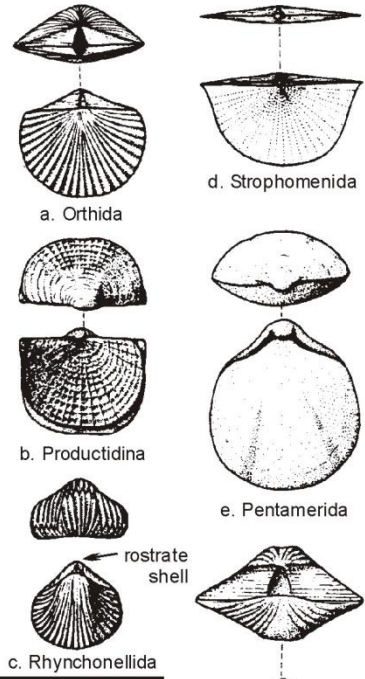


**Phylum Brachiopoda**

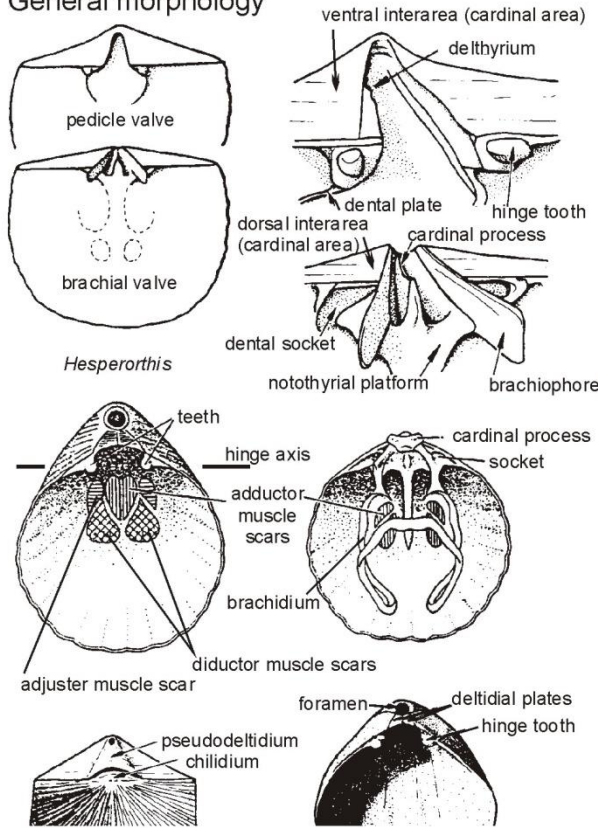
Subphylum **Linguliformea** - no teeth or sockets; complex musculature; organophosphatic shell.  
 Class **Lingulata** - usually a fleshy and muscular pedicle.  
 Order **Lingulida** (L Camb-R) - elongate or rounded shell, posterior pedicle; lingulids live in burrow.  
 Three other minor orders.  
 Class **Paterinata** - shell with pseudointerarea; pedicle probably absent; minor group.  
 Subphylum **Craniiformea** - no teeth or sockets; calcareous shell.  
 Class **Craniata** - as for subphylum.  
 Order **Craniida** (?M Camb-R) - usually cemented by pedicle valve.  
 Two other minor orders.  
 Subphylum **Rhynchonelliformea** - teeth and sockets present, occasionally lost secondarily; shell calcareous; blind-ending gut (no anus).  
 Class **Strophomenata** - normally strophic, concavo- or plano-convex; cardinal process often bi-lobed; hingeline widest point of shell; most pseudopunctate.  
 Order **Strophomenida** - usually concavo-convex; simple or reduced teeth; pedicle non-functional in adult.  
 Suborder **Strophomenidina** (Ord-Trias) - teeth often replaced by denticles; ornament usually fine radiating, intercalating costellae.  
 Suborder **Chonetidina** (L Sil-Perm) - mainly small with prominent spines along the posterior margin of the pedicle valve interarea.  
 Four other less important suborders.  
 Order **Productida** - usually deeply concavo-convex or bizarre conical shell form; usually with tubular spines.  
 Suborder **Productidina** (L Sil-Perm) - bilobed or trilobed cardinal process; juveniles attached or cemented; free-living as adults.  
 Suborder **Strophalosidina** (L Sil-Perm) - adults anchored by spines; some with conical pedicle and lid-like brachial valves.  
 Class **Rhynchonellata** - biconvex shell; may have calcified brachidium.  
 Order **Orthida** (L Camb-U Perm) - strophic, unequally biconvex; impunctate; simple cardinal process; open delthyrium and notothyrium.  
 Order **Pentamerida** (M Camb-U Dev) - non-strophic, biconvex; impunctate; spondylium in pedicle valve.  
 Order **Rhynchonellida** (M Ord-Rec) - non-strophic, usually rostrate; functional pedicle; impunctate; crura in brachial valve; dorsal fold, ventral sulcus; zigzag commissure.  
 Order **Atrypida** (M Ord-U Dev) - biconvex; impunctate; hinge line short; internal spiralia directed laterally or dorsally.  
 Order **Spiriferida** (M Ord-Perm) - biconvex, strophic w. hinge line usually long; punctate; commonly dorsal fold and ventral sulcus; comb-like cardinal process; laterally directed spiralia.  
 Order **Athyridida** (U Ord-Jur) - smooth, biconvex, impunctate, hinge-line short or absent, laterally directed spiralia with characteristic jugum.  
 Order **Terebratulida** (L Dev-Rec) - biconvex, non-strophic, functional pedicle, foramen in prominent beak, punctate, shape characteristic, brachial loop.

**Shell shape**

major groups of brachiopods have characteristic shell shapes



**General morphology**



**Cardinal process**

