

Afgiftekantoor: Aarschot

GLORIA MARIS

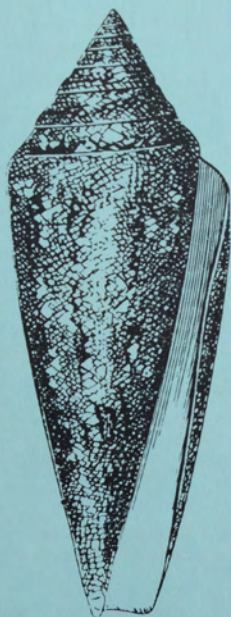
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**Nomenclatural list of all the patelliform genera
arised from the genus
PATELLA Linnaeus, 1758**

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KEYWORDS:

NOMENCLATURE - TRYBLIDIIDA - ARCHINACELLIDA - BELLEROPHONTIDA
DOCOGLOSSA - NEOMPHALINA - VETIGASTROPODA - COCCULINIFORMIA
PHENACOLEPADIDAE - VANIKOROIDEA - CALYPTRAEOIDEA -
UMBRACULOIDEA - SIPHONARIOIDEA - EUPULMONATA

SAMENVATTING :

Het geslacht *Patella* waarin Linnaeus een grote verscheidenheid van schaalvormige schelpen verzamelde, is in de loop der tijden geweldig ontmanteld. Ons huidig overzicht vormt een lange lijst van familie- en geslachtsnamen, synoniemen, onnauwkeurigheid uit de literatuur, type-species, opmerkingen, enz.

INTRODUCTION :

Many groups of nonspiral patelliform shells have a wide opening as open half-whorl of the coiled gastropod. They have a suckerlike foot, capable of adhering to a solid substrate and were in English commonly called: Limpets (ex lijmpot, pot in which lime or glue was retained); this word is worldwide used now. In Dutch they were called: Patellen, Klipklevers, Schilden; in French: Patelles, Oeil de bouc, Bernicle, Arapède (in Provence), Jamle (in Poitou), Berdin, (in Normandie); in German: Schüsselmuscheln, Klippkleber, Napfschnecken; in Spanish: lapas, in Chile: lapas, chapas, and in old literature and in Greek: lepas (= l'écaille des rochers), scale on the rocks. The rock is the limpet a sustenance as a second valve, hence the classification in Bivalvia by Aldrovani & Rondelet. The term limpet is most characteristic for the *Patellidae* (true limpets), *Acmaeidae* (limpets), *Siphonariidae* (false limpets). These groups are also called limpets in the Great Soviet Encyclopedia 1970 vol.16. The term is further used for shells with one of the following characteristics: a supplementary opening near the apex (keyhole limpets), a slit in the open cone (slit limpets), a shield, cap or solid hoof shape (shield, cap, hoof limpets or shells), a horizontal septum (slipper limpets), a subvertical septum (cup and saucer shells). The term has been extended to some groups with the protoconch (= initial coiling) visible throughout life and to some untorsted shells of a stock outside the gastropods. In the late 18th century all these groups were included in the genus (Gastropoda).

The limpets were described by Lister (1688) in 7 chapters and by Gualtieri (1742) in 2 sections. Klein (1753) put the limpets in two classes and in several genera. Linnaeus, founder of the Zoological Nomenclature, didn't show great understanding of the genus *Patella* (placed in Vermes: Mollusca: Testacea) and was not influenced by Klein's genera. He kept in the 10th edition of the *Systema Naturae* (1758), 32 species in a sole genus named "*Patella*". This genus had a five-fold division (Labiatae, Dentatae, Mucronatae, Intergerrimae, Perforatae) strongly based on Gualtieri, and including a valve of *Lingula*, a tongue-shaped brachiopod. He added afterwards 6 species: *Patella crepidula* (1764, Mus. Reg. L. Ulricaë), *antiquata*, *tricarinata*, *cristata* (1767, Syst. Nat. ed. XII), *noachina* and *militaris* (1771, Mantissa Plantarum).

Gmelin (1791), who closely followed Schroeter, adopted Linnaeus' classification without the species of the Mantissa. In the genus he described 238 names, used carelessly 10 names twice, repeated 1 species and didn't take into account the first disjunction of the genus made by Geoffroy (*Ancylus*, 1767 validated by Müller, 1774) and by Bruguière (*Fissurella* and *Lingula*, 1798). The dismemberment of Linnaeus' genus was continued by Modeer (*Cheilea*, 1793), by Humphrey (*Crypta*, *Larva*, *Calyptra*, 1797) and by Cuvier (*Orbicula*, 1798). The list of Humphrey, established without diagnosis, has to be rejected according the Opinion 51 and Direction 32 of the ICZN. In 1799 Lamarck created *Crepidula*, *Calyptraea* and 2 years later *Emarginula*. In 1815 Brookes mentioned the 8 genera by Lamarck: *Patella*, *Fissurella*, *Emarginula*, *Capulus*, *Concholepas*, *Calyptraea*, *Acardo* (cf. *Pat. sinica* Davila), *Orbicula* (cf. *Pat. anomala* Müller). Montfort (1810, with *Capulus*, *Scutus*, *Helcion*) was followed by Schumacher (1817), Defrance (1819), Sowerby (1824), Gray (1824) and so on.

Till the beginning of the 19th century some French authors wrote the Latin names in French. In case these vernacular family-names have later been latinized and accepted, they are, according ICZN Art.11(f), available with their original author and date.

The heterogeneous genus has been much further divided, principally on morphological and radular characters, on external and some internal anatomical features, and now, the last decades, on new finds, deepsea research, hydrovents, phylogenetic course, microstructure, etc. Half of the Linnaean limpets were taken as type species of the first genera or subgenera. I mention them in the same order as Linnaeus' species: *Cheilea equestris*, *Calyptraea chinensis*, *Crepidula (Sandalium) fornicata*, *Patelloida (Collisellina) saccharina*, *Patella (Patelloidea) granularis*, *Patella (Patellona) granatina*, *Patella vulgata*, *Capulus ungarica*, *Trimusculus mammilaris*, *Siphonaria (Patellopsis) pectinata*, *Acroloxus lacustris*, *Ansates pellucida*, *Patella (Cymbula) compressa*, *Patella (Patellastra) rustica*, *Clypidina notata*, *Emarginula fissura*, *Fissurella nimbose*, *Hipponyx antiquatus* (L., 1767), *Amathina tricarinata* (L., 1767) and *Puncturella noachina* (L., 1771).

The splitting of the limpets has reached great proportions and the number of actually valid taxa treated in this list is impressive. Without synonyms or homonyms I noted 471 (sub)genera and 81 (sub)families. I have never checked the number of valid species. I mention adventitiously that 2 centuries ago, 8 000 plants were known in the "Species Plantarum" and that some British botanists in the Kew Gardens are working now on a new catalogue of 250.000 different plants.

The major objective of this paper is to provide a summary of published data and characters in the limpets' systematics, to mention the main deviations and differences in the literature, and to include the fossil genera. I will not try to diagnose or to describe the higher taxa otherwise as done up to now. I will not create new taxa, not develop the origin of the limpets nor discuss the bellerophon derivatives. The article 51 of the Code, telling that the citation of the name of an author is optional, is very often applied in higher taxa and sometimes provoked inaccuracy. The articles 36 and 50c, reporting that change in rank (raising or lowering) of a taxon within a group doesn't affect its authorship, have not always been applied, especially not in the family group. I have checked thousands of references and I found that some taxa are noted with different dates, authors and types.

For the names of the family group, it is useful to remember that it is the highest-ranking group of taxa regulated by the Code and that the endings of the stem are: -OIDEA for the superfamily (recommendation Art.29A of the ICZN) (not -ACEA, as much used, even as correction of -oidea, and sometimes repeated in our citations), -IDAE for family and -INAE for subfamily names. For an order and suborder the terminations are -IDA and -INA, adopted here and there, and principally in the Treatise. The recommendation for the name of a tribe is -INI. As the rank of the family-group name is clearly indicated by the suffix, I don't mark the rank separately, except for the more unusual tribes and subtribes. I'll also try to mention in parentheses the first author who elevated a family to superfamily and the date of a taxon, when the name has been replaced afterwards. Citations of names and phrases are put between "inverted commas". In this list, but not in the current text, I write the names of the family-group and higher taxa in capital letters (the latter 10 letters indented). The genus-group and species-group names are, on the contrary, always in italic printing. All type genera are repeated but nominotypical taxa (subfamilies and subgenera) are generally not. The differences between sections and subgenera are not developed. Many sections were erected e.g. by Thiele and Hubendick, and they have, according the ICZN, subgeneric status. For names published with more than 2 authors, a burden on posterity as Knight (1956) said, I often cite the first author, followed with "& al.". The arrangement of families, genera and

subgenera in this list is alphabetical except the nominotypical taxa. Their synonyms are in chronological order and are given for the genera and subgenera after the "Type". For higher taxa the synonyms are placed in the beginning of the paragraph and before any comments.

The original state of a taxon, when different from the actual state, is indicated in parentheses. It is preceded by an asterisk * and the name is abbreviated. Many states, synonyms, other authors and dates are introduced by the word "as" and the authors doing so are shortly and incompletely cited. Then follows the type species, always under the original generic name so that, in case of a changed combination, I don't need to place the author's name and date in parentheses. I don't report the synonyms of the type, but eventually I'll indicate the present valid species name between double brackets (()) and in its original state. Let me remember that the type of a genus is not necessarily the first mentioned species nor the most common one. When the type was a new species, created together with the (sub)genus, I don't repeat the author's name of the species. In this list I rarely give bibliographic references and don't list any subphylum. At the end there is an index of the genera, an index of listed higher taxa and 4 plates with a limited number of figures.

I must admit that the radular and morphological characters of the limpets are no longer the principal factors, that shell characters were overrated in the past, that their micro shell structure (studied e.g. by MacClintock, 1967) gives a new insight and that biological criteria are more developed and used now. McLean (1988) has tentatively assigned limpets of the hydrothermal vent to 7 new superfamilies. This limited group, with some monotypic genera, has nearly as many superfamilies as the recent and worldwide Archaeogastropoda. This arises some doubts about the correct definition and concept of a superfamily, a taxon perhaps named for our convenience. I am rather conservative, try to respect the traditional and familiar taxa, and am more inclined to lower the rank than to raise and inflate the rank as some Russian and other authors do. The fact, indicated by Lindberg (1988), that gills are not conservative and that in the Lottiidae shell morphology is not constant, is new and I am glad that in some cases the number of limpets can be diminished. This increases automatically the number of synonyms.

I recall that limpets are not only known by shellcollectors. On the fish-market of Madeira, islas Canarias and Açores limpets are sold as food. In previous centuries a poor man was called limpet-eater and nowadays Anderson (1989) wrote a paper entitled: Just limpets in an aquarium to clean it.

ACKNOWLEDGMENT:

I am grateful to the Musée National d'Histoire Naturelle, Paris (MNHN) for the permission to inspect the files with the copies of the original descriptions of the genera, made by Mr. Rocroi and started 5 years ago. The last 60 years have been finished and I have detected some fossil genera I did not have in my notes.

ABBREVIATIONS:

TYPE SPECIES:

Type OD: Type species of a (sub)genus by Original Designation (Art.68b). When the word *typicus* or *typus* is used (Art.68c) I consider it as OD, except by monotypy.

Type SD: Type species of a (sub)genus by Subsequent Designation, (Art.69), with as author the writer who, subsequently and first, designated one of the originally included nominal species as type. Wenz (1938) for instance, did it simply with the words: "*Typus* (*hiermit*)". The author's name is mentioned after "SD"; e.g.: *Patella* (*Scutellastra*) is defined as: Type: *P.(S.) ferruginea* Gmel., 1791, SD Kobelt, 1879

(= *Patella gorgonica* Da Costa, 1771). I mentioned in 1973 *gorgonica* as nom.obl. As all nomina oblita have been suppressed, *gorgonica* is valid and has priority now.

Type MD: Type species of a (sub)genus by monotypy. In that case the only originally included species becomes the type by indication, even when after 1930 the type species was not fixated. I don't mention an eventual OD designation which has precedence; e.g.: *Clypidina* Gray, 1847, created as subg. of *Emarginula* for a sole species *Patella notata*, is now full genus and is followed in this list by: (* subg. of *Emarg.*), Type MD: *Pat. notata* L., 1758. The actual name of the type species is not mentioned and is easy to constitute: "*Clypidina notata* (L., 1758)". Other example: *Cellana* H. Adams, 1869, created as subg. of *Nacella* with *cernica*, a new and single species, is defined as: (* subg. of *Nacella*) Type MD: *N.(C.) cernica*.

STRATIGRAPHIC PERIODS:

Palaeozoic, (Cambrian, (Ord)ovician, (Sil)urian, (Dev)onian, (Carb)oniferous, (Perm)ian; Mesozoic, (Trias)sic, (Jura)ssic, (Cret)aceous; Caenozoic, Tertiary, (Paleo)cene, (Eoc)ene, (Oligo)cene, Neo(cene), (Mio)cene, (Plio)cene; Quaternary, (Pleist)ocene, (Rec)ent (= Holocene).

The genera and higher taxa, known only as fossils, are in the text preceded by " + "

GENERIC NAMES:

The abbreviated names are limited to the following genera: *Acm.* (= *Acmaea*), *Cal.* (= *Calyptraea*), *Cap.* (= *Capulus*), *Cell.* (= *Cellana*), *Cocc.* (= *Cocculina*), *Crep.* (= *Crepidula*), *Cruc.* (= *Crucibulum*), *Emarg.* (= *Emarginula*), *Fiss.* (= *Fissurella*), *Hipp.* (= *Hipponyx*), *Nac.* (= *Nacella*), *Pat.* (= *Patella*), *Punct.* (= *Puncturella*), *Siph.* (= *Siphonaria*). Other genera and subgenera are sometimes completely abbreviated when the name has to be repeated under the same heading or paragraph.

CURRENT ABBREVIATIONS:

- * = asterisk used to express the original state or description
- auctt. = many authors, whose names are not cited (except perhaps the first who made the mistake, e.g. by false dates)
- c f. = (confer) compare (= see; = fide)
- corr. = corrections, corrected by
- e.g. = (exempli gratia) for example, for instance
- emend. = emendation of the name which follows
- & al. = (et alii) and others; not: (at alibi) or elsewhere
- fam. = family, (also in plural and in the combinations super- and subfamilies)
- ICZN = International Code of Zoological Nomenclature, 1985
- id. = (idem) also, identical
- ms. = manuscript (mss.: manuscripts)
- n.dub. = (nomen dubium) name of unknown or doubtful application
- n.nov. = (nomen novum) new replacement name
- n.nud. = (nomen nudum) not available name
- n.obl. = (nomen oblitum) forgotten name; this is bannished in the last ICZN
- ref. = reference
- spec. = species (singular and plural)
- s.s. = *senso stricto*
- subg. = subgenus or subgenera
- syn. = synonym, synonymous, (in) synonymy

SYSTEMATICS (TAXONOMY)

Phylum **MOLLUSCA** Linnaeus, 1758 (ex Jonston, 1650)

- = Malacozoa Blainville, 1825
- = Heterogangliata Owen, 1855
- = Weichtiere (in German)

Under Mollusca Linnaeus not only included shelled uni- and bivalves, but also a potpourri of soft animals (cephalopods, tunicates, slugs, anemones, medusae, echinoderms, etc.). Dumeril (1806) divided "les Mollusques" into Céphalopodes, Ptéropodes, Gastéropodes, Brachiopodes, Acéphales. Between the later classifications there was one with few success: Von Ihering (1876) with the phyla Arthromalakia, including the class Cochlidae (= Prosobranchia, Heteropoda), Platymalakia, including Ichnopoda (= Opisthobranchia, Pulmonata) and Pteropoda. A classification that remained longtime standard is that of Pelsener (1892) with Cephalopoda, Amphineura, Scaphopoda, Gastropoda, Lamellibranchia. No classification reached formal stability. In 1980 Salvini-Plawen subdivided the Mollusca into the subphyla Scutapoda Salvini, 1978 and Adenopoda Salvini, 1971, the latter having 2 superclasses: Heterotecta Salvini, 1980 and Conchifera Gegenbaur, 1878 (the latter as subphylum Conchifera Lam., 1802, by Kerber, 1988). Salvini divided the Heterotecta into 2 classes: Solenogastres Gegenbaur, 1878 (= Aplacophora von Ihering, 1876, which has precedence according to Hyman, 1967) and Placophora Ihering, 1876. He retained in the Conchifera 5 classes: Galeroconcha Salvini-Plawen, 1980, (instead of the Monoplacophora), Gastropoda Cuvier, 1797, Bivalvia L., 1758, Scaphopoda Bronn, 1862 and Siphonopoda Lankester, 1877 (= Cephalopoda Schneider, 1784). For the Mollusca Wingstrand (1985) suggested a clear cladogram, including in the Conchifera the groups: Tryblidiidae, Gastropoda, Bellerophonitida, Cephalopoda, Bivalvia, Rostroconchia, and Scaphopoda. Although I don't list any subphylum, I wish to mention these of Runnegar & Pojeta, 1974, used by paleontologists but not adopted by neontologists: Cytosoma (including the Monoplacophora, Gastropoda, Cephalopoda) and Diasoma (including the Rostroconchia which has given rise to the classes Bivalvia (= Pelecypoda) and Scaphopoda).

In the phylum Brachiopoda, class Inarticulata Huxley, 1869, there are some patelliform shells. These are placed in superfamilies (Lingulacea, Discinacea, Craniacea, Paterinacea) which are not treated here. To show their resemblance with real limpets, I refer for instance to the brachial valve (= flat dorsal valve) of an unnamed brachiopod figured by Brunton & al. (1990, Palaeontology 33(2):323), to the figure of *Disciniscalamellosa* Brod. by Marincovich (1973), etc.

Class **MONOPLACOPHORA** Wenz, 1940 (ex Odhner)

Wenz published in 1940 the Monoplacophora (proposed verbally to him by Odhner in 1937) in opposition to Polyplacophora (teste also Odhner, 1961); as other authors "Odhner, 1940" and "Odhner in Wenz" by Lemche (1957); as "Wenz in Knight, 1952" by Knight & Yochelson (in Moore) 1960; as Knight, 1952 by Runnegar & Pojeta (1985); as Lemche, 1957 by Starobogatov (1974), Moskalev & al. (1983); as order in class Amphineura by Yochelson (1958).

- = Monoplacophoriformes Wenz (in Knight), 1952 (cf. Starobogatov & Moskalev, 1987)
- = Monoplacophorioides Lemche, 1957 (cf. Starobogatov & Moskalev, 1987)
- = Galeroconcha Salvini-Plawen, 1980

This group is mainly based on absence of torsion in the soft parts of the animal. The patelliform untorted Paleozoic tryblidiids were long time considered as Amphineura or primitive Patellacean. Fischer P. (1885) placed the genus *Tryblidium*, with subgenus *Palaeacmea*, in the Patellidae. Simroth (in Bronn, 1900) placed the family in the Silurian Palaeodocoglossa. Hedström (1923) considered them in the Aspidobranchia (suborder Docoglossa) and Wenz (1938) placed the "Tryblidiacea" (including Tryblidiidae, Metoptomatidae) and the "Bellerophontacea" in the order Archaeogastropoda. Two years later he separated both groups completely from the Prosobranchia and placed them in the subclass Amphigastropoda Simroth. Knight & al. (in Shimer & Shrock, 1944) placed many genera (*Proplina*, *Tryblium*, *Scenella*, *Palaeacmaea*, *Hypseloconus*, *Helcionella*) in the order Cynostraca (Gastropoda: subclass Protogastropoda). Findings of the recent *Neopilina galathea* allowed Lemche & Wingstränd (1957) to recognize them as belonging to a new untorted group, having a docoglossate radula. But the position of Bellerophontida was not solved. Pojeta & Runnegar (1976) considered this group as untorted, planispiral, exogastric animals. They were later consistent (Runnegar & Pojeta, 1985) in keeping them in the Monoplacophora. Meanwhile Starobogatov (1974) created in the Monoplacophora the subclasses: Cyrtonelella, Cyrtolitea and Pilinea (including Tryblidiida). This classification is repeated by Moskalev, Starobogatov & Filatova (1983), who put Pilinea as syn. of "Monoplacophora Lemche, 1957" and who included in this latter subclass the orders Kirengellida Rosov, 1975 (see below under Tryblidiida) and "Monoplacophorida Wenz (in Knight) 1952 (= Tryblidiida Lemche, 1957)", the last with 2 new superfamilies: Neopilinoidea and Monoplacophoroidea.

Salvini-Plawen (1972) discussed the separation of the Bellerophontida from the torted Gastropoda and reported in 1980 that "the cap-shaped or orthoconic Tryblidiida", having Monoplacophora as syn., are contrasting with the Bellerophontida of which some were direct phylogenetic and morphological forerunners of the Gastropoda". He placed both orders in the new class Galeroconcha, replacing name for "Amphigastropoda Simroth, in Wenz, 1940", which was a subclass in the Gastropoda. These two orders are: Tribliidiida (with Tryblidiina, Cyrtonelellina, Archinacellina) and Bellerophontida (Sinuitopsina, Helcionellina, Bellerophontina). Runnegar & Pojeta (1985) indicated the Cambrian class "Monoplacophora Knight, 1952" in the subphylum Cyrtosoma Runnegar & Pojeta, 1974, including the orders: Cyrtonelellida Horny, 1863 (with Scenellidae Wenz, 1938, Helcionellidae Wenz, 1938, Yochelcionellidae Runnegar & Jell, 1976, Stenothecidae Runnegar & Yell, 1980, Hypseloconidae Knight, 1954), Tryblidiida Lemche, 1957, Bellerophontida Ulrich & Scofield, 1897, Pelagiellida Runnegar & Pojeta, 1985 and Tuarangiida MacKinnon, 1982.

Runnegar & Knight (1960) placed the group Bellerophontina in the Archaeogastropoda. They were followed by the Treatise, by Taylor & Sohl (1962) and even now by the last Zoological Records (1989/90). Müller (1965) considered this group as subclass. Golikov & Star. (1975) kept it in the Prosobranchia (order Dicranobranchia). Boss (1982), Wingstränd (1985) placed the Bellerophontida in the Gastropoda and McLean (1985) concluded to a derivation of the Fissurelloidea from the Bellerophontoidea, transferring the Fissurelloidea from the suborder Pleurotomariina to the suborder Bellerophontina Cox & Knight, 1960. Yu (1979) (often as Yu Wen) created 25 new genera for the earliest Cambrian Monoplacophorans and Gastropods from Western Hubei. I mention in all 17 patelliform, cap-shaped or tryblidian taxa of him, sometimes in another position. Yu listed them as follows: order Yangtzeconioidea with the superfamily Yangtzeconiacea including 3 families: Eosoconidae (with *Truncato-*, *Eosoconus*), Yangtzeconidae (with *Yangtze-*, *Proto-*, *Actinoconus*, *Latiostratus*, *Huangshandongo-*, *Lati-*, *Centri-*, *Obtusoconus*), Sinuconidae (with *Spatula-*, *Liantuo-*, *Sinu-*, *Emarginoconus*); of the second superfamily (Archaeotremariacea) in this order, I only

retain Granoconidae. Finally there is the order Merismoconchida with *Merismoconcha* as single genus.

All these classifications, based on some groups imperfectly known, not taking into account the changeability of the recent limpets, are seldom completely adequate and show some contradictions. Yu (1981) admitted that the method to distinguish Monoplacophora from Gastropoda is still in question. Gastropods have a torted visceral mass and have 1, 2 or a horseshoe-shaped muscle scar. These elements are generally impossible to find by these cambrian fossils. The criterion of Jiang Zhi-Wen concerning the spirally gastropod curving of the apex is not convincing.

To avoid further confusion, I keep provisionally the Bellerophonida as separated order in the Prosobranchia including the Helcionelloidea with many families (not the Hypseloconidae, kept in the order Archinacellida).

Order TRYBLIDIIDA Lemche, 1957

Correction by Horny (1965) of Lemche's "order Tryblidiacea Wenz, 1938"; As author Simroth, 1900; as author Lemche, 1957, by Treatise, Franc (1960), Müller (1965); Monoplacophorida Wenz (in Knight), 1952 by Moskalev & al. (1983). Knight & Yochelson (1958) characterised this order by the simple bilateral symmetry of the shell and the soft parts. They included in the Tryblidioida, superfamily having 5 to 8 pairs of symmetrical dorsal muscles, the fam. Tryblidiidae and Palaeacmaeidae, and created in the former one 4 new subfam.: Proplininae, Archaeophialinae, Drahomirinae and Neopilinae. Moskalev & al. (1983) created the Vemidae and the monotypic Monoplacophoridae and Laevipilinidae. These classifications have much been altered.

- + **TRYBLIDIOIDEA** (* as fam.) Pilsbry (in Zittel-Eastman), 1899
- + **TRYBLIDIIDAE** with TRYBLIDIINAE and other subfamilies
- Vostokova (1962) placed Tryblidiidae in the Archaeogastropoda
- + *Tryblidium* Lindström, 1880; as 1884 by Yochelson (1958); in Patellidae by Fischer (1885) with subg. *Palaeacmea* and as author Hall, 1873; as syn. of *Capulus* (*Metoptoma*) by Tryon (1886); Grabau & Shimer (1909) wrote the vowel i instead of y; Type: *T. reticulatum*, SD. Miller, 1889 (Camb-Sil)
- + *Aktugaia* Missarzhevsky, 1976 (* in Tryblidiidae), Type MD: *A. triangula* (Camb)
- + *Anabarella* Vostokova, 1962, Type MD: *A. plana* (Camb)
- + *Helcionopsis* Ulrich & Scofield, 1897, Type MD: *H. fissicostata* (= *H. striatum* Ulrich, in U. & Sc.); as syn. of *Tryblidium* by Shimer & Shrock (1944); in Helcionelloidea by Runnegar & Pojeta (1985); (Ord-Dev)
- + *Kotysium* Horny, 1961 (* resembles somewhat *Proplina*, but muscle scars quite different); Type MD: *Helcionopsis praepostera* Perner, 1903 (Dev)
- + *Litavina* Horny, 1963 (* may be related with *Pilinopsis*, no visible muscle scars), Type MD: *L. mesodevonica* (Dev)
- + *Oelandiella* Vostokova, 1962, Type OD: *O. korobkovi* (Camb)
- + *Pilina* (Koken ms.) Perner, 1925; not *Pilinea* Star., 1974, syn. of subclass Monoplacophorea; as author Koken, 1925 by auctt.; Type: *Tryblidium unguis* Lindström, 1880, (1884 teste Horny)
- subg. *Retipilina* Horny, 1961; (* as genus); more detailed description in 1963, with "may be a subgenus of *Pilina*"; Type MD: *Pilina knighti* Horny, 1956 (Sil)
- subg. *Pilinopsis* Horny, 1961 (* as genus); more description in 1963, with: "may be a subgenus of *Pilina*"; Type MD: *Helcionopsis eminens* Perner, 1903 (Dev)
- + *Platypilina* Horny, 1961, Type MD: *Scenella ? tardissima* Perner, 1903 (Dev); more detailed description in 1963, but muscle impression still unknown
- + *Undicornu* Horny, 1970 (* probably here; syn.: "*Philidops* Hall, 1859 and *Capulus*

Montf. sensu Perner, 1903); as *Cardiola* Brod., 1834 by Barrande (1880); as *Pholidops* Hall, 1859 by Perner (1903, 1907); Type OD: *Cardiola carens* Barrande, 1881 (Sil)

+ BIPULVININAE Starobogatov, 1970 (* as fam.)

+ *Bipulvina* Yochelson, 1958 (* in Tryblidiinae), Type MD: *B. croftsae* (Ord)

+ *Pentalina* Horny, 1961 (* comparable with *Bipulvina*), Type MD: *P. prantli* (Ord)

+ DRAHOMIRINAE Knight & Yochelson, 1958 (* in Tryblidiidae)

+ *Drahomira* Perner, 1903; redescribed by Horny (1956); Type OD: *Tryblidium glaseri* Perner, 1903 (Sil)

+ PROPLININAE Knight & Yochelson, 1958 (* in Tryblidiidae)

+ *Proplina* (Ulrich & Bridge ms.) Kobayashi, 1933, Type OD: *Metoptoma cornutaforme* Walcott, 1879; as *cornutaformis* by Kobayashi, Knight (1941) (Camb-Ord)

+ *Kalbyella* Berg-Madsen & Peel, 1978, Type OD: *K. poulsenii* (Camb)

+ *Ozarkplina* Stinchcomb, 1986 (* in Proplininae), Type MD: *O. meramecensis* (Camb)

+ *Scutatestomaconus* Chen & Chang, 1980 (* in Tryblidioidea: Cyrtoneillidae), Type MD: *S. latus* (Camb)

+ *Vallatotheca* Foerste, 1914; as "*Valatotheca*, in ? Proplininae" by Knight & Yochelson (1958); morphologically similar to *Proplina* cf. Berg-Madsen (1978); syn. of *Tryblidium* by Knight & al. (in Shimer & Shrock), 1944; Type MD: *V. manitoulinii* (Camb-Sil)

+ *Xilingxiaconus* Chen & Chang, 1980 (* in Tryblidiidae), Type OD: *X. simplicus* (Camb)

+ **ACTINOCOONIDAE** Starobogatov & Moskalev, 1987 (* as fam. in Archaeophialoidea); in case the nominal genus, transferred from the fam. Yangtzeconidae, stays in both taxa, priority has to be given to Yangtzeconidae

Four genera of Zhiwen (1980), without fam. are by Star. & Mosk (1987) in this fam:

Aegides, *Maishucunconus*, *Stephanoconus*, *Stoliconus*. In MNHN they are put in the Scenellidae

+ *Actinoconus* Yu (in Xing & al.), 1979 (* in Yangtzeconidae), Type MD: *A. pyriformis*

+ *Aegides* Zhiwen, 1980, Type OD: *seperbes*; SD *ageneris* Zhiwen, 1980 by Missarzhevsky (1989) while *seperbes* near to *Illsanella compressa* (Camb)

+ *Acutirostriconus* Yue (in Xing & al.), 1984 (* in Tryblidiidae), Type MD: *A. simplex* (Camb)

+ *Stephaconus* Zhiwen, 1980, Type MD: *S. trulliformis* (Camb)

= *Jiangiconus* Starobogatov & Moskalev, 1987, n. nov. pro *Stephanaconus* Jiang Zhiwen, 1980 (non Mörch, 1852); unnecessary while it is *Stephanaconus* by Mörch

+ *Maishucunconus* Zhiwen, 1980, (= *Maishuconus* in err. by Star. & Mosk, 1989); Type MD: *M. campylurus* (Camb)

+ *Postacanthella* Yue (in Xing & al.), 1984 (* in Tryblidiidae), Type MD: *P. elegans* (Camb) (in ? Helcionelloidea by auct.)

