MORPHOLOGY OF OSTRACODS

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INTRODUCTION

- Ostracods are Bivalved crustaceans and are by far the most complex organisms studied within the field of micropaleontoly. Ostracods sometimes known as **"seed shrimps** (or) **mussel shrimps"** due to the external similarities with lamellibranchs.

- They are found today in almost all aquatic environments including hot springs, caves, within the water table. The largest known genus is **'Gingantocypris'.**

- Ostracods are next to forams in population first appeared in Upper Cambrian, ostracods are adopted practically to all the Recent aquatic environments There are more than 2000 known living species distributed in marine and fresh waters.

CLASSIFICATION OF OSTRACODS

- Phylum ARTHROPODA
- Class CRUSTACEA e.g. Crab, Shrimps, Barnacles. Camb. – Rec.
  - Subclass **Branchiopoda**
  - Subclass Ostracoda
  - Subclass **Copepoda**
  - Subclass **Cirripedia**
  - Subclass **Malacostraca**
- Class **ARACHNOIDEA** e.g. Scorpions and Spiders. Mid.Camb. – Rec.
  - Subclass **Merostomata**
  - Subclass **Arachnida**

Class **TRILOBITA** e.g. extinct Trilobite, Lr.Camb. to Permian

Class **CHILOPODA** e.g. fossil and living, Centipedes, Pennsylvanian to Rec.

Class **DIPLOPODA** e.g. fossil and living, Millipedes, Dev. to Rec.

Class **SYMPHYLA** e.g. living Symphylans – no fossils in known

Class **INSECTA** e.g. fossil and living insects, Lr.Per. to Rec.

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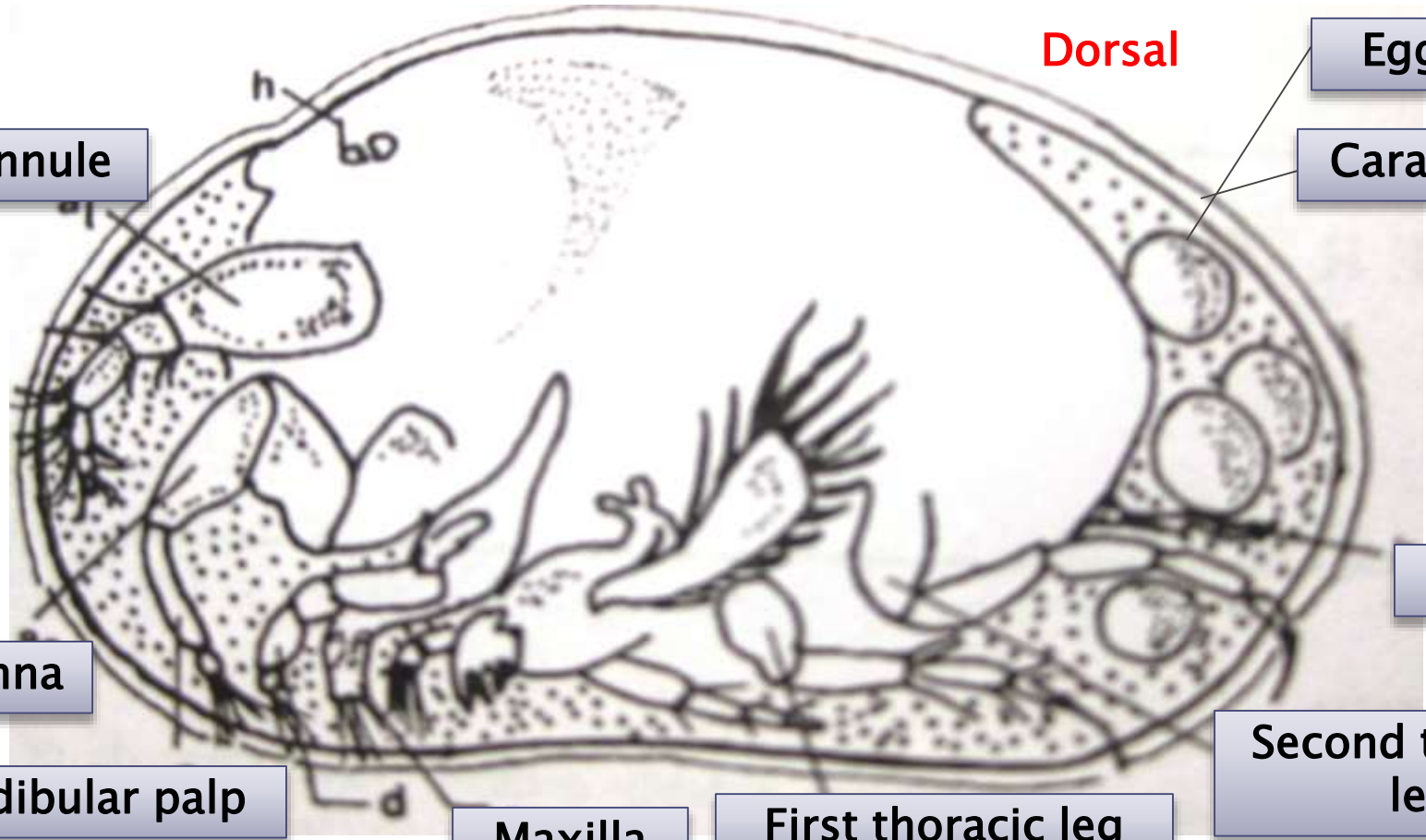
- In Greek; arthron = joint + pous, podus = foot, referring to the jointed or segmented nature of appendages
- Arthropods are the largest phylum including more than 1,000,000 species forming 80% of the animal kingdom
- e.g. Lobsters, Crabs, Shrimps, Crayfish, Ostracods, Brancles, Insects, Scorpions, Spider, Tickets, Mites, Cockroach, Grasshopper, Centipede, Millipedes, Ants, Flies etc…
- Ostracods are classified into five orders as **Archaeocopida, Leperditicopida, Paleocopida, Podocopida** and **Myodocopida.**

