

General properties of Trilobites

B.Sc. Part I, Group A, Animal Diversity

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Introduction

The trilobites are a large group of extinct marine arthropods that formed the class Trilobita. These are, remarkable hard shelled, segmented creatures that existed over 520 million years ago in the earth's ancient sea. They are the first prominent creatures of Paleozoic era. Trilobites are the most successful of early animals, existing in oceans for almost 300 million years ago. The trilobita are made up of 10 orders over 150 family and about 5000 genera and over 20000 described species. New species of trilobites are unearthed and described every year. This makes trilobites the single most diverse class of extinct organism.

The class trilobite are characterized by the presence of 3 lobes, multiple body segments and jointed legs. The softer part of the body were covered by an exoskeleton.

General properties of Trilobites



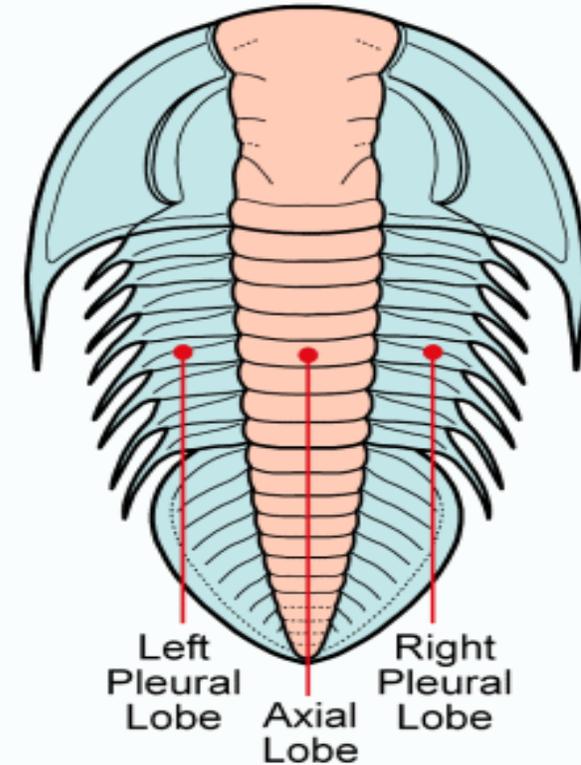
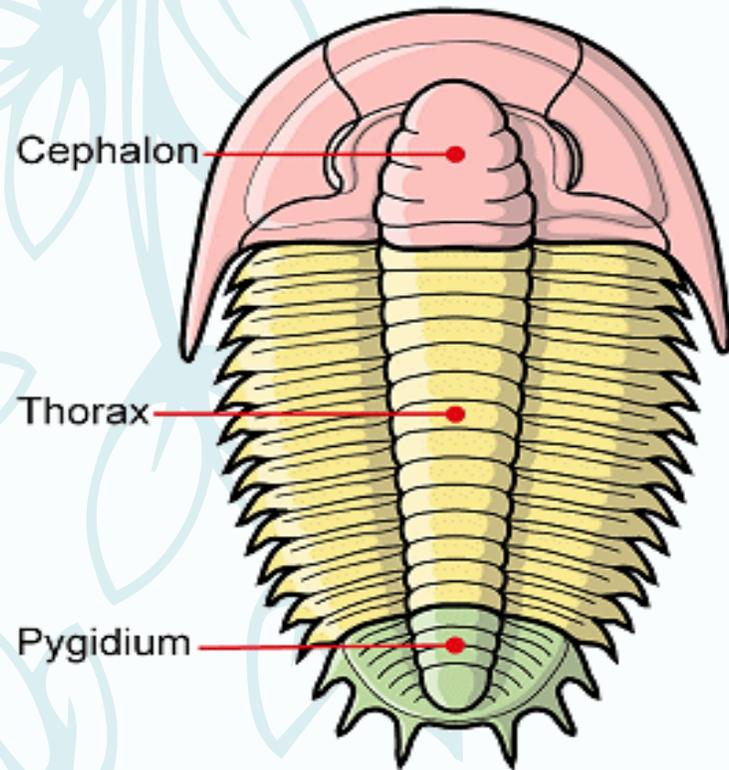
- Our knowledge about trilobites is based on the study of their fossils.
- The major trilobite body features that are typically preserved are as follows-
- Trilobites had three body lobes.
- One central axial lobe and two pleural lobes
- The trilobite body was segmented and divided into three regions:
- The cephalon, or head region.
- A Segmented thorax.
- A pygidium, or tail region.
- The three lobes that runs from the cephalon to the pygidium gave it the name 'Trilobites'.