+ *Pseudoscenella* Star. & Mosk., 1987, Type OD: *Scenella hujingtanensis* Yu, 1979 (Camb)

+ *Stoliconus* Zhiwen, 1980, Type MD: *S. vemeres* (under fig. as *vomeres*) (Camb)

+ EOSOCONINAE Yu, 1979 (* as fam., patelliform)

+ *Eosoconus* Yu, 1979, Type OD: *E. primarius*

+ *Truncatoconus* Yu, 1979; less than 1 mm.; Type MD: *T. yichangensis*

+ SINUCONINAE Yu, 1979 (* as fam. in Yangtzeconoidea; aperture with a sinus)

+ *Sinuconus* Yu, 1979, Type MD: *S. clypeus* (Camb)

+ *Emarginoconus* Yu, 1979; less than 1 mm.; Type MD: *E. mirus* (Camb)

+ *Liantuoconus* Yu, 1979; less than 1 mm.; Type MD: *L. pulchrus* (Camb)

+ *Spatuloconus* Yu, 1979; less than 1 mm.; Type MD: *S. rudis* (Camb)

+ **ARCHAEOPIHALIDAE** Knight & Yochelson, 1958 (* as subfam. in Tryblidiidae, including with a query *Calloconus* and *Micropileus*, now in Bellerophonotoidea); as

- fam. in the order Kirengellida by Rosov (1975); as superfam. by Starobogatov & Moskalev (1987)
- + *Archaeophiala* Perner, 1903; as author Koken (in Perner), 1903 by Wenz (1938), Knight (1952), Rosov (1975); as *Archaeophalia* (Koken) Perner, 1925 by Neave (1939); Type: *Pat. antiquissima* Hisinger, 1837; description given by Koken (1897); (Sil)
 - = + *Scapha* (Lindström, ms.) Hedström, 1923 (see corr. Wenz, 1943) (non Gray, 1847), Type OD: *Patellites antiquissimus* (Marklin ms in coll.) Hisinger, 1837 (Camb-Sil)
 - = + *Patelliscapha* Tomlin, 1929, n. nov. pro *Scapha* Hedström, 1923 (non Gray, 1847)
 - = + *Paterella* Hedström, 1930, n. nov. pro *Scapha* Hedström, 1923 (preoccupied in Coleopt. teste Richter, 1924); Hedström accepted not the name *Archaeophiala* while too general and too far-reaching; Type *P. antiquissima* (Markl)
 - + **PALAEACMAEIDAE** Grabau & Shimer, 1909; in Docoglossa by Howell (1937); in Gastropoda by Resser (1938), Kobayashi (1934, 1958); in Aspidobranchia by Rusconi (1952); in "Patellacea" by Zool. Rec. (1958); as subfam. in "Tryblidiacea, Archaeogastr." by Wenz (1938); as subfam. in Tryblidioidea by the Treatise, having Scenellinae Wenz as syn.; as subfam. in Tryblidiidae by Knight, 1952
 - + *Palaeacmaea* Hall & Whitfield, 1873; as date 1872 in Treatise; as subg. of "*Tryblidium* Hall, 1873" by Fischer P. (1885); in Tecturidae by Lindström (1884), Böhm (1895); Type: *P. typica* (Camb-Sil)
 - + *Barella* Hedström 1930 (* Barrande's Opercule isolé H); as subg. of *Discinella* by Wenz (1938); as hyolithoid operculum by Knight, 1952; Type: "Opercule isolé H" Barrande, 1867, SD Wenz, 1938: *D. (B.) hedstromi* Wenz, 1938
 - + *Discinella* Hall, 1871; in 1872 retreated by Hall, date mentioned by auctt.; in Patelloide by Hedström (1923); in ? Palaeacmaeidae, with Moberg, 1910 as author, by Wenz (1938); in Palaeacmaeidae by Resser (1938); in Hyolithidae Nicholson, order Pteropoda, by Rusconi (1952) and as hyolithoid operculum by Knight (1952); Type: *D. micans* (Billings, 1871); as operculum of the pteropod *Hyolithes ? micans* and generic name changed in *Hyolithellus* by Billings (1871: 215, 240) (Camb-Sil); Initially in Brachiopoda (class Inarticulata) where there are other strongly inequivalve genera, ever considered as limpets: e.g. the tongue-shaped *Lingula*, the biconical *Discinisca* and the cemented, conical *Crania*.
 - + *Mobergella* Hedström, 1923 (* n. nov. pro *Discinella*, while moved from Brachiopoda into Patellacea); not accepted by Richter (1924); kept by Hedström (1930) as a separate genus in N. Europe, having 7 instead of 5 pairs of scars as in the N. American *Discinella*; as subg. of *Discinella* by Wenz (1938); as hyolithoid operculum by Knight, 1952; Type OD: *Discinella holsti* Moberg
 - + *Macroscenella* Wilson, 1951; in "? Tryblidioidea incertae sedis" by Knight & Yoch. (1958); Type OD: *Metoptoma superba* Billings, 1865 (Ord)
 - + *Quilicanella* Rusconi, 1952 Type MD: *Q. cuyana* (Camb)
 - + *Randomia* Matthew, 1899 (cf. Neave, 1940) (*Randonia* in Wenz, 1938), Type MD: *R. aurorae* (Camb)
- SCENELLIDAE** (in Cyrtionellida by auct.), as subfam. by Wenz (1931) and in Tryblidiidae by Wenz (1938)
- + *Scenella* Billings, 1872; as syn. of Palaeacmaeidae in the Treatise; in Kirengellidae by Rosov (1975); in Helcionellacea by Runnegar & Pojeta (1985); Type MD: *S. reticulata* (Camb-Dev)
 - = *Parmophorella* Matthew, 1886; as date 1899 and in ? Helcionellinae by Wenz (1938) with *Stenotheca pauper* as type but in 1943 corrected; as syn. by Shimer & Shrock (1944), Knight & Yoch. (1960); as *Paramorphella* Matthew, 1886 by Müller (1965); Type MD: *Discina acadia* Hart

- subg.+ *Protoconchooides* Shaw, 1962, Type OD: *Scenella hermitensis* Resser, 1945 (Camb)
- + *Conchopeltis* Walcott, 1879; in ? Scenellinae by Wenz (1938); Type :*C.alternata* in Acmaeidae by Kobayashi (1934); "as probaly a scyphozoan and certainly no mollusk" by Wenz (in Knight), 1952; (Sil-Dev)
- + *Dengyingoconus* Chen & Xiong (in Xiong & al.), 1984, Type MD: *D.trianguliformis* (Camb)
- + *Parascenella* Chen & Xiong (in Xing & al.), 1984, Type MD: *P.typica*
- + *Scenellopsis* Resser, 1938 (* in Palaeacmaeidae, Gastropoda), Type OD: *Scenella clotho* Walcott, 1905 (Camb)
- + **YANGTZECONIDAE** Yu, 1979 (* as superfam. "Yangtzeconiacea" in order "Yangtzeconioida" including the fam. Yangtze-, Eoso-, Sinuconidae; the 2 last now as subfam. in Actinoconidae.) The family has 1 symmetrical pair of muscle scars (perhaps not in the Sinuconinae where they are unknown in the first 3 genera and unmentioned in the last one. Yu placed Archaeotremariacea as second superfam. in his order, having 3 families (A., Granoconidae and Archaeospiridae) of which only the 2d is patelliform, retained and placed in the Coreospiridae (Gastropoda, Helcionelloidea)
- + *Yangtzeconus* Yu, 1979, Type MD: *Y. priscus* (Camb)
- + *Centriconus* Yu, 1979; less than 1 mm.; Type MD: *C.lepidus* (Camb)
- + *Huangshandongoconus* Yu, 1979; less than 1 mm.; Type MD: *H.pileus* (Camb)
- + *Laticonus* Yu, 1979; less than 1 mm.; Type MD: *L. xiadongensis* (Camb)
- + *Latirostratus* Yu, 1979; typical Tryblidium; Type MD: *L. amplaperatus* (Camb)
- NB: + *Protoconus* Yu, 1979; now in Torimorphidae, Helcionelloidea teste Kerber (1988); as fam. by Jiang Zhiwen (1980); in Hypseloconidae by Stinchomb (1986)
- + **KIRENGELLOIDEA** Starobogatov, 1970 (* as fam. and superfam. in Tryblidiida for a Cambrian conoid shell); as order Kirengellida by Rosov (1975) who combined the most primitive monoplacophorans; contained 3 fam.: K. (with *K.*, *Scenella* and *Moyerokania*), Romaniellidae and Archaeophialidae; maintained as order by Moskalev & al.(1983), who considered Romaniellida Doguzhaeva, 1981 as synonym. Salvini-Plawen (1980) wrote that "Kirengellida Rosov obviously belong to the Tryblidiina". I separate this superfam. (not as order) from the Tryblidioidea to respect the point of view of the Russian authors.
- + **KIRENGELLIDAE**, with the subfamilies Kirengellinae and Romaniellinae; Starobogatov & Moskalev (1987) created the fam. Niuellidae including the genera "*Niuella*" and *Moyerokania*, both of Rosov
- + *Kirengella* Rosov, 1968 (* in Palaeacmaeidae; in trad.(1969) partially written as *Kiringella*), Type MD: *K.ayaktchica* (Camb)
- + *Lenaella* Bjaly, 1973, Type MD: *L. octobinaria* (Ord)
- + *Moyerokania* Rosov, 1970 (* in Archaeophialinae, Tryblidioidea); in Kirengellidae by Rosov (1975); Type MD: *M.miagkovae* (Ord)
- + **ROMANIELLIDAE** Rosov, 1975 (* as fam. in order Kirengellida); considered as order Romaniellida by Doguzhaeva (1981) including the genera *R.*, *Nyuella* and *Latouchella* (the latter now in Coreospiridae)
- + *Romaniella* Doguzhaeva, 1972, Type OD: *R.aebitensis* (Ord)
- + *Nyuella* Rosov, 1975; Type MD: *N.bjalyi* (Ord)
- + **NEOPILINOIDEA** Knight & Yochelson, 1958 (* as subfam.) and **NEOPILINIDAE**; Shead (1974) placed Neopilina in a sixth class of the phylum Mollusca; as superfam. by Moskalev & al., 1983, including Neopilinidae and Vemidae, apart from Monoplacophoroidea which includes Monoplacophoridae and Laevipilinidae

Neopilina Lemche, 1957; in Tryblidiidae by Franc (1968); Type MD: *N. galathea* (Rec) subg. *Lemchephyala* Moskalev & al., 1983; in Russian and English summary vowel instead of y, taken over by Vaught (1989) who considered it as genus; Type Mf: *Neopilina* (L.) *rebaini* (= *N. (N.) sp.* Filatova & al., 1974), as *rebaini* by Warén (1989)

Adenopilina Starobogatov & Mosk., 1987, Type MD: *Neopilina adenensis* Tebble, 1967
Laevipilina McLean, 1979 (* as subg. of *Vema*); as type genus of Laevipilinidae Moskalev & al., 1983 in Monoplacophoroidea; Type MD: *V. (L.) hyalina*

Monoplacophorus Moskalev & al., 1983 (* in Monoplacophoridae and Monoplacophoroidea Moskalev & al., 1983); in group *Laevipilina* by Warén (1989); Type MD: *M. zenkevitchi*

Micropilina Warén, 1989, Type MD: *M. minuta*

Rokopella Starobogatov & Moskalev, 1987, Type OD: *Neopilina oligotropha* Roskop, 1972; this genus includes *Acmaea zografi* Dautzenberg & Fischer, 1896

= *Veleropilina* Starobogatov & Moskalev, 1987; as syn. by Warén (1989); Type MD: *Neopilina veleronis* Menzies & Layton, 1963

Vema Clarke & Menzies, 1959 (* as subg. of *Neopilina*); as type genus of Vemidae Moskalev & al., 1983 (in Neopilinoidea); fam. not mentioned by Warén & Bouchet (1990); Type MD: *N. (V.) ewingi*

Order ARCHINACELLIDA Knight & Yochelson, 1958

(* as "order Archinacelloidea") The same authors (1960) gave the description: "muscle scar ring-shaped or incomplete ring and single pair of discrete muscle scars"; Stinchcomb (1986) kept the order "Archinacelloidea", including the superfam. "Hypseloconellacea"

+ **ARCHINACELLOIDEA** Knight, 1952 (* as fam.), and ARCHINACELLIDAE (Smith: Misc. Coll. 117: 47, including *A.* and ? *Ptychopeltis*); as new by Knight, 1956 (J. Wash. Acad. Sc., 46(2):42); *Archinacella* as genus in Tryblidiinae by Wenz (1938); studied in 1958 and placed as new order "Archinacelloidea" in the Monoplacophora by Knight & Yochelson, followed by Horny (1963), Chen & Chang (1980) and by Stinchcomb (1986) who included the superfam. "Hypseloconellacea"; Golikov (1970) removed *Archinacella* from the Monoplacophora; Golikov & Starobogatov (1975) placed it as separate order in the Cyclobranchia (Prosobranchia) on base of the radular muscles and beside the Docoglossa; in 1984 they cited it as "Archinacelliformes" Knight & Yoch., 1958, and in 1989 as the superorder "Archinacelliformii" Knight & Yoch., 1958; Yochelson (1988) transferred this group as fam. to Patellacea

+ *Archinacella* Ulrich & Scofield, 1897, Type MD: *A. powersi* (Ord-Sil)

+ *Archinacellina* Horny, 1961, Type MD: *Archinacella modesta* Perner, 1903 (Ord)

+ *Floripatella* Yochelson, 1988, Type MD: *F. rousseaui* (Ord)

NB: *Ptychopeltis* Perner, 1903 (Type MD: *Cap. incola*, Barrande ms), placed in a new fam. Ptychopeltidae Horny (1961), belongs to the Brachiopoda: Inarticulata

? + **ARCHAEOPRAGIDAE** Horny, 1963 (* in an undesignated order; shape of shell like *Pilina* or *Drahomira*, but with "single pair of large wide elongate scars")

+ *Archaeopruga* Horny, 1963, Type MD: *Helcionopsis pinnaeformis* Perner, 1903 (Sil)

+ **HYPSELOCONIDAE** Knight, 1952 (Smiths. Misc. Coll., 117:47, including *H.* and *Pollicina*); as new by Knight, 1956 (J. Wash. Acad. Sci., 46(2):42); as superfam. Hypseloconellacea Knight, 1956 (n. transl.) in order Archinacelloidea by Stinchcomb (1986); fam. in Archinacellidae with a query by Knight & Yochelson (1958, 1960), not by Yochelson & al. (1973); in Acmaeidae by Kobayashi (1938); in Scenellinae by Wenz (1938); in Romaniellidae by Rosov (1975); in Helcionelloidea by Runegar & al. (1985); this family has cone-shaped and somewhat patelliform

genera, not always very distinct; some are high horn-shaped and not patelliform (e.g. *Ceratoconus* Chen & Chang, 1980, *Cornuella* Stinchcomb, 1986)

+ *Hypseloconus* Berkey, 1898, Type OD: *Metoptoma recurva* Whitfield, 1897, var. *elongatus* Berkey, 1898, (Camb-Ord) (type: "*H. recurvus* Berkey, 1898" by Stinchcomb, 1986)

+ *Archeoconus* Stinchcomb, 1986 (* near to *Shelbyoceras*), Type MD: *A. missouriensis* (Camb)

+ *Aviculocephaloconus* Chen & Chang, 1980, Type OD: *A. mirus* (Camb)

+ *Cambrioconus* Stinchcomb, 1986, Type MD: *C. expansus* (Camb)

+ *Codonoconus* Chen & Chang, 1980, Type OD: *C. sinensis* (Camb)

+ *Gasconadeoconus* Stinchcomb, 1986, Type OD: *G. ponderosa* (Ord)

+ *Knighthoconus* Yochelson, Flower & Webers, 1973, Type MD: *K. antarcticus* (Camb)

+ *Orthoconus* Stinchcomb, 1986 (* ? syn. of *Ozarkoconus*), Type MD: *O. striatus* (Camb)

+ *Ozarkoconus* Heller, 1954; cf. Knight & Yoch. (1958), Stinchcomb (1986) Type: *O. prearcuatus* (Ord)

+ *Patelliconus* Horny, 1961 (* may be a descendant of *Hypseloconus*); in ? Actinoconidae by Star. & al. (1987); Type MD: *Palaeacmaea primula* Perner, 1903 (Ord-Sil)

+ *Pollicina* (Koken ms) Holzapfel, 1895; as (Koken ms.); in ? Scenellinae by Wenz (1938); Type: *Cyrtolithes corniculum* Eichwald, 1860 (Sil-Dev)

+ *Protoconus* Stinchcomb, 1986 (non Yu, 1979); Type MD: *P. eminense* (Camb)

+ *Pygmaeoconus* Horny, 1961, Type MD: *Palaeacmaea porrecta* Perner, 1903 (Ord)

NB.1: Here follow some undetermined genera which can belong to this family:

+ *Isitella* Missarzhevsky (1989), Type *I. recta* (Camb)

+ *Pseudopollicina* Vostokova, 1962 Type MD: *P. bystrowi* (Camb)

+ *Shelbyoceras* Ulrich & Foerste (in Bridge), 1930; as fam. by Stinchcomb (1986); Type MD: *S. robustum*; as type: *bessemerense* Meek by Yochelson & al. (1973) (Camb-Ord)

+ *Yochelsonella* Flower, 1969, Type MD: *Y. compressa* (Tertiary)

NB.2: Müller (1965) gave a capform fig. in *Cambridium* Horny, 1957 and in *Stenothecoides* Resser, 1938, both genera included in the order (?) *Cambridioidea* Horny (in Knight & Yochelson) 1958

Class **GASTROPODA** Cuvier, 1797 (* *Gastéropodes*; corr. Duméril, 1806)

As date 1798 by Ternier (1968), Müller (1965); 1795 by Lameere (1936); Rafinesque (1814, 1815) included in the class *Apalasia* (= Molluscs) the subclass *Cephadelia* with 4 orders, of which the third (= *Gasteropodia*) included the fam. *Patellaria* with *Haliotidia* and *Ancylidia* as subfam., and of which the fourth order (= *Spironotia* Raf., 1814, now in *Gastropoda*) included 7 families under which *Trochinia* and *Neritina*. In 1817 Cuvier recognized in 'Les *Gastéropodes*': Les *Nudibranches*, *Inférobranches* (with e.g. les *phyllidies*), *Tectibranches* (with e.g. les *pleurobranches*, *aplysies*), *Pulmonés* (les terrestres with e.g. les *limaces*, *escargots*; les aquatiques with e.g. les *lymnées*), *Pectinibranches* (with e.g. les *sabots*, *toupies*, *cornets*, *porcelaines*, *buccins*, *rochers*, *sigarets*), *Scutibranches* (with e.g. les *ormiers*, *cabochons*, *crépidules*, *fissurelles*, *émarginules*, *calyptrées*) and *Cyclobranches* (with les *patelles*, *oscabrions*).

Lamarck (1818) placed in the first section *Hydrobranches* of the order *Gastéropodes* 6 groups of which 3 included limpets: Les *phyllidiens* (= *phyllidiana*) with *Patella* and *Stomatella*, Les *semiphyllidiens* with *Umbrella*, Les *Calyptraciens* with *Fiss.*, *Emarg.*, *Siph.*, *Sal.*, *Crep.*, *Pileopsis*, *Ancylus*. He placed Les *Néritacées*, *Macrostomes* (with *Stomatella*) and *Limnéens* in the order Les *Trachélipodes*. Férussac (1819) splitted Les

Pulmonés into 2 orders: with and without operculum and created in the suborder Calyptraciens (in Scutibranches) the fam. "Les patelloïdes" including: les pavois, fissurelle, émarginule, septaire, calyptrée, trémésie, and in the suborder Chismo-branches (in Cyclobranches) as only fam.: Les patelles.

Schweigger (1820) followed Cuvier (1817), changed the names Pectinibranchia Blainville, 1814, and Scutibranchia Cuvier, 1817, vicious expressions according to Lameere (1936), into Cteno- and Aspidobranchiata, and named the first 3 groups Gymno-, Hypo- and Pomatobranchiata instead of Nudi-, Infero- and Tectibranchia. Gray (1821) retained in this class, named by him Gastropodophora, mainly: Cteno-, Trachelo-, Pneumono- and Notobranchia.

Fleming, who in 1815 called the Gastropoda Univalves, divided them in 1822 into 2 primary taxa: Pulmoni- and Branchifera. The same year Bowdich mentioned the divisions Clypeaceae (with *Pat.*, *Fiss.*, *Emarg.*, *Scutus*, *Septaria*, *Ancylus*) and Megastomata (with *Cap.*, *Hipp.*, *Crep.*, *Cal.*, *Umbrella*). Blainville (1825) renamed the class Gastropoda: Paraéphalophores, of which I cite the orders Monopleurobranches (with fam. Les Patelloïdes (not sensu Fér.) containing *Umbrella*, *Siph.*, *Tylo-* Cervicobranches (with fam. Retifères containing *Pat.* and the fam. Branchifères containing *Fiss.*, *Emarg.*), Scutibranches (with fam. Otidés containing *Ancylus* and the fam. Calyptraciens). Latreille (1825) used another system and included the limpets in the order Scutibranches (in class Peltocochlides, section Exocéphales, branch Les Agames) with ombrelle and patelle in the fam. Scutiformes, and most of the others (*Crep.*, *Cal.*, *Hipp.*, *Cap.*, *Emarg.*, *Fiss.*, *Scutus*) in the fam. Piléiformes.

Beck (1837) called the class Gastropoda. Gray (1840) subdivided the class into Cteno- (with Zoo- and Phytophaga) and Heterobranchiata. Forbes (1844), included in the Scutibranchia (= Aspidobranchia) many Linnaean limpets (*Crep Cal.*, *Cap.*, *Emarg.*, *Fiss.*, *Gadinia*, *Lottia*) and in the Cyclobranchia: *Pat.* and *Chiton*. Milne Edwards (1845) combined Cuvier and Fleming and grouped in the Branchifera the first 3 divisions, Cuvier under the Opisthobranchiata and the last 3 under the Prosobranchiata. Gray (1853, 1857) divided his stenobranch suborders (Proboscidi- and Rostrifera) into taxa based on the radula. He is followed by Troschel and I note e.g. Doco-, Rhipido-, Taenio- Pteno- and Stenoglossa (the last divided into Rachi- and Toxiglossa).

Mörch (1865) (1866 teste Lameere, 1936) created the Monoto- and Diotocardia which divided simultaneously the Streptoneura and the Prosobranchia. Monotocardia included the class Androgyna (with e.g. *Siph.* and *Ancylus* in the Hygrophila) and Exophallia (with *Crep.*, *Cap.*, *Hipp.* in the Taenioglossata). Diotocardia contained the class Pseudophallia (divided in Rhipidoglossata (with e.g. *Fiss.*, *Emarg.*) and Heteroglossata (with *Pat.* in Cyclobranchia). A century later, Chavan & Montocchio (1960) still treated fossil "Diotocardes" with "les Homonephridiés (including Fissurellidae), Hétéronephridiés and Monophridiés". Von Ihering, on base of nervous system, divided Streptoneura into Chias- and Orthoneura, contested by Pelseneer.

Spengel (1881) divided the Gastropoda, on base of the torsion, into Streptoneura and Euthyneura, the former coinciding with the Prosobranchia and including the Zygo-branchia in which Lankester, 2 years later, included the suborders Phyllidiobranchia (with *Pat.*) and Ctenidiobranchia (with *Fiss.*). Pelseneer (1892) accepted the division of the Gastropoda in 2 parts: Streptoneura (including the Aspidobranchia - with Rhipidoglossa, Docoglossa- and the Ctenobranchia) and Euthyneura (including Opisthobranchia and Pulmonata). For the latter he is followed by Boettger (1955) and Wenz & Zilch (1959, Vol.6, part 2). The usual systematic arrangement is that of Th. (1925, 1929) who accepted the sub-classes Prosobranchia, Opisthobranchia and Pulmonata (Vorderkiemer, Hinterkiemer, Lungenschnecken). Wenz (1943) placed Tryblidiacea and Bellerophonacea in the Gastropoda, subclass Amphigastropoda,

separated from Prosobranchia and Euthyneura. Shimer & Shrock (1944) assigned to the Gastropoda the subclass Protogastropoda (with as first order Cynostraca, including *Tryblidium*, *Helcionella*, etc.) and Eugastropoda (with Prosobranchia and Pulmonata as superorders). Clench (1968, *Encycl.Amer.*, 12: 334) accepted in the Gastropoda the subclass Protogastropoda, only known in the fossil state. In this class the Great Soviet Encyclopedia (1970, vol.4) gave a low number of species: 40.000 with about half of them extinct. Minichev & Starobogatov (1975, 1979) accepted 8 subclasses of which 3 created by themselves: Divasi-, Dextro- and Sinistrobranchia (the first, including the Siphonariida, is mentioned below). Salvini-Plawen & Haszprunar (1987) discussed the Archaeogastropoda and created in Streptoneura, for the remainder of Archaeogastropoda, the order Apogastropoda, including Caenogastropoda Cox, 1960 and Allogastropoda Haszprunar, 1985.

Subclass **PROSOBRANCHIA** Milne Edwards, 1848

(* Prosobranches; corr. Woodward, 1851)

= Streptoneura Spengel, 1881, including Zygobranchia (= Zeugobranchia v. Ihering) and Azygobranchia (= Anisobranchia)

Milne Edwards (1848) considered the position of the branches and united the Pectinibranchia Blainville, 1814 and the Scuti- and Cyclobranchia of Cuvier, 1817 in the Prosobranchia (= Vorderkiemer). It was Spengel (1881) who, on base of the nervous system, named this group Streptoneura, a name much used, e.g. Coomans (1963). Salvini-Plawen (1980), however, said that the pair of taxa Streptoneura / Euthyneura should be dropped. A short definition of Prosobranchia (= Streptoneura) given by Sohl (in Fairbridge, 1979) is: "visceral nerve cords cross, loop forming a figure 8; auricle anterior to ventricicle", while in the Opisthobranchia (= pars of Euthyneura) "nerve cords not crossed, auricle posterior to ventricle". Keferstein (1862, in Bronn, III.2) placed the Acmaeidae and Capulidae in the suborder Ctenobranchia Gray, 1821: Holostomata Woodward: Taenioglossa.

Thiele (1925) created in the Prosobranchia the familiar tripartite subdivision: Archaeogastropoda, Mesogastropoda and Stenoglossa, the last changed by Wenz (1938) in Neogastropoda. Thiele included in the first order the species with a rhipid- and docoglossan radula. Neritacea is often considered as a fourth and separate order which evolved completely independently of the other gastropods. Dacqué (1933, ed. Guérich. Leitfossilien, Berlin) described 13 jurassic (sub)genera Haber, 1932, in "Prosobranchier, Opisthobranchier: Fissurelliden, Patelliden". He is the author of these taxa (Haber didn't give a description !); some of his types are not correct as some genera are not limited to the Jura. Marlière (1939) placed the Fissurellidae in the suborder Aspidobranchia (= Diotocardia) and *Patella* in the Cyclobranchia (= Heterocardia).

Golikov & Starobogatov (1975) recognized 3 independent subclasses among the prosobranch gastropods. These subclasses are: Cyclobranchia Cuvier, 1817, (with the orders Helcionellida, Archinacellida and Docoglossa), Scutibranchia Cuvier, 1817, (with the orders Dicranobranchia -including Bellerophontoidea, Fissurelloidea-, Fissobranchia and Macluritida), Pectinibranchia Blainville, 1814, (with 18 orders and 6 new superorders). In the last subclass I note only the superorders: Turbinimorpha, (with the orders Anisobranchia -including Stomatellidae- and Lepetellida), Neritimorpha (with the order Planilabiata -including Cocculinioidea, Phenacolepadidae- and Littorinimorpha, (with 7 orders of which Echinospirida includes the suborder Inoperculata with Anicoroidea and Calyptraeidea as superfam.). Later, in 1984, Golikov & Starobogatov included in Patelliones, new name for the subclass Cyclobranchia, the orders: Helcionelliformes Golikov & Star., 1975, Archinacelliformes Knight & Yoch., 1958, Patelliformes Ihering, 1876. These authors added in 1989 four new suborders:

Coreospiroidei, Yochelcionelloidei in the first order and Bathysciadioidei, Lepetoidei in the last one. These higher systematics are generally mentioned in this list but not followed. Salvini-Plawen (1980) retained the orders Archaeo- and Caenogastropoda (id. by Lehmann & Hillmer, 1988) and later, with Haszprunar as coauthor (1987), the orders Aspido- and Pectinibranchia. Here follow other synonyms of the Prosobranchia, most of them given by Ponder & Warén (1988): Prosobranchiata Morris & Lycett, 1851, Ctenobranchiata Schweigger, 1820, Dactyloglossa Gray, 1853 (pars), Dioeca Gill, 1871, Arthrocochlides v. Ihering, 1876, Streptoneura Spengel, 1881, Strepsineura Lacaze-Duthiers, 1888, Chiastoneura Wurmbach, 1962.

Tadjalli-Pour (1974) cited other taxa as syn.: "(= Streptoneura, Aspidobranchia Schweigger, 1820; Diotocardia Mörch, 1865; Scutibranchia Schweigger, 1820)". The last Zoological Records (1989/90) included in the Prosobranchia the orders Archaeo-, Meso- and Neogastropoda. In the Archaeogastropoda they mentioned the superfam. "+ Helcionellacea, + Bellerophontacea, + Macluritacea, + Euomphalacea, Neomphalacea, Pleurotomariacea, Fissurellacea, Patellacea, Platycteratacea, ... Trochacea, Neritacea, ... Peltospiracea".

The number of genera has always been variable. Keferstein (in Bronn, 1862) noted 21 genera by Bruguière, 72 by Lamarck, 133 by Woodward, 180 by Philippi, 408 by Adams and 180 by himself.

Order + **BELLEROPHONTIDA** Ulrich & Scofield, 1897.

= Amphigastropoda Simroth, 1906

= Prohipidoglossa Simroth, 1906

= Belleromorpha Naef, 1911

= Planspiralia Naef, 1911

De Koninck (1873), probably unknown of M'Coy's family, classified Bellerophontina Montfort, 1808, in the Fissurellidae. Ulrich & Scofield (1897) erected, for the Lower Silurian Gastropoda of Minnesota and for 23 genera, the new suborder "Bellerophontacea" which Wenz (1938) placed, together with "Tryblidiacea", as superfam. in the Archaeogastropoda. Cox & Knight (1960) kept it as suborder in the Archaeogastropoda, noted the four syn. given above, and said that torsion, principal diagnostic criterion for the Gastropoda, is not proved by the Bellerophontida; considered as subclass by Müller (1965).

Golikov & Starobogatov (1975) placed Bellerophontoidea, together with the Fissurelloidea, in the order Dicranobranchia Gray, 1821, subclass Scutibranchia. They placed the order Helcionellida (with Helcionelloidea and Metoptomatoidea) in the first subclass Cyclobranchia and considered the Cambrian Coreospiridae and Helcionellidae as initial members of the Docoglossa, a separate phylogenetic line in the Cyclobranchia: Prosobranchia.

