

or France be derived from volcanic rocks? Were the theory of Von Buch true, we ought to expect all limestone rocks in the immediate vicinity of basalt to be magnesian; but some experiments which I made on the mountain limestone of Derbyshire, in near proximity to the toadstone, proved that it did not contain so much magnesia, as the beds that were much farther removed from the latter rock.

The magnesian limestone is distinctly stratified; the strata vary in thickness from a few inches to several feet: in the northern counties of England they are nearly horizontal; they border the great coal formation, and cover it on the eastern side. This formation of limestone extends from the mouth of the Tyne to near Nottingham. The colour of the limestone is generally a yellowish or reddish brown, varying in intensity from a fawn color to that of an overburnt brick. Some of the lowest beds are bluish and slaty, and intermixed with marl; but these beds seldom rise to the surface, and their nature is little known. Some beds of magnesian limestone have a granular sandy structure, others are imperfectly crystalline: they possess a considerable degree of hardness. A cellular variety of this limestone occurs near Sunderland, which has received the name of Honeycomb limestone: it agrees in most of its characters with the rauch wacke of Thuringia, which is part of the zechstein formation.

Many beds of magnesian limestone yield a fœtid smell when rubbed. At Sunderland, the beds of magnesian limestone are more developed than in any other part of England that I am acquainted with. In an account which I published of the Geology of Durham, in the Philosophical Magazine for 1815, I estimated the total thickness at one hundred and fifty yards. This limestone has been bored into to a considerable depth below the surface; it was, as before mentioned, of a bluish colour. According to Mr. Farey, "under the yellow beds of magnesian limestone, there are several beds of compact blue limestone, abounding with *Anomia* (*Terebratulæ*) and other shells; some of these beds differ entirely from the yellow and red beds, and are more useful for agricultural purposes, particularly on the yellow limestone lands."* This is the marl slate of Professor Sedgwick. The lower beds of this formation are, I believe, more fully developed in many parts of the Continent than in this country, which occasions some uncertainty in classing them. The limestone of Thuringia, it is agreed by the most respectable geologists, is zechstein, corresponding with our magnesian limestone; the lower part is a slaty marl, sometimes impregnated with bitumen, and sometimes with sand. This bed contains impressions of fish, like the lower beds of the slaty Sunderland magnesian limestone: it contains also a small quantity of copper pyrites, and the ores of lead, cobalt, zinc, bismuth, and arsenic, and is in some places worked by the miners for its mineral treasures. Above this bed there occurs a blackish-grey

* Survey of Derbyshire, p. 157.