

## Crinoids

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Relatively small body (calyx) composed of a dorsal cup and a ventral surface (tegmen). The dorsal cup is formed of two or three main circlets of calcareous plates, with or without additional plates. Pentamerous symmetry. Arms are radial appendages used for food gathering; they are commonly branched. Stem is a column of calcareous segments (as in arms), often known as ossicles. There may be an anchorage structure.

Stem-bearing crinoids live anchored to the sea floor; they are popularly known as sea-lilies, after a fanciful resemblance to flowering plants. Stemless crinoids are known as feather stars.

**Crotalocrinites** from Dudley, Worcestershire (Silurian age). Those arms lying next to each other join together to form a flexible network.

**Barycrinus** from Crawfordsville, Indiana, USA (Carboniferous age)

**Delocrinus?**, from Washington Co., Oklahoma, USA (Carboniferous age).

'Dicyclic Inadunate' Crinoid from Leintwardine, Herefordshire (Silurian age). Dorsal cup with three main circlets of plates.

**Cyathocrinites** from Humbledon Hill, Sunderland (Permian age).

**Zeacrinites?**, from Craig Co., Oklahoma, USA (Carboniferous age).

**Poteriocrinus** from Gerolstein, Eifel, Germany (Devonian age).

**Eucalyptocrinites** from Waldron, Indiana, USA ('roots') (of Silurian age).

**Eucalyptocrinites** from Devonian-age Limestone, Gerolstein, Eifel, Germany.

**Periechocrinites** from Wenlock Limestone (Silurian age), Wenlock, Shropshire.

**Melocrinites** from Gerolstein, Eifel, Germany (Devonian age).

**Platycrinites** from Crawfordsville, Indiana, USA (Carboniferous age). The calyx has a rigid tegmen.

**Pentacrinites** from Charmouth, Dorset (Jurassic age). Many branching arms and pentagonal/star-shaped stem.

**Apiocrinites** from Jurassic-age Bradford Clay, Wiltshire. Bulbous dorsal cup; discoidal stem segments.

**Marsupites** from Margate, Kent (Cretaceous age). Cup plates large; plates lightly ornamented; a stemless free-swimming crinoid.

**Bourgueticrinus** from Cretaceous-age Chalk, Grays, Essex. Calyx is a little larger in diameter than the stem.

**Crinoidal Limestone** (Carboniferous age)

**Crinoidal Limestone**, polished (Carboniferous age). This limestone contains densely-packed crinoid ossicles; when cut and polished by the stone trade it is known as a marble. Geologically defined marble has a different, metamorphic origin.

**Lias Limestone** (Jurassic age) with stem segments of **Pentacrinites**.

**Chert** with moulds of stems of crinoids. The infilled axial canal shows the position of the central passageway (it carried organs including the nervous system) running through the stem column.

**Woodocrinus** from Carboniferous Limestone, Yorkshire.

**Amphoracrinus** from Carboniferous Limestone, Clitheroe, Lancashire. The solid calyx (body) has a tegmen (ventral surface) containing calcareous plates which form a rigid roof to the dorsal cup.

**Erctinocrinus** from Sagetown, Illinois, USA (Carboniferous age).

**Granatocrinus** from Burlington, Iowa, USA (Carboniferous age)

**Rhipodocrinus** from Gerolstein, Eifel, Germany (Devonian age).

**Scaphiocrinus** from Crawfordsville, Indiana, USA (Carboniferous age).

**Encrinus** from Muschelkalk (Triassic-age limestone), Jena, Germany. Biserial arms connected to the calyx, and curve inwards in the middle.

**Balanocrinus**. Stem segments from London Clay (Eocene age), Aveley, Essex.

Approximate mid-way dates for these geological ages in millions of years.

Eocene 45 (London Clay c.53)

Cretaceous 105

Jurassic 173

Triassic 225

Permian 275

Carboniferous 329

Devonian 388

Silurian 430

#### Simplified classification of some crinoids

##### Inadunata

Calyx lacks a firm tegmen, e.g. **Crotalocrinites**.

Cladida – dorsal cup dicyclic (having two circlets of plates, the infrabasals and basals, below the circlet of radials which are the proximal plates of the arms), e.g. **Barycrinus** – arms rounded; **Delocrinus** – arms biserial (interlocked double series).

- Cyathocrinina – arms lack typical pinnules (unbranched branchlet of arm), e.g. **Cyathocrinites**.
- Poteriocrinina – arms pinnulate, e.g. **Zeacrinites**.

##### Camerata

Tegmen strong forming a solid calyx

Monobathrida – dorsal cup monocyclic (having only one circlet of plates, the basals, below the radials), e.g.

**Eucalyptocrinites**.

- Tanaocrinina (Compsocrinina) – radial plates circlet interrupted at posterior side of cup, e.g. **Periechocrinites**.
- Glyptocrinina – radial plates circlet uninterrupted, e.g. **Melocrinites**.

##### Articulata

Simple dorsal cups, lack a firm tegmen; arms usually uniserial, pinnulate, e.g. **Pentacrinites**

Stem-bearing

- Millericrinida – stem ossicles with radial notched articulation facets, e.g. **Apiocrinites**.
- Bourgueticrinida – stem ossicle facets with articulation ridge, e.g. **Bourgueticrinus**.

Stemless

- Uintacrinida – e.g. **Marsupites**