In 1980 Salvini-Plawen removed the Fissurelloidea to the Vetigastropoda and placed the order Bellerophontida in the class Galeroconcha, having as suborders: Bellerophontina M'Coy, 1851, Sinuitopsina Starobogatov, 1970 and Helcionellina Wenz, 1938. McLean (1985) concluded to a derivation of the Fissurellacea from the Bellerophontacea and transferred the former one "from the suborder Pleurotomariina to the suborder Bellerophontina Cox & Knight, 1960". Runnegar & Pojeta (1985) kept it in the Monoplacophora. Yochelson (1987, in McGraw-Hill Encycl., 7:589) drew the group Bellerophontacea (Camb-Tria) as offshoot of Helcionellacea (Camb) and placed both in the order Aspidobranchia.

+ **BELLEROPHONTOIDEA** M'Coy, 1851 (Camb-Tria)

Bellerophontiform species of the fam. Bellerophontidae M'Coy, 1851, are mostly not really limpetform; Wenz (1943, correc. p. 1490) accepted the subclass Amphigastropoda Simroth (only created for Bellerophontacea) and put the Tryblidiacea

besides; I mention a few genera, keep Cyrtoneillidae in this group and place Metoptomatidae in Patelloidea

- + **BELLEROPHONTIDAE** M'Coy, 1851, and BELLEROPHONTINAE
- + *Palaeophacmaea* Donaldson, 1962, (no fam. is given), Type MD: *P. criola* (Ord)
- + *Patellilabia* Knight, 1945, Type OD: *P. tentoriolum* (Dev)
- + **CARINAROPSINAE** (* as fam.)
- + *Carinaropsis* Hall, 1847; Type: *Cyrtolites carinatus* Hall (= *subcarinatus* Orb., 1850) SD: Fischer (1885); as other type: *C. patelliformis*, SD: (Trenton limestone)
- + *Bellerophacmaea* Horny, 1985 Type MD: *Salpingostoma caudatum* Perner, 1903 (Sil)
- + *Gyrospira* Boucot, 1956, Type MD: *G. tourteloti* (Ord-Dev)
- + **TROPIDODISCINAE** Knight, 1956; anal emargination, narrow coil; some capuliform but not *Tropidodiscus* Meek & Worthen, 1866 (pro *Tropidodiscus* Meek, 1866 (non Stein, 1855), nor *Phragmolites* Conrad, 1838
- + *Chalarostrepsis* Knight, 1948, Type: *C. praecursor* (Camb)
- + *Temnodiscus* Koken, 1896, Type: *Cyrtolites lamellifer* Lindström, 1884, SD Reed, 1920
- + **CYRTOLOTIDAE** Miller, 1889; not limpetlike but the type genus put as syn. of *Capulus* by Bischof (1849) and in Archaeogastropoda by Knight & al. (in Shimer & Shrock, 1943); elevated by Starobogatov (1974) to subclass (Cyrtolitea) including the order Sinuitopsida Starobogatov, 1970 and later accepted by Moskalev & al. (1983); Knight (1947) attributed this fam. to Ulrich & Scofield, 1897; as Cyrtolitea by Moskalev & al. (1983); many genera I don't list: e.g.: *Strepsodiscus*
- + *Cyrtolites* Conrad, 1838; *Cyrtolithes*, syn. of *Capulus*, and with *ornatus* as single spec. by Bischof & al. (1849); as author Gray, 1840 and n. nud. by Neave (1939)
- = *Microceras* Hall, 1845 (teste Knight & al., 1944)
- = *Discolites* Emmons, 1855 (teste Knight & al., 1944)
- + *Cloudia* Knight, 1947, Type MD: *C. buttsi*
- + *Semicircularaea* Lochman, 1944, Type MD: *Pelagiella ? semispira* Lochman, 1940 (Camb)
- + **CYRTONELLIDAE** Knight & Yochelson, 1953 (* as superfam. in Monoplacophora); Horny (1863) created the "order Cyrtoneilloidea", corrected in 1965 to Cyrtoneillida; Moskalev & al. (1983) included in the subclass "Cyrtoneillea Starobogatov, 1974" the fam. "Cyrtoneillidae and Yochelsoniidae"; the latter fam. "Yochelcionellidae" Runnegar & Jell, 1976, as suborder by Golikov & Star. (1989), with *Yochelcionella* and *Eotobenna* Runnegar & Pojeta, 1974, is not listed here, while the shell, with an attached elongate tube, is not patelliform
- + *Cyrtoneilla* Hall, 1879, Type: *Cyrtolites ? mitella* Hall, 1862, SD: Miller, 1889; Müller (1965) placed it, without fam., in Bellerophontida, (Sil-Dev)
- + *Cyrtoneillopsis* Yochelson, 1958 (* in Tryblidiinae); in Cyrtoneilloidea by Knight & Yoch. (1958), together with *Cyrtoneilla*; Type MD: *C. huzzahensis* (Ord)
- + **SINUITIDAE** Dall (in Zittel-Eastman), 1913
- as suborder Sinuitopsina by Starobogatov, 1970; in the subclass Cyrtolitea Starobogatov, 1974 (as Cyrtolitea in his summary); as order in Cyrtolitea by Moskalev & al. (1983); placed by Salvini-Plawen (1980) in Bellerophontida and in Bellerophontoidea by Yoo (1988); contains Sinuitinae, Bucanellinae Koken, 1925, Euphemintinae Knight, 1956, teste Knight & al. (1960)
- + *Sinuities* Koken, 1896, Type: *Bellerophon bilobatus* Sow., 1839, SD: Bassler, 1915 (Camb)
- + *Anconochilus* Knight, 1947, Type MD: *A. barnesi* (Camb)
- + *Sinuella* Knight, 1947, Type MD: *S. minuta* (Camb)
- + **HELACIONELLOIDEA** Wenz, 1938
- (* as " ? Subfam. Helcionellinae" in Tryblidiidae, Archaeogastropoda); in Bellerophontina by Knight & al. (1960); as suborder in the Helcionellida by Golikov & Starobogatov (1975) who in 1989 considered it with the suborders Coreospiroidei

and Yochelcionelloidei in the order Helcionelliformes, superorder Archinacelliformii, subclass Cyclobranchia; as only superfam. in the order Cyrtonelella Horny, 1963 (in Monoplacophora) by Runnegar & Pojeta (1985) including the fam. H., Hypseloconidae, Scenellidae, Stenothecidae and Yochelcionellidae; Chen & Chang (1980), placed "Cyrtonelella Knight & Yochelson, 1958" in the order "Tryblidioidea" and considered the class of Helcionellacea, with 8 new spec., as uncertain; as fam. in the order Archaeogastropoda by Missarzhevsky (1974), Zhegallo (1987).

Some families and genera, not well defined, are shortly kept in the Helcionelloidea, namely the 5 genera of Zhiwen here below; Zhiwen, 1980 (Acta geol. sin. 54(2): 116-120), described also 4 Cambrian genera in Actinoconidae, one in Helcionellidae, and one in the later family Securiconidae Missarzhevsky (1980)

- + *Pileconus* Zhiwen, 1980, (* Brachiopoda-like Monoplacophora), Type MD: *P. veloides*
- + *Crestoconus* Zhiwen, 1980 (* id. as *Pileconus*), Type OD: *C. idiovus* (Camb)
- + *Postestephaconus* Zhiwen, 1980 (* bivalves-like Monoplac.) Type MD: *P. tentes* (Camb)
- + *Rostroconus* Zhiwen, 1980 (* Rostroconchia-like Monoplac.), Type MD: *R. sinensis* (error pro "*Rostroconchia*", as class by Mac Kinnon (1985) and not cited here)
- + *Planuspira* Zhiwen, 1980 (* fam. indet.), Type MD: *P. simplica* (Camb)
- + **HELCIONELLIDAE** Wenz, 1938
- + *Helcionella* Grabau & Shimer, 1909; in Palaeacmaeidae by Howell (1937: Docoglossa), Resser (1938), Rusconi (1952: Aspidobranchia); Type: *Metoptoma* ? *rugosa* Hall, 1847 (= *Stenotheca rugosa* (pars) Walcott, 1866) (Camb) (= *subrugosa* Orb, teste Knight in Shimer & Shrock, 1944)
- subg. + *Acevinia* Rusconi 1952, Type: *Helcionella* (*A*) *cuyunchensis* (Camb)
- + *Absidaticonus* Yue (in Xing), 1984, Type MD: *A. triangulatus* (Camb)
- + *Algomella* Valkov & Karlova, 1984, Type MD: *A. calyptrata* (Camb)
- + *Bemella* Missarzhevsky, 1969; Type OD: *Helcionella jacutica* Miss., 1966; Yu (1979), Chen & Chang (1980) everyone with 2 new spec.; an unnamed spec. in ? *Bemella* by Kerber (1988) (Camb); as date 1966 by Valkov & al. (1984)
- + *Eocyrtilites* Yu, 1986, Type MD: *E. radiatus* (Camb)
- + *Gonamella* Valkov & Karlova, 1984, Type MD: *G. rostrata* (Camb)
- + *Hamataconus* Chen & Xiong (in Xing & al.), 1983, Type MD: *H. pygmaeus* (Camb)
- + *Hujigouella* Chen & Chang, 1980 (* fam. uncertain, but in Helcionellacea), Type MD: *H. hujigouensis*
- + *Igorella* Missarzhevsky, 1969; Type OD: *I. cingulata*; not *I. hamata* Yu, 1979 (Camb)
- + *Ilsanella* Missarzhevsky, 1981 (1969); n. nov. pro *Ginella* Miss., 1969 (non Ivanova, 1960)
- = *Ginella* Missarzhevsky, 1969, Type OD: *atdabanica* Miss., 1966 (Camb)
- + *Leptostega* Geyer, 1986, Type OD: *L. irregularis* (Camb)
- + *Micropileus* Wilson, 1951 (* "might be considered a subg. of *Helcionella*", but the latter "has been limited to the Cambrian"); with a query in Archaeophialinae by Knight & Yoch. (1958, 1960); Type OD: *M. obesus* (Ord) (in Tryblidiidae MNHN)
- + *Obtusoconus* Yu, 1979, Type MD: *paucicostatus*; in this fam ? by Kerber (1988) as *Obtusiconus* by Missarzhevsky (1989); (in Yangtzeconidae, in MNHN)
- + *Parailsanella* Zhegallo, 1987, Type OD: *P. acris* (Camb)
- + *Perssuakiella* Peel, 1988, Type MD: *P. troelseni* (Camb)
- + *Purella* Missarzhevski (in Zhuravjeva & Rozanov), 1974; ? in Torimorphidae by Kerber (1988); Type MD: *P. cristata* (Camb)
- + *Sacciconus* Zhiwen, 1980 (* in Helcionellidae), Type MD: *S. sacciformis* (Camb)
- + *Salanyella* Missarzhevsky, 1981, Type MD: *S. costulata* (Camb)
- + *Songlinella* Chen & Zhang, 1981, Type MD *S. formosa*
- + *Tannuella* Missarzhevsky, 1969, Type MD: *T. elata* (Camb)

- + *Tichkaella* Geyer, 1986, Type MD: *T.hamata* (Camb)
- + *Tuberoconus* Zhou & Xiao, 1983, Type MD: *T.regularis* (Camb)
- + **ARCHAEOTREMARIIDAE** :
- + *Archaeotremaria* Yu, 1979, Type MD *A.polytremata*, base of a new family, seems to be near to *Merismoconcha*
- + **COREOSPIRIDAE** Knight, 1947 (* in Bellerophonacea); in Archaeogastropoda by Missarzhevsky (1981); these Cambrian species are not all limpetlike, but are in the Treatise placed in the Helcionelloidea, Archaeogastropoda; some species with incomplete coiling are more cap-shaped, limpetform and are accepted; it is the same for Granoconidae Yu, 1979, in Archaeotremariacea
- + *Coreospira* Saito, 1936, Type OD: *C.rugosa* (Camb)
- + *Chabaktiella* Missarzhevsky (in Miss. & Mambetov), 1981, Type MD: *C.shabaktiensis* (in coll.MNHN: *Chabatiella*)
- + *Cycloholcus* Knight, 1947; Type MD: *C.nummus* (Camb)
- + *Latouchella* Cobbold, 1921 (* in Archaeogastr.); in Romaniellidae by Doguzhaeva (1981); in Helcionellidae by Chen & Zhang (1980); Type OD (?): *L.costata* (Camb); in this fam. by Kerber (1988)
Don't confound it with the genus *Latonchella* in the Patellidae
- = + *Maidipingoconus* Yu, 1979 (* in Granoconidae); as syn. by Kerber (1988)
- = + *Archaeospira* Yu, 1979; as syn. by Kerber (1988)
- = + *Gibbaspira* He, 1984; as syn. by Kerber (1988)
- = + *Sichuanospira* He, 1984; as syn. by Kerber (1988)
- = + *Uncinaspira* He, 1984; as syn. by Kerber (1988)
- + **HAMPILININAE** Kobayashi, 1958 (* as "Hamplininae" in Palaeacmaeidae); correctly written by Kobayashi (1961) and placed in Helcionellidae
- + *Hampilina* Kobayashi, 1958, Type OD: *H.goniospira* (Camb)
- + *Oelandia* Westergård, 1936 (* in Palaeacmaeidae); in Coreospiridae by Knight (1947); as syn. of *Latouchella* by Knight & al.(1960); Type MD: *O.pauciplicata* (*Helcionella pauciplicata* Westergard, 1929, is n.nud.)
- + **GRANOCONIDAE** Yu, 1979 (included also *Maidipingoconus*, now syn. of *Latouchella*)
- + *Granoconus* Yu, 1979, Type MD: *G.trematus* (Camb)
- + *Asperoconus* Yu, 1979
- + *Xiadongoconus* Yu, 1979, Type MD: *X.luminosus*
- + **MERISMOCONCHIDAE** Yu, 1979, (* in superfam. and new order Merismoconchida); Yu (1987) divided this fam. in 2 subfam.: Merismoconchidae and Yangtzeimerismatinae
- + *Merismoconcha* Yu, 1979, Type MD: *M.multisegmentata* (Camb)
- = + *Minymerisma* Yu, 1984; "similar to *Yangtzeimerisma* in apical view, but also resembles *Merismoconcha*"; Type MD: *M.yunnanensis* (Camb); as syn. by Kerber (1988)
- = + *Yangtzeimerisma* Yu, 1984, Type OD: *Y.raris*; as syn. by Kerber (1988)
- + **SECURICONIDAE** Missarzhevsky, 1980
- + *Securiconus* Zhiwen, 1980, Type MD: *S.simus* (Camb)
- + *Mastakhella* Missarzhevsky, 1989 (* ? in Securiconidae), Type MD: *M.incurva* (Camb)
- + *Tuoraconus* Missarzhevsky, 1989 (* near to *Igorellina*), Type MD: *T.acutatus* (Camb) (put in this fam. by MNHN)
- + **STENOTHECIDAE** Runnegar & Jell, 1980
- + *Stenotheca* (Salter ms.) Hicks, 1872, without descr.; generic diagnosis by Cobbold (1934); extracted from Helcionellidae by Wenz (1938); put in Crustacea by Matthew (1891), followed by Resser (1938) who regarded *Watsonella* Grabau, 1900 as syn.; as author Salter, 1872 by Kobayashi (1933); considered as "*Phyllopode*" by Matthew (1890), Grabau & Shimer (1909) (cf. Kerber, 1988); nearer to Helcion-

- ellidae by Knight & al. (1960); (Camb); Type *S.cornucopia* Salter, (cf. Resser); as *pojetai* Runnegar & Jell
- + *Eurekapegma* Mac Kinnon, 1985, with gapes at the ends, is not patelliform
- + *Stenothecopsis* Cobbold, 1935 (* in ? Crustacea); in Helcionellidae by Knight & al. (1960), Kerber (1988); Type: *S.heraultensis* (Camb.)
- + **TORIMORPHIDAE** Kerber, 1988 (* as "Gruppe" in Helcionellacea), including 5 genera
- + *Jakobina* Kerber, 1988 (* in this group), Type MD: *J.marcouensis* (Camb)
- + *Maikhanella* Zhegallo, 1982 (1980) Type: *M.multa* (Camb)
- = + *Cassidina* Jiang Zhiwen, 1980; as syn. of *M.* and in Torimorphidae by Kerber (1988); Type MD: *C.pristinis* (Camb)
- = + *Jiangia* Starogogatov & Moskalev, 1987, n.nov.pro *Cassidina* Jiang Zhiwen, 1980 (non Milne Edwards, 1839)
- = *Ramenta* Jiang Zhiwen, 1982 (as syn.of *M.* by Kerber, 1988)
- + *Prosinuites* Poulsen, 1967 (* in Sinuitidae), Type OD: *P.bornholmensis* (Camb)
- + *Protoconus* Yu, 1979 (* in Yangtzeconidae); in Actinoconidae by Star. & Mosk. (1987); in Torimorphidae by Kerber (1988); Type MD: *P.crestatus*, (Camb)
- + *Rozanoviella* Missarzhevski, 1981, Type: *R.atypica* (Camb)

Order **DOCOGLOSSA** Troschel, 1861

Férussac (1819) (not Blainville as cited by auctt.) put in the Cyclobranchiata the suborders Schismobranchia for the Patellidae and Polyplaxiphora for the Chitons (later corrected by Gray to Polyplacophora). Latreille (1825) divided Cyclobranchiata into the fam. "Scutiformes" (with Patellidae, *Umbraculum* and "Lamellés". Blainville (1825) mentioned the order Cervicobranchiata with fam. Retifera (for *Pat.*) and Branchifera (for *Fiss.*, *Parmophorus*, *Emarg.*). Swainson (1840) put in the tribe Scutibranchia "The limpets" (*Fiss.*, *Emarg.*, *Hipp.*, *Pedicularia* and *Pat.*, the last including the *Siph.*) and kept *Cal.* and *Crep.* in the Haliotidae. The limpets were placed by Gray (1857) in the Scutibranchiata, suborders Cervico- (Gadiniidae and Lepetidae beside) and Cyclobranchiata. H. & A. Adams (1858) placed them in the suborder Edriophthalma. Mörch (1865) subdivided the Heteroglossata (in Diotocardia) into Cyclobranchiata (*Pat.*), Polyplaxiphora and Cirrobranchia (*Dentalium*). In 1866 Troschel defined better his Docoglossa, including still the Chitons and Dentalia. Dall (1871) said that Cervico- and Cyclobranchiata of Gray are not well separated, put both in the Docoglossa and extracted the Polyplacophora and Solenoconchae. In 1870 he divided Docoglossa into 2 suborders: Abranchiata (with Lepetidae) and Proteobranchiata (with Acmaeidae, Patellidae, + *Metoptoma*). Dall & Simpson (1901) reduced the Docoglossa to superfamily. Rochebrune (1881) included in the Cyclobranchiata Cuv. the limpet families Patellidae, Gadiniidae, Tecturidae, while Fischer (1885) included in the Docoglossa (with 1866 as date): Acmaeidae, Patellidae and Lepetidae, each in its turn in an unused taxon: Trachelo-, Cyclo- and Abranchia. These last 3 fam. are respected by Thiele (1929). Taylor & Sohl (1962) added the fossils + *Metoptomatidae* and + *Symmetrocapsulidae*. Cox & Knight (1960) included the superfam. "Patellacea and Cocculinacea", Golikov & Star. (1970, in Great Soviet Encycl., vol.19) said that the Docoglossa are sometimes classified as the subclass Peribranchia and that they include about 350 littoral marine species. Moskalev (1973) added to the "Cyclobranches: Docoglossa Troschel 1857" the subclasses Bathysciadoidea and Bathypeltoidea, reduced by Boss (1982) to families, Golikov & Kussakin (1972, 1974) placed in the Acmaeidae, named Tecturidae, two subfam.: Patelloidinae (*Patelloida*, *Collisella*, *Notoacmea*, *Testudinalia*) and Tecturinae (*Tectura*, *Acmaea*, *Rhodopetala*, *Problacmaea*).

Some authors (Stearns, 1893, Wenz, 1938, Franc, 1968) considered *Docoglossa* as superfam. Zittel (1887, trad.) put these groups in the suborder Cyclobranchia Cuvier, 1817, with *Docoglossa* as syn. and included the related Cervicobranchiata Gray. The *Docoglossa* are often considered as a suborder of the Archaeogastropoda, a group having, with exception of limpets, a rhipidoglossan radula. *Docoglossa* is considered as suborder of Aspidobranchia by Howell (1937). Lindberg & Hickman (1986, J. Paleont., 60(3):662) mentioned the order Patellida and the same year (1986, Bull. Malac. Bull. 4(1):115) Lindberg created for the patelloidean genera the order Patellogastropoda. Two years later he rejected the term *Docoglossa* "because it describes a type of radular morphology, musculature, and function that is not unique to the Patellogastropoda: this also is the mono- and polyplacophoran condition." Lindberg is followed by McLean, (1990) who says that "the name Patellogastropoda is more appropriate than *Docoglossa*". I admit that the Tryblidioidea and Polyplacophora have also a radula with the teeth shafts immovably fixed to the radula membrane, able to dig into a hard substratum, but for stability of nomenclature I give priority to the name *Docoglossa* and don't reject it for inappropriateness (art. 18 ICZN) while in that case other names are waiting.

In the order Patellogastropoda, Lindberg (1988) included the suborders Patellina and Nacellina, the latter placed in syn. of Patellina by McLean (1990). Haszprunar (1988) didn't mention the Patellogastropoda, but Hickman (1988) did. Golikov & Starobogatov (1984, 1989) placed Patelliformes Ihering, 1876 in the subclass Cyclobranchia (= Patelliones Gol. & Star., 1984), including the suborders Bathysciadoidei Gol. & Star., 1984, Patelloidei Ihering, 1876, Lepetoidei Gol. & Star., 1989. Graham (1988) kept the superfam. "Fissurellacea, Patellacea, Cocculinacea" in the Archaeogastropoda Thiele, "1929". Salvini-Plawen & Haszprunar (1987) noted that the *Docoglossa* are nearly separated from rhipidoglossate gastropods and in 1988 Lindberg separated them from the Archaeogastropoda. The rhipidoglossate have a considerable number of teeth, the patellids a multidentate radula which in Tecturidae is a paucidentate one.

I follow Lindberg in separating the *Docoglossa* from the Archaeogastropoda.

- = Cyclobranchia Cuvier, 1817, associating *Patella* and Chiton, followed by Gray (1821), Forbes (1844; in 1838 as fam. in Mal Mon.), Philippi (1853), etc.; Keferstein (1862) extracted the chitons and kept in the suborder C. the single family Patellidae; idem by Rochebrune (1884, in Brehm, éd. franç.) with Cyclobranchiata; as subclass by Golikov & Star. (1975), including the order *Docoglossa* (without Chitons)
- = Patellida von Ihering, 1876; as order by Lindberg & Hickman (1986); as suborder by Cox & Knight (1960) n. transl. ex Patelloidea v. Ihering, with syn. Cyclobranchia (Goldfuss, 1820, partim) Gray, 1821.
- = Patelliformes von Ihering, 1876 (cf. Golikov & Star. (1984), who added in 1989 the new suborders Bathysciadoidei and Lepetoidei).
- = Onychoglossa Sars, 1878; name proposed instead of *Docoglossa*, with only the Patellidae, Tecturidae and Lepetidae and with the Chitonidae excluded.
- = Phyllidiobranchia Lankester, 1883 (including *Pat.*)
- = Hétérocardes Perrier, 1889; still in Chavan & Montocchio (1960) with "Patellacés ou Docoglosses" in Archaeogastropoda
- = Heterocardia Bernard, 1890; with Patellacea, Cocculinacea.
- = Peribranchia; as subclass (instead of *Docoglossa*) by Golikov & Starobogatov (1970, Bol'shaia Sov. Entsiklopedia, 19:1122).
- = Patellogastropoda Lindberg, 1986; used by Fretter (1990)

Suborder **PATELLINA** von Ihering, 1876

PATELLOIDEA Rafinesque, 1814 (pars) (* as fam. Patellaria, including subfam. Ancyliodia (with *Patella* and *Haliotidia*) (n.transL et sensu Thiele, 1925); as auth. Menke, 1828, by Yochelson (1960); name used as higher taxon by Troschel (1866), Franc (1968); used as family name by Risso (1826) including *Pat.* and *Ombrella*; not "les Patelloides" Fér., 1821, 2nd fam. of Calyptracea with *Scutus*, *Fiss.*, *Emarg.*, *Cal.* etc. and name used by Rang (1829), Menke (1830), Forbes (1838); not Patelloidea Blainville, 1824 with *Umbrella*, *Siph.*, *Tyrodina*

= Conivalvia Cuvier, 1800; with only *Patella* ?

= Phyllidiana Lam., 1809; (* fam. Phyllidiens) with: *Chiton*, *Pat.*, *Siph.*, *Scutella*

= Ancyliodia Rafinesque, 1814 (* subfam. in Patellaria) containing *Ancilus* Geof. (non Müller), *Pat. L.*, *Fiss.*, *Emarg.*, *Cal.*, *Crep.* of Lamarck, etc.

= Chismobranches Férussac, 1819 (* as suborder in Cyclobranches with only "Les patelles")

= Retifera Blainville, 1825 (* Rétifères); first fam. in Cervicobranchiata with sole gen. *Patella*; as syn. of Docoglossa by Fischer (1885)

= Patellina Wiegmann, 1832, Wiegmann & Ruthe, 1843; in suborder Cyclobranchia with only *Patella*

= Heteroglossa Gray, 1857 (pars in Docoglossa, cf. Fischer P. 1885)

= Proteobranchiata Dall, 1871 (* as suborder with Acmaeidae -including *Pectinodonta* and *Patellidae*); as superfam. Proteobranchia by Dall, 1889

PATELLIDAE Raf., 1815, and **PATELLINAE** (True limpets)

as author Férussac, 1819 by Rang (1829) with "Les Patelles" (= *Patellae*) sole fam. in suborder Chismobranches, order Cyclobranches; as Férussac, 1821 by Malatesta (1960), Mari & Zanardi (1970); as d'Orb., 1837, by Daniel (1883), Cossmann & al. (1915); as Carp. by Blaschke (1911); Brewster (1813) mentioned sections in the single genus *Patella*: *Pat.*, *Crep.*, *Concholepas*, *Fiss.*, *Emarg.*, *Cal.*, Mawe (1823) retained in *Patella* 7 divisions with unavailable names, e.g.: margin entire, angular, key-hole; Menke (1828) put *Patellaceae* as single fam. in Chismobranchiata and in 1830 as *Patellacea*, with single genus *Pat.*, in *Retiferae*; d'Orbigny (1837) included in *Patellidae* (in Cyclobranchiata) *Pat.* and *Pateilloidea*, while Gray (1842) included: *Pat.*, *Patina*, *Helcion*, *Nac.*, *Lepeta*. Fischer (1885) added the genus *Tryblidium*, and considered *Patinella*, *Nac.*, *Helcion*, *Helcioniscus* as subg. of *Pat.*; Some authors put the genus *Pat.* in other high taxa: in Scutiformia by Latreille (1825); in *Patellida* by d'Orb. (1837); in Scutibranchia by Swainson (1840); in *Phylidida* by Lea (1843); in *Fissurellida* by Geinitz (1845).

