

phism, brought about by great heat with presence of water. In other words, when the metamorphism has been so great that all traces of the semi-crystalline laminated structure has disappeared, a more perfect crystallisation has taken place." * It is obvious that the very result on which the Professor founds his theory, namely, the difficulty "in many cases," of drawing a line between the granite and the gneiss, would be produced by the sudden injection of the fluid minerals into gneiss, composed of the same materials. Moreover, it is only in some cases that the difficulty exists; in many others the line of separation is definable enough. †

The granitic rock called *Syenite*, in which a part of the mica is replaced by hornblende or amphibole, has to all appearance been erupted to the surface subsequently to the granite, and very often alongside of it. Thus the two extremities of the Vosges, towards Belfort and Strasburg, are eminently syenitic, while the intermediate part, towards Colmar, is as markedly granitic. In the Lyonnais, the southern region is granitic; the northern region, from Arbresle, is in great part syenitic. Syenite also makes its appearance in the Limousin.

Syenite, into which rose-coloured felspar often enters, forms a beautiful rock, because the green or nearly black hornblende heightens, by contrast, the effect of its colour. This rock is a valuable adjunct for architectural ornament; it is that out of which the ancient Egyptians shaped many of their monumental columns, sphinxes, and sarcophagi; the most perfect type of it is found in Egypt, not far from the city of Syene, from which it derives its name. The obelisk of Luxor now in Paris, several of the Egyptian obelisks in Rome, and the celebrated sphinxes, of which copies may be seen in front of the Egyptian Court at the Crystal Palace, the pedestal of the statue of Peter the Great at St. Petersburg, and the facing of the sub-basement of the column in the Place Vendôme in Paris, are of this stone, of which there are quarries in the neighbourhood of Plancher-les-Mines in the Vosges.

Syenite disintegrates more readily than granite, and it contains indurated nodular concretions, which often remain in the form of large spherical balls, in the midst of the débris resulting from disin-

* "Physical Geology and Geography of Great Britain," by A. C. Ramsay, p. 38, 2nd ed.

† At the same time it may be safely assumed (as Professor Ramsay believes to be the case) that granite in most cases is a metamorphic rock; yet are there many instances in which it may with greater truth be considered as a true plutonic rock.