it is often a metamorphic rock, because it is sometimes impossible to draw any definite line between gneiss and granite, for they pass into each other by insensible gradations. About half-way up the Matterhorn in the Alps, among the largely-contorted beds, a thick stratum occurs, one end of which is true gneiss, on the western side of the mountain, which striking towards the eastern cliff, gradually gets more and more crystalline till at length it passes into true granite. On the largest scale, both in Canada and in the Alps, I have frequently seen varieties of gneissic rocks regularly interbedded with less altered strata, the gneiss being so crystalline, that in a hand specimen it is impossible to distinguish it from some granitic rocks, and even on a large scale the uneducated eye will constantly mistake them for granites. Another very important circumstance is that *granite* and its allies *frequently occupy the spaces that ought to be filled with gneiss* or other rocks, were it not that they have been entirely fused and changed into granite. I therefore believe that many of the granite rocks I have seen, are simply the result of the extreme of metamorphism brought about by great heat with presence of water.

One reason why it has been inferred that granite is not a common igneous rock is that, *enveloping* the crystals of felspar and mica, there is generally a quantity of *free* silica, not always crystallised in definite forms like the two other materials. Silica being far less easily fusible than felspar, it seems clear that had all the substances that form granite been merely fused like common lavas, the silica ought on partial cooling to have crystallised first, whereas the felspar and mica have crystallised first, and the silica *not used in the formation of these minerals* wraps them round often in