MORPHOLOGY OF LIVING OSTRACODA



Dorsal

Egg

Carapace

Antennule

Anterior

Posterior

Furca

Antenna

Second thoracic leg

Mandibular palp

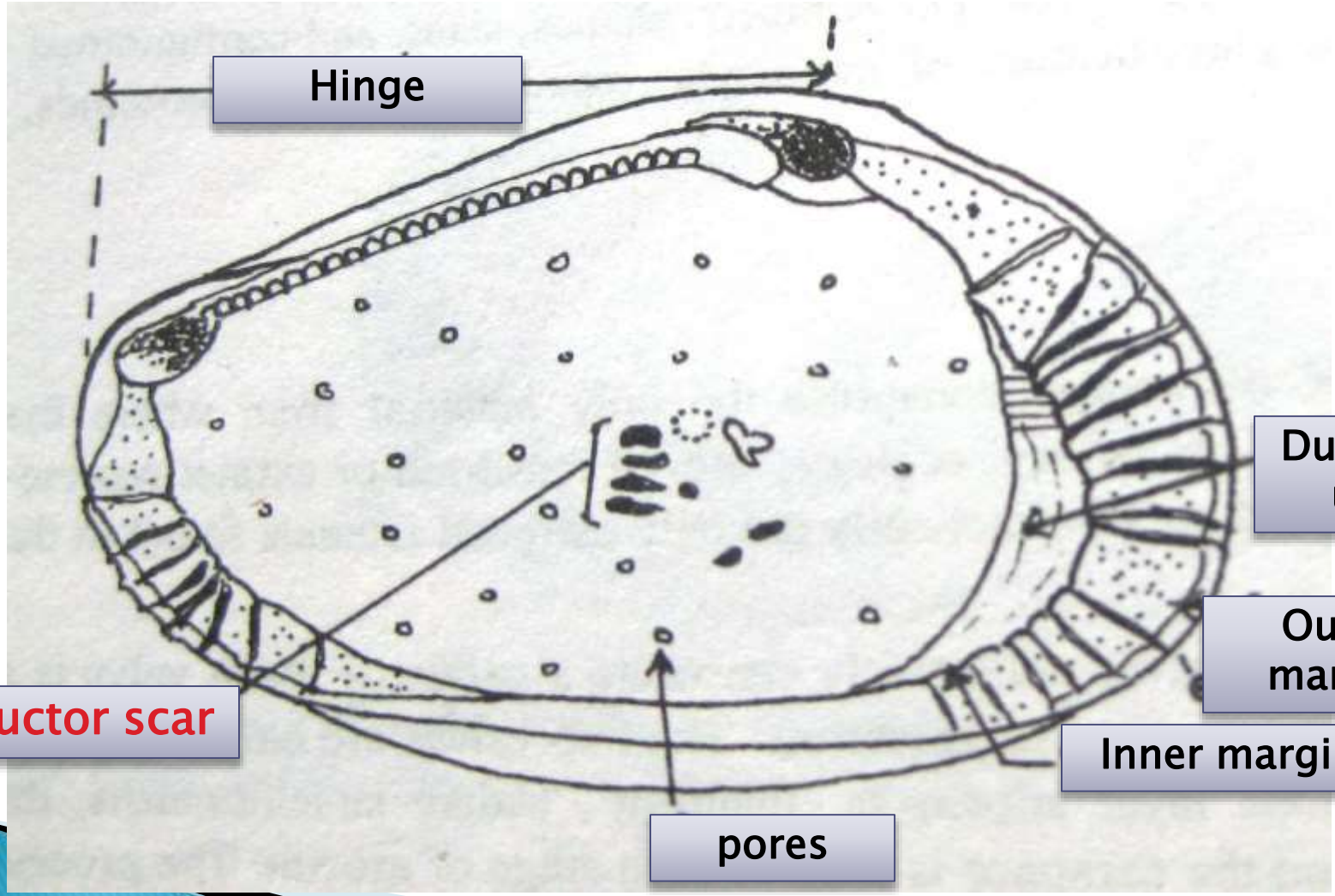
Maxilla

First thoracic leg

d.Mandibular teeth

Ventral

ADDUCTOR MUSCLE



DESCRIPTION FOR MORPHOLOGY OF OSTRACODA

- In Ostracods indistinct junction separates the head from thorax. The body has three intimately connected features: **forehead**, **upper-lip** and **hypostome**. Each of them is provided by a pair of appendages. The mouth is situated ventrally. Of the seven, four of the pair of appendages are borne by the cephalon.

- The first known as **'antennules'** consisting of long and tapering appendages, mainly used for feeding. In walking and swimming, however, the second