

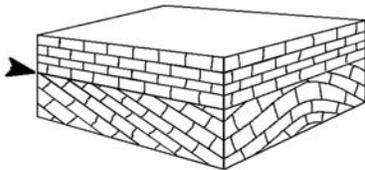
Preamble An ancient work of humans well known to Hutton was Hadrian's Wall built AD 122-126 during the Roman occupation of Britain across the width of England from the Tyne to the Solway to separate the land of the Britons from the land of the Picts. The Wall in its course drapes across prior existing scenery and is vastly younger, clearly so, where its stones, which follow along the crest of the 125 km long north-facing erosional escarpment of the 75-meter thick Great Whin Sill, traverse on down and across sandstone, shale, and limestone layers exposed in the sides of valleys stream-eroded through the sill (**Footnote c19.1**). And those sedimentary layers, Hutton had found, bury an even older erosional scenery that truncates vertically upturned layers of yet older rocks.

According to James Geikie (1879), Hutton never used the term 'unconformity' that Wernerian Robert Jameson (1774-1854) in his company with James Hall used for one seen at Burnswark Hill.²

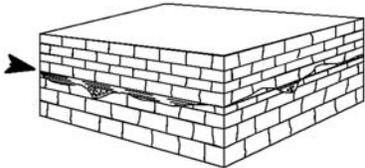
c19 Unconformities < angular, dis-, para-, non- >

An unconformity is a buried erosion surface. As it is a surface, an unconformity has no thickness. It must, however, represent a great length of geologic time to be called an *unconformity*. That is, it is a surface that separates two rock formations of greatly different age. This distinguishes it from a bedding surface that separates two beds and which was only briefly Earth's surface.

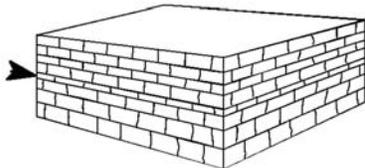
Because an unconformity is a buried erosion surface, the younger formation will be conformable upon it. Four types of unconformity are:³ (the unconformity surface is indicated by the arrows)



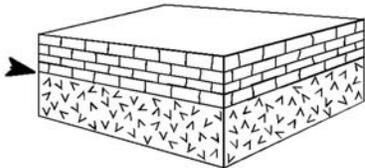
ANGULAR UNCONFORMITY (example: Siccar Point)
Historically unconformities were first recognized as buried erosion surfaces that truncate tilted or folded strata. The unconformity is called an *angular unconformity* as the erosion surface cuts off at an angle the strata of the older formation.



DISCONFORMITY (example: Iowan till over Kansan gumbotil)⁴
The younger formations buries an irregular erosion surface incised into the upper beds of the older formation.



PARACONFORMITY (example: Devonian-Cambrian conformable boundary in the Grand Canyon "Redwall" limestone)
The unconformity is between conformable strata of greatly different age as is evidenced by the fossils in each. However, as Norman Newell showed in 1967, a "paraconformity" can be mistakenly assumed when what is recorded is a major extinction event.⁵



NONCONFORMITY (example: till resting on a striated gneiss) (example: sediment resting on a weathered granite)
No metamorphism of sediments where they are in contact with igneous or metamorphic rocks.

The duration of time, during which sediments ceased to accumulate, represented by an angular unconformity, a disconformity, or a nonconformity, in the stratigraphic record, is called a *degradation vacuity* (period of erosion), and that represented by a paraconformity (if not an extinction event), is called a *hiatus* (period of non-deposition). For any reason(s), the duration of time locally missing in the stratigraphic record due to an unconformity is called, more generally, a *lacuna* (a time-stratigraphic unit representing a gap in the stratigraphic record). Léonce Élie de Beaumont (1798-1874) in *Researches on some of the revolutions of the globe*, 1829-30, from ages of the oldest strata overlying folded strata and the youngest involved in folded strata, demonstrated that mountain building had occurred at many different periods of Earth-history.⁶ □