

j33 Fossil Lagerstätten <concentration deposits; stagnation and obrution types>

Both Darwin and Freud ... were in on 'The death of immortality.' Neither left room for transcendence or deliverance, both gave priority of place to the transience of our lives.
—Steven Marcus.¹

A richness of extraordinarily well preserved fossil biota is called a *Lagerstätten* (etymology: a German term for economic bodies of ores or minerals) after Adolf Seilacher's usage in 1985 (**Figure j33.1**).² A Lagerstaetten (Lagerstätten) in forthright English terms has the divisions:³

Concentration deposits characterized by close-packing as in bone beds,⁴ oyster beds,⁵ plasters,⁶ varied coquinas,⁷ and cave deposits.⁸ Included are placer deposits and the fill of concentration traps (non-marine & marine) are such as fissures.

Conservation deposits characterized by quality preservation of soft tissues of organisms under conditions (anoxic, hypersaline) that inhibit bacterial decay, bioturbation, and predators, exclude scavengers, and favor fine castings, distillation or fine diagenetic mineralization. Differentiated are:

Stagnation deposits are fossil accumulation of pelagic groups (example: the Posidonienschiefer in the Toarcian, Jurassic, Holzmaden, Germany)⁹ with lesser amounts of washed in fauna and benthic fauna where the bottom waters temporarily became dysaerobic or even anaerobic (example: the Solnhofen limestone, Upper Jurassic, Bavarian Germany).¹⁰

Obrution deposits record rapid burial of a fauna by short-lived events, such as storms (smothered hardground faunas, clustered fossils—indicating gregarious behavior such as trilobites sometimes exhibit), entombment in volcanic ash (example: Herefordshire Lagerstätte, England, with Silurian marine biota, their soft parts replaced by sparry calcite in three-dimensional fossil preservation in concretions, including otherwise unknown fossils of the most primitive, extant, vermiform-mollusk class Aplacophora),¹¹ or faunas transported and buried in turbidites or storm flows (example: the Burgess shale, Middle Cambrian, Rocky Mountains, Canada).¹²

Conservation traps preserve as do peat bogs, tar mires, and amber. □

Figure j33.1¹³ Classification of Lagerstätten deposits, with examples