pair known as the **'antennae'**(singular antenna) is used. The other two pairs, **'mandibles'** and **'maxillae'** lie behind the mouth. The latter also whip-up water to provide filter-feeding currents, and respiration.

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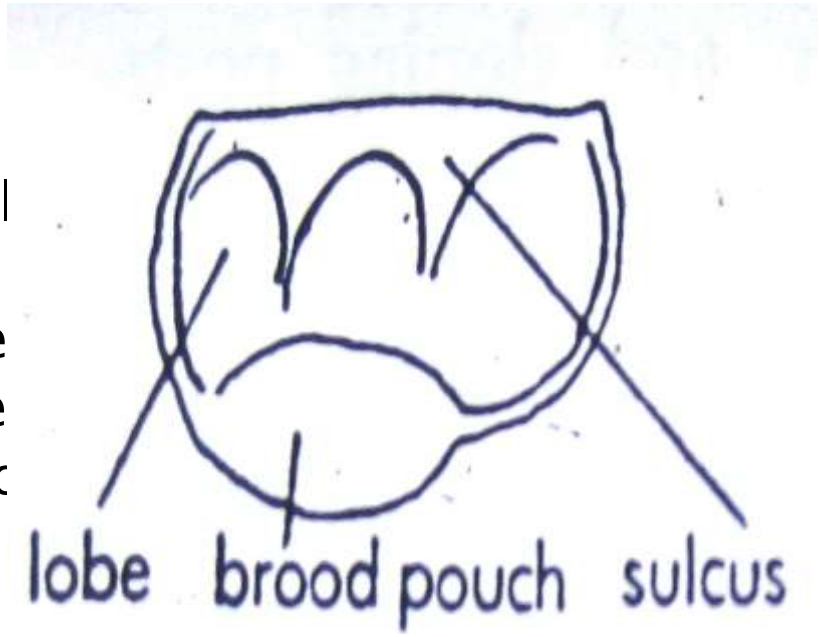
- The thorax contains the other organs like **stomach, intestine, genital organs** etc. Three pairs of appendages known as **'thoracic appendages'** are attached to the thorax. A pair of leg like appendages known as **'furcae'** joins the thorax at the posterior side. They are used for locomotion in myodocopida. Benthic forms have a typical dorsal eye where as, some of the myodocopids have two lateral eyes. The deep-water forms, however, are totally blind.

