

Marine Permian of England

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Glossary

Aeolian: produced by, or borne by, the wind.

Alabastrine: **gypsum** of a very fine-grained massive nature, generally white in mass but may be tinted.

Allochthonous: refers to rock formed elsewhere and transported to place where now found.

Anhydrite: anhydrous calcium sulphate (CaSO_4).

Anoxic: lacking in oxygen.

Aphanitic: a rock in which the individual grains or crystals cannot be seen by the naked eye.

Arborescent: tree-like.

Authigenic: a mineral formed in place in a sediment or rock either by replacing an earlier mineral or by displacive growth.

Autochthonous: refers to rock formed in place where now found.

Azurite: copper carbonate ($\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$).

Backreef or back-reef: the environment lying landward of a linear reef, especially a barrier reef; can include the landward margin of a linear reef.

Bafflestone: a term used in a refinement of the Dunham system of limestone classification to denote a rock in which a sparse population of **sessile benthic** organisms caused grains to be deposited by functioning as baffles and thereby reducing current velocity.

Barite (barytes): barium sulphate (BaSO_4).

Benthic: refers to the flora and fauna of the sea floor.

Bindstone: a term used in a refinement of the Dunham system of limestone classification to denote a rock (commonly laminated) in which the constituent grains were held together by encrusting organisms such as **cyanophytes**.

Bioclasts: whole or fragmented organic remains, generally transported, in a sediment or rock.

Biota: faunal and floral assemblage of a bed or other stratigraphical unit.

Botryoidal: a term used to describe a smoothly mammilar accretionary surface, commonly on the free side of an encrusting mineral, facing a cavity.

Boundstone: a term used in the Dunham system of limestone classification to denote a rock in which the primary grains or constituents were bound together during formation or deposition (e.g. as in an organic reef).

Brash: a litter of broken pieces of rock, commonly in thin soil on rock.

Breccia: a rock composed of angular fragments, generally of varied sizes, produced in a wide range of ways.

Brockram: a term used in Cumbria for a sedimentary **breccia** of Permo-Triassic age; commonly red or purple.

Calcarenite: limestone formed mainly of calcium carbonate fragments of sand size.

Calcirudite: limestone formed mainly of calcium carbonate fragments of gravel size.

Calcite: calcium carbonate (CaCO_3).

Celestite (celestine): strontium sulphate (SrSO_4).

Chalcedony: a cryptocrystalline variety of silica (SiO_2), consisting essentially of fibrous or ultra-fine quartz, some opal, together with water trapped in its structure.

Chalcocite: copper sulphide (Cu_2S).

Chert: cryptocrystalline silica (SiO_2) which may be of organic or inorganic origin, occurring as layers or nodules in sedimentary rocks (mainly limestones).

Chronostratigraphy: system of dividing up the geological column into convenient portions of

Glossary

time, leading to age classification of rocks according to hierarchical groupings of Systems, Series, Stages and Sub-stages.

Concretion: a hard, subspherical, discoidal or irregular mass or aggregate of mineral matter, generally formed by orderly and localized concentration from aqueous solution in the pores of a sedimentary rock.

Coquina: as **calcirudite**, but with most fragments being **bioclasts**.

Cyanophytic: related to microbes, especially blue-green algae, and the part they play in the creation of some laminated carbonate rocks.

Décollement (plane of): a surface separating rigid rock (below) from overlying, more plastic strata that have been detached and folded.

Dedolomite: a rock that previously has been composed of **dolomite** but which is now limestone.

Diachronous: a term used to describe a continuous rock body that is of different age in different places.

Diagenesis: the mainly physiochemical processes affecting sediments and sedimentary rocks between and including burial and re-emergence, but excluding metamorphism according to some authors.

Discontinuity: a break within a rock sequence indicating a cessation of deposition at the time of formation.

Dolomicrite: a **dolomite** rock composed of mud- to silt-size particles or crystals of dolomite.

Dolomite: (a) a mineral, carbonate of calcium and magnesium ($\text{CaMg}(\text{CO}_3)_2$) or (b) a rock composed mainly of the mineral dolomite; dolomite-rock.

