

about two-thirds up that mountain. They are seen near this point to rest on the old red sandstone and greywacké slate, as described in Mr. Buckland's paper. Greywacké-slate also occurs near the head of Swale-dale, perhaps connected with this tract. The limestone beds, having continued to Kirby Stephen,* a branch of mountain limestone is thrown off from them to the north-west; which, ranging by Orton, Hesket, Ireby, Cockermouth, Egremont, and Ravenglass, skirts the slate mountains of Cumberland on the north-east, north, and north-west. Farther to the south near Ingleborough, another similar branch is detached, which skirts the southern portion of the same mountain, occupying all the lower portion of the valley of the Kent, as far as Kendall: thence crossing the æstuary south of Ulverstone, near which place the hæmatitic iron ore is procured abundantly from this rock;† and proceeding over the mouth of the Daddon, till it almost joins the former branch, and thus completes a calcareous ring encircling the transition district of the lakes. This calcareous ring is attended, as has been before stated, by an exterior zone of the coal-formation. These branches have never been accurately described or minutely examined. It should seem, however, that the beds of limestone are in them less interrupted by heterogeneous strata, and of greater thickness than farther north, composing almost exclusively the substance of entire mountains. This description particularly applies to the southern branch; and may be extended to the base of Ingleborough. The vast base of Ingleborough, near 30 miles in circuit, consists of limestone; which extends in a similar manner beneath the neighbouring mountains of Whernside, Pennegent, Greg roof, Colm hill, &c. The summits of these mountains consist of the millstone-grit formation. A thin seam of coal also occurs near the top of Whernside and Colm hill. At the foot of Ingleborough, a contact of the mountain limestone and transition slate, was observed by Lord Webb Seymour and Mr. Playfair, going the Askrigg road from Ingleton. About a mile and a half from the latter, an opening appeared in the side of the hill, on the

* Mr. Greenough's Map represents the junction of the limestone and slate incorrectly in the neighbourhood of Dent dale and Houghill fells. The hills marked *m. n. o. p.* ought to be have been coloured slate, not limestone, as also the Riggs, and the southern point of Houghill fells; the southern branch of limestone is also incorrectly given. Whin fell is not limestone, and, e contra, the hills south of the road from Kendal to Newby bridge, as far as the sands of Morecombe bay, are limestone, though in many cases coloured in the map as slate.

† One perpendicular vein of iron ore traversing the limestone is 30 yards wide. Large reniform nodules of hæmatites, some even weighing 4 cwt. are found in the loose ore.