

SYSTEMATIC INVERTEBRATE PALAEOONTOLOGY COLLECTION

INFORMATION SHEET 2 (CASES 226-245)

Fossils are the remains of organisms (animals and plants) that lived millions of years ago. The preserved remains of these organisms' activities are known as trace fossils, some examples being dinosaur footprints (giving evidence of their locomotion) and animal droppings, called coprolites (yielding evidence of their digestion). This information sheet describes some of the most common, well-known fossil invertebrates in the fossil record held in the Systematic Invertebrate Palaeontology Collection.



CASE 226
PORIFERA (SPONGES)

Sponges are aquatic invertebrates that live attached to the sea floor. The name Porifera comes from the Latin *porus*, meaning pore, and *fero*, meaning to carry or bear, since the body contains a system of channels connected by pores. Sponges were not considered animals until the 18th century, when the water flow through their bodies was described. They are known from the Cambrian (about 540 million years ago) to the present.

Jerea sp.
Late Cretaceous (90 million years ago).
Indre et Loire (France).
Maximum dimension: 8 cm.



CASE 227
CNIDARIA (CORALS)

The Cnidaria form a very diverse group of invertebrates that includes jellyfish, anemones and corals. These two specimens correspond to a solitary, conical coral, and a more typical colony of corals. Since the Early Palaeozoic, corals have contributed to the formation of rocks, especially in reef environments. They are known from before the Cambrian to the present.

Solitary coral: *Zaphrentis roemeri*.
Middle Devonian (390 million years ago).
Uad Uein Terguet (Sahara).
Maximum dimension: 13 cm.
Colonial coral: *Spongophyllum profunda*.
Middle Devonian (390 million years ago).
Waller's (France).
Maximum dimension: 7 cm.



CASE 229
ARTHROPODS: TRILOBITES

Trilobites are the best known fossils from the Palaeozoic. They were very primitive marine arthropods that eventually colonised almost all ecological niches, and survived for almost 300 million years. The name "trilobite" alludes to the lengthwise and widthwise division of the body into three lobes. Fossils of the traces of movement that they left on seabed sediments are known by the name of *Cruziana*.

Flexicalymene ouzregui.
Ordovician (460 million years ago).
Morocco.
Maximum dimension: 7.5 cm.



CASE 234
MOLLUSCS: BIVALVES

Bivalves are aquatic molluscs with an external shell composed of two valves. They present a wide range of shapes, sizes and environmental adaptations. Some could swim, such as *Aequipecten opercularis*, propelling themselves freely through the water. Fossils have been found dating back to the Cambrian and there are currently about 100,000 species, rendering bivalves the second largest group of molluscs after the gastropods.

Aequipecten opercularis.
Pliocene (3 million years ago).
Italy,
Maximum dimension: 7.5 cm.



CASE 236
MOLLUSCS: CEPHALOPODS
(NAUTILOIDS AND COLEOIDS)

The cephalopods (from *cephalos*, meaning head, and *podos*, meaning feet) are the largest and most intelligent of the molluscs. Nautiloids have an external, spiral shell. They are known from the Cambrian to the present. Fossil coleoids usually have a straight internal shell with a pointed end. Although there are living representatives, they were much more abundant in the past, particularly the order known as the belemnites (see the specimen of *Passaloteuthis*).

Nautiloid: *Aturia aturi*.
Miocene (15 million years ago).
Puglia (Italy).
Maximum dimension: 2.5 cm.

Coleoid: *Passaloteuthis paxillosus*.
Early Jurassic (180 million years ago).
Meude (France).
Maximum dimension: 11 cm.



**CASE 237
MOLLUSCS: CEPHALOPODS
(AMMONOIDS)**

The ammonites are perhaps the best known fossil invertebrates from the Mesozoic. The name comes from the Egyptian god Amun, who was typically depicted wearing ram's horns, which are reminiscent of these molluscs' planispiral shell. These marine animals presented wide morphological diversity, and are known from the Early Devonian (416 million years ago) to the Late Cretaceous (65 million years ago).

Stephanoceras humphriesianus.
Middle Jurassic (170 million years ago).
France.
Maximum dimension: 15 cm.

**CASE 240
MOLLUSCS: GASTROPODS**

The gastropods are one of the most diversified groups of invertebrates known, second only to the insects. Most gastropods have an external shell, although a few, such as slugs, do not. Over the course of geological time, they became increasingly diverse, reaching maximum diversity in the present. They are known from the Cambrian to the present.

Turritella terebrallata.
Eocene (45 million years ago).
Chamout (France).
Maximum dimension: 6.5 cm.

**CASE 241
BRACHIOPODS**

The brachiopods are invertebrates with a shell composed of two valves that are symmetrical in relation to a plane that is perpendicular to the opening of the same. They live on the seabed in groups containing several individuals. Fossil brachiopods represent approximately 95% of the total, as more than 4500 genera have been described, of which only about 120 are extant today.

Morrisithyris phillipsii.
Middle Jurassic (170 million years ago).
Port-en-Bessin (France).
Maximum dimension: 4.5 cm.

**CASE 242
ECHINODERMS: ECHINOZOANS**

The echinoderms (from *echinos*, meaning spine, and *dermos*, meaning skin) are marine organisms that include sea urchins, sea stars, crinoids, brittle stars and sea cucumbers. Sea urchins, or echinozoans, were studied by Aristotle, and hence the masticatory apparatus of these animals has been named "Aristotle's lantern" in his honour. They are known from the Ordovician to the present.

Echinozoa: Echinolampas affinis.
Eocene (40 million years ago).
Courtignon (France).
Maximum dimension: 5 cm.

**CASE 245
FOSSILISATION**

Fossilisation is a process that preserves remains. The probability of an organism being fossilised is very low, because animal remains usually decompose after death. This is why fossils are so valuable. Sometimes, skeletal parts are replaced by iron sulphides such as pyrite or marcasite. Such was the case of the specimen on display, where the calcium carbonate of the shell was replaced by an iron ore.

Ammonoidea gen. indet.
Jurassic (170 million years ago).
Russia.
Maximum dimension: 7 cm.