Patella L., 1758, Type: *P. vulgata* L., 1758, SD: ? by Fleming (1837), Dall (1871), Pilsbry (1891), etc.; as other types: *Pat. granularis* L., 1758 by Lam. (1799), Glib. (1949), Malatesta (1960), Brebion (1964); *Pat. miniata* Born, 1780 by Swainson (1840); *Pat. testudinaria* L., 1758 by Lam. (1801), Gray (1847); *Pat. roseus* Montfort, 1810; *Pat. longicosta* Lam. by Woodward (1851); *Pat. caerulea* L., 1758 by Tryon (1883), Thiele (1929), Wenz (1938), Nordsieck (1968), (Cret-Rec)

= *Lepas* Tournefort, 1742, (= le libot)

= *Eruca* Tournefort (see *Paetel*, 1888); as author Tornefort by Pilsbry (1891)

= *Patellites* auct.: Gesner, 1752; Walch, 1768 (by Pilsbry, 1891); Schroeter, 1775, 1782; Schlotheim, 1820

= *Patellaria* Gmelin, 1798; ex Lhwyl, 1698 by Herrmannsen (1847); as *Patellarius*

Dum. by *Paetel* (1888); as + *Lhwyl* by Pilsbry (1891); is not the fam. by Raf., 1814

= *Patellus* Montfort, 1810, Type OD: *P. roseus* (= *miniata*) (as subg. by Gray, 184

- = *Goniclis* Rafinesque, 1819 (* with *G. elliptica*); cf. Potiez & al. (1838), Paetel (1888) with the sect.: *Pat.*, *Scutus*, *Cymbula*, *Olana*; as syn.? by Pilsbry (1891)
- = *Patellopsis* Thiele (in Troschel), 1891 (non Nobre, 1886, in *Siph.*) (* as genus with the radula of an unnamed monotype from S.Afr.); as subg. of *Pat.* by Wenz (1938) and in Conchiglie (1965); unnecessary by Thiele (1931, Index:766)
- = *Patellona* Thiele (in Troschel), 1891 (* as genus); as sect. of *Cymbula* by Thiele (1929), Christiaens (1973); as subg. of *Pat.* by Wenz (1938), Conchiglie (1965), Lindner (1984); Type: *Pat. granatina* L., 1758 (first ex.), SD Tomlin, 1931
- subg. *Ancistromesus* Dall, 1871 (* as genus); as genus by Zittel (1887, trad.) with *Patinella* Dall (= *Patinigera*) and *Nacella* Schum. as syn.; as sect. of *Pat.* by Fischer (1885); as syn. of *Scutellastra* by Thiele (1929), Wenz (1938); as genus by Keen (1971, not 1958); as subgenus by Christ. (1973) with the sections: *Eliana* *Patellidea*, *Olana*, *Patellanax*, *Penepatella*; Type MD: *Pat. (A.) mexicana* Brod. & Sow., 1829
- Scutellaria*, subg. of *Pat.* for *Pat. pica* by Smith (1901)
- Patellanax* Iredale, 1924 (* as genus); as syn. of *Scutellastra* by Thiele (1929), Wenz (1938), Knight (1960), Ludbrook (1978); as genus by Cotton (1947), MacPherson (1962); Type OD: *Pat. squamifera* Reeve, 1855 (= *Pat. (Anc.) peronii* Blv, 1825)
- = *Eliana* Christiaens, 1973 (* as sect. of *Pat. (Ancistromesus)*), Type OD: *Pat. concolor* Krauss, 1848 (*Pat. variabilis* var. - Krauss, 1848 (non *variabilis* Risso, 1826)
- subg. *Cymbula* H. & A. Adams, 1854, Type OD: *Pat. (C.) compressa* L. 1758; as sect. of *Pat.* by Fischer P. (1885) and as syn. of the sect. *Pat.* by Pilsbry (1891); it included the sect. *Patellona* by Thiele (1929), Christ. (1973), now kept as syn. of *Pat. (Pat.)*
- subg. *Laevipatella* Pallary, 1920; as syn. of *Pat. s.s.* by Wenz (1938); Type OD: *Pat. (sect. L.) safiana* Lam., 1819, (= *Pat. nigra* da Costa, 1771)
- subg. *Olana* H. & A. Adams, 1854; as genus by Gray (1857); as sect. by Fischer P. (1885); as syn. of *Scutellastra* by Pilsbry (1891); as sect. of *Cymbula* by Thiele (1929) and of *Ancistromesus* by Christ. (1973); Type MD: *Pat. cochlear* Born, 1778
- subg. *Patellastra* Monterosato, 1884; as sect. by Fischer P. (1885) and as syn. by Pilsbry (1891); Type MD: *Patella lusitanica* Gmel, 1791 (= *P. rustica* L., 1758)
- subg. *Patellidea* Thiele (in Troschel), 1891, Type OD: *Pat. granularis* L., 1758
- = *Granopatella* Pallary, 1920 (* sect. of *Patella*) (not as syn. of *Cellana*, see below)
- subg. *Penepatella* Iredale, 1929 (* as genus); as subg.? by Wenz (1938); as sect. of *Ancistromesus* by Christ. (1973); as genus by Higo (1973), Kuroda & al. (1971); Type OD: *P. inquisitor* (= *Pat. flexuosa* QG, 1834)
- subg. *Scutellastra*, H. & A. Adams, 1854; as genus in Scutellidae by Paetel (1888); as sect. by Pilsbry (1891), Christ. (1973); Type: *Pat. ferruginea* Gmel., 1791, SD Kobelt, 1879 (= *Pat. gorgonica* da Costa, 1771); as other types: *Pat. longicosta* Lam. by Tryon (1883); *Pat. gorgonica* Humph. by Pilsbry (1891) with *pentagona*, *plicata* Born as syn.; *gorgonica* Humph. SD Powell (1938) of *Scut.* and with *longicosta* as syn.; *plicata* Born (= *barbara* L.) by Thiele (1929), Wenz (1938)
- = *Costatopatella* Pallary, 1920; as syn. of *Pat. s.s.* by Wenz (1938) with Pall., 1914; as date 1912 by Neave (1939), but in 1912 it was n.nud.
- Helcion* Montfort, 1810; as genus by Dall (1871) with *Helcioniscus* prov. as subg.; as subg. of *Pat.* by Fischer P. (1885, with *Patina* as syn.), Cossmann (1885, not 1888); Pilsbry (1891) considered *Helcion* and *Patina* as 2 sections; as subg. of *Patina* Leach in Gray, 1840, by Cossmann & Peyrot (1915); not *Helcion* d'Orb., 1846, which is syn. of *Lottia*, teste Gray (1847); as *Helicon* (error) by Vaught (1984) and as + *Helicion* (error) by Mösch (1867); Type OD (as MD by

- Wenz, 1938): *Pat. pectinata* Born, 1778 (non Lin., 1758, which is *Siph.*) (*Pat. pectunculus* Gmel., 1791, who gave Born, pl.98, fig.7 as ref.) (Jura ?, Plio-Rec); *Ansates* Sowerby 1839 (* subg. of *Helcion*); as syn. of *Patina* Leach, 1852 (* subg. of *Helcion*) and as subg. by Wenz (1938); as syn. of *Helcion* by Lindner (1984); n. *Ansata* Klein, 1753, prelinnaean; as genus by Jeffreys (1882), auctt.; Type MD: *Pat. pellucida* L., 1758 (not Philippi, 1836, which is *Williamia gussoni*); (Eoc-Rec) = *Patina* (Klein) Sow., 1839 (Conch. Man.:6) with ex. *Pat. pellucida* in *Ansates* Klein, 1753; Iredale (1925) gave priority to this name
 = *Patina* (Leach ms., 1819) Gray, 1847 (* subg. of *Nac.*) Type MD: *Pat. caerulea* (non L.)
 = *Lottia* Gray (pars), Petit de la Saussaye (1852) with *Lottia pellucida* L.
 NB: *Rhodopetala* Dall, 1921, as subg. of *Ansates* by McLean (1966), is now in Acmaeidae
- Patinastra* Thiele (in Troschel), 1891 (* as genus); as subg. of *Helcion* by Wenz (1938), Vaught (1989), etc.; Type MD: *Pat. pruinosa* Krauss, 1848
 = *Patina* (Leach) Gray, 1840 (cf. Dall, 1871); I consider it (Syn. Brit. Mus. ed.42: 148) n.nud.
- + *Latonchella* Lermontova, 1940, Type MD: *L. reticulata* (Camb.)
- + *Proscutum* Fischer P., 1885 (* as sect. of *Scutum* in Emarginulinae); as subg. of *Scutus* by Wenz (1938); removed to Patellinae by McClintock (1963), Merle (1984); Type MD: *Scutum compressum* Deshayes, 1861 (Eoc-Rec)
- + **ANISOMYONIDAE** Kanie 1975 (* closely reported to the Mesogastropoda); in the Siphonarioidea by Starobogatov (1976) including perhaps *Pseudohercynella*; in the Patelloidea by Kanie (1977); a spec. was described by Wilckens (1910) as *Nacella* (*Anisomyon?*) *ovata* (Cret)
- + *Anisomyon* Meek & Hayden, 1860, Type: *Helcion patelliformis* Meek & H., 1857; as type *Ancylus gussoni* Costa (now in *Williamia*) and *Hipponyx borealis* Morton cited by Dall (1870) (Cret)
- + *Brunonia* Muller G., 1898; in "? fam." by Wenz (1938) and in "? Patellina" by Knight & al. (1960); Type: *B. grandis* (Cret)
- + **DAMILINIDAE** Horny 1961 (* in Patellina; restricted in 1963 to Patellacea)
- + *Damilina* Horny, 1961, Type MD: *Lepetopsis subrotunda* Perner, 1903 (Sil)
- + *Ceratopea* Ulrich, 1911, Type: *C. unguis* (Ord) (cf. Yochelson & al., 1972)
- + *Siluracmaea* Horny, 1961 (* in familia incerta); in Patellacea by Horny (1963); Type MD: *Palaeacmaea incerta* Perner, 1903 (Sil)
- + *Vanuxemia* Billings, 1858 (Ord)
- + **METOPTOMATIDAE** Wenz, 1938, (* in Tryblidiacea); in "Patellacea Menke, 1828" by Yochelson (1960); in Patelloidea by Knight & al. (1960), Taylor & Sohl (1962); in Helcionellida (Cyclobranchia: Prosobranchia) by Golikov & Starobogatov (1975)
- + *Metoptoma* Phillips, 1836; in *Patella* by de Koninck (1842), Woodward (1851), Chenu (1870); in Docoglossa by Dall (1870); nearer to *Capulus* in Calyptraeidae by McCoy (1855), Fischer (1880); as subg. of *Capulus* by Tryon (1886) with *Tryblidium* as syn.; Type: *M. oblonga*, SD Miller, 1889; as *oblongata* by Yochelson (1960); as type *Pat. olaris* by Dall (1870, fig. in Chenu), Tryon (1883); as *M. pileus* by Dall (1871) and suggested by de Koninck (1883) (Sil-Carb)
- + *Calloconus* Perner, 1903 (* as subg. of *Palaeoscurria*); in Palaeacmaeinae by Knight (1951); with a query in Archaeophialinae by Knight & Yoch. (1958); Type: *P. (C) humilis* Perner, SD Knight, 1937; not *Pat. coronata* Perner, 1903, SD Wenz, 1938 (see corr. Wenz, 1943) (Camb-Dev)

+ *Halophiala* Koken (in Koken & Perner), 1925; in ? *M.* (*Tryblidiacea*) by Wenz (1938);
Type MD: *H.anomia* (Ord)

+ *Palaeoscurria* Perner, 1903, Type: *P.calyptrata*, SD Cossmann, 1904; same spec. as
SD by Wenz (1938) who placed this genus in Palaeacmaeinae, (Ord-Sil)

+ *Patellostium* Waagen, 1880, Type: (e.g. *timorensis* Hamlet, 1928) (Perm)

NACELLOIDEA Thiele, 1891, and **NACELLIDAE** (* *Nacellinae* in *Patellidae*)

as suborder *Nacellina* Lindberg, 1988, modified by McLean (1990), who considered
Nacellina as syn. of *Patellina*; as date 1929 by Powell (1973), Lindberg & Hickman
(1986); as subfam. (including *Nac.* and *Cell.*) by Thiele (1929), Wenz (1938), Knight
& al. (1960), Skwarko (1966), Franc (1968), Powell 1973, Piani (1980), Boss
(1982), Lindner (1984), Bruschi & al. (1985); Rafinesque (1815: 144) mentioned the
genus *Nacella* Lam., in subfam. *Neritacea*, fam. *Neritina*, order *Epironotia*. The
generic name *Nacella* Schum., 1817, is preoccupied by *Nacella* Lam. and has to be
replaced, but not the family name according art. 40 of the ICZN.

Nacella Schumacher 1817; not sensu Paetel, 1888, including *Pat.*, *Cell.*, *Lottia* etc. and
having *Ansates* and *Patina* as syn.; not *Nacella pellucida* (see Nordic Code centre)
nor *Nacella* sensu Cossmann (1882) which is + *Acrorœia* Cossm., 1885; as subg. of
Pat. by Dall (1871) et auctt.; Type: *Pat. mytilina* Helbling, 1779, SD Gray, 1847 (as
N. mytiloides); as other types: *Pat. cymbularia* by Tryon (1883); *Pat. conchacea*
Gmel. by Cossmann & Peyrot (1915) and as MD by Dell (1971) (not monotype, as
Pat. conchacea Bosc was also mentioned by Schumacher; (Eoc-Rec)

Patinigera Dall 1905, as n. nov. pro *Patinella* Dall, 1871 (non Gray, 1848) (* subg. in *Pat.*);
as subg. of *Nac.* by Lamy (1905) and auctt.; as subg. of *Pat.* by Fischer (1885),
Gunther (1881); as genus by Powell (1951), Otaegui (1974), Scarabino (1977);
Type OD: *Pat. magellanica* Gmel., 1791, (= *aenea* Martyn, 1784)

= ? *Patelloides* Hombron & Jacquinot, 1841 (in a list of *Patella* species, without
description and with a single spec. *antarctica*)

= *Patinella* Dall, 1871 (non Gray, 1848); as genus by Tryon (1883); as sect. of *Nac.* by
Suter (1905); Type: *Pat. magellanica* Gmelin, 1791

Cellana H. Adams, 1869 (* subg. of *Nacella*) (not 1889, a lapsus in Franc, 1968), Type
MD: "*Nacella (Cellana) cernica* Barcl. MS." (= *cernica* Rve, 1855, by Lindberg,
1986a) = *livescens* Reeve, 1855 by Lindberg, 1986b);

= *Helcioniscus* Dall, 1871, (* prov. subg. in *Helcion*); as subg. of *Pat.* by Fischer P.
(1885), Moazzo (1939); Type OD: *Pat. variegata* Dall, 1842 and ? syn. of *Pat. rota*
(Chemnitz) Rve; (= *Pat. rota* Gmelin, 1791); as type *H. exaratus* by Tryon (1883);
not: *Granopatella* Pallary, 1920, now syn. of *Pat. (Patellidea)*, considered by Vaught
(1984) as syn. of *Cellana* and with as author Pall. 1941 (probably a copy and lapsus
of Wenz (1938) who cited *Granopatella* Pall., 1914 as syn. of ? *Cellana*)

ACMAEOIDEA Carpenter, 1857 (see ICZN Opinion 343, 1955); as author Forbes, 1850
by e.g. McLean (1990); as *Acmaeidae* in *Patelloidea* by the Treatise, Piani (1980),
Terreni (1981), Bruschi & al. (1985), Graham (1988), Vaught (1989); as *Tecturoidea*
Gray, 1847 by Golikov & Star., 1975, with *Tecturidae*, *Lottia* Habe, 1944 and
Pectinodontidae Thiele, 1893; Lynn Scheu, 1987 (N.Y. Shell Club): The *Patellidae*
evolved from *Acmaeidae* stock and both belong to the superfamily "Patellacea"

ACMAEIDAE Carpenter, 1857, and **ACMAEINAE**

Franc (1968) cited Philippi, 1853 as author and followed Wenz (1938) who put
Tecturidae and *Lottiidae* in synonymy. Lindberg always cited Forbes, 1850 and
maintained in 1981 three full generic separations of species-groups, based on the
marginal teeth, q.e.: two marginals (*Patelloida*), a single pair of marginal remnants

or uncini (*Collisella*, *Lottia*, *Scurria*) and no uncini (*Acmaea*, *Notoacmea*, *Problacmaea*, *Rhodopetala*, *Tectura*). In 1986 he divided Acmaeidea in Acmaeidae (with in *Acmaea* a monotypic shell) and Lottiidae, synonymized *Collisella* with *Lottia* and transferred the eastern Pacific limpets from the genus *Notoacmea* to *Tectura*.

- = Tecturidae Gray, 1847; used by Cerulli-Irelli (1916); by Golikov & Kussakin (1972, 1978) with: Patelloidinae (*Patelloida*, *Collisella*, *Notoacmea*, *Testudinalia*) and Tecturinae (*Tectura*, *Acmaea*, *Rhodopetala*, *Problacmaea*)
 - = Trachelobranchia; as syn. by Thiele (1929) but considered by Fischer (1885) as valid taxon containing *Acmaea* and *Scurria*, the latter with the subg. *Lottia*.
- Acmaea* Eschscholtz (in Rathke), 1833, (see ICZN, Opinion 344, 1955); *Acmaea* Eschsch. in Kotzebue, 1830, is genus without spec. and n.nud.; the date 1830 is retained e.g. by Thiele (1929), Grant & Gale (1931), Golikov & Scarlato (1967); as other date: 1828 by Fischer (1885), Cossmann (1888), auctt.; Type: *A. mitra* Rathke, 1833, SD Dall, 1871 (see Opinion 344, 1955); as date 1840 by Dautz., 1927 as single spec. in this genus since the restriction made by Lindberg (1986); this monotypy is still often ignored, e.g. by Diaz & Gotting (1988) who put the Caribbean limpets in *Acmaea*, as done before by Warmke & Abbott (1961), Humfrey (1975) etc.; the genus *Acm.* included many lower taxa: 16 by Thiele (1929), 17 by Wenz (1938), Lindner (1984), which are now all excluded since *Acmaea* became monotypic; (Trias-Rec)
- = *Tectura* auctt.: see below

PECTINODONTINAE Pilsbry, 1891; also as new by Thiele (in Troschel, 1892) and cited by Marshall (1985, with Thiele, 1893), Lindberg (1986); as fam. by Russian authors *Pectinodonta* Dall 1882; as subg. of *Acmaea* by Fischer (1885); animal blind, without branchial cordon, radula a simple lateral tooth, no uncini; Type MD: *P. arcuata*

LOTTIIDAE Gray, 1840 (sensu Lindberg, 1986), and LOTTIINAE

- Lindberg (1986) retained the name Lottiidae; 5 years before he mentioned Acmaeidae Forbes, 1850 with two syn.: Tecturidae Gray, 1847 (with *Tectura* and *Scurria*) and Lottiidae Habe, 1944; as Lottiidae Habe, 1944 in Tecturoidea Gray, 1847 by Golikov & Starob. (1975); as Lottidae in Nordic Code Centre, (Cret-Rec)
- = Acmaeidae Forbes, 1850 (in pars); = Tecturidae Gray, 1847 (pars)
 - = Scutellidae Paetel, 1888, including *Patelloidea* (= *Tectura*, *Acm.*, *Lottia*), *Williamia*, *Scurria*, *Rowellia* (= *Trimusculus*), *Helcion*, *Scutellina*, *Cryptobranchia*, *Lepeta*, *Lepetella*, *Fissurisepta*

The following fossil limpets are placed here in the Lottiidae:

- + *Conorhytis* Cossmann, 1907; as ? subg. of *Pat.* or sect. of *Helcion* by Rollier (1918), and kept as genus by Haber (1932), Wenz (1938), Knight & al. (1960); Type OD: *Pat. (Helcion) squamula* Eudes-Deslongchamps, 1863 (Jura: Bathonian); as type *Pat. squamosa* Desl. by Dacqué, 1933)
- + *Deslongchampsia* McCoy (in Morris & Lycett) 1850; as subg. of *Emarg.* by Dall (1871), Fischer (1885); in ? Siphonariidae by Zittel (1887); as *Deslongchampsia* Mac-Coy, 1850, subg. of *Submarginula* (= *Hemitoma*) by Cossmann & Peyrot (1915); Type: *Pat. appendiculata* Eudes-Deslongchamps, 1842, SD Laube, 1868 (1867 date by Wenz); as other type: *D. eugenei* McCoy by Dall (1870), Tryon (1883); as "*eugenii*" Morris & Lycett 1854 by Dacqué (1933) (Jura)
- + *Hamptoniella* Wenz, 1938, pro + *Hamptonia* Haber, 1932 (non Walcott, 1920)
- = *Hamptonia* Haber, 1932; as n.nud. teste Dacqué (1933); Type MD: *Umbrella ? hamptonensis* Morris & Lycett, 1854 (Jura)
- + *Marbodaia* Chelot, 1886, pro *Guerangeria* Cossmann, 1885 (non Oehlert, 1881)

= *Guerangeria* Cossmann, 1885 (* subg. of *Acm.*), Type MD: *Pat. clypeola* Eudes-Desl., 1842 (Jura)

+ *Propatella* Grubbs, 1939 (* in Acmaeidae), Type MD: *P. + magnacostata* (Sil.)

+ *Punctopatella* Grubbs, 1939 (* in Acmaeidae); often cited in Pectinodontinae; Type MD: *P. + corallifera* (Sil.)

+ *Scurriopsis* Gemmellaro, 1879, as date 1878 by Fischer, 1885; Type: *S. neumayri*, SD. Haber, 1932 (Trias-Jura)

subg. + *Dietrichiella* (ex Haber, 1932 n.nud.) Wenz, 1938 (* subg. of *Scurria*); placed here by Cox (1960); Type OD (ex Haber): *Pat. kindopensis* Dietrich, 1914 (Jura- Cret)

subg. + *Hennocquia* (ex Haber, 1932, n.nud.) Wenz, 1938 (* subg. of *Scurria*); placed here by Cox (1960); Type OD (ex Haber): *Pat. hennocquii* Terquem, 1855 (Jura)

LOTTIINI (tribe) Lindberg, 1988 (Plio-Rec)

Lottia Gray, 1833; Gray (1833, Phil. Trans. Royal Soc. Lond 123: 800) mentioned *Lottia* in a footnote without spec.; Gray, 1833 is considered as author by Gray (1847), Carpenter (1857), Neave (1939), Lindberg (1981) etc.; as *Lottia* (Gray) Sow., 1833, by Thiele (1929), Wenz (1938); Sowerby (1834) validated Gray's name, included 4 spec. (*Lottia gigantea*, *antillarum*, *testudinaria* and *radians*) and is often considered as author; as subg. of *Scurria* by Fischer (1885); as syn. of *Patelloidea* by Paetel (1888); the secondary gill of the large *gigantea*, increased its respiratory surface (cf. Cooper, 1860, Ghiselin, 1974) and was the reason that Carpenter (1886) established this species as type of *Lottia* by MD; but this gill is not as conservative as thought and Lindberg (1986) synonymized *Lottia* with *Collisella*. Type: *L. gigantea* Sow. by Tryon (1883); as other type: *Acme scutum* Eschscholtz by Gray (1847)

I keep *Collisella*, and provisory the other groups, as subgenera of *Lottia*.

= *Helcion* d'Orbigny, 1846 (non Montfort, 1810), Type: *Pat. zebrina*

= *Tecturella* Gray, 1860 (non Stimpson, 1853 -or 1854 as by Knight & al., a Polychaete worm); Type: *T. grandis*, n.nud. (= *Lottia gigantea* teste Carp., 1860)

= *Tecturina* Carpenter, 1860, n.nud.; as date 1861 by Knight & al. (1960); as error ? for *Tecturella* teste Dall, 1871; as syn. of *Lottia* by Tryon (1883)

= *Lecania* Carp., 1866 (non Macquart, 1839, a Diptera) n.nud.; as syn. of *Lottia*

subg. *Collisella* Dall, 1871 (* subg. of *Acm.*); as genus by Japanese authors, McLean (1966), Ponder & Creese (1980), Lindberg (1981); Christiaens (1976) considered *Conoidacmea*, *Kikukozara* and *Nomaeopelta* as syn. of *Collisella* and Vaught (1989) as syn. of *Lottia*; Type OD: *Acm. pelta* Rathke, 1833; as syn. of *cassis* Rathke, by Moskalov (1966, 1970); Fischer (1885) gave *testudinalis* as ex. (Pleist-Rec)

subg. *Colliselacmaea* Christiaens, 1975 (* subg. of *Collisella*), Type OD: *Pat. jamaicensis* Gmel., 1791; not used by Lindberg (1981) who strongly suggested that radular "similarities are the result of convergence rather than common ancestry"

subg. *Conoidacmea* Habe, 1944 (* subg. of *Collisella*), Type MD: *Pat. heroldi* Dunker, 1861

subg. *Kikukozara* Habe, 1944 (* subg. of *Collisella*), Type OD: "*Coll. (K.) langfordi* (Kuroda ms.) sp. nov." with *Patelloida langfordi* Kuroda, 1935 as ref.; as *langifordi* (err.) in Zool. Rec., 1962

subg. *Naccula* Iredale, 1924 (* as genus); as sect. of *Acm.* by Thiele (1929); as subg. by Wenz (1938); as genus by Oliver (1926), MacPherson & al. (1962); Type MD: *Nacella parva* Angas, 1878 (= *Patelloida punctata* Q. & G., 1834)

subg. *Nomaeopelta* Berry, 1958 (* as genus), Type MD: *Acm. dalliana* Pilsbry, 1891

- subg. *Radiacmea* Iredale, 1915 (* as genus); as sect. of *Acm.* by Thiele (1929); as subg. by Wenz (1938); as genus by Oliver (1926), Cotton (1946); Type OD: *Acmaea cingulata* Hutton, 1884 (1883 by Cotton, 1945) (= ? *A. inconspicua* Gray, 1843)
- subg. *Simplacmaea* Christiaens, 1975 (* nonuncinate subg. kept in *Collisella*); as syn. of *Lottia* by Vaught (1989); Type MD: *Nac. stowae* Verco, 1906
- Tectura* Audouin & Milne Edwards, 1830 (Ann. Sci. Nat.: Tectura); as author Gray, 1847 by auct.; as syn. of *Acm.* by Fischer (1885) and as subg. by Thiele (1929), Wenz (1938), Test (1946), Brebion, 1964; as sect. of *Patelloida* by Glibert (1949); used pro *Acm.* by Iredale (1915), Cossmann & al. (1915) while they considered *Acmaea* as preoccupied by *Acmea* Hartmann, 1821, a terrestrial gastropod (not *Acmea* by Vincent, 1930, which is an *Acmaea*). Type OD: *Pat. parva* Da Costa, 1778. (= *Pat. virginea* Muller, 1776) (Plio-Rec)
- = *Lottia* Gray, 1833 (pars) teste Petit de la Saussaye (1852) with *Lottia virginea*
- subg. *Atalacmea* Iredale, 1915 (* as genus); as subg. of *Acm.* by Wenz (1938); as genus by Cotton (1946); Type MD: *Pat. unguis-almae* Lesson, 1830 (= *Pat. fragilis* Holten, 1802); Oliver (1926), Cotton (1946) restored the name *fragilis* Sow., 1820 (Mio-Rec)
- subg. *Notoacmea* Iredale 1915 (* as genus); as subg. of *Acm.* by Thiele (1929), Wenz (1938), Knight & al. (1960), Gol. & Kuss (1978); as subg. of *Collisella* by McLean (1966), Christiaens (1975, 1976); as genus by Oliver (1926), Cotton (1946), Kuroda & al. (1970), Ponder & Creese (1980); Lindberg (1986) kept this name for Australian and N.Z. spec. and transferred the eastern Pacific *Notoacmea* limpets to *Tectura*; Type OD: *Patelloida pileopsis* Q. & G., 1834
- = *Subacmea* Oliver, 1926 (* as subg. of *Notoacmea*); as syn. by Thiele (1929), Christiaens (1975); as subg. of *Acm.* by Wenz (1938); as genus by Cotton (1946); Type MD: *N. (S.) scopulina*
- = *Thalassacmea* Oliver, 1926 (* as subg. of *Notoacmea*); as syn. by Thiele (1929), Christiaens (1975); as subg. of *Acm.* by Wenz (1938); as genus by Cotton (1946); Type MD: *N. (T.) badia*
- subg. *Parvacmea* Iredale, 1915 (* as subgenus of *Notoacmea*); as syn. of *Notoacmea* by Thiele (1929); as subg. of *Acm.* by Wenz (1938); as genus by Cotton (1946); Type OD: *Acm. daedala* Suter, 1907
- = *Actinoleuca* Oliver, 1926 (* as genus); as sect. of *Notoacmea* by Thiele (1929); as subg. by Wenz (1938); as genus by Cotton (1946, 1959), Iredale & al. (1962); as syn. by Christiaens (1975); Type OD: *Pat. campbelli* Filhol, 1880
- = *Conacmea* Oliver, 1926 (* subg. of *Notoacmea*); as syn. of *Notoacmea* by Thiele (1929), of *Parvacmea* by Christiaens (1975); as genus by Cotton (1946, Iredale & al. (1962); as subg. by Wenz (1938); Type OD: *Acm. parviconoidea* Suter, 1907
- subg. *Testudinalia* Moskalev, 1966 (* as genus); Christiaens (1975) considered the publication in 1964 as n.nud.; Type OD: *Pat. "tessellata"* Müller, 1776, a name in error and emended by Müller (1779) to *tessulata* (= *testudinalis* Müller, 1776)
- SCURRIINI (tribe) Lindberg 1988 (= Scurriiden Thiem, 1917)
- Scurria* Gray, 1847 (* as genus in ? Tecturidae); as genus in Scutellidae by Paetel (1888); Type OD: *Pat. scurra* Lesson, 1830 (Lesson, 1841 by Anderson & al. (1964) and 1847 by Haber (1932); (= *zonata* Schubert & Wagner, 1829) (Trias-Rec)
- NB: + *Dietrichiella* and + *Hennocquia*, by Wenz (1938) in *Scurria*, are now in *Scurriopsis*
- Discurria* Lindberg, 1988, Type OD: *Pat. insessa* Hinds, 1842.

PATELLOIDINAE Chapman & Gabriel, 1923 (* as fam.); now accepted by Lindberg (1988); not Allan, 1950 as cited by Golikov & Kussakin, 1972; in *Acmaeidae* by Lindberg (1985), Vaught (1989)

Patelloida Quoy & Gaimard, 1834; as subg. of *Tectura* by Gray (1847) and of *Acm.* (with sect. *Collisellina*, *Chiaz-* and *Asteracmea*) by Thiele (1929); as *Patelloidea* Couthouy, 1839 (non Cantraine, 1835); (error pro *Patelloida*, teste Sherborn); Type: *P. rugosa*, SD Gray, 1847 (Cret-Rec); radula with 2 functional marginals; Christ. (1975) recognized the *profunda* group, further developed by Lindberg & Vermeij (1985).

= *Chiazacmea* Oliver, 1926 (* as genus); as sect. of *Patelloida* by Thiele (1929); as subg. of *Acm.* by Wenz (1938), Knight & al. (1960); as *Chiazacmea* by Finlay, 1926; as genus by Cotton (1959), Iredale & al. (1962), MacPherson & al. (1962), Higo (1973); as syn. by Christiaens (1976), Vaught (1989); Type OD: *Patelloida flammaea* Q. & G., 1834; as type by Ponder & al. (1980): "*flammaea* auct. = *Acmaea crucis* T. Woods, 1876"

Collisellina Dall, 1871 (Proc. Boston Soc. S.N. 14: 49); same year (Am. J. Conch. 6: 259) put in *Collisella* with these words: "Section B; with two uncini. (? *Collisellina*)" what was sufficient to Fischer (1885) to accept it as sect. of *Acm.* (*Collisella*); as sect. by Thiele (1929); as subg. of *Acm.* by Wenz (1938); as genus (?) in Scutellidae by Paetel (1888); as genus by Cotton (1959), Higo (1973); as syn. by Iredale (1915), Christiaens (1975), Vaught (1989); Type OD: *Pat. saccharina* L., 1758

subg. *Asteracmea* Oliver, 1926 (* as genus); as sect. of *Patelloida* by Thiele (1929); as subg. of *Acm.* by Wenz, Knight, Vaught; as subg. by Habe (1944), Christiaens (1975); as genus by Cotton (1946); Type OD: *Helcioniscus illibrata* Verco, 1906

Erginus Jeffreys, 1877; as syn. of *Tectura* by Thiele (1929), Wenz (1938), Christiaens (1976); as genus by the Nordic Code Centre; *Ergina* as syn. of *Pilidium* by Tryon (1883); Lindeberg (1988) redefined the status; Type OD: *Pat. rubella* Fabric., 1780

subg. *Problacmaea* Golikov & Kussakin, 1972 (* as genus in Tecturinae, but mentioned as fam. in the French and English abstracts); downgraded to subgenus by Lindberg (1988); Type OD: *P. moskalevi*

Niveotectura Habe, 1944 (* subg. of *Tectura*); as subg. of *Acm.* by Golikov & Scarlato (1966), Kuroda & al. (1971), Higo (1973) and of *Tectura* by Gol. & Kuss. (1978); as syn. of *Acm.* by Christ. (1976); as *Cell.* by Pilsbry (1891); derived from a Tertiary *Patelloida*, teste Lindberg (1988); Type MD: *Pat. pallida* Gould, 1859

Potamacmaea Peile, 1922; in brackish water; Type MD: *Sutura fluviatilis* Blanford, 1867; as *Tectura fluviatilis* Blanford, 1868, in the Zool. Rec.

