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 ($Cu_3(CO_3)_2(OH)_2$).

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 ultrafine 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

time, leading to age classification of rocks according to hierarchal 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 ($CaMg(CO_3)_2$) 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 ($CaSO_4.2H_2O$)

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 ($A1_4Si_4O_{10}(OH)_8$) 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 ($Cu_2CO_3(OH)_2$).

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.

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 ($KAl_2(AlSi_3)O_{10}(OH,F)_2$).

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.

Scalenohedron: 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**).

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.

Trepostome: 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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