- The muscle, which are used for closing and opening of the valves are called **'adductor muscles'** They are generally situated at the mid point of the valves. The number, shapes, sizes, and configuration of their **scars** are important traits in the classification of ostracods.

ORNAMENTATION OF OSTRACODS CARAPACE

➢ The carapace of most ostracods show many varyingg types and degrees of ornamentation, varying from sulci and ridges which divide the valve into lobes to fine markings on the surface. The principle types of these distinctive features are shown below,

- **Brood pouches**. These are hemisph -erical or ovoid bulges on the femal carapace, which the unborn young are carried. They are particularly we developed in certain Paleozoic gene and have demonstrated, by means c thin section, to contain embryoic ostracods.



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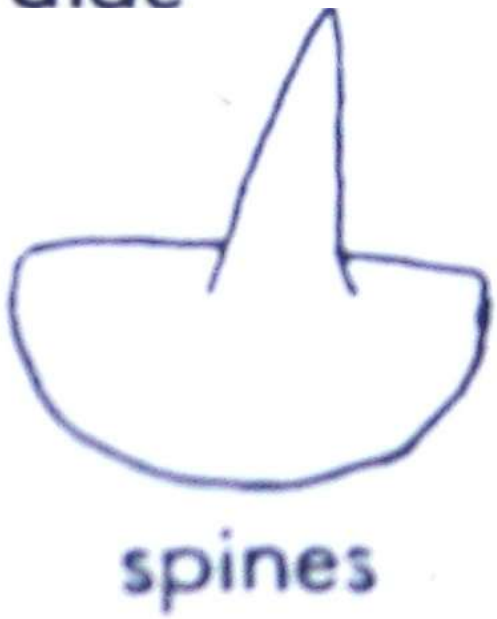
- **Alae**, The wing-like projections on the post ventral portion of the valve are common in many Mesozoic and Paleozoic genera Including **Brachycythere Carine**

- **Nodes and spines**. Nodes are common on valve, particularly in the various Paleozoic genera, including **Holinella**, **Mauryella, Keisowia,** and the common Mesozoic-Cenozoic forms such as **Cytheropteron** and **Loxoconcha**.



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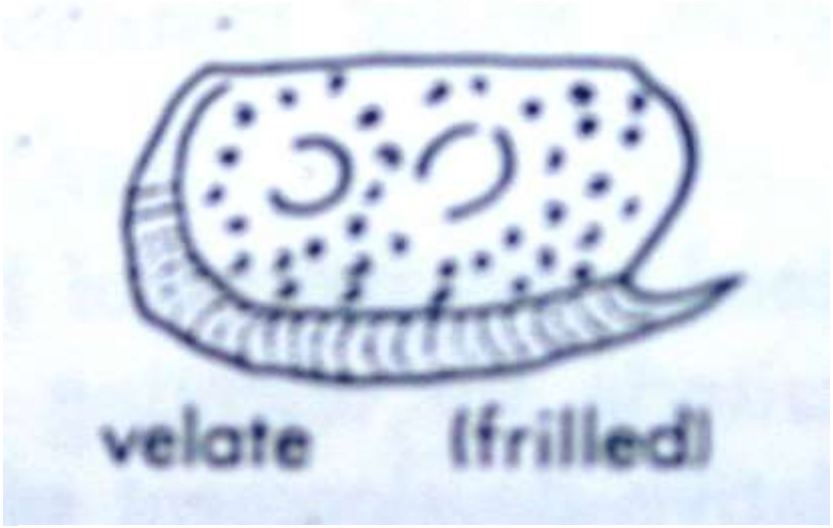
velate (frilled)


marginal denticulation


costae (ribs)


anterior notch

HINGE PATTERN

- **Adont hinge:** The simplest of all,lacs teeth and socket, in general. It may consist of grooves and sockets arrangement, in the hinge zone of larger and stronger valves, respectively

