

recent Report on the Geology of that State, by Dr. Dale Owen: ' In south-western Kentucky, the whole of eight counties, and a part of four other counties, are embraced in the middle coal field of the Mississippi valley, or the coal field which lies partly in Illinois, partly in Indiana, and partly in Kentucky. In eastern Kentucky, fifteen counties, and a large area of five more counties, are included in the great Appalachian coal field, *i. e.* in the coal region occupying the western slopes of the Alleghany Mountains, and the Cumberland range, situated partly in Pennsylvania, Virginia, Ohio, Tennessee, and those above-mentioned eastern counties of Kentucky."

After describing the boundaries of the south-western coal field, the author continues as follows: "The coal beds included in these counties, (Christian county, Baker county, &c.,) naturally divide themselves into Upper and Lower coal measures. These are separated from each other, not only by a prominent sandstone formation, (the so-called Anvil Rock,) but they have been cast off from continuity, immediately on the Ohio River, by an extensive uplift and dislocation of the geological formation which stretches from Gold Hill, on the Illinois side of the Ohio River, across the bed of that stream at Shawneeton, to Bald Hill, in Union County. The Topographical Assistant, (S. S. Lyon,) in his detailed survey of Union County, has traced a continuation of this upheaval in a nearly east and west course through the entire county. Beyond the Valley of Cypress, this disturbed belt has an increased width to the boundary of Henderson County. Beyond this point it has not yet been systematically followed; but the occurrence of disturbances, with a reversal of dip, near the confluence of Pond and Green Rivers, render it probable that it can be traced completely through the coal field. In Kentucky there is no evidence, whatever, that this disturbance occurred prior to the deposition of the coal measures; on the contrary, it has implicated in its movements, not only the sub-carboniferous limestone, and millstone-grit, but also the entire coal formation which lies in conformable dip on either side of the axis." Almost all of the coal beds are stated to occur in connexion with under clays containing stigmairia. At least eight workable seams occur in the Upper measures and ten in the Lower, varying in thickness, from about a foot to seven feet. Beds of clay iron ore are likewise abundant.

ZIRCON WITH BASAL PLANES.

The absence of the basal form, is one of the most salient characteristics of zircon crystals. M. Friedel, however, has recently announced* the existence of two small crystals in the collection belonging to the Ecole des Mines, in which this form occurs. These crystals are said to have been brought from Serro-de-Frio in Brazil. They have not been analysed, but their identity with zircon seems to be established by their physical and blow-pipe characters, and by the general correspondence of their angles with the measurements of that mineral. Besides the basal plane, the following forms, were also recognized, *viz.*—the first or diaxial vertical prism, (placed, however, as a monaxial prism in M. Friedel's figures, in conformity with the system of the French school); the triaxial pyramids or octahedrons P , $\frac{1}{2}P$ (not previously recognized), and $3P$; and the eight-sided pyramid $3P3$. The new form denoted by the symbol $\frac{1}{2}P$, comes out nearest to that notation, but the agreement is by no means close. According to M. Friedel's measurements, $P : P$ (in the

* Annales des Mines, tome IX, p. 620.