

*Part I.*—The character of the limestones which underlie the platform of Vesuvius may be studied in the peninsula of Sorrento, where the mass attains a thickness of 4700 feet. They are magnesian in varying proportions. A table was given showing twenty-seven analyses, made principally by Ricciardi, the amount of MgO ranging from 1 to 22 per cent. Silica rarely exceeds 2 or 3 per cent., whereas in the greater number of limestones it is absent. The bituminous matter, though a powerful colouring agent, usually exists in quantities too small for estimation, but sometimes reaches 3 per cent. Such are the materials out of which the extraordinary series of silicate-compounds have been developed, and as these materials of themselves could not form peridotites, micas, pyroxenes, etc., it is clear that the silica, alumina, iron, fluorine, etc., must have been introduced from without, viz. from the neighbouring igneous magma. The author then discussed the question of the probable methods, being inclined to favour the notion of vapour in combination with acid gases.

The bulk of the paper was occupied with a detailed description of the microscopic structure of these stratified limestones and their derivatives. The author remarked that the same metamorphic changes may be traced on a much grander scale amongst the ejected blocks, and hinted at the similarity of these changes to those of contact-phenomena as seen elsewhere, and even of regional metamorphism, the two main factors to be considered being the composition of the rock to be acted upon and that of the magma acting.

The changes which ensue in an impure limestone are, in the first place, the carbonization of the bituminous contents, which are converted into graphite; and a kind of recrystallization, approaching the saccharoidal structure, seems to have taken place, although the stratification, etc., is preserved. A few grains of peridote now begin to make their appearance, chiefly as inclusions within the calcite crystals, and thus by degrees the results already recorded are effected. In the early stages only is the metamorphism selective. The order in which the new minerals seem to develop is the following:—(1) Peridote, Periclase, Humite. (2) Spinel, Mica, Fluorite, Galena, Pyrites, Wollastonite. (3) Garnet, Idocrase, Nepheline, Sodalite, Felspar. Many of these minerals are crowded with microliths, which there is reason to believe consist of pyroxene.

## CORRESPONDENCE.

### ELEVATION AND SUBSIDENCE.

SIR,—In the suggestion as to the cause of subsidence and elevation put forward by Professor Lloyd Morgan,<sup>1</sup> it is not quite clear whether on his hypothesis he looks upon the conversion of molten rock into the crystalline condition as a case of simple condensation by pressure following ordinary lavas, or whether he assumes that after a certain pressure is applied the molten rock will suddenly assume the crystalline condition and contract, and thereby cause

<sup>1</sup> GEOL. MAG. July, 1888, pp. 291–97.

subsidence. For the proper estimation of the efficiency of the cause invoked, it is requisite that this should be clearly set forth. That lateral displacement by weight of accumulated sediment together with actual compression of the rocks below may take place in certain cases is extremely probable.

The assumption of the existence of a zone of molten rock at a certain distance below the surface of the earth in so sensitive a condition as to respond to the weight of accumulation by becoming solid or that of denudation by becoming liquid is rather a large one, especially when the physical part is unsupported by experiment or quantitative determination. If these were supplied, it would be a fit subject for investigation, but the suggestion fails as a general explanation of subsidence and elevation, even if the assumptions are admitted, inasmuch as it does not account for the elevation of areas of former great sedimentation, which is one of the most striking facts of geology.

T. MELLARD READE.

#### THE NOMENCLATURE OF AMMONITES.

SIR,—I had not much hope of converting Mr. Buckman from what, in common with Mr. Haddow, I conceive to be the error of his ways; but I wished to protest against the system of which he is an exponent.

He still assumes that *Ægoceras* and *Arietites* are *genera*, which is exactly what I ventured to question. He says I do not attempt to discuss *Lioceras*, but I should have thought he would understand that it could be treated in the same way as *Harpoceras* (if it is a group of equal value). Let us write in catalogues *Ammonites* (*Lioceras elegans*; specialists will doubtless prefer to call it *Lioceras elegans*; but most geologists will probably be content with *Ammonites elegans*, regarding *Lioceras* merely as a subgeneric name.

My chief point, which Mr. Buckman entirely fails to notice, is this, that if the specialists rank *Harpoceras*, *Lioceras*, etc., as genera, each of them may be accredited with a species having the same specific name. Fancy half a dozen different *Amm. elegans* referable to an equal number of these so-called genera.

A. J. JUKES-BROWNE.

#### “GEOLOGY FOR ALL.”

SIR,—While thanking you for your notice of “Geology for All,” perhaps you will permit me to say that what is called a “slip” is explained by the context, and is in accord with the spirit and intention of the book, while the high per-centage of silica in orthoclase is duly acknowledged on page 58, where the fact is wanted.

I may add that my aim was to find a new and intermediate path between the two old and well-beaten ones of Academic or Text-book geology and so-called “popular” or entertaining geology, neither of which in my humble opinion is likely to lead to the end I have in view, namely, a general knowledge of geology by all well-educated people. In the days of Buckland and Hugh Miller, fossils were