  e.g. **Beyrichia**

- **Merodont hinge**: It has three basic hinge elements: anterior, median and posterior. Of the three the anterior and posterior elements have a 'tooth and socket' arrangement while the median one has groove and ridge arrangement

  e.g. **Bythocythere**

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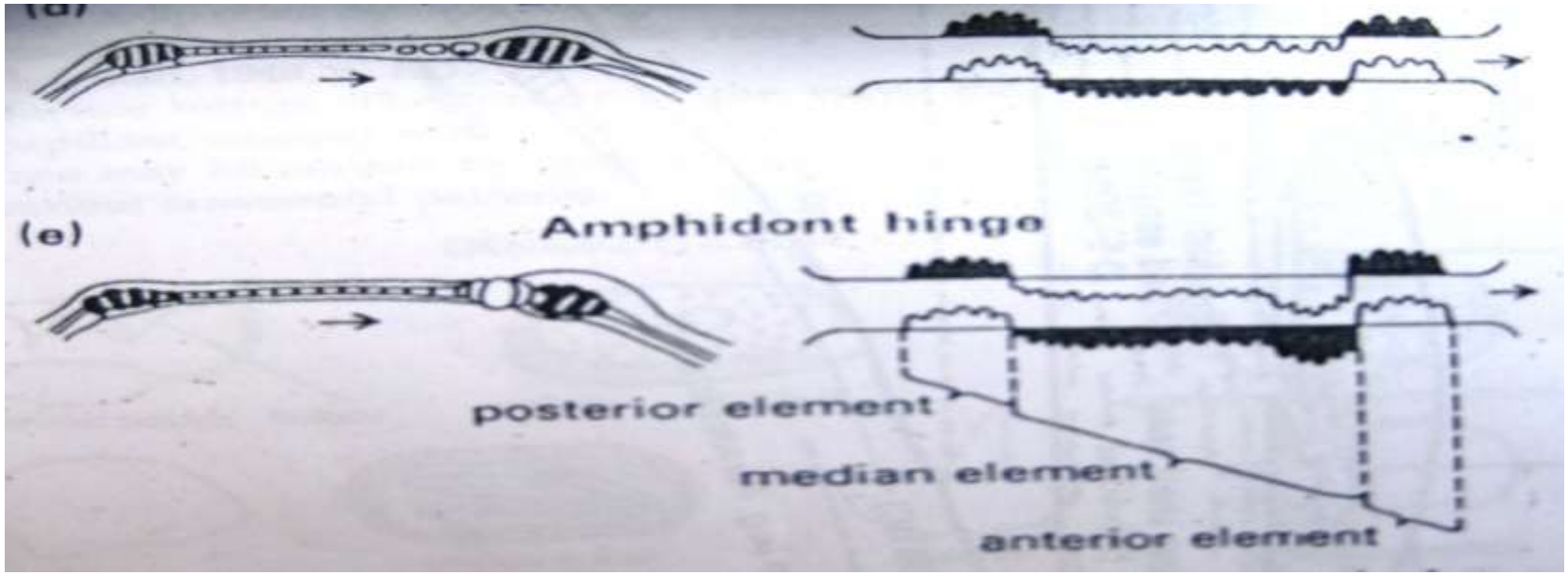
- **Entomodont hinge**: It differs by having a coarsely crenulated median element, e.g. **Cytheropteron.**



