the forms of carbon! What different relations to light! While the dull charcoal covers up and almost excludes every ray of light, the flashing diamond is brilliant with light. And their relations to heat are also different; the diamond is incombustible, while charcoal burns easily, and lamp-black, another form of carbon, is so combustible that it may take fire spontaneously in the open air.

Now, we are not for a moment permitted to doubt that the elements carry their properties into the living organism. This mysterious allotropic elasticity is so formed upon them for real purposes, and we cannot explain the facts of the living system without taking it into account. Oxygen is carried into all parts of the body, and throughout its textures; and while some parts are abandoned to its action, others are saved; that which is ready is seized, but that which is not ready, remains unacted upon—the selective power is exercised; some particles are taken, and others left. We may not explain how this is, but we remember that carbon has five or six phases of action, vibrating from the combustible lamp-black to the incombustible diamond.

Oxygen itself has its double; the passive or peaceful state may instantly be exalted into extraordinary intensity of effect:—

Carbon may enter the system in one way as lamp-black, and perhaps in another as anthracite, and perhaps still another as a diamond—and the power contained in various substances exalts common oxygen into ozone; and there is no reason to doubt that the conditions by which this change is effected may constantly occur within the vital domain.

AN EXPERIMENT.

But the train of thoughts we have started carries us to still larger and higher speculations. The universe, though boundless, is a rational and well-conducted scheme, and in an ordinary range of thought we regard our earth as an independent theatre of being, a world of itself, containing its own springs of action and sources of power. When the astronomical fireworks are displayed at night, they may indeed be very pretty appendages, but hardly of any practical account, and rather a foreign affair. This is all a mistake. The fountain of terrestrial force, the base of the life organization of the earth, is the sun. The sunbeam is the finger of God, working across the universe and combining the materials from which living things are formed. Not only is the sun our master-chemist, but he seems to have control of this curious allotropic phenomena—some portion of his rays appear, directly, changing the elements to a different form. Another curious and startling action is afforded by a recent experiment of Prof. Draper, of this city. Those of you who may have dabbled some in chemistry, or you who have read upon the subject, will remember that nitric acid, or aqua fortis, is an extremely powerful corrosive, oxydizing agent, and is capable of dissolving most metals. Gold it does not dissolve or affect; and because gold is not thus tarnished by the air or acted upon by oxygen, and seems to be exempt from the conditions of the vulgar metal here, it is called a royal metal—a noble metal. Silver, on the other hand, is dissolved by nitric acid—the acid combines with it, forming a compound known as nitrate of silver, part metallic, but the silver disappears, and the solution is as clear and transparent as water. By a proper method of transmutation, the silver may be separated and recovered; but it is considered a fixed property of silver always to dissolve in nitric acid.

Dr. Draper took a glass flask, two inches in diameter, containing nitric acid, diluted with its own bulk of water—the water was put in not to diminish, but increase, the strength of the acid. Into