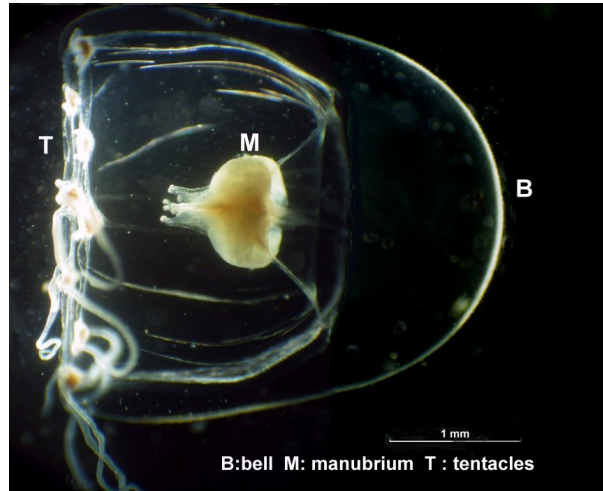


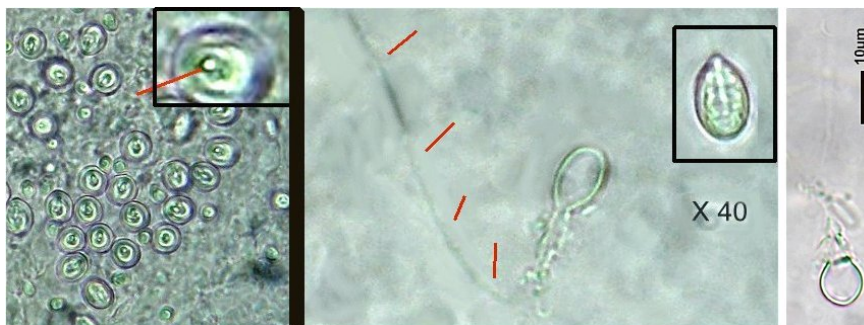
SIPHONOPHORES

JM Cavanilhac - France

Siphonophores are a phylum of cnidarians, and their name means “tube-bearing” in Greek. All cnidarians have a common characteristic: the presence of stinging cells: nematocysts. Here is an example of a cnidarian in the form of a microjellyfish probably *Turritopsis nutricula*. It is NOT a siphonophore!

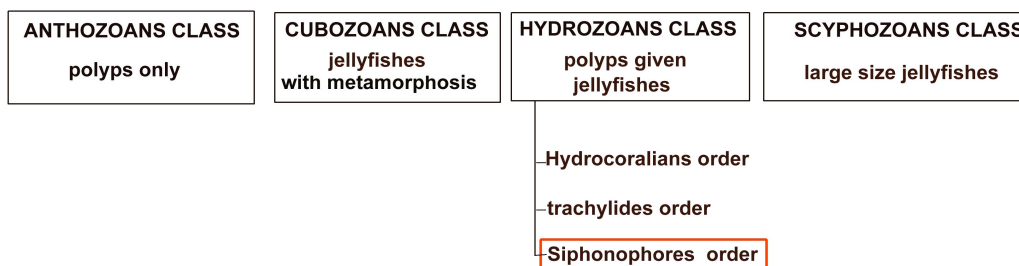


The tentacles carry the nematocysts in the form of specialized cells containing a spirally wound filament ending in a sort of harpoon. The ejection of the harpoon is controlled by the contact of the prey with a cnidocil which serves as a trigger. The harpoon injects a substance that paralyzes the prey. On the left nematocysts seen from above and in detail (arrow) the position of the cnidocil. On the right unloaded cnidocysts: the arrows indicate the long filament which can be guessed spirally wound in the detail boxed on the right



The study and identification of siphonophores are made difficult by their structure and the various phases of their evolution. In addition, their gelatinous body is fragile and it is difficult to capture and preserve them complete. Specific terminology has been developed to describe their components. They are the most complex of the marine cnidarians and their great diversity has generated a particular systematics based on morphological descriptions.

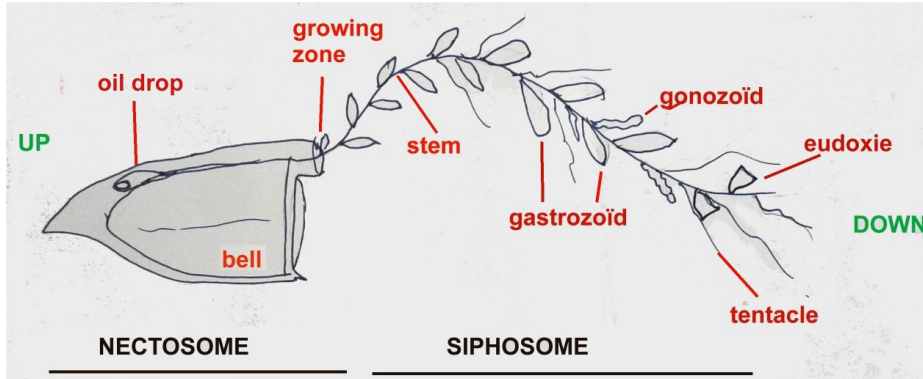
CNIDARIANS



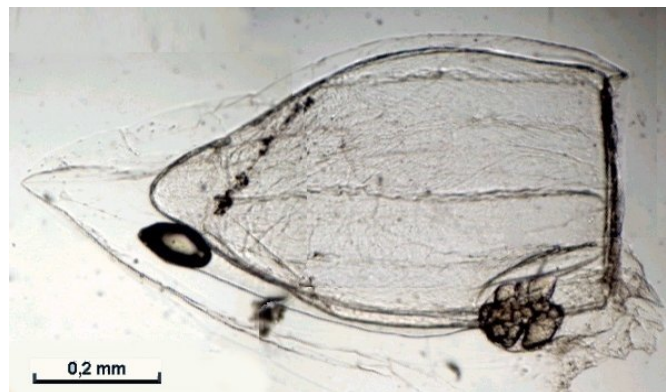
Depending on their colony configuration, siphonophores can be classified into three groups: cystonectes, physonectes and calycophores.

