Blastocoelomates, Continued

Phylum Loricifera
General Characteristics:
1. A recently discovered phylum (Kristensen 1983) from shell-gravel sediments.
   a. Now known to occur at great depth.

   Phylum Loricifera
   General Characteristics:
   b. N species unknown, now about 35-40.

2. Bilaterally, radially symmetrical, unsegmented, apparently pseudocoelomate.

   Body Form:
   a. Extremely tiny, 1/4 mm long.
   b. Head, neck, and thorax retractable into abdomen.
   1. Spines encircle cone-shaped mouth.
   c. All surrounded by cuticle - lorica ("corset-bearers").
   d. Complete gut, diet?

   Locomotion:
   e. Appear to propel themselves along with spines and toes.

   Reproduction:
   a. Poorly known like rest of group.
   b. Sexes separate, sexually dimorphic in head scales.
   c. Unique "Higgins-larva" named after co-discoverer.
   1. Originally thought to be a larval priapulan.
**Phylum Priapula**

**General Characteristics:**
1. Named after the Greek god *Priapos*, although actual name-sake reported by B&B to be from Linnaeus (*Priapus humanus*) - human penis.

**Phylum Priapula
Priapus humanus**

a. Reported to be 20 cm long (>9 inches!)

b. Anterior end armed with spikes.

**Body Form:**

a. Bilaterally symmetrical, superficially annulated.

b. Armed anterior end (introvert) that is retractable.

1. Burrowing forms, structure assists in food capture.

**Feeding:**

a. Extend introvert, hook prey, contract muscles and draw prey in.

1. Amounts to a true urogenital system - observed in more derived forms.


**Body Form:**

c. Radially arranged nervous system located near surface of body

d. Complete gut - often with diverticulae.

e. Numerous protonephridia associated with the reproductive tract.
**Body Form:**

f. Unique (apparently) respiratory structure - caudal appendage.

1. No apparent effect if removed, however.

**Phylogenetic Position:**

3. Unusual group-difficult to place due to affinities to pseudocoels and eucoels.

**With Pseudocoels?**

1. Cuticle, periodically shed (Ecdysozoa).
2. Fluid filled body cavity, movement assisted by hydrostatic pressure.
3. lorica-encased larva - very similar to Loriciferans.

**With Eucoels?**

1. Body wall is lined - but lining does not cover internal organs.
2. Yet extensions do support viscera.
3. Overall, difficult to classify.

**Reproduction:**

a. Gonochoristic, but copulation doesn't occur - spawning instead.

b. Males first, female second - interesting, this is unusual for external fertilizers.

**Development:**

c. Is unusual for pseudocoels: radial holoblastic cleavage.

d. Produces loricate larva.
**Phylum Nematomorpha**

**General Characteristics**
1. Wierd, once thought to represent spontaneous generation.
   a. Adults occur in horse troughs.
   b. Attempts to revitalize horsehairs failed.

2. Fairly abundant - 230 spp
3. Body form
   a. Similar to nematodes
   1. Thick cuticle must be molted.

**Dissimilar to Nematodes.**
1. Do not show consistency in cell number (eutely).
2. Pseudocoel filled with mesenchyme.
3. Rudimentary digestive system.

4. Nutrients absorbed from body of insect host.
3. No excretory system
4. No specialized genital system - cloacas in both sexes.
**Phylum Nematomorpha**

**Reproduction -**

a. Example: *Gordius* after the Gordian Knot.

1. intricate knot tied by King Gordius of Phrygia
   a. whoever untied it would be King of Asia.

**Phylum Nematomorpha**

b. Alexander cut it with his sword and became King of Phrygia

**Phylum Nematomorpha**

**Life Cycle:**

a. Adults develop in bodies of insects.

1. Cause them to seek water, once entering, they explode.

2. Separate sexes mate in water.

**Phylum Nematomorpha**

a. Females lay eggs that wrap around aquatic vegetation.

3. Eggs hatch, larvae remain free living for only a few days.

**Phylum Nematomorpha**

b. If unsuitable host ingests, will encyst and wait for intermediate host to be ingested by suitable host.

1. Beetle -> mantid
Phylum Nematomorpha
2. Can also inhabit annelids, molluscs, crustceans, humans
5. Mature worm develops beneath skin.

Phylum Entoprocta (Kamptozoa)
General Characteristics
1. Usually colonial organisms with upright zooids.
   a. ciliated tentacles surrounding the mouth and anus.
2. Appear related to other similar groups:
   a. Bryozoans - ectoprocts
   b. but similarity is ecological rather than evolutionary.

Phylum Entoprocta
General Characteristics
b. Derivation of "ento-proct" -anus within ring of tentacles.
c. Kamptozoa - derived from flexible calyx that permits zoids to "nod."

Phylum Entoprocta
Cilia draw water from beneath tentacles.
a. Food swept to mouth, anus within ring of tentacles.

Phylum Entoprocta
Reproduction
a. Capable of reproduction by budding - hence colonial structure.
b. Also sexual reproduction.
Phylum Entoprocta
1. Sperm released into water; internal fertilization.
3. Ciliated larva that is similar to that of annelids and molluscs.

Phylum Entoprocta
4. Some to suggest that entoprocts are highly derived, share a common ancestor with these groups.
a. Lack of body cavity represents a neotenic character.

Box Seven
Characteristics of the Phylum Acanthocephala
1. Triploblastic, bilateral, unsegmented, vermiform pseudocelomates
2. Anterior end with hook-bearing proboscis
3. Epidermis contains a unique system of channels called the lacunar system
4. Gut absent
5. Proctonephridia absent except in a few species
6. With unique system of ligaments and ligament sacs partially partitioning the body cavity
7. Gonochoristic
8. All are obligate parasites in vertebrates; many have complex life cycles

Phylum Acanthocephala

Box Four
Characteristics of the Phylum Nemathela
1. Triploblastic, bilateral, vermiform, unsegmented pseudocelomate
2. Body moved in mass motion and covered by a loricate cuticle; growth in juveniles usually accompanied by ecdysis.
3. With unique epidermal sense organs called amphids; some have nasal sense organs called phasmids
4. Gut complex; mouth surrounded by six lips bearing sense organs (often reduced to three lips, or a simple ring)
5. Energetic system, more paired or two or more cells to a set of collecting tubules
6. Without special circulatory or gas exchange structures
7. Body wall has only longitudinal muscles
8. Longitudinal muscles with connected to longitudinal nerve cords for unique muscles areas
9. Epidermis protonal or longitudinal cuticle lacking motor ends
10. Gonochoristic
11. Infest hosts, freshwater, and terrestrial environments; some are free-living and some parasitic
**Caenorhabditis elegans**

**Rhabditiform larva of a hookworm**

**Dracunculus medinensis larvae**

**Onchocerca volvulus**

**Loa loa**
Anchylostoma (Ancylostoma) sp. anterior end

Necator americanus

Strongyloides filariform larva

Strongyloides filariform larva