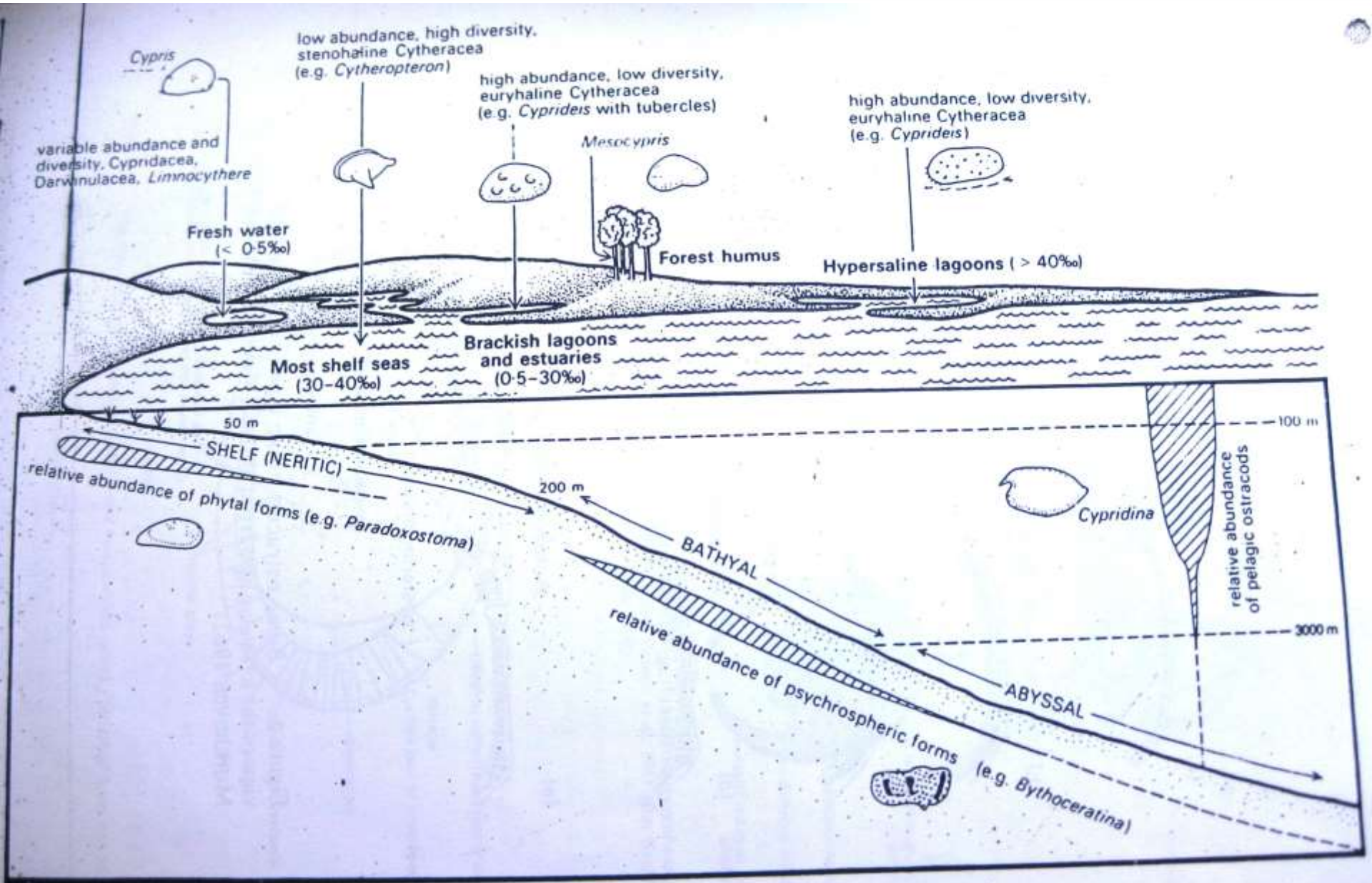
- **Amphidont hinge:** The first part of the median element developed into a ‘ teeth and socket’ arrangements

FRESH AND MARINE WATER OSTRACODS

Potamocypris sp.

