be repeated in other forms, but their present value is great, and they may, as he suggests, lead to practical results of value in mining operations.

Metamorphic Rocks.

For the application of the useful term, "Metamorphic Rocks," in the description of phenomena connected with the occurrence of igneous rocks, and reasoning on their causes, we are indebted to Mr. Lyell; and there is, perhaps, no part of the study of ancient nature more worthy of attention from philosophic minds. For thus, and thus only in many instances, are we enabled to arrive at probable and intelligible views of the course of changes which even the most solid materials of the globe have undergone. The Pythagorean maxim,

"Nihil est toto quod perstet in orbe,"

comes into full credit when we approach the great masses of felspathic and augitic rocks which have been effused in a melted state above and amongst the ordinary products of water. As we pass from the districts where no igneous rocks appear at the surface, towards the mountain regions where they abound, the strata acquire hardness, assume new structures, and in their innermost texture and substance appear under new and peculiar aspects.

In order to trace these phenomena so that the picture may not only be interesting but instructive, it will be necessary to distinguish the effects which we call "metamorphic" into three classes.

1. There are rocks which, by the local influence of heated rocks, are *locally* changed as to the arrangement of their mineral ingredients; so that earthy substances become crystalline; and the view thus arising is capable of being *generalised* so as to explain the corresponding appearances of similar rocks, by a similar but more general cause.

2. There are stratified masses which have undergone