RHODOPETALINAE Lindberg 1981 (Boreal Pacific)

Rhodopetala Dall, 1921 (* as sect. in *Acmaea*); as subg. of *Helcion* by Wenz (1938, with ?), Keen (1960), Treatise (1960), Vaught (1984); as subg. of *Ansates* by McLean (1966); as subg. of *Cell.* (on base of shell structure) by McClintock (1967); in Tecturidae with acmaeid radula by Golikov & Kuss. (1972) and as genus in 1974; Type MD: *Nacella (?) rosea* Dall, 1872, kept in *Pat. (Patina)* by Pilsbry (1891)

Suborder **ABRANCHIATA** Dall, 1871

(* in Docoglossa with Lepetidae as single fam.); called Abranchia by Fischer (1885)

= Lepetoidea, as suborder in Pateliformes, by Golikov & Starobogatov (1975)

LEPETOIDEA Gray, 1850, and **LEPETIDAE**

as superfam. (with Lepetidae and Propilidiidae) by Golikov & Starobogatov (1975), and with Dall, 1869 as author; the fam. is by Gray, 1850 (in M.E. Gray, Figures of Moll. Animals, IV: 93); as authors: Gray, 1857 by Moskalev (1977); Dall, 1882 (year

- of *Lepetellinae* Dall) by Franc (1968); Dall, 1869, (year that Dall accepted *Lepeta* and *Pilidium*) in *Acmaeidae* by McLean (1985); as *Lepetidae* (= *Abranchia* = *Propilidiidae*) by Boss (1982) including: *Lepeta*, *Propilidium*, *lothia*, *Punctolepta* (lapsus pro *Punctolepta*)
- Lepeta* Gray 1842; the date 1840 is n.nud.; as 1842 cited by Grant & Gale (1931); Wenz (1938), Neave (1939), Nordsieck (1968, 1982), McPherson (1971); no spec. were cited, and Iredale (1913) gave SD Gray, 1847; as 1844 by Gray (1850); the first generic diagnosis is made by H. & A. Adams (1858) in which case *Cryptobranchia* Middendorff, 1851 should have priority; but there was no reaction; Dall (1871) included in *Lepeta* 3 subg.: *L.*, *Cryptobranchia* and *Pilidium* (only the first two in his monograph, 1870) and substituted in 1918 *Cryptobranchia* by *Cryptoctenidia*; Fischer (1885) included as sect.: *Cryptobranchia* (pars), *Pilidium* and as subg.: *Lepetella*; has as syn. *Propilidium*, *Pilidium* by Paetel (1888); Moskalev (1977) emended the diagnosis. I keep in this list *Lepeta* and *Cryptobranchia* separated. Type MD: *Pat. caeca* O.F. Muller, 1776 (emend. cae Lovén 1846 for Danish: blind-patellen), (Plio-Rec)
- lothia* Gray, 1849 (error typo. pro *Lothia fulva* Gray, 1833, cf. Sherborn, Index Anim: 3242); as date 1850 by Graham (1988); 1857 by Moskalev (1977); as author Forbes, 1849 by Neave (1939), Knight & al. (1960), Piani (1980), Bruschi & al. (1985), McLean (1985); Type: *Pat. fulva* O.F. Muller, 1776, SD. Gray, 1857; (Plio-Rec)
- = *Pilidium* Forbes & Hanley, 1849; Type: *Pat. fulva* Muller, 1776; no other spec. is named and I consider *fulva* as MD; the mention of *caeca* by Forbes (1849, in *Athenaeum*: 1018), belonging also "to the new genus *Pilidium*", where *Pilidium* is n.nud., does not count, the more as the authors F. & H. mentioned *caeca* in ? *Propilidium*; *Pilidium* (non Müller Joh. 1846, 1847) was longtime accepted by auctt. e.g.: as 2d genus of *Lepetidae* by Dall (1869); as sect. of *Lepeta* (non *Pilidium* Midd., 1851) with *L. fulva* as ex. by Fischer (1885); as subg. of *Lepeta* by Thiele (1929, with *lothia* as syn.), Pilsbry (1891), McLean (1966); as genus by Wenz (1938, with *Jothia* as syn.), Vaught (1984, different from *lothia* Gray, 1833)
- = *Scutellina* Gray; (not Gray, 1847 which is *Plesiothyreus*, cf. Christ., 1989); as syn. by Carp., 1856; as subg. in ? *Acmaea* by Fischer P. (1885) with as syn. *Scutella* Brod., 1834 and as author Gray, 1847; as genus in *Scutellidae* by Paetel (1888) with as syn.: *Scutella* Brod., *Pilidium* and as sect.: *Scutellina* Forbes, *Jothia* Forbes; *Scutellina* Chenu (non Gray) as syn. of *Pilidium* by Pilsbry (1891)
- = *Patelloida* Cantraine (non Q.G., 1834) by Adams H. & A. (1854), Paetel (1888) (Cantraine, 1835 wrote *Patelloidea*)
- = *Lepeta* (*lothia*) by McLean, 1966; as *Jothia* Gray, 1850 by Seagems
- Cryptobranchia* Middendorff, 1851; as sect. of *Lepeta* by Fischer (1885), auctt.; as subg. of *Lepeta* by Pilsbry (1895), Dall (1921), auctt.; as subg. of *Maoricrater* by Vaught (1989); as genus by Paetel (1888), McLean (1966), Moskalev (1977); Type: *Pat. caeca* var. *concentrica* Midd., 1847, SD. Dall, 1869, (Plio-Rec)
- = *Cryptoctenidia* Dall, 1918, (* as subg. of *Lepeta* and n.nov. pro *Cryptobranchia* Midd. 1851 (non Gray, 1821); Gray is a higher taxon, not preoccupying a genus name
- PROFILIDIINAE Thiele (in Troschel), 1892; as fam. in *Lepetoidea* by Golikov & Starobogatov (1975); not in Bruschi & al. (1985)
- Propilidium* Forbes & Hanley, 1849; the "new genus *Propilidium*" proposed for "*lothia ancyloides*" by Forbes (1849 in: *Athenaeum* N° 1145:1018) is n.nud.; Type MD: *Prop. ancyloide* Forbes, 1849 (1840); I wonder if "*ancyloide* Forbes" (in F. & H., 1849) was a lapsus, an emendation or a n.nov. for "*Patella* ? *ancyloides* Forbes, 1840" listed by F. & H. as syn., avoiding also the preoccupation by Sowerby, 1824.

I consider *ancyloide* as n.nov. for *ancyloides*, making also *exiguum* (Thompson, 1843) a syn.; this latter name is used by many authors, e.g. by the Nordic Code Centre where *Prop. exiguum* (Thompson, 1844) is mentioned, with as syn. "*ancyloide* Forbes, 1843"

= *Rostrisepta* Seguenza, 1866, (Plio); as syn. by Jeffer. (1877) and auctt.

Bathylepeta Moskalev, 1977, Type MD: *Bathylepta* (error) *laevis*.

Limalepeta Moskalev, 1977, Type MD: *Lepeta* (*Cryptoctenidia*) *lima* Dall, 1918 (Proc. USNM N° 54:233); as date of the type: 1919 by Zool. Rec. (1920), Mosk. (1977)

Maoricrater Dell, 1956; as subg. of *Cocculina* by Knight & al. (1960); as genus in Cocculinidae by Moskalev (1973); Type MD: *Notoacmea explorata* Dell, 1953 (Rec) (= *Cocculina tasmanica* Suter, 1913 (non Pilsbry, 1895); described as new by Habe (1958) with type *N. explorata* Dell, 1957

Sagamilepeta Okutani, 1987, Type MD: *Lepeta sagamiensis* Kuroda & Habe, 1971

Suborder LEPETOPSINA McLean, 1990

? suborder "Hot-vent group-C" by Haszprunar (1988); Fretter (1990) mentioned Lepetopsina correctly in the title of the anatomical study of the neolepetopsid limpets but used also Neolepetopsina (as suborder) in the text

LEPETOPSOIDEA McLean, 1990 (Patellogastropods with articulating radular teeth) with late Palaeozoic to early Mesozoic LEPETOPSIDAE

+ *Lepetopsis* Whitfield, 1882; in 1883 de Koninck already included 17 spec. from the Carboniferous; in Cocculinidae by Fischer P. (1885); as syn. of *Palaeacmaea* by Barrois (1889); in Metoptomatidae by Wenz (1938), Yochelson (1960) who said that later investigation can perhaps refer it to Patellida; Type MD: *Pat. levettei* White, 1882 (see Whitfield p.68, with on p.67: "Type *L. Levitte*"); as *levetti* by Knight (1944), (Sil-Perm)

NEOLEPETOPSIDAE McLean, 1990; from hydrothermal vents

= "symmetrical" limpets of McLean (1985)

= Radula Hot-vent Group C of Hickman (1983)

Neolepetopsis McLean, 1990, (with 4 spec.) Type OD: *N. gordensis*

Eulepetopsis McLean, 1990, Type MD: *E. vitrea*

Paralepetopsis McLean, 1990, Type MD: *P. floridensis*

Order ARCHAEOGASTROPODA Thiele 1925.

= Scutibranchia Cuvier, 1817; as author Schweigger, 1820 by Franc (1968); as suborder by Desh., 1830, and even as subclass by others; not Blv., 1825 who included Otidea and Calyptracea; the name Scutibranchiata is often used, e.g. Rochebrune, 1881

Pectinobranchia Cuvier, 1817 (in pars), cf. Salvini

= *Aspidobranchia* Schweigger, 1820, extent. Pelseneer, 1893; as *Aspidobranchiata* by e.g. Rüppel & al. (1828); as suborder by Keferstein (1862) with Fissurellidae, Haliotidae, Pleurotomaridae, Trochidae, Neritidae; Rusconi (1952) added Palaeacmaeidae (now in Monoplacophora)

= Diotocardia Mörch, 1865; as order in subclass Streptoneura by Vatova (1974) with Archaeogastropoda as syn. and including Trochoidea and Cocculinoidea

In the stirps Zeugobranchia of this order, Thiele (1929) included Pleurotomariidae, Haliotidae, Scissurellidae (*Sc.*, *Schismope*, *Incisura*) and Fissurellidae. Cox & Knight (1960) introduced 7 suborders of which 5 new. Cox "explicitly cautioned that the Thiele-Wenz subdivision merely brought together groups that had attained the same evolutionary grade" (cf. Hickman, 1988). All these suborders are based on the name of typical genera and not on anatomical conditions, which for extinct species can not be

confirmed. Taylor & Sohl (1962) listed 21 superfamilies of which only 15 have fossils. Franc (1968) divided this order into 5 superfamilies: Pleurotomarioidea (including Haliotidae, Scissurellidae, Fissurellidae), Patelloidea (= Docoglossa), Troichoidea, Neritoidea and Cocculinoidea. Boss (1982) and many other authors separate Fissurelloidea as a sixth superfamily to which Vaught (1989) added: Neomphaloidea, Lepetelloidea, Seguenzioidae, Hydrocenoidea and Helicinoidea. Golikov & Star. (1975) regarded the order Docoglossa in the Cyclobranchia, another subclass as that of the limpets given below. Salvini-Plawen (1980) included Vetigastropoda, Docoglossa and Neritopsina. Lindberg (1986) separated the traditional Docoglossa from the Archaeogastropoda and named that order Patellogastropoda, including the Patelloidea, Nacelloidea and Acmaeoidea. Hickman (1988) restricted the archaeogastropod superfamilies to the vetigastropods. McLean (1990) followed Haszprunar (1988) "in a philosophy of classification that allows Archaeogastropoda to be expressly indicated in the classification as an orthophyletic grade and Patellogastropoda as a clade" and he included the last clade as order in the superorder Archaeogastropoda. Haszprunar (1988) considered Cocculiniformia, Neritimorpha and possibly hot-vent group A, a distinct radiations in Archaeogastropoda. I include in this order, name particularly acceptable to palaeontologists, many suborders, more than Hickman did, and keep it separated from the order Docoglossa (= Patellogastropoda). However, it is noteworthy that Hickman (1989) and Hickman & McLean (1990) restricted the sense of Archaeogastropoda and only included 3 superfamilies: "Pleurotomariacea, Fissurellacea and Trochacea".

Suborder **NEOMPHALINA** McLean, 1990

The Galapagos rift limpet *Neomphalus* was put in the Euomphalina by McLean (1981), a suborder including the Paleozoic Euomphaloidea and the Neomphaloidea. Batten (1984) contradicted a relationship between both with respect to shell structure and remarked a closer relationship with certain Calyptrioidea. Salvini-Plawen & Haszprunar (1987) also separated them and considered the family Neomphalidae, incertae sedis, as an offshoot of the Vetigastropoda. Euomphaloidea de Koninck, 1881, not considered as patelliform, was put by Wenz (1938) behind the Fissurelloidea (in Archaeogastropoda) and put by Golikov & Starobogatov (1989) in a new suborder Euomphaloidei (in Scutibranchia: Trochonematiformes). Cox & Knight (1960) united Euomphaloidea and Macluritoidea in their new suborder Macluritina, followed (and put at a higher level) by Golikov & Starobogatov (1975). The same year Starobogatov, this time as coauthor of Minichev, put Macluritida (with Macluritidae, Ecculiomphalidae and Pelagiellidae) in a new subclass Divasibranchia. Bändel (1988) ascertained that many of the genera considered in Euomphaloidea, belong to other groups. Yochelson (1987, in McGraw-Hill, Encycl. 7:589) drew Euomphalacea as offshoot of Bellerophonacea, and finally McLean (1990) separated Neomphaloidea from Euomphalina, where he had placed it in 1981, and elevated it now to suborder.

NEOMPHALOIDEA McLean, 1981, and **NEOMPHALIDAE**

from Galapagos Rift, hydrothermal vents; anatomy by Fretter & al. (1981) who passed them from archaeo- to mesogastropod grade; in the order Vivipariformes by Sitnikova & Star. (1983); shell structure near to Calyptraeidea by Batten (1984).

I mention but not list Cyathermiidae McLean, 1990, with the genera *Cyathermia* and *Lacunoides* Warén & Bouchet, 1989, and having an operculum.

Neomphalus McLean, 1981, Type MD: *N. fretterae* McLean, 1981; as the most highly specialized genus by Fretter (1990)

Symmetromphalus McLean, 1990, Type MD: *S. regularis*

PELTOSPIROIDEA McLean, 1989.

- = Radula hot-vent group-A of Hickman, 1983, 1988;
- = the "tapersnout" hydrothermal-vent limpets of McLean (1985), with four later types, named as follows: "Opercular, Tube-spine, Haliotiform and Half-node tapersnout limpet"; Haszprunar (1988) mentioned superfam. "Hot-vent group A" (Melanodrymia) ? in Neritimorpha; anatomy studied by Fretter (1989) ; the fam Peltospiridae McLean, 1989 is not patelliform, sometimes with operculum but is mentioned while called tapersnout limpets; in Neomphaloidea by Warén & Bouchet
- Peltospira* McLean, 1989, (with 3 spec.) Type OD: *P. operculata*
- Depressigyra* Warén & Bouchet, 1989, (with 2 spec.), Type OD: *D. globulus*
- Echinopelta* McLean, 1989 (= Tube-spine McLean, 1985), Type MD: *E. fistulosa*
- Hirtopelta* McLean, 1989 (* perhaps at family level);
- = *Haliotiform* McLean, 1985 Type MD: *H. hirta*
- Lirapex* Warén & Bouchet, 1989, (with 2 spec.), Type OD: *L. humata*
- Melanodrymia* Hickman, 1984; radula trochacean condition; not a true peltospirid, perhaps in Trochoidea; Type MD: *M. aurantiaca*
- Nodopelta* McLean, 1989, (with 2 spec.); = Half-node McL., 1985), Type OD: *N. heminoda*
- Pachydermia* Warén & Bouchet, 1989, Type MD: *P. laevis*
- Rhynchopelta* McLean, 1989, Type MD: *R. concentrica*
- Solutigyra* Warén & Bouchet, 1989 (* perhaps at family level), Type MD: *S. reticulata*

Suborder **VETIGASTROPODA** Salvini-Plawén 1980 (sensu 1987)

- = Calyptrea Lamarck (pars), with *Fiss.*, *Emarg.*, *Rimula*, *Cemoria*
 - = Scutibranchia Cuvier, 1817, name partially replaced by Aspidobranchia Schweigger, 1820 (see above, as syn. of the order)
 - = Dicranobranchia Gray, 1821; as order in subclass Scutibranchia, including Bellerophonitoidea and Fissurelloidea, by Golikov & Star. (1975)
 - = Branchifera Blainville, 1825; 2nd fam. in Cervicobranchiata with *Fiss.*, *Emarg.*, *Parmophorus*; Catlow (1845) included "Fissuracea" (with *Lottia*, *Mouretia*, *Siph.*, *Parmophorus*, *Emarg. Fiss.*) and "Capulacea" (*Crep.*, *Cal.*, *Hipp.*, *Pileopsis*)
 - = Zeugobranchia Von Ihering, 1876 (pars); as Zygobranchia by Spengel (1881), Gol. & Scarlato (1967); as Zygobranchiata in Rhipidoglossa by Coen (1933); order uniting Fissurellidae, Pleurotomariidae and Haliotidae, the latter elevated in rank by Golikov & Star., 1975 and followed by McLean (1984); as stirps in Archaeogastropoda by Thiele (1929)
 - = Fissobranchia Stoliczka, 1868; as Fissibranchiata, Stol. by Cox & Knight (1960); as order by Golikov & Scarlato (1967) in the subclass Zygobranchia, including Fissurellidae; as order by Gol. & Star. (1975) including Pleurotomarioidea Swainson, 1840 Haliotoidea Raf., 1815, Rhapsistomatoidea Koken, 1896, and Murchisonioidea Koken, 1896
 - = Pleurotomariina Cox & Knight, 1960 (in pars); suborder for Pleurotomarioidea, Haliotoidea, Fissurelloidea; kept as superfamily (see below)
 - = Trochina Cox & Knight, 1960 (in pars); suborder for Trochoidea and other fam.; not by Salvini & Haszprunar (1987), nor here as shown below
- Vetigastropoda, created to unite zeugobranch and trochoid archaeogastropods, included the + Macluritoidea, Pleurotomarioidea, Cocculinoidea, Trochoidea, Fissurelloidea and Murchisonioidea. The fact of adding the Trochoidea to the Zeugobranchia was sufficient for Salvini to extend the sense of Zeugobranchia and to change the name. In 1987 Salvini & Haszprunar restricted this suborder to the superfam. Fissurelloidea, Pleurotomarioidea (both in Pleurotomariina) and Trochoidea.

In 1988 Haszprunar included the Lepetodriloidea McLean, 1988. A year later he removed the Scissurellidae from the Pleurotomarioidea s.s., and erected them to superfamily in the Vetigastropoda

SCISSURELLOIDEA Gray, 1847 (1952)

(* as fam. in Pleurotomarioidea Swainson, 1840, together with Fissurellidae and Haliotidae; elevated to superfamilial level by Glibert (1952), Haszprunar (1989, with justification), McLean (1989, in Vetigastropoda); Pleurotomariina, created as suborder by Cox & Knight (1960), has not always been accepted, and certainly not by Salvini-Plawen who created the suborder Vetigastropoda and who placed in that phylogram the Pleurotomarioidea between the Fissurelloidea and Trochoidea; Taylor & Sohl (1962) put in Pleurotomariacea the Scissurellidae, Pleurotomariidae, Haliotidae and 20 fossil families; Bourne (1910) considered Scissurellidae as distinct from Pleurotomariidae, while Graham (1988) kept it in "Pleurotomariacea"

= Zeugobranchia von Ihering, 1876 (in pars); Thiele (1929) included here the scissurellids as family

SCISSURELLIDAE Gray, 1847, and **SCISSURELLINAE**

as Gray approached them to *Emarg.* and while called in English the "slit-limpets" I give shortly the main genera but I don't consider them all as patelliform; *Scissurella* was placed in the Stomatellidae by A. Adams (1850)

Scissurella d'Orbigny, 1824; as date 1823 by Finlay (1928), auct.; Type: *S. laevigata* SD Gray, 1847

= *Schismope* Jeffreys, 1856; as date 1859 by Nordsieck (1982); as syn. by Adams (1862, with query), Herbert (1986); as full genus by Finlay (1926), Thiele (1929), Macpherson (1958), Cotton (1959), Powell (1962), Franc (1968), Cernohorsky (1972); Type MD: *Scissurella striatula* Philippi, 1844; as other type *cingulata* Costa by Powell (1962), Iredale & al. (1962)

= *Woodwardia* Crosse & Fischer, 1861; as syn. of *Schismope* by Thiele (1929), of *Scissurella* by Herbert (1986); as genus by Beltran (1965), Nordsieck (1968), Ghisotti & Melone (1969); Type MD: *elegans* Woodward, 1860 (non d'Orb.) (= *cingulata* O.G. Costa)

Incisura Hedley, 1904 (* in Fissurellidae); transferred by McLean (1989) into Sciss.; Type MD: *Scissurella lytteltonensis* Smith, 1894

Scissurona Iredale, 1924 (* as genus); as subg. only by Wenz (1938); Type OD: *Scissurella rosea* Hedley, 1904

Sinezona Finlay, 1926; as syn. of *Schismope* by Thiele (1929), Piani (1981); as genus by Yaron (1983), Burnay & Rolan (1990); Type OD: *Schismope brevis* Hedley, 1904

= *Yonadoda* Bartsch, 1946; as syn. by McLean (1967, Herbert (1986); Type OD: *C. simonsae* (= *rimuloides* Carpenter, 1865)

SCHIZOTROCHINAE Iredale & McMichael, 1962 (* as fam.); as **ANATOMINAE** by McLean, 1990

Anatoma Woodward, 1859; as syn. of *Scissurella* by Woodward (1868, with mention *Anatomus* Montfort, 1810), Thiele (1929) and as subg. by Keen (1960), McLean (1970), Abbott (1974), Yaron (1983), Herbert (1986); as genus by Habe & Kosuga (1964), Powell (1979), Herbert (1986); Type MD: *Scissurella crispata* Fleming, 1828; as other type: *lyra* (Berry, 1947)

= *Schizotrochus* Monterosato, 1884 (* as genus); as date 1877 by Neave (1940), Azuma (1960); as genus by Finlay (1926), Powell (1962), Cotton (1959); as syn. by Herbert (1986), Vaught (1989); Type MD: *Scissurella crispata* Fleming, 1823 (as date: 1828 by Herbert (1986), and 1832 by Cotton (1959)

Sukashitrochus Habe & Kosuge, 1964; Type OD: *Scissurella carinata* A. Adams, 1862

SUTILIZONINAE McLean, 1989 (from deep-sea hydrothermal vents, with closed slit)

Sutilizona McLean, 1989, Type MD: *S. theca*

EMNOCINCLINAE McLean, 1989 (from deep-sea hydrothermal vents, with open slit)

Emnocioclis McLean, 1989, Type MD: *T. euripes*

Temnozaga McLean, 1989, Type MD: *T. parilis*

FISSURELLOIDEA Fleming, 1822

as fam. in superfam. Pleurotomariacea by e.g. Janus (1961); as superfam., separated from Pleurotomarioidea by Taylor & Sohl (1962); Hemitoma extracted from this superfam. by Cox (1960); McLean (1984, Malac. 25(1):3) favored for derivation from the Bellerophonacea whose type-genus *Bellerophon* was included in the Fissurellidae by de Koninck (1873) (hypothesis not upheld by Salvini-Plawen & Haszprunar, 1987); Golikov & Starobogatov (1989) created the new suborder Fissurelloidei (in Pleurotomariiformes) with the fam.: Raphistomatidae Konen, 1896 (excl. Omospiridae Wenz, 1938), Gosseletinidae Wenz, 1938, Portlockiellidae Batten, 1956, Catantostomatidae Wenz, 1938, Porcelliidae Broili, 1924, Polytremaniidae Wenz, 1938, Zygitidae Cox, 1960, and the 4 better known groups as fam.: Scissurellidae, Emarginulidae, Hemitomidae, Fissurellidae.

= "Les patelloides" Férussac, 1819 (pars); name used by Rang (1929), auctt.; not sensu Blainville, 1825; fam. including e.g. *Emarg.*, *Fiss.* by Potiez & Michaud (1838)

= Calyptracea (pars) Sowerby G.B. II, 1842, 1852, including the genera: *Parmophorus*, *Emarg.*, *Siph.*, *Fiss.*, *Pileopsis*, *Cal.*, *Crep.*, *Ancylus*, *Cap.*, *Rimula*

FISSURELLIDAE Fleming, 1822 (= Keyhole limpets)

as author Risso, 1826 by Deshayes (1864), Schepman (1908), Cossmann & Peyrot (1915), Cerulli (1916), Zuniga (1951, who treated 27 *Fiss.* from Chile), Silva da Costa (1990); as author d'Orbigny by Alder (1844), De Ryckholdt (1897); as Fissurelladae by Leach, 1852 (in Gray); was long time in Pleurotomariina till Parker (1982) and Boss (1982) extracted it; Anton (1839) placed *Fiss.* and *Emarg.* in the Rimulacea; de Koninck (1873) included *Bellerophon*; Tryon (1883) retained 6 genera: *Fiss.*, *Rimula*, *Emarg.*, *Parmophorus*, *Cocc.* and *Addisonia*; Thiele (1925, 1929) placed the fam. in Zeugobranchia and subdivided it into 2 subfam.: Emarginulinae (*Zeidora*, *Emarg.*, *Scutus*, *Hemitoma*, *Clypidina*, *Rimula*, *Punct.*, *Rixa*, *Diodora*, *Lucapina*, *Fissurellidea*) and Fissurellinae (*Fiss.*, *Macroschisma*); Ghisotti & Melone (1969) included the subfam. Emarginulinae, Diodorinae and Fissurellinae, in the superfam. "Pleurotomariacea"; Christiaens (1973) retained 4 subfam.: Emarginulinae (with *Emarg.*, *Hemitoma*, *Clypidina*, *Punct.*, *Rimula*, *Zeidora*, *Tugali*, *Emarginella*), Fissurellinae (with *Fiss.* and *Diodora*), Fissurellidinae (with *Lucapina*, *Monodilepas*, *Lucapinella*, *Leurolepas*, *Amblychilepas*, *Macroschisma*, *Fissurellidea*) and Scutinae; McLean (1984, 1986) recognized the two first, to which Boss (1982) added the Diodorinae. I list here Emarginulidae as fam. with Hemitominae as subfam.

FISSURELLINAE Fleming, 1822; perforated cap-like shell, rounded interior callus, rachidian tooth of radula with broad base, narrow tip and quadricuspid lateral

Fissurella Bruguière, 1789; as date 1791 by Pilsbry (1890); 1798 by Wenz (1938), Franc (1968); Bruguière cited no species, is considered as n.nud. by Iredale (1915) but is accepted by other authors, not by Clench (1943) claiming that Lamarck, 1799 is the author; Lam., 1799 also by Dell (1971); as subg. of *Patella* by Cuvier (1800); Type by subsequent monotypy in Lamarck, 1799: *Pat. nimbosa* L., 1758 (not as SD Lam.); other types are: *Fiss. radiata* Lam. by Montfort (1810); *Pat. barbadensis* Gmel. MD in first sect. by Schumacher (1817); *Pat. graeca* L. by Blainville (1825); *Pat. picta*

- Gmel. by Tryon (1883), Pilsbry (1890), Thiele (1929); *Fiss. crassa* Lam. by Dautz. & Fischer (1925); placed by Bruguière in begin of the classification of Mollusca, together with *Patella*; (Olig-Rec)
- = *Lepas* (Dasan) Adanson, 1757
- = *Fissurelligenus* Renier (1804) Tavole, VIII; *F.+ circularis* Zittel as typical for the Jura, by Dacqué (1933)
- = *Fissurellus* Montfort, 1810; Type: *F. radiatus* Lam. teste Wenz (1938)
- = *Caminata* Fabr., teste Paetel, 1888
- = *Serra* Lesson, teste Paetel, 1888
- = *Balboaina* Farfante, 1943; as syn. by McLean (1984) and with a query by Vaught (1989); as subg. by Lindner (1984), Type OD: *Pat. picta* Gmel., 1791
- = *Carcelllesia* Farfante, 1952 (* as subg. of *Fiss.*); possible syn. or sect. of *Balboaina* by Christ. (1973); as subg. by Lindner (1984); Type MD: *Fiss. (C.) doellojuradoi*; (= *F. (Fiss.) oriens* Sow., 1835 by McLean, 1984)
- = *Corrina* Christ. 1973, Type OD: *Fiss. (C.) alba* Phil., 1845; is a scarce white *F. (F. oriens* by McLean (1984); as syn. of *Fiss.* by Vaught (1989)
- subg. *Clypidella* Swainson, 1840 (* as subg. of *Fiss.* with single spec. *pustula* Sow.) as *Clypsidella* (lapsus) Swains., 1840 by Gray, 1847; Type MD: "*Fiss. pustula* Sow." ; as author Lam. 1822, by Pilsbry (1890); = *Pat. pustula* Gmel., 1791 (pars, non L.); = *Fiss. punctata* Fisch., 1857, accepted by Farfante (1943); = *Fiss. pustulata* Lam. by Tryon (1883), Wenz (1938)
- subg. *Cremitides* H. & A. Adams, 1854; as sect. of *Fiss.* by Pilsbry (1890, 1891), Christiaens (1973); Type: *F. alabastrites* Rve, 1849, SD Cossm. & Peyrot, 1917; as type *barbadensis* by Wenz (1938), auct.; as type *F. (C.) nodosa* by Tryon (1883)
- Amblychilepas* Pilsbry, 1890 (* as sect. of *Megatebennus* in Fissurellidinae); as subg. of *Fiss.* by Thiele (1929), Type OD: *Fiss. trapezina* Sow, 1835 (= *Fiss javanicensis* Lam., 1822) (Cotton, 1959, not in 1945, gave Sow., 1834)
- = *Sophismalepas* Iredale, 1924 (* as genus); as genus by Cotton, 1945; as syn. by Thiele (1929), Wenz (1938), Ludbrook (1956), MacPherson & al. (1962); as genus by Iredale & McMichael (1962); body much longer than saddle-shaped shell with oval central foramen; Type OD: *Fiss. nigrita* Sow., 1835 (spec. in 1924 in *Lucapinella*)
- Dendrofissurella* McLean & Kilburn, 1986; animal with dendritic propodium; Type OD: *Pat. scutellum* Gmel., 1791
- Macrochisma* (Gray ms.) Sow. 1839; based on *Fiss. macroschisma* figured by Humphrey; not Sow. 1835 (= n. nud.); not Gray, 1840 (= n. nud. teste Sherborn); emend. Agassiz, (1846) pro "*Macrochisma* Gray, 1840"; as subg. of *Fiss.* by Fischer P. (1885); body much longer than shell with posterior elongate foramen; Type MD: "*Patella* named *macroschisma*" Humphrey, 1786 (Portland Cat., generally accepted as valid); as other authors of the type: Dillwyn, 1817 (by Higo) and often Sowerby; as other type: *M. maxima* A. Ad. by Tryon (1883), Wenz (1943, not type MD: *M. hiantulum* Sws., as cited by Wenz in 1938), Cotton, 1945; as *Macrochisma* Sws., 1840 by auctt.
- = *Macrochisma* Gray, 1840 (* as subg. of *Fiss.*); based on the renamed fig. of *Fiss. macroschisma* Sow., 1823 (having erroneously *Fiss. hiantula* as syn. by Sow.); name used by A. Adams (1850), Paetel (1888), Thiele (1929), Wenz (1938, not 1943), Tomlin (1931), Franc (1968); Type MD: *M. hiantula*
- = *Larva* Humphrey, 1797 (Mus. Calon.) (rejected Opinion 51), Type: *Pat. macroschisma* in: Cat. Portland Mus., 1786; as other type: *L. larva* by Gray (1847)

