

fall into is, mistaking an under for an upper stratum. Suppose a hill to be covered with vegetable soil, and, that a quarry or pit being made in it near the bottom, as at *a*, Plate I. fig. 1., the rock was discovered to be sandstone: if another pit were sunk, near the summit at *b*, which cut into liemstone, it might be supposed, because the liemstone is met with at a higher level, that it lies over the sandstone stratum, when it is in reality below it. The young observer, who has not a clear notion of this, may be said not yet to have passed the *pons asinorum* of the geologist.

In calcareous mountains of vast magnitude, as those in the Swiss and Savoy Alps, the enormous beds of limestone are often intersected by regular seams, which cut through the whole bed, in a direction nearly perpendicular to that of the true strata seams, or make very oblique angles with them. These partings or seams are sometimes nearly vertical, when the strata are almost horizontal. The cliffs and escarpments of these mountains being lofty, and much exposed to the action of the atmosphere, the vertical seams enlarge, and are, often, more conspicuous than the strata seams; hence, without great attention the observer may describe the strata of a mountain as being perpendicular, when, in reality, they are nearly horizontal. To add to the difficulty, it, very frequently, happens, that a calcareous deposition, like a coat of plaster, covers the face of a rock: this has been formed, by moisture running over the surface, and depositing calcareous particles upon it. This deposition, sometimes, conceals the partings or seams of the stratification, as completely as a coat of plaster covers the rows of brick in a building. The vertical seams or partings are also sometimes open, and sometimes form parallel ridges, which efface the appearance of the strata seams in one part of a rock, but not in the other; and in such instances we have a mountain mass in which the strata are, apparently, partly horizontal and partly vertical. See Plate I. fig. 5. Inattention to this circumstance, I am convinced, has, sometimes, deceived the eye of M. Saussure, one of the most diligent and accurate of observers.

The regular partings or cleavages in many slate rocks which intersect the beds, nearly at right angles to their dip or inclination (See Plate III. fig. 1. *dd*), have, often, been mistaken for strata seams, and have led geologists of some eminence to draw very erroneous inferences. The thick beds of transition or mountain limestone which compose a great part of Ingleborough, and other adjacent mountains in the district called Cravon, in Yorkshire, generally dip at a moderate inclination towards the south-east; the lower beds rest on coarso slate, which has in reality the same inclination as the limestone, but as the under part of the slate is often concealed, the vertical partings are mistaken for strata seams. This limestone is described by Professor Playfair as resting on vertical beds of slate; and he draws several important conclusions respecting the elevation of the beds of slate, and its action on the superincumbent beds of limestone; where-