Evaporite: a sedimentary rock composed mainly of minerals produced by chemical precipitation from a saline solution that became concentrated by evaporation of the solvent.

Fasciculate: as in a bundle of parallel rods.

Fenestral fabric: a texture characterized by very abundant primary or penecontemporaneous unsupported elongate cavities in a sediment or rock, generally carbonate; it may be open or filled with secondarily introduced sediment or minerals, commonly calcite or anhydrite.

Flaser: a sedimentary structure consisting of silt lenticles that are commonly aligned and usually cross-bedded.

Flowstone: a variety of **travertine** that coats existing surfaces (including the walls of caves and fissures) with laminar fine-grained deposits

(generally calcium carbonate) precipitated from solution by trickling or slow-flowing mineral-rich water.

Foundering: the subsidence or collapse of strata overlying a sediment or rock that is undergoing dissolution.

Framestone: a term used in a refinement of the Dunham system of limestone classification to denote a variety of **boundstone** in which sessile skeletal organisms such as bryozoans construct a rigid or semi-rigid grain-trapping open framework.

Galena: lead sulphide (PbS).

Geode: a roughly equidimensional cavity up to a few centimetres across, in a rock; commonly lined with **botryoidal** deposits and/or inward-projecting crystals. Also called a vugh or vug.

Grainstone: a term used in the Dunham system of limestone classification to denote a carbonate rock composed of sand-sized grains in mutual contact and with no carbonate mud matrix.

Grapestone: a carbonate rock composed of grape-like clusters of silt-sized carbonate grains or crystals.

Gypsum: hydrated calcium sulphate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)

Halite: crystalline sodium chloride (rock-salt) (NaCl).

Infauna: the assemblage of fossil remains of organisms that lived below the sea floor, especially in sediments but also including some boring organisms.

Kaolinite: a clay mineral ($\text{Al}_4\text{Si}_4\text{O}_{10}(\text{OH})_8$) of the kaolin group.

Lamellar drapes: thin layers of sediment, commonly laminated, that conform to substrate irregularities such as ripple marks.

Liesegang banding, rings: roughly concentric secondary rings or fronts caused in a sediment or rock by the rhythmic precipitation of pigmented minerals (commonly iron oxides) by groundwater.

Lithostratigraphy: the description, definition and naming of rock units. Units are named according to their perceived rank in a formal hierarchy, namely Supergroup, Group, Formation, Member and Bed.

Malachite: copper carbonate ($\text{Cu}_2\text{CO}_3(\text{OH})_2$).

Mammilar: as **botryoidal**.

Marl: a loosely-used term properly applied to a calcareous clay but widely misapplied in geology to describe a thick-bedded claystone or mudstone, whether calcareous or not.