- subg. *Dolichoschisma* Iredale, 1940 (* as genus); as syn. by MacPherson & al. (1962) with Adams 1850 for the type; Type OD: *M.producta* A.Adams, 1854
- subg. *Foralepas* Iredale, 1940 (* as genus); as *Forolepas* (error) by Iredale & al. (1962); as genus by Cotton (1945, 1959), Vaught (1984); as syn. by MacPherson & al. (1962); Type OD: *Emarg. tasmaniae* Sow., 1863
- Medusafissurella* McLean & Kilburn, 1986; body, nearly covered by shell, has numerous propodial subequal tentacles; Type OD: *Fiss.salebrosa* Rve, 1850
- DIODORINAE Wenz, 1938; as author Odhner, 1932 by Franc (1968), Tadjali-Pour (1974); by reason of the large central radula-tooth often in Fissurellidinae (e.g. Keen & McLean, 1971); McLean, 1984, included in the tribe Diodorini some large-bodied genera: *Megathura*, *Cosmetalepas*, *Monodilepas*, (Jur-Rec)
- Diodora* Gray 1821, sensu Iredale, 1915; not "*Diadora* Gray, 1821" in Gray (1847) nor Blainville (1825) which are *Punct.*; *Diadora*, still used by Dall (1927), Aguayo & Rehder (1936), Burch (March 1946), results from an error and is not an unjustified emendation as mentioned by Keen (1971); Type MD: *Pat.apertura* Montagu, 1803; = *Pat.graeca* auct. (non L., 1758); = *D.reticulata* (Récluz, 1843)
- = *Glyphis* Carpenter, 1856 (* = *Lucapina* H. & A. Ad., *maxima*, pars, non Gray) (non Agassiz, 1843, nec R.W. Gibbes, 1848); as date 1857 by Thiele (1929), Neave (1939), auctt.; as sect. of *Fiss.* by Fischer P. (1885); as subg. of *Lucapina* by Angas (1867); as genus by Dautz. & Fischer (1896), Smith (1901, 1910, 1914); as syn. of *Capiluna* by Harris & Burrow (1891)
- = *Capiluna* Gray, 1857; as valid name by Cossmann (1891), Dautzenberg (1927); as subg. of *Fiss.* by Dautz. & Fischer (1925) with *graeca* as type and *Glyphis* as syn.; as *Capulina* (error) by Newton (1900); Type : *D.cuvieri* Gray M.E., 1850
- subg. + *Atractotrema* Cossmann, 1888 (* as sect. in *Glyphis*), Type MD: *Fiss. grata* Deshayes, 1861 (Eoc)
- subg. *Austroglyphis* Cotton & Godfrey, 1934 (* as genus), Type: *D.lincolnensis* Cotton, 1930 (= Rve, 1849) (perhaps syn. of *Elegidion*, cf. Christ., 1974)
- subg. *Elegidion* Iredale 1924 (* as genus); as sect. by Thiele (1931); as genus by Higo (1973), auctt.; as *Eligidion* (error) by Cotton (1959); Type MD: *E.audax*
- subg. *Fissuridea* Swainson, 1840 (* as subgenus of *Fiss.* with a single spec.); as sect. of *Fiss.* by Fischer P. (1885), Paetel (1888); as subg. of *Fiss.* by Pilsbry (1890) and of *Diodora* the year later; as syn. by Thiele, Wenz, and of *Fiss.* by Dacqué (1933); as *Fissurillea* Sws (lapsus) by Gray (1847); as genus by Tomlin (1932); Type MD: "*T.pileus* Sw." (= *Pat.galeata* Helbling, 1779); as other type: *pileopsoides* Rve by Tryon (1883); many American tertiary fossils are in this taxon
- Megathura* (Nuttall ms) Pilsbry 1890 (* n. nov. pro *Lucapina* Gray, 1857 (non Sow., 1835, which is in Fissurellidinae); as author "Nuttall in Pilsbry" by Clark & al. (1923); as subg. of *Lucapina* by Thiele (1929), Christiaens (1973); named *Lucapina* by Tryon (1883), Arnold (cf. Burch, 1946); Type MD: *M.californica* (Nuttall ms.) (= *Fiss. crenulata* Sowerby G.B., 1825) (Plio-Rec)
- = *Lucapina* Gray, 1857 (non Sow., 1835)
- = *Macrochasma* Dall, 1915; as syn. since Iredale (1917)
- + *Pseudofissurella* (ex Haber, 1932, n. nud.) Dacqué, 1933; as author Haber by Wenz (1938); Type OD (ex Haber): *Fiss. corallensis* Buvignier, 1852 (Jura)
- Stromboli* Berry 1954 (* near *Megathura*); as date 1953 by Vaught (1984); as subg. of *Lucapina* by Christ. (1973); Type MD: *Fiss.beebei* Hertlein & Strong, 1951
- CLYPEOSECTIDAE McLean, 1989 (slit limpets from deep-sea hydrothermal vents; anatomy by Haszprunar (1989)
- Clypeosectus* McLean, 1989, Type OD: *C.delectus* (with asymmetrical open slit)

Pseudorimula McLean, 1989, Type MD: *P. marianae* (with closed slit, cf. *Rimula*)

EMARGINULIDAE Gray, 1834, (vernacular name: Slit-limpets); in order Dicranobranchia, subcl. Scutibranchia, by Golikov & Star. (1975), Gol. & Kussakin (1978); as fam. by Batten (1975); as subfam. in Fissurellidae by Piani (1980), McLean (1984), Bruschi & al. (1985), Vaught (1989), Da Silva (1990)

EMARGINULINAE Gray, 1834; as author Leach, 1852 by Nordsieck (1982), Franc (1968) NB: Leach in Gray, 1852, gave Emarginuladae in Aspidobranchia; this group is subdivided in tribes by McLean & Kilb. (1983)

Emarginula Lamarck, 1801; with 3 sect: *Emarg.*, *Subemarginula* (= *Hemitoma*, *Montfortia*) and *Cypidina* Gray (sic) by Paetel (1888); as *Emarginulus* Montfort, 1810, type *reticulatus*; as *Imarginula* by Gray, 1821; Type MD: *E. conica* (= *Pat. fissura* L., 1758 (in pars), name retained by e.g. Dautz. & Fischer, 1925), (Jura-Rec)

= *Palmarium* Montfort, 1810 (teste Paetel, 1888)

subg. + *Altmarginula* (ex Haber, 1932, n.nud.) Dacqué, 1933; as author Haber by Wenz (1938); Type MD (ex Haber): *Emarg. desnoyersi* Eudes-Desl., 1842 (Jura)

subg. + *Arginula* Palmer, 1937 (* as sect.), Type MD: *Emarg. arata* Conrad, 1833 (Eoc); as other type: *E. (Tauschia) paronai* Haber 1932, n.nov. pro *Emarg.* sp. Parona, 1883

subg. + *Entomella* Cossmann, 1888 (* as sect.; id. 1902); as genus by Janssen (1984); non Cotton, 1945 (= *Notomella*, cf. below); Type: *Emarg. clypeata* Lam, 1803 (Eoc)

subg. *Notomella* Cotton 1957 (* n.nov. pro *Entomella* Cotton, 1945 (non Cossm., 1888); as genus by Iredale & al. (1962), Lindner (1984)

= *Entomella* Cotton, 1945 (* as genus), Type OD: *Emarg. candida* A. Adams, 1851

subg. *Semperia* Crosse 1867 (* as genus in Fissurellidae, near to *Emarg.*); as subg. in *Emarg.* by Fischer P. (1885), Cossmann & Peyrot (1915), forming passage to *Rimula*, where Cossmann (1902) put it as sect.; as ? subg. of *Emarg.* by Wenz (1938); as syn. by Pilsbry (1891), Thiele (1929); as *Semparia* by Satyamurti (1952) Type OD: *S. paivana* (* single spec. named by Crosse, but I don't consider it here as MD while Crosse added this obscure statement: "2 espèces, déjà antérieurement connues, nous paraissent devoir y être comprises" (Eoc-Rec)

subg. *Subzeidora* Iredale, 1924 (* as genus); as genus by Cotton (1945), Iredale & al. (1962), Conchiglie (1965); Type OD: *Emarg. connectens* Thiele, 1915

subg. + *Tauschia* (ex Haber, 1932, n.nud.) Dacqué, 1933; as author Haber by Wenz (1938); as genus by Squires (1987); Type OD (ex Haber): *Emarg. orthogonia* Tausch, 1890

+ *Austriacopsis* (ex Haber 1932, n.nud.) Dacqué, 1933; as author Haber by Wenz (1938); as *Austracopsis* (error) by Kilburn (1978); Type OD (ex Haber): *Rimula austriaca* Hornes (in Hauer), 1853; as author Hoern. in Stoliczka, 1861, by Dacqué; (Jura)

subg. + *Puncturellopsis* (ex Haber, 1932, n.nud.) Dacqué, 1933; as author Haber by Wenz, (1938); Type OD (ex Haber): *Fiss. acuta* Eudes-Deslongchamps, 1842 (1843 by Cox, 1950) (= + *Orbicula granulata* J. de C. Sowerby, 1826) (Jura)

subg. + *Balinula* (ex Haber, 1932, n.nud.) Dacqué, 1933; as ? subg. with Haber as author by Wenz (1938); Type OD (ex Haber): *Emarg. triontina* Greco, 1899 (Jura)

Clypidina Gray, 1847 (* subg. of *Emarg.*); as sect. of *Emarg. (Subemarginula)* by Fischer (1885), Pilsbry (1891); as *Cypidina* (error), sect. of *Emarg.*, by Paetel (1888); closely related to *Hemitoma* by Herbert (1987); Type MD: *Pat. notata* L., 1758

subg. *Montfortula* Iredale, 1915 (* as genus but "quite probable" as subg. of *Emarg.*, entirely different from *Clypidina*); as genus by Finlay (1926), auct.; as genus in *Hemitominae* by Kuroda & al. (1971), Higo (1973); as subg. of *Hemitoma* by Crees (1980) and in 1981 as subg. of *Clypidina*; Type OD: *Emarg. rugosa* Q. & G., 1834

- = *Plagiorhysis* Fischer P., 1885 (non Chaudoir, 1848); (* as section of *Subemarg.* in *Emarg.*); as sect. by Pilsbry, (1891), Cossmann & al. (1915); as syn. of *C.(M.)* by Thiele (1929), Wenz (1938); Type OD: *Clypidina stellata* A. Adams, 1851
- subg. *Montfortulana* Habe, 1961; as genus in Hemitominae by Higo (1973) with ex. *eurythma* (Dautz., 1908)
- Emarginella* Pilsbry, 1891 (* as sect. of *Emarg.*); as subg. of *Emarg.* by Thiele (1891, 1929); as genus by Wenz (1938), Kilburn (1978, with Pilsbry, 1890); Type MD: *Emarg. cuvieri* Audouin, 1826
- + *Emersonia* (ex Haber, 1932, n. nud.) Dacqué, 1933 (* in Calyptraeidae ?); as Haber by Wenz (1938); Type OD (ex Haber): *Cemoria + costata* Emerson, 1870 (Jura)
- Fissurisepta* Seguenza 1862 (see also Ruhoff, 1980); as date 1863 by Neave (1939), auctt.; as sect. or subg. of *Puncturella* by e.g. Fischer (1885), Pilsbry, Thiele, Wenz, Woodring (1928), Palmer (1942), Okutani (1964, not 1968), Lindner (1984); as genus by Dautz. & Fischer (1886), Crozier (1966), Kuroda & al. (1971), Warén (1972), Ghisotti & Giannini (1983) who reviewed this genus; as *Fissurisepta* (lapsus) by Weinkauff (1871); as *Fissurisepta* (lapsus) by Galindo (1968); Type: *F. papillosa* (not sensu Jeffreys, 1870, which is *F. granulosa* Jeffr., 1882) SD: Woodring, 1928 (Mio-Rec)
- + *Hercynella* Kayser, 1878; perhaps near to *Cap.* by Fischer P., (1885); in ? Siphonariidae by Zittel (1887); Type MD: *H. beyrichi* (Sil)
- Laeviemarginula* Habe (in Kuroda), 1953, Type MD: *L. membranacea*
- + *Loxotoma* Fischer P., 1885 (* sect. of *Emarg.*); as subg. of *Emarg.* by Cossm. & Peyrot (1915), Haber (1932); Type MD: *Emarg. neocomiensis* d'Orb., 1843 (Jura-Eoc)
- Nesta* H. Adams, 1870 (* as genus, link between *Zeidora* and *Emarg.*); as sect. of *Emarg.* by Fischer (1885), Pilsbry (1891, who renamed the type); as subg. of *Zeidora* by Thiele (1929), Wenz (1938), Keen (1960), Christ. (1973), Lindner (1984), Herbert (1987); as genus by Paetel (1888), Farfante (1947), Habe (1963), McLean (1970), Fasulo & Sorbi (1977), Vaught (1984), Janssen (1984); Type MD: *N. candida* (= *Emarg. (E.) nesta* Pilsbry, 1891, n. nov. pro *N. candida* (non *Emarg. candida* A. Ad., 1851); *Nesta candida* is actually not preoccupied, but according to Herbert (1987) the name "*nesta*" remains valid under Art. 59(b) of the ICZN
- Puncturella* Lowe 1827; as *Punctrella* by Higo (1973); as syn. of *Rimula* by Philippi (1853); in Fissurellidae by Gol. & Scarlato (1967); as date 1828 by Gray (1847), Dell (1971); Type MD: *Pat. noachina* L., 1771; (OD, by Woodring 1928) (Eoc-Rec)
- = *Sipho* Brown, 1833 (pars in + *Rimulopsis*); as author Fabr., 1822 (and 1823) by Thiele; as *Sypho* by Brown (1827, explaining the plate, and n. nud.), Philippi (1853); as *Siphon* by Brown (1844)
- = *Cemoria* Leach, 1819 cf. Paetel (1888) with as syn.: *Sipho, Diadora, Rimula, Punct.*; as author Lowe, 1827 by Kuroda (1951) (non Risso, 1826, which is now *Rimula*); as *Cremoria* (lapsus) by Gray (1842); with spec. *Cemori harrison* by Beddome, 1883
- = *Diadora* "Gray, 1821" and Blainville, 1825, sensu Gray (1847) with *noachina* as type.
- subg. + *Altrix* Palmer 1942; n. nov. pro *Folia* Palmer, 1937 (non Lohman, 1892)
- = *Folia* Palmer, 1937 (* sect. of *Punct. (Fissurisepta)*, Type MD: *Fiss. altior* Meyer & Aldrich, 1886, (Eoc)
- subg. *Cranopsis* A. Adams, 1860 (* as genus); as genus by Paetel (1888), Higo (1973); as sect. by Pilsbry (1891); as *Craniopsis*, Wenz, 1938 (lapsus, cf. corr. Wenz, 1943), Nordsieck (1982); Type MD: *C. pelex*, (Tertiary by e.g. Fischer, 1885)
- subg. + *Esmeria* Olson, 1964, Type OD: *Punct. (Esm.) palmerae* (Neo)

- subg. *Rimulanax* Iredale, 1924 (* as genus); as syn. of *Punct.* (*Cranopsis*) by Thiele (1929), Wenz (1938), Knight & al. (1960); as genus by Cotton (1945) and as *Rimlanx* by Higo (1973); Type MD: *Punct.* (*Cranopsis*) *corolla* Verco, 1908
 = *Kira* Habe, 1951 (* as subg. of *Punct.*), Type OD: *Punct.* *dorcas* Kira & Habe, 1949; often as valid subg. of *Punct.* (e.g. Azuma, 1960, Vaught, 1984)
- subg. *Rixa* Iredale, 1924 (* as genus); often kept as genus e.g. Cotton (1945), Conchiglie (1985); Type MD: *Glyphis watsoni* Brazier (in Henn), 1894, who wrote: "to be placed in a new genus"
- subg. *Vacerrana* Ired., 1958 (* n. nov. pro *Vacerra* Iredale, 1924 (non Godman, 1900); as *Vacerrana* (err.) by Macpherson & al. (1962); as genus by Iredale & al. (1962)
 = *Vacerra* Iredale, 1924 (* as genus), Type: *Punct. demissa* Hedley, 1904; as *demissi* by Cotton (1945) who considered *V.* as genus
- Rimularia* Fischer Waldheim, 1834 (1827); pro *Rimula* Defr., cf. Schultze (1936); as err. for *Rimula*, cf. Neave (1940); as other author: Gray, 1847 by Wenz (1938); Waldheim accepted by Kuroda (1951), Knight & al. (1960); as syn. *Ditremaria* d'Orb. by Paetel (1888); as type *R. blainvillei* Bronn, Franc (1968) (as *blainvillii* by Sow., 1852)
 = *Rimula* Desfrance, 1827 (in Dict. Sc. Nat. 45:472, as *Rimule*, vernacular, not available); by Agassiz (1846), Neave (1940), auct.; taken in 1840 pro *Cemoria* Risso, 1826, (non Leach, now syn. of *Punct.*); as date 1819 by Fischer (1885), Dacqué (1933); as date 1824 by Seguenza (1862), Deshayes (1864); as subg. of *Emarg.* by Fischer (1885), Pilsbry (1890); not *Rimula* Couthouy (= syn. of *Diodora* by Gray, nec Lowe, 1852, subg. of *Helix*); Type: *Rimularia blainvillii*, SD Gray (1847); as other types: *exquisita* A. Adams by Tryon (1883), Thiele (1929), ? *Rimula* d'Orb. *conica* d'Orb. by Gray (1847), *striata* Récluz, 1843 by Wenz (1938)
- + *Rimulopsis* (ex Haber, 1932, n. nud.) Dacqué, 1933; as author Haber by Wenz (1938); Type OD: (ex Haber) *Emarg. goldfuzsi* Roemer, 1836 (= *R. broesamleni* Haber, 1932, a n. nov. which was unnecessary) (Jura)
- subg.+ *Koniakaua* (ex Haber, 1932 n. nud.) Dacqué 1933; as author Haber (in Dacqué), 1934 by Wenz (1938); Type OD (ex Haber): *Rimula multistriata* Zittel, 187
- Scelidotoma* McLean 1966 (* in Fissurellidae); as subg. of *Tugali* by Christiaens (1973) and some Japanese authors; Type OD: *Emarg. bella* Gabb, 1865
- Tugali* Gray (in Dieffenbach), 1843; as subg. of *Emarg.* by A. Adams (1851); Type MD: *T. elegans*; (= *Emarg. parmophoidea* Q. & G., 1834) (Mio-Rec)
- = *Tugalia* Gray, 1843 (emend.); name used by Gray (1847), Sow. (1870), Hedley (1917, who considered *Tugali* apparently as misprint), Marwick (1927), Hirase (1934, for *T. gigas*), Iredale (1915), Vaught (1984); as date 1857 by Suter (1913), auct.; as sect. of *Scutum* by Fischer (1885) and of *Parmophorus* (= *Scutus*) by Paetel (1888); as "*Tugalia* Gray, 1857 (= *Tugali* Gray, olim)", sect. of *Submarginula* by Pilsbry (1891); as subg. of *Emarg.* by Thiele, 1929
- = *Parmaphorella* (Pferrer, ms.) Strebel, 1907; Strebel's mention under *Tugalia* of Pferrer's label "*Parmaphorella antarctica*" is considered by Tomlin (1932) as publication; as subg. by Wenz (1938); as genus by Tomlin (1932), Carcelles & al. (1951); as syn. by Barnard (1963); Type: *Tugalia antarctica*, SD Tomlin, 1932
- = *Parmophoridae* Wenz, 1938; n. nov. pro *Parmaphorella* Strebel, 1907 (non Matthew, 1899); as syn. by Herbert (1987) while "*Parmaphorella* Matthew, 1886" is not homonym; name retained by Geyer (1986) who accepted that Strebel is preoccupied



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Tugulina Habe (in Kuroda), 1953 (* as genus); as subg. by Kira (1962); as genus by Habe & Ito (1965), McLean (1966), Herbert (1987, with Habe, 1958); as *Tugulina* by Okara (1972); Type MD: *T. radiata*

Zidora A. Adams, 1860; with *Nesta* as subg. by auctt; as *Zidora* A. Adams, 1860 by Tate & May (1901); as *Zidora* emend. Fischer, 1885; Type MD: *Z. calceolina*

= *Crepiemarginula* Seguenza, 1880; as syn. by Fischer (1885); as date 1879 by Wenz (1938); Type MD: *C. reticulata* (= *Z. seguenza* Watson), (Plio-Rec)

= *Legrandia* Beddome, 1883 (not Hanley, 1871); as *Legrande* (error) by Vaught (1984); Type MD: *L. tasmanica* (= *Zidora legrandi*) by Tate, 1894

subg. *Laevinesta* Pilsbry & McGinty, 1952 (* as subg. of *Nesta*), Type MD: *Nesta* (*L. atlantica*) Farfante, 1947

FISSURELLIDINAE Pilsbry, 1890; subfam. not accepted by Thiele (1929) because there are 2 different types of radula included; cited by McLean (1984) as *Fissurellidini* Pilsbry, 1890 (tribe with *Pupillaea* but without *Lucapina*)

Fissurellidea d'Orbigny, 1841; as date 1839 by Fischer, who included *Lucapina* as subg., Cossm. & al. (1915); 1840 by Thiele (1929), Wenz (1938); 1848 by McLean (1984) who studied this group; in *Fissurellidae* by Franc (1968), Vaught (1989); as *Fissurellidia* and *Fissurellidaea* by Gray (1840, 1847); the latter as subg. of *Fiss.* by Turton (1932); Type MD: *F. megatrema*; as type *Fiss. hiantula* Lam., 1822 (not auctt.) by Tryon (1883); as *hiantula* (lapsus) by Gray (1847), (Eoc-Rec)

= *Megatebennus* Pilsbry, 1890 (* as genus); as genus in *Diodorinae* by Wenz (1938), Janus (1961), Dell (1971); as subg. of *Lucapina* by Thiele (1929), Christ. (1973); as syn. by McLean (1984); Type OD: *Fissurellidea bimaculata* Dall, 1871; as date 1872 by Pilsbry (1890), Dell (1971)

subg. *Pupillaea* "Gray" Sowerby, 1835; as other authors: d'Orb., 1840 by Knight & al. (1960); Sow., 1839 by Vaught (1984); (Gray) Krauss, 1848 by Thiele (1929), Wenz (1938, as *Papillaea*, name corrected in 1943, but keeping the same author); as genus by Krauss (1848), Pilsbry (1890), McLean (1984); as sect. of *Pupilia* Gray, 1840, by Cossmann & al. (1915); as subg. by Barnard (1963); as subg. of *Pupillia* Gray, 1840 by Fischer (1885) (invalid emend. teste McLean, 1984); as syn. by Kilburn & Rippey (1982), Kensley & Pether (1986); as genus *Pupilia* by Paetel (1888) with *Pupillaea* Phil. as syn.; as *Pupilla* Gray by Tryon (1883) with *apertura* Born as type; Type MD: *Fiss. aperta* Sow, 1825 (Plio-Rec)

Buchanania Lesson, 1830; as *Buchannia* by Gray (1847); as *Buchanaania* by Gistel (1848); (* related to *Onchidia* Buch., 1800, (now in *Onchidiidae*); Type MD: *B. onchidioides*; as *ochidioides* in Lesson's citation by McLean (1984)

= *Ephadra* Gistel, 1848, by Neave (1939, "emend. pro *Buchanania* Lesson, 1831), Vaught (1989); as *Ephadra* Gistel, syn. by McLean (1984)

Leurolepas McLean, 1970 (* in *Fissurellinae* while small rachidian tooth); in tribe *Fissurellidini* by McLean (1984); Type MD: *L. roseola*.

Lucapina (Gray ms.) Sow., 1835; as "Gray, in Sow., 1835" by Wenz (1938); non *Lucapina* Gray, 1840, subg. of *Fissurellidea* (well defined by Gray, 1857, Dautz., 1927) nor Gray, 1857 (used by Pilsbry, 1890) which are *Megathura*; as sect. of *Fiss.* by Arango & al. (1878), Paetel (1888), etc.; not *Fiss. p.p.* teste Arnould, 1955; in *Fissurellinae* by Vaught and in *Diodorinae* by Franc (1968); Type: *Foraminella sowerbii* (Guilting MS.), pro *Fiss. cancellata* "Solander" Sow., 1835 ("non Gray, 1825", although both are identical); as other types: *L. elegans* Gray in Sow., 1835 by Gray (1847), Cossmann & Peyrot (1915), Dall (1915), Woodring (1928, with MD *cancellata* as syn.), Wenz (1938); *L. crenulata* by Tryon (1883)

Foraminella (Guilting MS.) Sow. 1835; Type *F. sowerbii*

= *Chlamydoglyphis* Pilsbry, 1891 (* as sect. of *Lucapina*); as *Chlamidoglyphis* by Wenz (1938), corrected in 1943; as syn. of *Lucapinella* by Vaught (1989); Type OD: *Lucapina adspersa* Phil., 1845 (= *Foraminella sowerbii* Sow., 1835)

Lucapinella Pilsbry, 1890 (* as sect. of *Lucapina*, Man. Conch.: 128; not p. 181 which is *Megathura*); Type: *Clypidella callomarginata* (Carp. ms.) Dall, 1871, SD Pilsbry, 1890 (in *Nautilus* 4(3): 961); not "OD Pilsbry" as mentioned by Woodring (1928), Burch (1946); Carp. is not author of the type, as cited by Wenz (1938), (Olig-Rec)

Monodilepas Finlay, 1926; as date 1927 by Zool. Rec. (1927), and auctt.; created for *Fissurellidea monilifera* (Hutton, 1873); in Fissurellidinae by Christiaens (1973) while animal larger than shell having an outer lateral tricuspid tooth; as ? *Diodora* by Pilsbry (1891), Thiele (1929), Wenz (1938) and as *Diodora* by Knight & al. (1960), Vaught (1989); Type OD: *Lucapina monilifera* Hutton, 1873 (is not *Fiss. monilifera* Sow., 1862 !)

subg. *Cosmetalepas* Iredale, 1924 (* as genus); as subg. of *Lucapina* by Thiele (1931); subg. of *Monodilepas* by Christiaens (1973); as genus by Wenz (1938), Cotton (1945, including fossils), McPherson & al. (1962), Climo (1972), Lindner (1984); Type OD: *Fiss. concatenata* Crosse & Fischer, 1864 (considered in 1924 in *Megatebennus*)

= + *Profissurellidea* Wenz, 1938 (* subg. of *Fissurellidea*); as syn. with query by Knight & al., 1960; Type MD: *Fissurellidea malleolata* Tate, 1893, (Mio-Rec ?)

HEMITOMINAE Kuroda, Habe & Oyoma, 1971

as fam. by Golikov & Star. (1975) while the differences from Emarginulidae and Fissurellidae lead to the conclusion "that the Hemitomidae originated from other bellerophon-like ancestors"; kept without (sub)familial rank in the Emarginulinae by e.g. Boss (1982), Vaught (1984), Herbert (1987), Squires (1987). In this subfam. Higo (1973) cited 4 Japanese genera (*Montfortista*, *Montfortia*, *Montfortula* and *Montfortulana*) of which the 2 last are subg. of *Clypidina*

Subemarginula Gray, 1847 (1825) (* Blainville, 1825: Les Subémarginules, sect. of *Emarg.*; vernacular, not available); this name firstly used with *Hemitoma* as syn. (e.g. Gray, 1847, Pilsbry, 1891), was still accepted by Dall & Simpson (1901), Dautzenberg (1932), Rogers (1936); Iredale (1915) cited Gray (1847) as first user of the latinized form; Cossmann & Peyrot (1915) retained Blv., 1825 while all French authors begin XIX century wrote the latin names in French; priority not given to Blv. the last decades; as subg. of *Emarg.* by Adams A. (1851), Arango & Molina (1878), Fischer P. (1885, with *Hemitoma* as syn. and *Plagiorhytis*, *Clypidina* as sect.); Type MD: *Pat. octoradiata* Gmel., 1791; as type *E. emarginata* by Pils., 1891

= *Hemitoma* Swainson 1840 (* as subg. of *Emarg.*); in Fissurellidae by Von Cosel (1984); in Emarginulinae by Herbert (1987); as *Emitoma* (err.) in Conchiglia (1965); Type MD: *Emarg. tricostata* Sow. J., 1823 (= *Pat. octoradiata* Gmel., 1791) (as OD by Squires, 1987); as other type: *Emarg. tricostalis* Sws., 1840 by McPherson & Gabriel (1962), (Eoc-Rec)

= *Montfortia* Récluz, 1843 (* pro *Subémarginules*); as syn. of *Emarg.* (*Subemarg.*) by Fischer (1885); as subg. of *Hemitoma* by Wenz (1938), McLean (1966), Yaron (1981), Herbert (1987), Squires (1987); as genus by Thiele (1931), Habe (1953); Type: *Emarg. australis* Q. & G., 1834, SD Iredale, 1915; as other types: *Emarg. emarginata* Blainville, 1819, SD Hedley (1915); *Emarg. subemarginata* Blv., 1819 by Cotton (1959)

= *Siphonella* Issel, 1869 (non Hagenow, 1851) (* subg. of *Emarg.*), Type MD: *Emarg. (S.) arconatii*; sometimes as *arconautii*; as syn. of *panhi* Q. & G., 1834 by Yaron (1981)

= *Montfortista* Iredale, 1929 (* as subg. of *Montfortia*); as subg. of *Hemitoma* by Keen (1960); as syn. of *Montfortia* by Herbert (1987); as genus by Kuroda & al. (1971), Higo (1973); Type MD: *M. (M.) excentrica*

SCUTINAE Christiaens, 1973 (Mio-Rec) (Shield shells)

Scutus treated by Christiaens (1986, *Gloria Maris* 25:1-28); Herbert (1987) not convinced of the subfamilial rank

Scutus Montfort, 1810; in *Fissurellidae* by Adams A. (1851); in *Emarginulinae* by Pilsbry (1891), Thiele (1929), Franc (1968); as *Scutina* (pro *Scutus*) by Bowdich, 1822; as *Scutum* (emend.) Sowerby, 1842 (non Walch, 1779, nec Schumacher, 1817 the last Echinoderm); same emend. by Fischer P. (1885) who preferred *Parmophorus* while *Scutus* a dreadful barbarism; emendation Cossmann & Peyr (1915) not necessary by Dautz. (1932), but he wrote *Scutum*; Paetel (1888) retained *Parmophorus* and *Tugalia* as sect.; Type OD: *S. antipodes* (= *unguis* auct., non L., 1758, which is not a gastropod but a *Lingula* (see also Fleming, 1837)); = *Pat. ambigua* Chemnitz, 1795, non-binominal); as type *australis* Blv. by Tryon, 1883)

= *Aviscutum* Iredale, 1940 (* as genus); as subg. by Kuroda & al. (1970); as genus by Cotton (1959), Iredale & McMichael (1962); Type OD: *A. olunguis*

= *Dascanus* Gray, 1850 (1815), by M.E. Gray (1850) (lapsus?); *Dasanus* Raf., 1814, is n.nud.; *D. "pro Dasanus Raf., 1815"* by Neave (1939)

= *Parmophorus* Blainville, 1817 (p. 27; not p. 28 with *Parmaphorus* in error and repeated by many authors); as *Parmophora* (emend. pro -us Blv.) Desmarest in Chenu (1859); as author Deshayes by Paetel (1888); as genus by Potiez & Michaud (1838), Swainson (1840), Thiele (1891), etc.; as *Parmorphorus* (err.) by Herbert (1987); = *Le Pavois* (in French)

= *Scutifera* Blv., 1818; = *Scutellites*, Montfort, 1810, auct.

subg. *Nannoscutum* Iredale, 1937 (* as genus); Type MD: *N. forsythi*

NB: + *Proscutum* Fischer P., 1885; originally as sect. of *Scutum*; (see also Cossmann & Peyrot, 1915); is now in *Patellinae* by e.g. Merle (1984)

TROCHOIDEA Rafinesque, 1814 (top shells) (* as fam. *Trochinia*)

as suborder *Trochina* by Cox & Knight (1960) but not accepted by Salvini-Plawen, who created the suborder *Vetigastropoda*; not in the suprageneric classification of "Trochacea", (including 23 subfamilies), by Hickman (1989), Hickman & McLean (1990); I only mention the *Stomatellinae*, with a limited number of limpetlike genera (the "wide mouths shells" = the "false ears")

STOMATELLINAE Gray, 1840; as *Stomatellina* by Gray (1847); as *Stomatellidae* Gray, 1850 by Rehder (1980); A. Adams (1850) made an arrangement of *Stomatellidae* (not Finlay, 1926, which is syn. of *Margaritinae*)

= *Stomatiidae* Stoliczka, 1868 with *Stomatia* as nominotypical genus; name used by G. & H. Nevill (1869), Azuma (1960) and by Iredale (1937) who said that it was incorrectly called *Stomatellidae* by Pilsbry

Stomatella Lamarck, 1816 (1812) (* as *Stomatelle* in 1812; not available); as date 1816 and 1819 by Cotton (1959); 1816 by Kuroda & al. (1971), Rehder (1980) and 1822 by Gray (1847); in *Gena* by A. Adams (1850); Type: *S. auricula* Lam., 1812, SD Anton, 1839 (= *Pat. lutea* L., 1758); as other type: *S. imbricata* Lam. by Gray (1847)

= *Gena* Gray, 1842; in Gray, 1840 is n.nud.; as syn. with Gray, 1850, by Rehder (1980) and *S. nigra* Q.G., 1834 as type; as subg. by Keen (1960); as syn. with Gray, 1847 by Kuroda & al. (1971); as genus by May (rev. MacPherson), 1958; Type: *Pat. lutea* L., 1758 (cf. Gray, 1847)

= *Plocamotis* Fischer P., 1885 (* subg. of *Gena* Gray); as syn. by Keen (1960), Rehder

(1980, 1986), Vaught (1989); Type OD: *Gena laevis* Pease, 1868

= *Phymotis* Rafinesque, 1814 (* as *Stomatella* Lam. in Haliotidia; n.nud.); as syn. of ?*Stomatia* by Thiele (1929)

Broderipia Gray, 1847; as *Scutella* Broderip, 1834 (pars, together with *Plesiothyreus*); Type OD: *Scutella rosea* Broderip, 1834 (Rec)

Pseudostomatella Thiele, 1921, Type *Pat. papyracea* Chemnitz

subg. *Stomatolina* Iredale, 1937 (* as genus); as subg. by Vaught (1989); Type OD: *Stomatella rufescens* Gray, 1847; has to be reevaluated, cf. Hickman & McLean, 1990

Stomatia Helbling, 1779; Type: *S. phymotis* (cf. Thiele, 1929); first spec. by Adams (1850)

= *Haliotoidea* Humphrey, 1797

= ? *Sigaretus* Schumacher, 1817 (cf. Gray, 1847)

= *Stomax* Montfort, 1810 (cf. Gray, 1847, Thiele, 1929, Vaught, 1989)

subg. *Miraconcha* Bergh (in Schepman), 1908; as syn. ? by Thiele, 1929

subg. *Microtis* A. Adams, 1850; Type MD: *M. tuberculata*

= *Microtina* Adams in Sowerby, 1854

subg. *Niphonia* A. Adams, 1860; cf. Vaught (1989)

NB.1: *Roya* Iredale, 1912 (* in Trochidae) placed in Stomatiinae by Thiele (1929), in Stomatidae by Ired. (1962), Franc (1968), in Stomatellidae by Vaught (1989), is syn. of *Williamia* (Siphonarioidea)

NB.2: McLean (1980) suggested that the platyceratid limpets, with horseshoeshaped muscle scar, have a derivation as limpets parallel to that of the trochian fam. Stomatellidae, and retained Platycerataceae Hall, 1859, separated from Trochacea; Hickman & McLean (1990) mentioned this taxon (including *Holopeinae* Wenz, 1938) but didn't treat it. This taxon is not listed here.

