might seem to be truly granitic; but when the detailed geology of the country has been worked out, they are found to follow all the great anticlinal and synclinal folds of metamorphosed strata that have also in a minor way been intensely contorted. The same is the case in parts of the Alps.

I have already stated that if we chemically analyse a series of specimens of clays, shales, and slates, often more or less sandy, together with various gneissic rocks and granites, it is remarkable how closely the quantities of their ultimate constituents, in many cases, approach to each other. They are never identical, while yet the resemblance is close, as close indeed as it may be in two specimens of the same kind of sandy shale or slate. In all of them silica would form by far the largest proportion, say from 60 to 70 per cent.; alumina would come next, and then other substances, such as lime, soda, potash, iron, &c., would be found in smaller varying proportions; and what I now wish to express is, that the distinct minerals developed in the gneiss, such as felspar, mica, garnets, &c., *were not new substances* introduced into the rock, by contact with granite, or by any other process, but *were all developed under the influence of metamorphism from materials that previously existed in the strata before their metamorphism began*, aided by hydrothermal action due to the presence of heated alkaline waters deep beneath the surface of the earth. Through some process, in which heat played a large part, the rock having been softened, and water—present in most rocks underground—having been diffused throughout the mass and heated, chemical action was set up, and the substances that composed the shale or slate, often mingled with silicious sandy material, were enabled more or less to re-arrange