The old red sandstone, about which so much has been written and so little understood, is a greywacke, colored red by the accidental admixture of oxide of iron. In Monmouthshire, the relations of red sandstone with greywacke, and the passage of one rock into the other, may be distinctly observed; the connection also with the lower gritstone, under the mountain limestone, may be plainly traced. Here, then, we have the mountain limestone with its alternating beds of grit, the red sandstone and the greywacke, evidently members of the same formation; and to make the connection more complete, the red sandstone contains beds of limestone, which form the link between the lower transition and the upper transition limestones. This limestone is imperfect, being intermixed with siliceous particles; it is of a greenish color, and hence called Gooseberry limestone. The red sandstone also passes into claystone, which is as well characterised as that of the Pentland Hills.*

The old red sandstone possesses all the mineral characters of greywacke, except the color, which is a quality that can never be considered of importance, being chiefly derived from local or accidental causes. The old red sandstone also occupies the geological position of greywacke, and greywacke-slate, into which it passes merely by a change of color. The principal reason why it has not been generally recognised as belonging to the greywacke formation is, that it has been frequently confounded with the red sandstone above the coal formation: some of the beds greatly resemble each other; and it is not yet clearly ascertained, whether the red sandstone in some parts of England and Scotland be the old red sandstone or the new. Until English geologists shall renounce their prejudices, and place the old red sandstone and mountain limestone in the Transition Class, as greywacke, and transition limestone, every attempt will be vain to identify this part of the geology of England with that of the Continent: particularly as the Alpine limestone of foreign geologists, is a very different formation from the transition limestone, comprising the several formations of limestone above the coal strata, and new red sandstone, or what the French call *Grès bigarré*.

Transition Limestone.—This is one of the most important of the transition rocks: its mineral characters vary considerably, according to the nature of the rocks with which it is associated; it has generally a subcrystalline texture, and is more or less translucent on the edges. From the degree of hardness which it possesses, it will take a good polish: most of the colored marbles are transition limestone. The prevailing color is bluish grey, but it is sometimes red, brown, or black: the lower beds of this limestone are often beautifully va-

* From the quantity of oxide of iron and of red marle in some beds of the old red sandstone, and from its passage into claystone, I am inclined to believe that the red sandstone of Monmouthshire has been partly formed by the decomposition of an ancient basaltic formation, which has become intermixed with greywacke.