LEPETODRILIOIDEA McLean, 1988 (* Lepetodrilacea with 2 new fam.: Lepetodrilidae and Gorgoleptidae); Haszprunar (1988) included this superfam. (with 1987 as date) in the Vetigastropoda, followed by McLean (1990); radula rhipidoglossate; Warén & Bouchet (1989) included the next taxa in Neomphaloidea = Hot-vent group-B of Hickman, 1983, (cf. Haszprunar (1988))

= the "dimorphic" Archaeogastropoda limpets from hydrothermal vents of McLean (1985) (Rec); anatomy studied by Fretter (1988); affinity to the Cretaceous *Damesia* (? in Crepidulinae) is possible, teste McLean (1988)

Lepetodrilus McLean, 1988 (* in Lepetodrilidae); Type OD: *L. pustulosus*

Gorgoleptis McLean, 1988 (* in Gorgoleptidae); Type OD: *G. emarginatus*

Suborder **COCCULINIFORMIA** Haszprunar, 1987

The fam. Cocculinidae was included by Dall (1889) in the superfam. Schismatobranchia. In 1970 Allen still kept the Cocculinoidea in the suborder Patellina. The next year Moskalev subdivided the confused order Cocculinida Thiele, 1908, in 5 main groups: the first one (Bathysciadiidae) placed in the Docoglossa (subcl. Cyclobranchia) and the 4 others, as superfam. in the subclass Pectinibranchia: Cocculinoidea, Lepetelloidea, Addisonioidea and Bathypeltoidea. Golikov & Starobogatov (1975) put the Bathypeltoidea tentatively in the Docoglossa and created in Pectinibranchia new superorders e.g. Turbinimorpha (with Lepetellida) and Neritimorpha (with the order Planilabiata Stoliczka, 1868, containing with a query the Cocculinoidea). It was also tentatively that Salvini-Plawen (1980) placed the Cocculinoidea in the Vetigastropoda. The creation of Cocculiniformia is not clear. In 1987 Salvini-Plawen & Haszprunar classified this taxon "in equivalent rank to Neritopsina and Vetigastropoda as a suborder proper", placed at a primitive level of the Archaeogastropoda, between

Docoglossa and Vetigastropoda. As the new suborder includes two superfam., before often put together or mixed, they created a new name and didn't retain the existing ones. This was possible as the Code has no rules for the higher taxa. Haszprunar (1987, Zool. Scripta 16:322) wrote: "I use here and elsewhere (Haszprunar, 1987) the taxon Cocculiniformia because...". In 1988 (Malac. Rev. Suppl. 4:80) he considered 1987 as date while in 1989 (Contr. Sci. 408:1) he gave Haszprunar, 1988 as author. I list here Haszprunar's suborder, including the superfamilies Cocculinoidea and Lepetelloidea. Graham (1988) retained the "Cocculinacea" in the Archaeogastropoda, while McLean (1991) accepted the name Cocculiniformia.

COCCULINOIDEA Dall, 1882 (* as fam. in Proc. USNM for 1881:401, published 24 April 1882; see correct date in Ann. Mag. NH. 55:11, 1882 and in Verrill, 1882); 1881 is an error, made e.g. by Dall himself (1921), by McLean & Haszprunar (1989), etc.; as author Thiele, 1908 by Moskalev (1971), Haszprunar (1987); as Thiele, 1909 by Treatise (1960), Allan (1970), Terreni (1981), Piani (1980; not in 1981 with Dall, 1881), Marshall (1985), Haszprunar (1988); as Thiele, 1925 by Anderson & al. (1964); as fam. in superfam. Schismatobranchia by Dall (1889); as superfam. with Cocculinidae, Lepetellidae, without Bathysciadiidae, by e.g. Thiele (1929), Wenz (1938), Knight (1960), Taylor & Sohl (1962), Vaught (1984); in Lepetellina by Marshall (1983); followed by McLean (1985) who included the Cocculiniform limpets in the single superfam. Lepetelloidea; about Lindner's book "Muscheln und Schnecken der Weltmeere" (3d ed., 1990) the Club Conchylie (1991, 23(1,2): 29) wrote: Cocculinacea is nov. syn. of Lepetellacea; Cox & Knight (1960), Piani (1980) included this superfam. in suborder Patellina

COCCULINIDAE Dall, 1882; as date 1889 by Moskalev (1976) and 1881 by auctt. (*Cocculina* Dall, 1882 (= Cap limpets); as subg. *C.*, *Maoricrater* (now in Propilidiinae), *Pseudococculina*, *Notocrater* (both now in Pseudococculinidae) by Knight & al. (1960); Type: *C. rathbuni*, SD Dall, 1908; Fleming (1948) quoted Dall, 1881, and said SD Suter, 1913 by Woodring (1928) is error (id by Wenz, 1938, Kuroda & al., 1971) (Mio-Rec)

= *Dallia* Jeffreys, 1882 (non Bean, 1879) (* as subg. of *Tectura*); as genus by Dautz. & Fischer (1896, 1912); as syn. by Moskalev (1976), Vaught (1984), with a query by Jeffreys (1889), auctt.; Type MD: *Tectura galeola*

subg. *Antitectisumen* Bogi 1984; proposed subg. for *Cocc. labronica* (MD)

Cococrater Haszprunar, 1987, Type OD: *Cocculina radiata* Thiele, 1903.

Coccopygia Marshall, 1986 (* n. nov. pro sect. *Coccopygia* Dall, 1889 (non Reichenbach, 1882; N.Z. Journ. Zool., 1985, Vol. 12); as sect. of *Cocculina* by Thiele (1929), as subg. by Wenz (1938) and as syn. by Vaught (1984); as full genus in Cocculinidae Dall, 1881 by Haszprunar (1987), (1988, id. with correct date 1882); Type MD: *Cocculina spinigera* Jeffer., 1883

Fedikovella Moskalev, 1976; in ? Cocculinidae by Haszprunar (1988); Type MD: *F. caymanensis*

Paracocculina Haszprunar, 1987, Type OD: *Cocculina laevis* Thiele, 1903

Teuthirostria Moskalev, 1976 (* in Cocculinidae); with a query by Haszprunar (1988); Type MD: *T. cancellata* Dall, 1889; as anomalous cocculinid by Marshall (1987)

BATHYSIADIIDAE Dautz. & Fischer, 1900; as date 1901 by Dall (1908), Hickman (1983) but 1900 confirmed by Dautz. & Fischer, J. Conchyl. 1900, tome 48; in Lepetellidae by Thiele (1929), Wenz (1938), Knight & al. (1960), Clarke (1962); in Patellacea by Boss (in Parker, 1982); in order Docoglossa, subclass Cyclobranchia by Pelseneer (1900), Moskalev (1971); in Patelliformes and Patelliformii by

- Moskalev (1973), Golikov & Starobogatov (1975, 1984, 1989); in Cocculinoidea by Haszprunar (1988) according to the rule of Wiley, 1981, and including ? *Bathypelta* = Bathypeltidae Moskalev, 1971 (* new group, with superfam. Bathypeltoidea in Lepetellida); as fam. in ? Docoglossa (Cyclobranchia) by Golikov & Star. (1975); as fam. in Lepetellida by Moskalev (1971) and in Patellacea by Boss (in Parker, 1982); Marshall (1987) not convinced that fam. separated; as fam. in Lepetelloidea by Haszprunar (1988, Zool. Scripta), with in the list the mention: "not valid, see below" (mention not found); as syn. of Bathysciadiidae by Vaught (1989)
- Bathysciadium* Dautzenberg & Fischer, 1899; as date 1901 by Dall (1908); Type MD: *B. conicum* (= *Lepeta costulata* Locard, 1898); spec. established by Locard pro *L. tubicola* Jeffr. (non Verrill & Smith), admitted by Dautz. & Fischer (1900), (Rec)
- Bathypelta* Moskalev, 1971 (* in Bathypeltidae); in ? Bathysciadiidae by Haszprunar, (1988, Malac. Rev.); Type OD: "*Bathysciadium pacificum* Dall, 1908"
- Bonus* Moskalev 1973; as ultra-abysal in depths over 9000 m.; docoglossate radula, without central tooth); as syn. of Lepetellidae by Knight & al. (1960); in Patellacea by Parker (1982); Type: *B. petrochenkoi*
- SYMMETROCAPULIDAE** Wenz, 1938 (* as "? Symetrocapulinae" in Patellidae); in Patellidae by Cox & Arkell (1950); Cox (1960) corrected the name and kept it with a query in Patelloidea or cf. Capulidae (for the Capulidae he is followed by Kase, 1984); in Cocculinoidea by Moskalev (1971), Golikov & Star. (1975); provisionally as a sister group of Lepeto- and Peltospiridae by McLean (1988)
- + *Symetrocapulus* (ex *Symetrocapulus* Haber ms., 1932, n. nud.) Dacqué, 1933; in Capulidae by Kase (1984); in Patellidae by Cox & Arkell (1950); Type OD: "*Cap. rugosus* Sow. (s. Bohm 1892)" by Dacqué (1933); (= *Pat. rugosa* J. Sow., 1816 (non Röding 1798), (= *Pat. tessonii* Eudes-Deslongchamps, 1842)) (Jura-Cret; cf. Knight & al., 1960)
- + *Phryx*, Blaschke, 1905 (* subg. of *Capulus*), Type MD: *Cap. (P.) bilateralis*; (as genus placed in "? Symetrocapulinae" by Wenz (1938), (Trias)
- LEPETELLOIDEA** Dall, 1882 (* as Lepetellinae in Proc. USNM for 1981: 408, published 24 April 1882); the date 1881 is often mentioned, e.g. McLean (1991) who wrote Lepetellacea; as authors "Thiele 1908 (emend)" by Haszprunar (1988); as "McLean & Haszprunar, 1987" by McLean & Fretter (1990); as order Lepetellida by Moskalev (1971); as suborder by Marshall (1983, 1987); as Lepetodriolea by Fretter (1988); Haszprunar (1988) created new bone-feeding limpets and justified this superfam. including: Pseudococculinidae, Pyropeltidae, Lepetellidae, the latter with *Osteopelta*, *Cocculinella* as offshoot and *Addisonia*, *Choristella* as highly aberrant; a new fam. was created for *Choristella* by Bouchet & Warén (1979) and for *Osteopelta* Marshall, 1987, (type MD: *O. mirabilis*), the latter genus questionable by Warén (1989)
- LEPETELLIDAE** Dall, 1882; as date 1881 by Allen (1970), Graham (1988); was longtime in Cocculinoidea, e.g. Clarke (1962), Allan (1970), Piani (1980); Boss (1982) took as syn. Cocculinellidae and Addisoniidae (sic); Vaught (1984) included 5 genera: *Lepetella*, *Tecticrater*, *Tectisumen*, *Addisonia* and *Cocculinella*, of which, in 1989, the 3 first are retained; can perhaps be divided in the subfamilies Lepetellinae and Cocculinellinae; I follow here Moskalev (1971)
- Lepetella* Verrill 1880; as author Verrill & Smith, 1880 by Dautz. (1927); as subg. of *Lepeta* by Fischer (1885); as genus in Scutellidae by Paetel (1888); included the subg. *Tectisumen* and ? *Tecticrater* by Knight & al. (1960), taxa kept as genus by Powell (1962), Moskalev (1973), Vaught (1984, 1989), Haszprunar (1988) but put in syn. by Warén (1972, 1975); Type MD: *L. tubicola* Verrill & Smith, 1880, (Rec)

= *Raynevallia* Ponzi, 1872, Type MD: *Pat.+ laterocompressa* De Rayneval & Ponzi, 1854; this spec. is in *Cocculina* by Locard (1889), Monterosato (1890), Pallary (1900); as operculum of *Serpula* by Meli (1895) and in *Gadinia* by Meli (1906); as syn. of *Lepetella tubicola* by Dall (1889) and in *Lepetella* by Warén (1972)

= *Tectisumen* Finlay 1926; in ? *Cocc.* by Thiele (1929); as subg. of *Cocculina* by Wenz (1938) and of *Lepetella* by Knight & al. (1960); as genus by Dell (1956), Powell (1955); as genus in Cocculinidae by Cotton (1959); Type OD: *Cocc. clypidellaeformis* Suter, 1908; as *clypidelliformis* by Iredale & al. (1962); (Olig-Rec)

= *Tecticrater* Dell 1956 (* "only differs in detail" from *Lep. tubicola*); as genus by Crozier (1966), Willan (1974); Type OD: *Cocc. compressa* Suter, 1908

NB: *Saptadanta* Prashad & Rao, 1934, initially in this fam. (where kept by Moskalev, 1973), is in this list as syn. of *Hipp. (Sabia)*

ADDISONIIDAE Dall, 1882; in Rhipidoglossa, superfam. Schismatobranchia by Dall (1889); this family with single genus and 3 species which all lack eyes, was reviewed by McLean (1985); as superfam. by Moskalev (1971), Golikov & Star. (1975); as Addissionioidae by Boss (1982)

Addisonia Dall, 1882; in Fissurellidae by Tryon (1883); in Lepetellidae by Thiele (1908, 1929), Wenz (1938), Vaught (1984); in Capulidae by Fischer (1885); in Gadinidae by Paetel (1888); as *Addinsonia* (lapsus) by Carus (1889); Type MD: *A. paradoxa* (= *Gadinia lateralis* Réquien, 1848); as *Tylodina excentrica* Tiberi, 1857 by Carus (1889) (*Tylodina* now in Umbraculoidea)

BATHYPHYTOPHILIDAE Moskalev, 1978 (* incertae sedis); "anatomy completely unknown and placed tentatively within the Cocculiniformia" by Haszprunar (1987) who put it later (1988) in Lepetelloidea

Bathyphytophilus Moskalev, 1978; Type MD: *B. caribaeus*

Aenigmabonus Moskalev, 1978; Type MD: *A. kurilokamtschaticus*

COCCULINELLIDAE Moskalev, 1971 (* in Lepetelloidea); id. by Gol. & Star. (1975), Haszprunar (1988); in Cocculinoidea by Marshall (1983)

Cocculinella Thiele, 1909; in Lepetellidae by Thiele (1929), Wenz (1938), Knight & al. (1960), Vaught (1984); Type MD: *Acmaea minutissima* E.A. Smith, 1904 (Mio-Rec)

+ *Sablea* Allen 1970 (* in Lepetellidae, Cocculinacea), Type MD: *S. minuta*, (Eoc)

PSEUDOCOCCULINIDAE Hickman, 1983 (* in Cocculinoidea); the classification in 2 subfam. Pseudococculininae (gill-leaflets at right side only) and Caymanabyssiinae is somewhat tentative, certainly at that level; Haszprunar (1988) questioned further the validity of radular characters as its base; McLean (1991) didn't recognize a subfamily division

Pseudococculina Schepman, 1908 (* genus in Phenacolepidae); as subg. of *Cocculina* by Knight & al. (1960); Type: *P. rugosoplicata*, SD Wenz, 1938

Landabyssia Moskalev, 1976 (* in Cocculinidae), Type MD: *B. costoconcentrica*

Kurilabyssia Moskalev, 1976 (* in Cocculinidae); as date 1983 by McLean (1988); Type MD: *K. squamosa*

Mesopelex Marshall, 1986 (* in Cocculinidae), Type MD: *M. zelandica*

Notocrater Finlay, 1926 (* in Cocculinidae); in ? *Cocculina* by Thiele (1929); as subg. of *Cocc.* by Wenz (1938), Knight & al. (1960); sensu Finlay by Cotton (1959), Iredale (1962), Moskalev (1973); in Lepetidae by Powell (1962), Moskalev (1977); in Pseudococculininae by Haszprunar (1988), Vaught (1989); Type OD: *Cocc. craticulata* Suter, 1908 (as *craticulus* by Iredale & al. (1962) (Mio)

= *Punctolepeta* Habe 1958; as subg. by Vaught (1989); as genus in Lepetidae by Knight (1960), Moskalev (1977), Boss (1988, as *Punctolepta*); as syn. by Marshall (1986), Haszprunar (1988); Type MD: *P. minuta*

- subg. + *Kaiparapelta* Marshall, 1986 (* as genus; the type "closely resembles *Notocrater* species"); as subg. by Haszprunar (1988); Type MD: *K. singularis* (Mio)
- Tentaoculus* Moskalev, 1976 (* in Cocculinidae), Type MD: *T. perlucida*
- CAYMANABYSSIINAE Marshall, 1986 (* in Cocculinoidea: Pseudococculinidae)
- Caymanabyssia* Moskalev, 1976 (* in Cocculinidae), Type MD: *C. spina*
- subg. *Dictyabyssia* McLean, 1991, Type OD: *Caymanabyssia sinespina* Marshall, 1986
- Amphiplica* Haszprunar, 1988, Type OD: *A. venezuelensis* McLean, 1988
- subg. *Gordabyssia* McLean, 1991, Type MD: *A. (G.) gordensis*
- Colotrachelus* Marshall, 1986 (* close relationship with *Caymanabyssia* is suggested; another spec. is to be described by McLean), Type MD: *C. hestica*
- Copulabyssia* Haszprunar, 1988, Type OD: *Cocculina corrugata* Jeffr., 1883
- Punctabyssia* McLean, 1991 (* in Pseudococculinidae), Type MD: *P. tibbettsi*
- Yaquinabyssia* Haszprunar, 1988, Type MD: *Y. careyi* McLean, 1988
- PYROPELTIDAE** McLean & Haszprunar, 1987 (from hydrothermal vents)
- Pyropelta* McLean & Hasz., 1987, Type OD: *P. musaica*

Suborder **NERITOPSINA** Cox & Knight, 1960

Golikov & Starobogatov (1975) placed it in the superorder Neritimorpha, superorder preferred by Healy (1988) and including the Cocculinoidea. As order by Burch (1984, 1987). Vaught (1989) mentioned Neritimorpha as suborder, including in the Neritoidea the Neritopsidae, Neritidae, Septariidae, Phenacolepadidae and Titiscaniidae (no shell and ever as superfamily). The Neritopsina, regarded as a separate and early offshoot of the Archaeogastropoda, is rarely placed before the Vetigastropoda. Salvini-Plawen & Haszprunar (1987) did so, but I follow the other authors.

NERITOIDEA Lamarck, 1809 (ex * *Néritacées*, nom. transl. Thiele, 1929)

as fam. *Neritina* by Rafinesque (1814), with subfam. *Neritacea*; in 1815 Rafinesque used *Neritinae*, name not kept; as author Raf., 1815 by Burch (1984, 1987) and Golikov & Star., 1975, who added that the old superfam. *Neritacea* must be divided into *Titiscanioidea*, *Hydrocenoidea* and *Neritoidea* with the new fam. *Septariidae*; as *Neritidae* by Fleming, 1828

PHENACOLEPADIDAE Thiele, 1909 (1871); Christiaens, 1988, 1989 reviewed and monographed this fam.; as authors Thiele, 1929 by Cox (in Moore, 1960); Pilsbry, 1895 by Franc (1968), Golikov & Star. (1975); Thiele, 1895 by Christ. (1988); as *Phenacolepatidae* by Kuroda & al. (1971), Roth (1976); in the systematical research of the authors of the family taxa (authors rarely mentioned correctly), I found that Thiele 1909, (Monograph in *Conch. Cab., Mart. & Chemn.*) was the first who used this name and that the date of Angas may be put in parentheses.

- = *Scutellidae* Angas, 1871 (not Paetel, 1888, who included e.g. *Patelloida*, *Lepeta*)
- = *Scutellinidae* Dall, 1889 (not cited as new) (* in Rhipidoglossa: *Schismatobranchia*, a superfam. comprising *Cocculinidae*, *Addisoniidae*)

Plesiothyreus Cossmann, 1888; as priority name by Christ. (1989); Type: *Scutella crenulata* Broderip, 1834, SD Gray, 1847 (= *Pileopsis cytherae* Lesson, 1830) (not the eocene *Capulus parmophoroides* Cossmann, 1885, type OD of *Plesiothyreus*)

- = *Scutella* Broderip, 1834 (non Lam., 1816, which is Echinoderm), (pars, together with *Broderipia*) (* probably in Cyclobranchia, between *Ancylus* and *Patella*);
- = *Scutellina* Gray, 1847 (* in Echinodermata); n. nov. pro *Scutella* Brod., 1834 (non Lam.); in *Acmaeidae* by H. & A. Ad. (1854) and as *Acmaea*? subg. by Fischer (1885)
- = *Phenacolepas* Pilsbry, 1891; n. nov. pro *Scutellina* Gray, 1847 (non Agassiz, 1841)
- = *Scutulina* Cossmann, 1912; n. nov. pro *Scutellina* Gray, 1847 (non Agassiz, 1841)

- = *Cinnalepeta* Iredale, 1929 (* as genus); as genus by Iredale & al. (1962), Kuroda & al. (1971); as subg. by Cernohorsky (1972); Type OD: *Pat. cinnamomea* Gould, 1846
- = *Zacalantica* Iredale, 1929 (* as genus), Type OD: *Phenacolepas linguaviverrae* Melvill & Standen, 1899

subg. *Amapileus* Iredale, 1929 (* as genus, with the type "apparently related to *P. laevicostalis*") Type OD: *A. immeritus* (= *Scutellina laevicostalis* Thiele, 1909)

subg. *Hyalopatina* (Dall, 1889), Type MD: *Umbraculum (H.) rushii*

subg. *Hyalorisia* (Dall, 1889) (* as sect. of *Capulus*), id. by Thiele (1929); as subg. by Wenz (1940); as genus in Capulidae by Higo (1973) with ex. *H. tosaensis* Otuka, 1939; in *Plesiothyreus* by Christiaens (1989); Type MD: *Capulus (H.) galea*

SEPTARIIDAE Golikov & Starobogatov, 1975

Septaria Férussac, 1807; in Neritidae by Okutani & al., 1989; syn. cited by de Koninck (1853): ? *Nacella* Lam., *Cumbry* Montfort, *Cimber* Montfort, 1810; syn. cited by Vaught (1989): *Cimber*, *Septarius* Gray, 1821, *Catillus* Gray, 1847 (non Brongniart, 1822), *Cibota* H. & A. Adams, 1858 (non Herrmannsen, 1852), *Laodia*, *Paria* Gray, 1868; Type MD: *Pat. borbonica* Bory de St Vincent, 1803 (= *borbonicensis*)

subg. *Navicella* Lamarck, 1816; as date 1811 by de Koninck (1843); as *Navicellus* by Gray (1821); in Trochoidea by Rang (1829) with "Septaire Férussac, *Cimber* Montf." as syn.; other syn.: *Scapha* Récluz, 1841, *Stenopoma* Gray, 1868

subg. *Paraseptaria* Risbec, 1942, Type MD: *S. (P.) parva* (= *Cocculina* sp. Risbec, 1935)

subg. *Orthopoma* Gray, 1867

SHINKAILEPADIDAE Okutani, Saito & Hashimoto, 1989

Shinkailepas Okutani & al., 1989; from hydrothermal vent; the radula is near to *Plesiothyreus*, but the anatomy has not been compared; Type OD: *S. kaikatensis*

Order APOGASTROPODA Salvini-Plawen & Haszprunar, 1987

Suborder CAENOGASTROPODA Cox, 1960

- = Pectinibranchia (pars) Blainville, 1814 (* Pectinibranches); as Pectinibranchia by Goldfuss, 1820; as Pectinibranchiata (pars) by Gray 1850, Rochebrune (1884)

- = Ctenobranchia (pars) Schweigger, 1820; Bischof & al. (1849) mentioned Ctenobranchia Wiegmann with Asiphonobranchia Blv., including Capuloidea Cuv. pars (with *Capulina*, *Sigaretina*), Trochoidea, etc.

- = Siphonobranchia Schweigger, 1820

- = Hemipomatostoma Menke, 1830 (teste Ponder & Warén, 1988)

- = Apomatostoma Menke, 1830 (teste Ponder & Warén, 1988)

- = Plocamobranchia Gray, 1847, including Capulidae, Calypttradae but not Fissurellidae

- = Monotocardia Mörch, 1863

- = Exophallia Mörch, 1865 (teste Ponder & Warén, 1988)

- = Arthroglossata Mörch, 1865 (teste Ponder & Warén, 1988)

- = Dioecia MacDonald, 1881 (teste Ponder & Warén, 1988)

- = Glossophora Fischer, 1883 (teste Ponder & Warén, 1988)

- = Aglossa Fischer, 1883 (teste Ponder & Warén, 1988)

- = Aponotoneura (pars) Lacaze-Duthiers, 1888 (teste Ponder & Warén, 1988)

- = Meso- and Neogastropoda Thiele, 1925 (including pars of Ctenobranchia)

The Mesogastropoda (with Taenio-, Ptenoglossa and Heteroglossa ?), Stenoglossa Bouvier, 1887 (= Neogastropoda Wenz, 1938, with Rachi- and Toxoglossa) and Heterogastropoda were initially included in the Pectinibranches Blainville, 1814. Cox (1960) suggested to replace Pectinibranchia by Caenogastropoda if the name Archaeogastropoda "particularly acceptable to palaeontologists" is retained. He included the Meso- and Neogastropoda in his new single order, whose line of separation is a very

arbitrary one. Cox's change is generally accepted. Salvini-Plawen & Haszprunar (1987) reduced that taxon to suborder and placed it, together with Allogastropoda Haszprunar, 1985, in their order Apogastropoda. Vaught (1989) didn't mention the last one and kept the orders Meso- and Neogastropoda, of which the former included the Hipponicoidea and Crepiduloidea. These two taxa treated in this list are the sole superfamilies in Inoperculata Fischer P., 1883, suborder placed together with Involuta in the order Echinospirida Fretter & Graham, 1962, which in its turn is in the superorder Littorinimorpha Golikov & Starobogatov, 1975, the last authors naming the two superfamilies here treated: Vanicoroidea and Calyptraeidea. Ponder & Warén (1988) considered Caenogastropoda as superorder, translated the name Vanikoroidea Gray, 1840 (superfam. including Hipponicidae and Vanikoridae) and mentioned in the Calyptraeidea: Calyptraeidae, Capulidae and "+ Isospiridae Wangberg-Eriksson, 1964 (family position uncertain)".

