prevalent elementary bases, of even the most dissimilar rocks.

Silica, or silicium combined with oxygen, is found abundantly in perhaps every igneous rock, and very commonly is combined in definite atomic proportions with lime, alumina, &c., so as to form a peculiar class of compounds, called silicates, bisilicates, and trisilicates, according to the atomic proportion of silica in the mineral. So general is this fact that, considering the easy fusion of most earthy substances in contact with silica, and the well known fact that in most of the igneous rocks some superabundant silica remains (in the state of quartz), we may contemplate the whole mass of these rocks as having existed in the state of a siliceous glass, from which, according to the admixture of other elements, silicates, bisilicates, &c., would be formed by crystallisation; or, according to the rate of cooling, pressure, and other circumstances, earthy aggregates, compact stones, or glassy products, result.

According to this view, the differences between some of the most remarkable igneous rocks are merely in the degrees of arrangement to which their particles have been subjected. As lava, obsidian, and pumice, are merely three states of the same volcanic product, so probably the granitic, porphyritic, and homogeneous rocks, generated by heat in ancient times, have derived their characteristic structures from the conditions of their solidification. On this subject it is satisfactory to refer to the capital experiments of Mr. Gregory Watt (*Phil. Trans.* 1804), which are among the most interesting and instructive on record, and have been repeated by other observers with like success.

Mr. Watt's experiments were made on the amorphous basalt of Rowley, in Staffordshire, a fusible, fine-grained, confusedly crystalline stone, of dark colour, and opaque. It affects the magnetic needle, and has a specific gravity of 2·868.

Seven hundred weight of this rock was placed in a reverberatory furnace, on the elevated part of the inte-