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- Trilobites, like other arthropods, had an external skeleton, called exoskeleton, composed of chitinous material the hard pieces of exoskeleton are preserved because of their mineral content high in calcite (CaCO_3)
 - For the animal to grow, the exoskeleton had to be shed, the shed trilobite exoskeletons, or portions of them, are fossils that are relatively common.
 - The exoskeleton is divided from side to side into a central axis, with two side regions termed pleurae.
 - It is separated from anterior to posterior into a head shield termed the cephalon, a thorax and a tail shield the pygidium.
 - The cephalon thorax and pygidium are divided into segments.
 - The segments of the cephalon and pygidium were fused, but those of the thorax were not.
 - This helped the animals to roll into a ball to protect its relatively exposed ventral side in time of danger.
 - The central region of cephalon is termed the glabella.
 - The cheeks on the side of the glabella are separated by a facial suture.
 - The cheeks or genae are the pleural lobes on each side of the axial feature, the glabella.
 - The suture helped the animal to moult during growth.

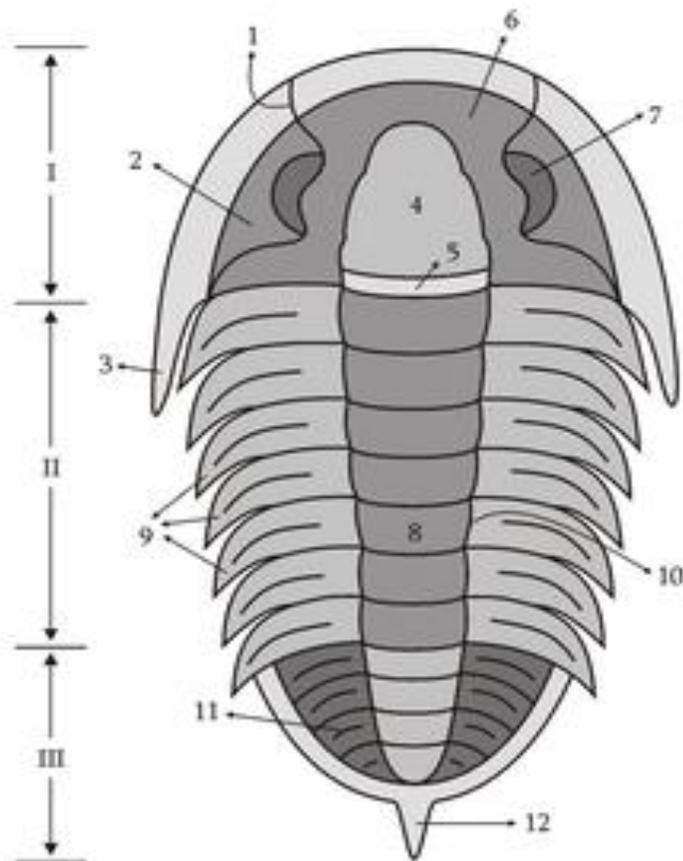


- Some trilobites were active predators, whereas others were scavengers, and still others probably ate plankton.
- Great diversity had been seen in the shape and size of trilobites.
- The smallest known trilobite species is below 1mm while the largest include species over 30 to 70 cm in length.
- Some trilobites grew to large size; *Paradoxides harlani*, which has been found near Boston in rocks of the Middle Cambrian Epoch (521 million to 501 million years ago), grew to be more than 45 cm (18 inches) in length and may have weighed as much as 4.5 kg (10 pounds).
- Each trilobite body segment bore a pair of jointed appendages. The forward most appendages were modified into sense and feeding organ.
- Most trilobites had a pair of compound eyes.

Trilobites body plan



Anatomy



– Trilobite anatomy sketch. Drawn by Muriel Gottrop

I – Cephalon, **II** – Thorax, **III** – Pygidium, **1** – Facial suture, **2** – Librigena (Free Cheek), **3** – Genal Spine, **4** – Glabella, **5** – Occipital ring, **6** – Fixigena, **7** – Eye, **8** – Axial lobe, **9** – Pleures, **10** – Dorsal line, **11** – Ornamentation, **12** – Posterior spine