Glossary

- Micrite:** a limestone composed of microcrystalline calcite.
- Microspar:** a mosaic of crystals of any mineral in the 4–50 micron range; commonly applied to calcite and dolomite in the context used here.
- Monomict:** refers to a **breccia**/conglomerate composed of clasts of a single rock type, generally locally derived and accumulated.
- Mucilage:** a layer or mass of organic matter, commonly coating the shells of marine organisms and some grains such as **ooids**.
- Muscovite:** the commonest form of white mica; a silicate of aluminium and potassium, with hydroxyl and fluorine ($\text{KAl}_2(\text{AlSi}_3)\text{O}_{10}(\text{OH},\text{F})_2$).
- Mylonite:** a roughly laminated finely fragmental rock created at the mutual contact of two rock-masses that have been moved forcefully against each other.
- Olistolith:** a large coherent mass of rock that has been transported down a submarine slope by gravity sliding, and which forms part of a body of rock ('olistostrome') composed of similar masses in a varied fragmental matrix.
- Oncoid or oncolith:** a pisoid or pisolith of algal origin (= a subspherical algal **stromatolite**).
- Ooid or oolith:** a subspherical grain of sand-size, with or without a nucleus and with at least two concentric layers of roughly uniform thickness. Generally used to describe calcium carbonate grains but can be composed of other minerals.
- Packstone:** a term used in the Dunham system of limestone classification to denote a rock in which constituent grains in point-contact have mud-size carbonate grains in the interstices.
- Palaeosol:** a fossil soil.
- Patch-reef:** an isolated body of **autochthonous** reef-rock, generally 10–50 m across and 3–10 m thick in the sense used in this book.
- Pellicle:** a thin resistant coating on a grain of any size.
- Pelloid:** a sand-sized to granule-sized grain of finely crystalline carbonate of any origin, including pellets and **ooids** (or ooliths).
- Peritidal:** within or close to the tidal range; slightly broader than 'intertidal'.
- Pinnate:** leaf-like, with a central stalk.
- Polyzoan:** bryozoan.
- Proximal turbidite:** an obsolescent term used to describe a rock comprising an accumulation of coarse debris near the upslope limit of a submarine slump or slide. Now being replaced by 'debris flow'.
- Pycnocline:** a plane or thin transitional zone separating a dense lower layer in a density-stratified water body, from a less dense upper layer.
- Pyrite:** crystalline iron sulphide (FeS_2).
- Ramose:** a term used for a fossil bryozoan or other sessile benthic organism with thin twiggy branches. Dendritic.
- Recessive:** forming a step-back or cleft in a cliff profile.
- Reef crest:** the junction between the basinward side of a reef flat and the top of the basinward reef slope (or reef wall, reef face).
- Reef slope:** the basinward slope (wall, face) of a shelf-edge or barrier reef.
- Regression, marine:** withdrawal of the sea from a large area of land.
- Reticulate:** having a net-like, equidimensional structure produced by rod-like frame elements crossing at right-angles and outlining square spaces or interstices.
- Sabkha:** a broad, very gently-sloping arid alluvial plain, generally understood to border a tropical or sub-tropical sea or lake and to have a high water table.
- Saccharoidal:** sugar-like, used to describe a carbonate rock formed of calcite or dolomite crystals of sand size.
- Saccolith:** a sack-shaped and sack-sized mass in a reef, thought to be a single colony of frame-building organisms such as bryozoans.
- Scaleno-hedron:** a crystal shape, essentially a twinned form of rhombohedra, especially in calcite, in which the twin plane is the basal pinacoid 0001.
- Sessile:** attached, applied to an organism that remains in one place during adult life.
- Siliciclastic:** a sediment or sedimentary rock comprising a high proportion of silica-rich grains or clasts.
- Slickensides:** parallel striations or scratches on the faces of a movement plane.
- Speleothem:** (= dripstone). A secondary mineral deposit, generally of calcium carbonate, formed in caves by deposition from saturated groundwater.
- Sphalerite:** zinc sulphide (ZnS).
- Stellate:** an aggregate of crystals in a star-like arrangement.
- Stromatolite:** a variously shaped (commonly domal) laminated, generally calcareous sedimentary structure, now mainly formed in a shallow-water, tropical environment under the influence of a mat or assemblage of sediment-binding blue-green algae (**cyanophytes**).

Glossary

Stylolite: an irregular interpenetrant suture-like boundary, mainly in carbonate rocks, which is caused by pressure-dissolution; can lie at any angle relative to the bedding.

Sucrosic: a granular or crystalline texture resembling that of sugar.

Talus: an accumulation of rock litter at the foot of a slope, generally with a wide size-range (up to several metres) and ungraded; commonly used to denote debris shed from the high part of a reef slope and transported basinward by gravity ('reef talus', 'talus apron').

Transgression, marine: the invasion of a large area of land by the sea.

Travertine: see **flowstone**. Use of term broadened by some to include deposits of silica or other mineral formed in a similar manner.

Trepastome: an organism belonging to an extinct order of bryozoan.

Vor-riff, vorreef: an accumulation of debris near the basinward margin of a reef.

Wackestone: a term used in the Dunham system of limestone classification to denote a rock mainly of carbonate mud that contains more than 10%, but less than 50% of coarser clasts.

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