above or below it, by which its identity with any known stratum may generally be ascertained. The manner in which the strata are inclined towards the fault, will also determine whether they are thrown up or down, provided they are not shattered where they come in contact with it, which is frequently the case.* Each bed of coal in a coal-field has certain characters by which it may generally be known to be the same. Its thickness, and the quality of the roof and floor, with that of the upper and under strata, generally serve to identify it, though it may be much deeper in one place than another.

The dykes which intersect coal strata are generally impervious to water; and it not unfrequently happens, that where the strata decline to them, they hold up the water, and occasion springs at the surface, or keep the coal works on that side of the fault under water, when the coal works on the other side are dry. This will be better understood by referring to Plate IV. fig. 2. and 3., where the coal strata on the right hand decline or dip to the fault or dyke; and the water which passes through or between the strata will be stopped at the faults and dammed up; in which case the coal beds to the right of the dyke will be under water, and those on the other side dry. Now, should a perforation be incautiously made through the dyke, all the water will be thrown upon the works on the left, that were before dry. Where the coal on each side of a fault belongs to different proprietors, a few strokes with a pickaxe may thus do incalculable mischief to those on the one side, and render great service to the other, by laying their pits dry.

The deepest coal mines in England are those in Northumberland and in the county of Durham, some of which are worked nearly three hundred yards below the surface. The thickest bed of English coal of any considerable extent is the main coal in Staffordshire, which is thirty feet. The upper, lower, and middle parts of the bed differ in quality. Mr. Keir, who has written an interesting account of the mineralogy of the south of Staffordshire, says that thirteen different kinds of coal occur over each other in this bed; the uppermost, which is compact, serves as a roof in getting the under coal. At the Wood Mill-hill colliery in this county, the coal is said to be forty-five feet thick; and three beds of coal, from three to four feet in thickness, have been found under it, since Mr. Kier's account was published. The first is only two yards under the thick coal. The main bed of coal in the Ashby-de-la-Zouch coal-field is thirteen feet thick; the upper and lower seams of this bed also vary in quality; and the top serves as the roof, being more compact than the stratum over the coal. Few beds of coal in other parts of Eng-

* If the dyke make an acute angle with the upper surface of the strata, they are thrown up on that side; but if it make an obtuse angle, they are thrown down. See Plate IV. fig. 2. *b*; and fig. 3. *d*.