The cystonectes colony has a pneumatophore and siphosome (the chain of zooids). That of physonectes has: pneumatophore, nectosome (the swimming bells) and siphosome. The calyphorans colony don't have a pneumatophore and has only nectosome and siphosome. The gas-filled pneumatophore serves as a float. Located at the top of the colony, it helps it stay at the correct flotation level and keeps it vertical. The nectosome is the region composed of the nectophores which propel the colony. The siphosome is the lower part: long stem which carries the other zooids specialized for feeding: gastrozooids, reproduction: gonozooids and defense: dactylozooids. They are great predators.

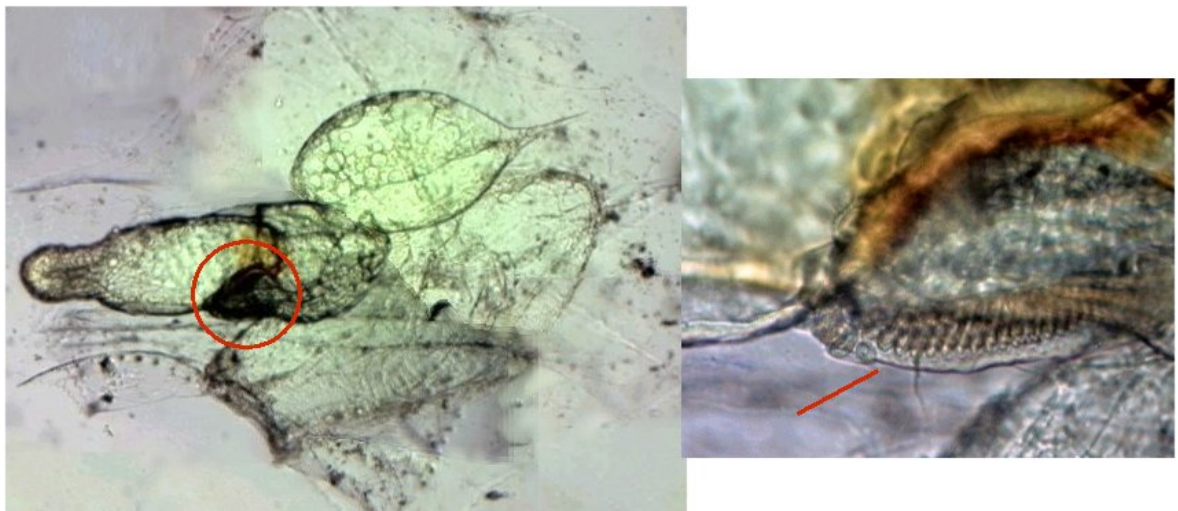
Diagram showing the configuration and different parts of a calyphoran: imagine the vertical colony. It is made up of several dozen interdependent zooids distributed along the stem.



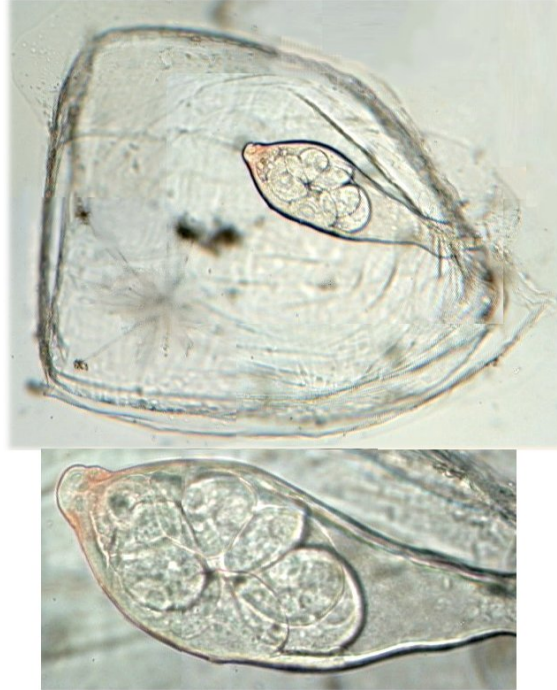
A specimen of calyphoran: *Muggiaea*: we see towards the top of the bell on the left not a pneumatophore but a drop of oil. At the bottom right the first zooids



Here is probably a eudoxia = old individual which detaches from the stem with the three types of zooids; we see several interesting structures: gastrozoid on the left, pear-shaped somatocyst in the middle; on the right detail under the X 15 objective of the dark circled part showing an outline of a tentacle with cnidocysts (red arrow)



Another gonophorous eudoxia (from *Muggiaea*?) with the manubrium containing the embryos. Below detail of the manubrium with its pink tip.



Later stage embryos on another specimen.



Other siphonophores pictures: (Physonectae):

https://www.researchgate.net/publication/384964925_Unexpected_diversity_and_novel_lineages_in_the_cosmopolitan_genus_Nanomia_Cnidaria_Siphonophorae_Physonectae

These species have zooids and nectophores measuring a few mm. A much larger species is the Physalia (Portugese man of war) with an aerial float of more than 10 cm and tentacles of up to 10 m. Its contact is dangerous even for humans.

It is difficult to collect complete specimens of siphonophores with a plankton net. The stem breaks and the zooids are lost. This explains why the 177 known species have been little studied and sometimes the eudoxies have been considered as a separate species.

Note: My images used here are more than twenty years old on samples collected at sea from a boat and I have not had the opportunity to meet others since.

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