Heterocyprideis sorbyana

PALEOECOLOGY AND ECOLOGY



GEOLOGICAL DISTRIBUTION

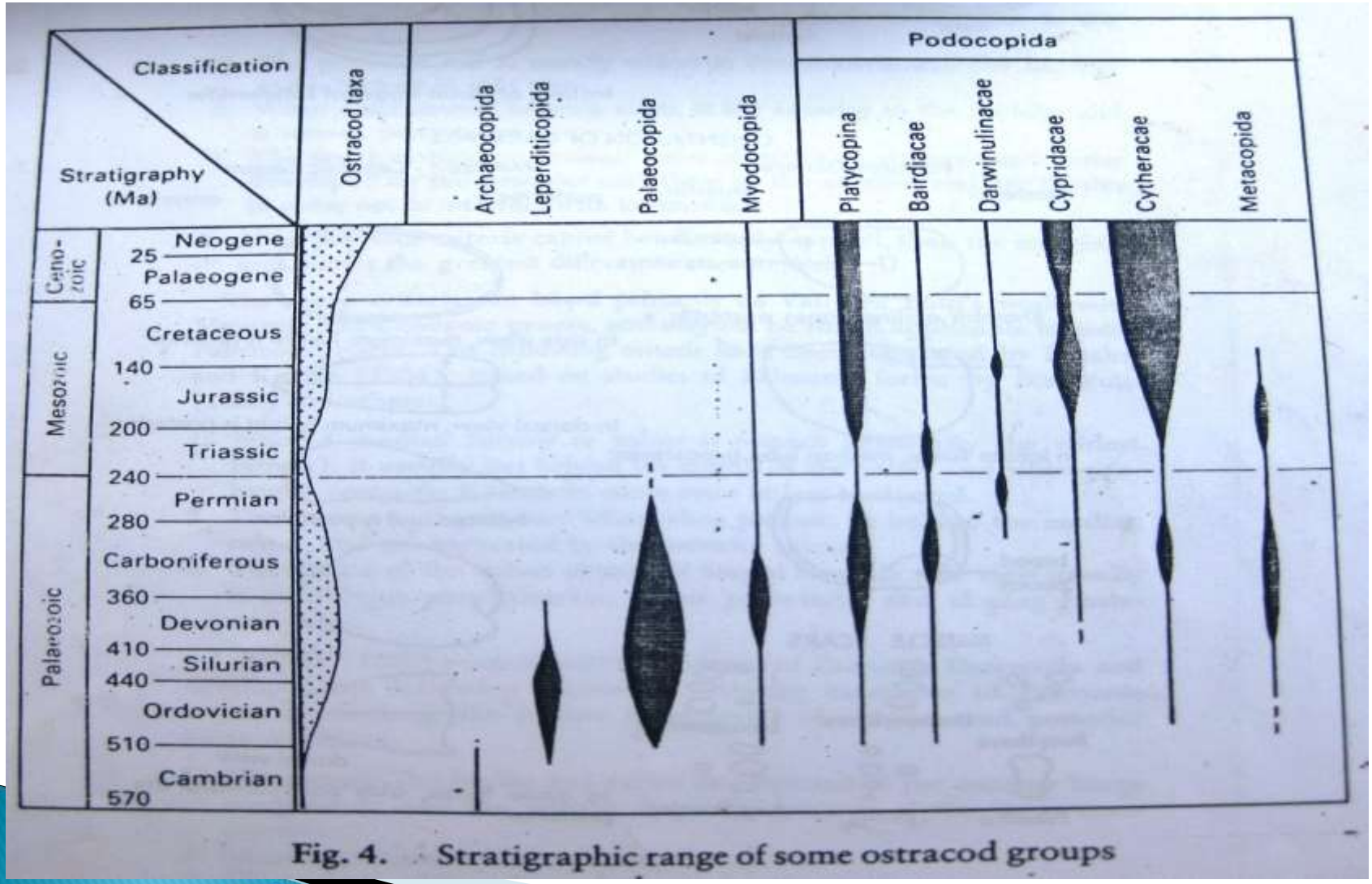


Fig. 4. Stratigraphic range of some ostracod groups

APPLICATIONS OF OSTRACODS

- In a marine environment benthic ostracods are utilized for **paleoenvironmental reconstructions.**
- Freshwater and brackish facies commonly contain abundant ostracods which are used for environmental studies and for **biostratigraphic zonations**, for instance in non-marine sediments from **Mongolia** and **China**.
- Several morphological features of ostracods are at times preserved in the fossil forms and have been utilized in their classification.

CONCLUSION

- Ostracods are the important microfossils, which are useful for biostratigraphic zonation and ecological interpretation.
- The researches of the last 60-70 years have resulted in selecting some of the ecological factors as tool in oil exploration mainly for identifying the source rock for **hydrocarbons** in sedimentary basins.
- Ostracods are first appeared during Upper Cambrian and continued till recent, they are adopted to all sorts aquatic environments and there are more than 2000 known living species distributed in fresh and marine waters.

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THANK YOU..!