

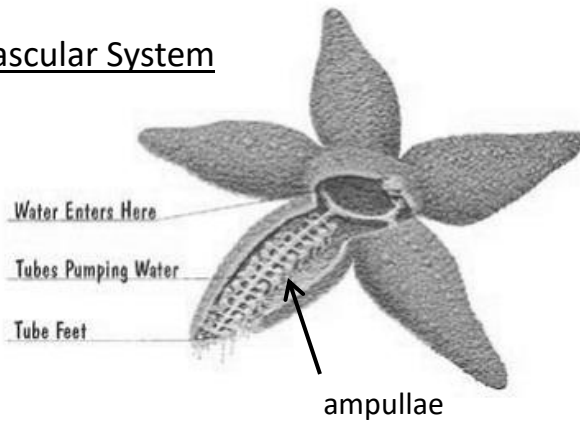
Phylum Echinodermata

- Exclusively marine, bottom dwellers (benthic)
- Earliest Echinoderms were in the Cambrian Period
- Some prey on other invertebrates, some eat organic debris or algae

Three features characterize echinoderms

- 1) A 5-fold symmetry superimposed on a primitive bi-lateral symmetry
- 2) A skeleton of calcite plates honeycombed with organic material. These plates are secreted by the organism as discrete single crystals.
- 3) A unique hydrostatic system called a water vascular system. This system consists of series of pipes, pressure chambers, reservoirs and valves that the organism can use for locomotion, respiration, food gathering, etc.

Vascular System



Starfish have hundreds of tiny feet on each ray. These tube feet (called podia) can be filled by sea water. The vascular system moves water to the tiny feet, expanding and contracting them to permit movement.

45. Class Asteroidea (Starfish)

Ordovician – Recent



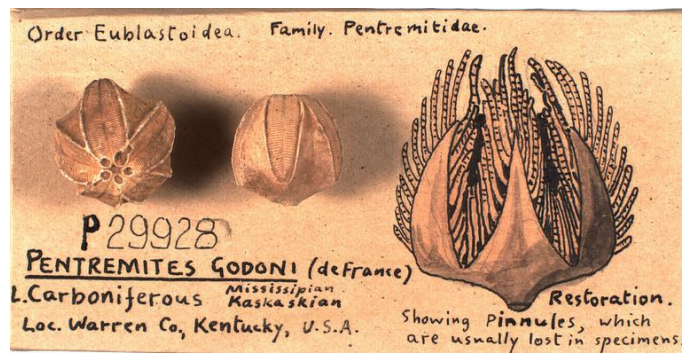
Phylum Echinodermata

Class Blastoidea (Blastoids)

46. Genus *Pentremites*

Ordovician-Permian

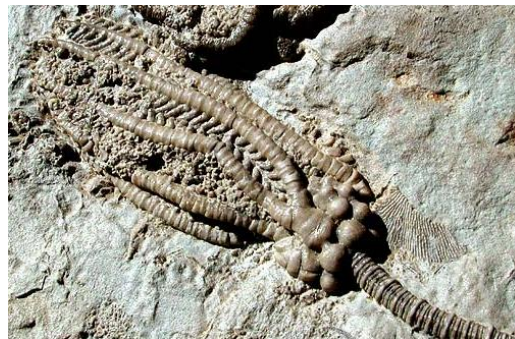
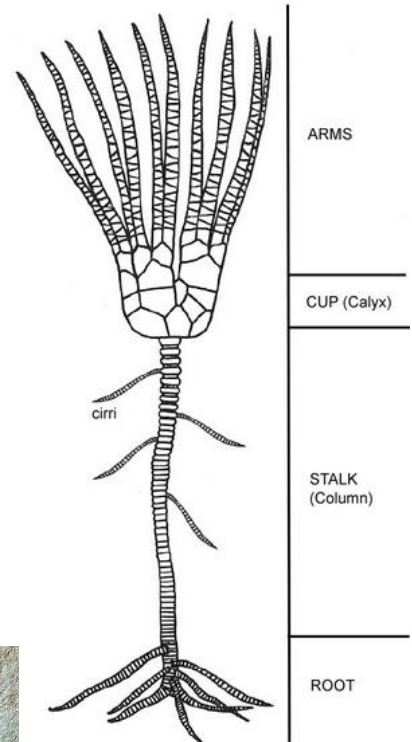
Prolific in Carboniferous



47. Class Crinoidea (sea lilies) (stems, columns, calyxes)

Ordovician-recent

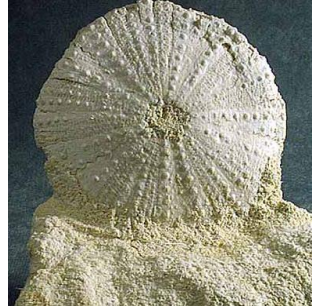
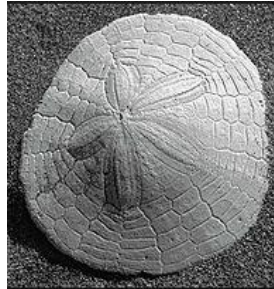
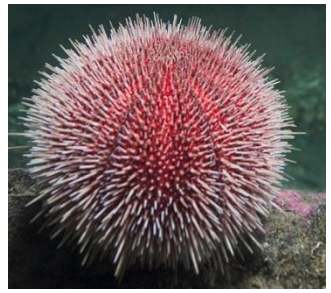
Prolific in mid-late Paleozoic



Phylum Echinodermata

48. Class Echinoidea (sea urchins, sand dollars)

Ordovician-recent



49. Ophiuroidea (brittle stars)

Devonian-recent

