

INTRODUCTION.

The Art of Agriculture is based upon the Science of Chemistry. There can be no intelligent cultivation of the soil without some knowledge of the leading principles of chemical science. The acquisition of such knowledge becomes possible, and indeed easy, when the pupil is made acquainted with the peculiarities of language and the nature of the formulæ and equations employed by chemists. An acquaintance with these modes of expression is required for the purpose of conveying chemical ideas with the necessary precision and no attempt should be made to teach chemistry without their use.

The rules for the formation of Chemical Terms and Symbols, and for the construction of formulæ and chemical equations, are exceedingly simple ; and chemical language and notation, instead of interposing difficulties in the pupil's way (as is feared by many persons), on the contrary, render clear and easily comprehensible what, without them, would appear obscure and confused. This is the sole reason why they are used

The work of the Agriculturist is to convert matter in the soil, which would otherwise be useless to man, into useful crops, and to convert the whole, or a portion, of such crops, into flesh, wool, butter, and other animal products. The processes by which these conversions are accomplished depend upon chemical laws, according to which all changes of matter take place.

Matter or material, of whatever nature or aspect, is either (1) *Simple*, consisting of one kind and not capable of yielding any other ; or (2) *Compound*, that is, made up of two or more kinds of matter, which are simple. When a substance consists of only one kind of matter, it is said to be elementary, this ultimate form of matter is called an ELEMENT. The number of such Elements discovered so far, well established, is about sixty-four, of which fifty are regarded as Metals and fourteen Non-Metallic Elements, or, as they are some-