VANIKOROIDEA Gray, 1840 (= HIPPONICOIDEA Troschel, 1861)

(* Vanicoroidea); Agassiz (1845) wrote the genus name *Vanicoro*, emend. pro *Vanikoro* Quoy & Gaimard, 1832.; Monterosato (1877) considered the family Vanikoridae Gray, 1840 (with a single genus *Vanikoro* Q. & G.) as related to Fossaridae (with *Fossarus* Philippi, 1841, Type *Helix ambiguus* L., 1758). Thiele (1925, 1929) mentioned in the Stirps "Amaltheacea" the Fossaridae, Vanikoridae and Amaltheidae. He is followed by Taylor & Sohl (1962) who exchanged the name Amaltheidae with Hipponicidae and by Franc (1968) who wrote Vanikoroidae. Ponder & Warén (1988) wrote Vanikoridae, conform to the ICZN, Opin. 1009 and didn't include the Fossaridae Troschel, 1861, a non patelliform group (now in Cerithioidea); Iredale & McMichael (1962) included Calyptraeidae, Cheileidae and Crepidulidae, while Warén & Bouchet (1988) redefined the family and included *Macromphalus* Wood, 1842 (= *Couthouyia* A. Adams, 1860), *Megalomphalus*, *Talassia* and other genera, previously in the Fossaridae, Rissoidae, Epitonidae, Caledoniellidae Rosewater, 1969, (with monotypic *Caledoniella* Soubervie, 1869) (Type MD: *montrouzieri*) has been added to this superfamily, and is considered by Ponder & Warén (1988) as syn. of Vanikoridae.

Caledoniella was put in the Lamelliariinae by Tryon (1886), Thiele (1929), in the Pyramidelloidea by Wenz (1940) and in the Hipponicoidea by Taylor & Sohl (1962). *Caledoniella* is not patelliform and I don't mention it in this list.

HIPPONYCIDAE Troschel, 1861 (* as Hipponicidae) (= horse-hoof limpets)

= Pileopsidae (cf. Paetel, 1883 with *Pileopsis*, *Caledoniella*, *Amathina*, *Hipponyx*)

= Amaltheidae Dall, 1889, Thiele, 1925; not Hyatt, 1867, sensu Tinker (1959), in Cephalopoda by Opin. 575

Hipponyx DeFrance 1819, (Bull. Soc. Philom.: 9; cf. Melvill, 1906); as *Hipponix* DeFrance 1819 (J. Phys. Chim., Hist. nat. 88:215; cf. Smith, 1906, Bigot, 1943); DeFrance's separation from *Capulus* was at the beginning not always accepted (cf. de Koninck, 1843); the name *Amalthea* is used by Thiele (1929); Type: *Pat cornucopiae* Lam., 1803; also as *cornucopia* SD Anton, 1839 by Burch (1946) and with SD Gray, 1847 by Woodring (1928), Wenz (1940); Cernohorsky (1972) didn't accept SD Gray while 2 types are listed and gave SD Woodward, 1851

= *Cochlolepas* (ex Klein, 1753) and with *Concholepas* (error pro *Cochlolepas*) H. & A. Adams, 1854; as syn. by Zittel, 1887, Cossmann & al. (1917), Thiele with ?, Wenz (1940); as genus in Capulidae by Angas (1867), Arango & Molina (1878) with *Pat. antiquata* L.; not *Concholepas* Lamarck, 1801 which was placed in Lamarck's single patelliform division with *C. peruviana* as monotype (= *Buccinum concholepas* Brug., 1789, = *Patella lepas* Gmel., 1791) and which was later transferred into Muricidae

- by Thiele (1931), Beu (1970), into Drupinae by Wenz (1941), Franc (1968) and into Thaididae by Lambiotte (1975), Kensley (1985)
- = *Cochlearia* (ex Klein, 1753) syn. of *Hipponyx* by Paetel (1883)
 - = *Capulonyx* Iredale, 1929 (Capulonyx Martyn not binominal); as ? *Amalthea* by Thiele (1931); *Capulonyx* as syn. of ? *Sabia* by Wenz (1940); as genus in Capulidae by Iredale & McMichael (1962); Type MD: *Pat. calyptra* Martyn, listed by Hedley as *Capulus* (= *Pileopsis danieli* Crosse, 1858)
 - = *Pilosabia* Iredale, 1929; near to *Amalthea* by Thiele (1929); as subg. by Wenz (1940), Kay (1959); as genus by Morrison (1965), Kuroda & al. (1971), Rehder (1980), Vaught (1989); Type MD: *Pileopsis pilosus* Desh., 1831 (= *Pat. trigona* Gmel.)
 - subg. *Antisabia* Iredale, 1937 (* as genus); named *Hipp.* by Cowan (1974); as genus by Rehder (1980), Vaught (1989); Type OD: *Hipp. foliaceus*, Q.G., 1835
 - subg. *Malluvium* Melvill, 1906 (Proc. Malac. Soc. Lond., 7(2):81, June 1906, not 1907 as in Zool. Rec.) (* as subg. of "*Amalthea* Schum."); as subg. of *Cap.* by Woodring (1928); as syn. of *Amalthea* by Thiele (1929), Peile (1935), contested by Iredale (1937); as genus by Rios (1975); *Malluvium* as premature and unnecessary by Smith (1960); Type OD: *Cap. lissus* E.A. Smith, 1894 (Mio-Rec)
 - subg. + *Rothpletzia* Simonelli (in Rothpletz & Sim.), 1890; as 1891 by Neave (1940); Type MD: *R. rudista*;
 - = + *Neomonopleura* Hodson & Harris, 1931, (Olig-Mio)
 - subg. *Sabia* Gray, 1847 (* as genus); "Gray, 1833" quoted by Gray, 1847, is a lapsus teste Iredale (1937); Gray, 1841 quoted by Sherborn is n.nud.; as *Sabisa* (lapsus) syn. of *Amalthea* by Kuroda & al. (1971); as genus by e.g. Morrison (1965), Rehder (1980), Vaught (1989, with "Gray, 1839 ?, non Reeve, 1842"); as syn. of *Amalthea* by Paetel (1883), Thiele (1929); Type OD: *Amalthea conica* Schumacher, 1817
 - = *Amalthea* Schumacher, 1817; (non Rafinesque, 1815 -1817 given by Wenz, 1940-, nec *Amaltheus* Montfort, 1808; as genus by Gray (1847); name used by Melvill (1906), Nobre (1909, with *Amathea* in error), Thiele (1929), Risbec (1955, suggesting that they belong to Cerithiacea) and S. Afr. authors; Type: *A. conica*, (as MD of the first section of Schumacher), SD Gray, 1847, same type as *Sabia* Gray
 - = *Trochilina* Gray, 1867 (* in tribe Mitrellina); with first example of 6 spec. *Cal. conica* Brod. which is also first of 21 spec. in Thesaurus Sow., 1883; as syn. of *Mitrolaria* (= *Cheilea*) by Tryon (1886)
 - = *Sabina* Zittel, 1882 (id. 1887)
 - = *Saptadanta* Prashad & Rao, 1934 (* in Lepetellidae); in Amaltheidae by Peile (1935); still in Lepetellidae by Rao (1960), Moskalev (1973); as syn. of *Sabia* by Iredale (1937); Type MD: *S. nasika*
 - = *Cheilea* Modeer, 1793
 - in Amaltheidae (= Hipponicidae) by Thiele (1929), Wenz (1940); "is more dissimilar to *Hipp.* than to *Capulus*" wrote Cernohorsky (1968, Veliger 10(3):276) but he didn't change the position; in Calyptraeidae by Kuroda (1941); in "Hipponicacea" in the Zool. Rec. (1986); in fam. Cheileidae, superfam. Cheileacea by Ludbrook (1941); in fam. Cheileidae by Iredale & al. (1962), Kuroda & al. (1971); kept in Amaltheidae by Barnard (1963) who wrote: as *Cheilea* "is the oldest genus, the family name should be Cheileidae, and the Stirps Cheileacea"; in Crepidulidae by Rehder (1980); Type: *Pat. equestris* L., 1758, SD Woodring, 1928; as date 1767 by Nordsieck (1982); not *Pat. equestris* Wood which is *Pat. diliwyni* Gray; (Eoc-Rec)
 - = *Calyptra* (ex Klein, 1753) Humphrey, 1797, with *Pat. tectum chinensis*; rejected ICZN Op. 51; as genus by Gray (1847) and H. & A. Adams (1854) with type *Pat. equestris*; as sole genus in tribe Calyptrina by Gray, 1867; as *Calyptrus* by Montfort, 1810,

- with type *equestris*; as *Calyptria* Løsson, 1830 (cf. Gray, 1847, with *Cemoria* Risso, 1826 as syn., which is now syn. of *Rimula*)
- = *Calyptraea* Lamarck, 1801, Type: *C. equestris* (not 1799, with type *chinensis*)
 - = *Mitralaria* Schumacher, 1817; name used by Tryon (1886), Smith (1890), Cossmann (1890), Peyrot (1917), Yen (1933), Termier (1968); name discarded by Dall (1900, *Nautilus* 14:44); as subg. of *Cal.* by Speyer (1864) and as syn. by Paetel (1883); Type OD: *Pat. equestris* L.
 - = *Lithedaphus* Owen, 1843, Type: *Pat. equestris*
 - = *Litholepas* Gray, 1847; n. nov. pro *Lithedaphus* (cf. Neave, 1939)
 - = *Poculina* Gray, 1867 (* in new tribe Mitrellina); as syn. of *Mitralaria* (= *Cheilea*) by Tryon (1886); as syn. of *Cal.* by Dall (1909); as first of 3 spec. *Cal. unguis* Brod.; Type: *Pat. equestris*
- Cochlear* Mörch, 1877; as genus by Vaught (1989) with a query for the date 1877) as *Hipponix* (*Cochlear*) by Kay (1979) (for *imbricatus* Gld, 1846 of Hawaii)
- + *Hartites* Howell & Knight, 1936, n. nov. pro *Hartia* Walcott, 1884 (non Steindachner, 1877, = *Pisces*); new name not necessary if one of the following dates is exact: Walcott, 1874 (in Tryon, 1886) or Steind., 1887 (in *Zool. Rec.*, 1936); systematic position, even as gastropod, unwarranted by Howell & Knight
 - = *Hartia* Walcott, 1884, Type MD: + *Hartia matthewi* (Camb)
- CALYPTRAEOIDEA** Lamarck, 1809 (* Les Calyptraciens)
- the genera in this taxon, including originally *Fiss.*, *Emarg.*, have continuously been changed; Férussac (1819) put the group in Patelloides; Blainville (1825) put it in Scutibranchiata with: *Crep.*, *Cal.*, *Cap.*, *Hipp.*, *Notrema* (this last genus Raf., 1819, which is fluviatic with central aperture for the head and a lateral small valve on the underside, is very doubtful and was later transformed into *Tremesia* Blv.); Gray (1853) put in Calyptraeidae e.g. *Crypta*, *Galerus*, *Cruc.*, *Cal.*, *Trochita*, mentioned in 1854 *Infundibulum* and in 1867 he included 7 tribes and 18 genera: *Trochitina* (with *Trochita*, *Clypeola*, *Trochella*), *Cryptaina* (with *Crepipatella*, *Crypta*, *Garnotia*), *Ergaeina* (with *Ergaea*, *Noicia*), *Mitrellina* (with *Mitrella*, *Trochilina*, *Poculina*), an unnamed tribe (with only *Galerus*), *Dispoteana* (with *Neleta*, *Trelania*, *Catillina*, *Dispotea*, *Crucibulum*) and *Calyptrina* (with *Calyptra*).
- Sowerby (1883) retained 4 of the 18 genera of Gray, 1867: *Cal.*, *Cruc.*, *Trochita*, *Crep.*; Thiele (1925) retained Calyptraeidae, Capulidae and in 1929 he added Trichotropidae and Anaplocamidae; Fischer P.H. (1955) mentioned as subdivision or syn. of *Calyptraea* 7 of the 18 genera: *Trochita*, *Clypeola*, *Trochella*, *Mitrella*, *Trochilina*, *Poculina*, *Galerus*; in 1975 Golikov & Starobogatov included Trichotropidae Gray, 1850, Capulidae Fleming, 1822, Calyptraeidae, Xenophoridae Phil., 1856 (now in Xenophoroidea), Lycopyclidae Thiele, 1925, Lamelliphoridae Korobkov, 1951 (these last 2 fam. are omitted by Taylor & Sohl, 1962 and Boss, 1982); as Crepiduloidea by Golikov & Starobogatov; Haszprunar (1988) preferred Calyptraeoidea in the suborder Neotaenioglossa Haller, 1892, order Caenogastropoda; McLean (1981) mentioned: "Four poorly known Devonian genera, *Procrucibulum*, *Paragalerus*, *Progalerus*, *Protocalyptraea*, have names that imply some similarity to the shell form of calyptraeids. An affinity of these genera to the Calyptraeidae, which appeared in the Cretaceous (Hoagland, 1977) has to be ruled out. However, these genera are of interest as possible precursors to the Neomphalidae." I don't list these Devonian genera and keep Calyptraeidae and Crepidulidae separated
- = Crepiduladae Fleming, 1822; as Crepiduloidea, name translated by Carnes (1975) (cf. Ponder & Warén, 1988)

- = Scutibranchiata (pars) Blainville, 1825 (with patelliform but not symmetrical shells, divided into the families Otidea and Calyptreae)
- = Les Piléiformes Latreille, 1825 (pars), with *Cal.*, *Crep.*, *Hipp.*, *Cap.*, *Fiss.*, *Emarg.*, *Scutus*
- = Calyptraciana Lea 1833 (cf. Ponder & Warén, 1988); not Calyptreae Jay, 1839 (not Jay, 1852) including *Emarg.*, *Fiss.* etc.
- = Capulidae Cuvier by Zittel (1887), including *Cal.*, *Cap.*, *Hipp.*, *Crep.*, etc.
- CALYPTRAEIDAE** Lamarck, 1809 (= cup-and-saucer limpets)
 - as author Blainville, 1824 by Franc (1968), Piani (1980), Nordsieck (1982, with 1834 for the superfam.), Bruschi & al. (1985), Seagems Catal. (1985, as subfam.), Squires (1987), Graham (1988); as author Broderip, 1834 by de Koninck (1883), Cossmann & Peyr. (1917); as Gray by Yen (1933); as Calyptridae Brod. by Angas (1867, with *Trochita*, *Crypta*, *Galerus*), B.D.D. (1882); in Hipponicoidea by Iredale, 1962; priority is given to Crepidulidae by Hemmen (1979), Rehder (1980)
 - = Trachelobranchia Gray by Potiez & Michaud (1838)
 - = tribe Mitrellina Gray, 1867 (pars, with *Mitrella*, *Trochilina*; not *Poculina*) considered as syn. of *Calyptraea* by Thiele (1929) and Wenz (1940)
- Calyptraea* Lamarck, 1799; (* as *Calyptroea* p.78; in tab.: *Calyptraea*); as *Calyptrus* Montfort, 1810; as *Calyptrea* Raf., 1815 (pro - *troea* Lam.); as *Calyptria* Gray, 1847, pro *Calyptroa* (err.) Lam.; Broderip (1834) included here 5 subg.: *Cal.*, *Calypeopsis* Lesson (= *Crucibulum*), *Syphopatella*, *Crepidatella*, *Crepidula* Lesson (sic); Tryon (1886) chose other subg.: *Galeropsis*, *Infundibulum* (with *Trochita* as syn.), and *Sigapatella*; Dall (1909) retained: *Cal.*, *Trochita*, *Sigapatella*; Thiele (1929) cited 6 sections: *Cal.*, *Trochatella*, *Sigapatella*, *Clypeola*, *Bicatillus*, *Crucibulum*; Wenz (1940) added *Spirogalerus* and *Calyptropsis*; Type MD: *Pat. chinensis* L., 1758, (ICZN.Op. 94), written *sinensis* by Gmelin et auctt.; non *Cal.* Lam., 1801 which is *Cheilea* Modeer, 1793, with type *Pat. equestris*
- = *Ancilla* Gevers, 1778; as syn. of *Galerus* by Gray, 1847; as *Ancilia* Meuschen, 1787, (non binom.) with 4 linnaean spec.: *Pat. ungarica*, *equestris*, *chinensis*, *fornicata*
- = *Galerus* Humphrey, 1797, (rejected ICZN, Op.51); name accepted by Finlay (1926); name cited by Gray (1847) with type *Pat. chinensis* and having as syn.: *Trochita* Schum., *Mitrula* Gray, 1821, *Trochilea* Swainson, 1837, *Trochilla* Swainson, 1840; has many syn. by Paetel (1883): *Ancyle* Meuschen, *Mitella* Argenville, *Mitrula* Gray, *Trochilla* Swainson, *Infundibulum* Sow, *Sigapatella* Lesson, *Siphopatella* Lesson
- = *Infundibulum* Montfort, 1810; as author Sowerby by Dall (1909); as subg. by Tryon (1886); Type: *Trochus apertus* Sol., (cf. Gray, 1847)
- = *Mitrula* Gray, 1821, (non Menke, 1830); with *Pat. chinensis*; as syn. of *Galerus* by Gray (1847); as syn. of *Crucibulum* by Deshayes (1864)
- = *Mitella* Leach (in Gray), 1852; not 1847 as Neave (1940) et auctt.; Type MD: *M. sinensis* (= *Pat. chinensis*)
- = *Mitrella* Gray, 1867 (non Risso, 1826) (* in tribe Mitrellina); as syn. of *Mitrolaria* (= *Cheilea*) by Tryon (1886); Gray included 4 spec. with *M. spinifera* as only new one
- = *Calyptra* (ex Klein, 1753) sensu B.D.D., 1882; as *Calyptra* by Vincent (1930); non *Calyptra* Humph. (as syn. of *Cal.* by Paetel, 1883, and treated here as syn. of *Cheilea*) nor Ossenheimer, 1816 (= Lep.) nec Leuckart, 1856 (= Coel.)
- subg. *Calyptropsis* Tate, 1893 (* as genus); this name is preoccupied by Broderip, 1824, a syn. of *Crucibulum*; as subg. by Suter (1906), Wenz (1940); as syn. of *Sigapatella* by Boshier (1961); Type: *C. arachnoides*, SD. Harris G.F., 1897
- subg. *Desmaulus* Rehder, 1943 (* as subg. of *Cal.*); with a query by Kilburn (1980); Type OD: *Cal. extintorium* Lam., sensu Blv. 1825 (not Sow., see *Bicatillus* below)

- subg.+ *Spirogalerus* Finlay & Marwick, 1937 (* as genus in Calyptraeidae; not patelliform, with resemblance to *Lamellaria*), Type MD: *S.lamellaria* (Paleo)
- subg. *Trochita* Schumacher, 1817; as genus by Gray (1847) with as syn. *Infundibulum* d'Orb., 1846 (non Montf. nec J.Sow.) and type *Pat. trochoides*; in tribe Trochitina by Gray, 1867; as syn. of *Cal.* by Cossmann (1888), Cossm. & Peyr. (1917), Thiele (1929); as sect. of *Cal.* by Dall (1909); as subg. of *Cal.* by Wenz (1940), Keen (1971), McLean (1973), Vaught (1989); as genus by Paetel (1883) with as syn.: *Luna* Klein, *Infundibulum* d'Orb., *Trochatella* Less. and as sect.: *Trochita* and *Haliotideae*; as genus by Olsson & Peile (1964); Type: *T. spiralis*, SD Rehder, 1943, (= *Trochus radians* Lam., 1816); the SD Gray, 1847 (*Pat. trochoides* Dillwyn, 1817) and SD Wenz, 1940 (*Pat. trochiformis* Gmel.), are not valid while originally not included in Schumacher's two sections of which the first is typified by *Pat. chinensis* and the second by *spiralis*
- = *Infundibulum* J.Sow., 1815 (non Montfort); as author d'Orb., 1841 by Keferstein (in Bronn, 1862), Gray (1967) and as syn. of *Trochita*, while Speyer (1864) put *Trochita* as syn.; as subg. of *Trochita* by Gray (1847); as subg. of *Cal.* with *Trochita* as syn. and *Trochus trochiformis* Gmel. as type by Bronn (1838), Wenz (1940)
- = *Trochatella* Lesson, 1830 (* as subg. of *Cal.*); as subg. of *Trochita* by Gray (1847); as subg. of *Cal.* by Gray, 1854, and as syn. by Gray (1867); as sect. of *Cal.* by Thiele (1929); Type MD: *Cal.(T.) araucana* (= *Trochus radians* Lam.)
- = *Trochilla* Swainson, 1840 (* as subg. of *Cal.*, with *auriculata* and *pileus* Sow.); as subg. of *Trochita* by Gray 1847 with Type: *Infundibulum pileus* Sow, 1839; (SD Rehder, 1943, was unnecessary); as syn. ? *Trochilea* Swainson, 1837
- + *Bicatillus* Swainson 1840 (* as subg. of *Cal.*, with *extinctorium* "Sow. Gen. f. 3" and *deformis* "l b. f. 1"); as syn. of *Crucibulum* by Paetel (1883), Zittel (1887, as "*Bicatillus*"); as sect. of *Cruc.* by Tryon (1886), Cossm. & al. (1917) and as subg. by Lamy (1911), Fischer P.H. (1950); as sect. of *Cal.* by Thiele (1929) and as subg. by Wenz (1940); as subg. of *Galerus* (= *Cal.*) by Gray (1847); as subg. of *Sigapatella* by Vaught (1989); Swainson's first species (*Cal.? extinctorium* Sow., 1824), considered as type by Gray (1847), Wenz (1940), is different from *extinctorium* Lam. (first spec. in Tryon) and is, teste Rehder (1943), "apparently *Crucibulum imbricatum* Sow."; Type: *deformis* DeFr., SD Herrmannsen, 1846 (Mio)
- = *Trelania* Gray, 1867 (* in new tribe Dispotaeana); as syn. by Thiele (1929), Wenz (1940), Vaught (1989); as syn. of *Mitularia* (= *Cheilea*) by Tryon (1886); as syn. of *Cruc.* by Zittel (1887), Cossmann & Peyrot (1917); in *Crucibulum* by Fischer P.H. (1950); Type MD: *Cal. radiata* Broderip,
- + *Calyptroides* Clark, 1946 (* "has characters common to both" *Cal.* and *Cruc.*), Type MD: *C. bolivarensis* (Eoc)
- + *Calyptronerita* Le Renard 1980 (* in Calyptraeidae having the general shape of Neritidae), Type MD: *C.+ dolinorum* (Eoc)
- Crucibulum* Schumacher, 1817; as sect. of *Cal.* by Thiele (1929) and as subg. by Wenz (1940); Type: *C. planum*, SD Keen, 1958 (= Gmelin, 1791) (= *auriculata* by Gray, 1847); *Pat. scutellata* Gray, previous type species mentioned by Thiele and Wenz, and *Cruc. rude* Brod., 1835, mentioned by Fischer, Tryon, Cossm. & al. (1917) are not in Schumacher; (Mio-Rec)
- = *Calyptropsis* Broderip, 1824 (non sensu Tate, 1893); Gray (1847) included as subg. *Calypeopsis* with 3 different authors: Brod., 1824 (with type OD: *Cal. spinosa*), d'Orb. (with first ex. *Cal. striata* Say) and Lesson 1830 (with MD: *C.(C.) rugosa*); the last one, *Calypeopsis* Less., is by Paetel (1883) and auctt. syn. of *Dispotaea* with *Cal. tubifera* as type

- = *Biconia* Swainson, 1840 (* as subg. of *Cal.*, without spec.); syn. of *Cruc.* by Gray, 1847, 1867, including *Pat. auriculata* which was in *Trochilla* by Swainson
- = *Catillina* Gray, 1867 (* in new tribe Dispotearia), Type MD: *Cal. pectinata* Carp.
- = *Jeleta* Gray, 1867 (* in new tribe Dispotearia), Type MD: *Cal. serrata* Brod.
- subg. *Dispotaea* Say, 1824 (* *Dispotea*, sect. of *Crucibulum*); as date 1826 by Tryon (1886), Vaught (1989); emend. of *Dispotea* by Conrad, 1841, teste Cossmann & Peyr. (1917); as genus by Rochebrune (1883); as syn. of *Cruc.* by Tryon (1886) and of *Crep.* by Vaught (1989), which was not accepted by Fischer (1955); as subg. of *Cruc.* by Keen (1971) and of *Crep.* by Thiele (1929), Wenz (1940); Gray (1867) made a difference between *Dispotea* Adams (with *Calypeopsis* Lesson as syn. and *Cal. striata* as first spec.) and *Dispotea* Say (syn. of *Crucibulum* with *Calyptropsis* Brod. as syn.), both in his new tribe Dispotearia Gray, 1867; Type: *Cal. costata* Say, 1824, SD: *C. (D.) MacNeil* & al., 1984; as other type *Cal. striata* Say by Cossm. & al. (1917), Wenz (1940); (Olig-Rec)
- = *irpsa* Stephenson, 1952 (* in Trichotropidae), Type OD: *L. Cornuta* (Cenomanian); not limpetform but put in in the Calyptraeacea by Stephenson (1954)
- Sigapatella* Lesson, 1830 (* subg. of *Cal.*); idem by Tryon (1886), Lamy (1911), Ludbrook (1978); as syn. of ?*Galerus* Humph. (= *Cheilea*) by Gray (1847); as syn. of *Cal.* by Paetel (1883); as sect. of *Cal.* by Dall (1909), Thiele (199); as genus by Smith (1915), Mestayer (1928), Boshier (1961); Type: *Cal. Novae Zelandiae*, SD Gray, 1847 (Cret-Rec); as *novozelandiae* by Wenz (1940); Garrard (1961) mentioned *novae zelandiae* SD Dall, 1909 (= *Trochus calyptraeiformis* Lam., 1822) (Eoc)
- = *Haliotidea* Swainson, 1840 (* as subg. of *Cal.*); as syn. by Dall (1909), auctt.; as sect. of *Trochita* by Paetel (1883); as *Haliotoideus* by Gray, 1867 (lapses teste Dall, 1909); as *Haliotoidea* Sws. by Tryon (1886), Zittel (trad. 1887) (non Menke, 1839 nec Humphrey, 1797, which is syn. of *Stomax* (= *Stomatia*) by Gray (1847)
- = *Galeropsis* Conrad, 1866 (non Hupé, 1858, nec Kutassy, 1937, the latter is *Galeropsidea* in Crepidulinae); as subg. of *Cal.* by Tryon (1886), (Eoc); Type: *Galerus + excentricus* Gabb, 1864, placed in *Cal. (Sigapatella)* by Dall (1909)
- = *Trochella* Gray, 1867 (* in tribe Trochitina Gray, 1867, with as 2nd example *Trochus calyptraeiformis* Lk.); as syn. by Tryon (1886), Dall (1909), Thiele, Wenz (1940)
- = *Calyptropsis* Tate, 1893 (non Brod. teste Boshier (1961); see under *Crucibulum*)
- subg. *Clypeola* Gray, 1867 (* as genus in tribe Trochitina), (not *Clypeolum* Récluz, 1850, teste Dall, 1909); as syn. of *Cal. (Infundibulum)* by Tryon (1886); as syn. of *Trochita* by Olsson & Peile (1964); as subg. of *Cal.* with *C. tenuis* Gray as type by Wenz (1940); Type: *C. magellanica* (first spec.) (= *Trochita clypeolum* Rve, 1859, cited as syn. by Gray; = *decipiens* Philippi, 1845)
- = *Gegalerus* Finlay, 1926 (* as genus); as genus by Rehder (1943), Powell (1962), Cumber (1981); as syn. of *Infundibulum* by Tryon (1866) and of *Clypeola* by Thiele (1929), Wenz (1940), Vaught (1989); Type OD: *Clypeola tenuis* Gray, 1867; as other type: *Z. gigantus* by Beu (1970)
- lphinoe* H. & A. Adams, 1854; proposed suppression 1988 (preoccupied by Bate, 1856, in Crustacea); used by Ohara (1972) as Pleistocene genus in Calyptraea
- + *Turbocalyptraea* Eames, 1957, Type MD: *T. scabrosa* (Eoc)
- ? *Zelippistes*, in Calyptraeacea teste Tucker J.K. (1981) (unknown to me)
(= slipper limpets, = half desks)
as authors: Fleming, 1822 by Ccelho (1979), Rehder (1980); Blainville, 1824 by Squires (1987); d'Orbigny by Ryckholt (1847); Iredale, 1962 put this fam. with Calyptraeidae and Cheileidae in Hipponicoidea; as subfam. in Calyptraeidae by Kuroda & al. (1971), Higo (1973); the tribe Cryptaina by Gray (1867); *Crep.* has also

been placed in other fam., e.g. in Capulidae by Nobre (1909), Calyptraeidae by Piani (1980) and in no fam. by Bruschi & al.(1985)

- Crepidula* Lamarck, 1799; these shells with an internal shelf for support of the soft parts, are the most common of the family and the most studied. These "limp" sometimes appear in such large numbers on oyster beds that they smother the oysters" (cf. Collier, 1968); the fact that Linnaeus mentioned "*Crepidula michelii*" as citation of Gualtieri, is not sufficient to consider Linnaeus as author of *Crepidula*; as subg. of *Cal.* by Broderip (1834); Type MD: *Pat.fornicata* L. 1758; as other types: *Pat.porcellana* Lam. 1801 by Dall (1909), *navicella* (in *Crep.* Lesson, 1830) by Gray (1847); as *Crepidulus* Montfort, 1810 with *C.fornicatus* Lam.
- = Le Sulin Adanson, 1757.
- = *Crypta* (after Hwass) Humphrey, 1797 (only by name in a catal.) Rejected ICZN Op.51; as section by Mörch, 1852, with *Crep.fornicata* as type; as genus name by Brusina (1866); as genus by Angas (1867) with *Crepipatella* and *Ianachus* as subg.; in the tribe Cryptaina by Gray, 1867, having *Crep.* Lam. as syn.; *Crypta* with *aculeata* as type, has been established later and is syn. of *Bostrycapulus*
- = *Lephyrobolus* Schlueter, 1838; as *Lephyrobolus* and as syn. by Paetel (1883)
- = *Liroscapha* Conrad, 1869; as *Liroscaphe* by Paetel (1875); as *Lyroscapha* by Tryon (1886); in ? Acmaeidae by Dall (1909); in *Crep.* by Wenz (1940); Type OD: *L.squamosa*
- = *Proscenula* Perry, 1811; as *Proxenula* (lapsus) in Férussac (1820), Adams (1854), Paetel (1883); as syn. by Paetel (1883), Dall (1909), Thiele (1929); *P.viridis* Perry as first spec.
- = *Zeacrypta* Finlay, 1926 (* as subg. of *Maoricrypta*); as sect. by Thiele (1929); as subg. by Wenz (1940) and of *Cal.* by Ludbrook (1978); as genus by Iredale & al. (1962); Type OD: *Cal.monoxyla* Lesson, 1830 (identical with *Zeacrypta* Allan, 1926 (in Calyptraeacea) that requested is by Beu & al. (1969) for suppression (Bull. Zool. Nom. 26: 42), (Mio-Rec)
- subg. *Bostrycapulus* Olsson & Harbison, 1953 (1817) (* n.nov. pro *Sandalium* Schum. 1817 (non Retzius, 1788, nec Oken, 1815); as genus by Kuroda & al. (1971), auctt.
- = *Sandalium* Schumacher, 1817; as syn. of *Crypta* by Gray (1847, 1867), Paetel (1883); and of *Crep.* by Zittel, Dall (1909, with *porcellana* as type), Thiele, Wenz; as full genus by Hoagland (1977), Vaught (1989, with *Retzius* as n.nud.); as *Sandalinum* Récluz, 1841 (lapsus); Type OD: *Pat.aculeata* Gmelin, 1791
- = *Elara* H. & A. Adams, 1856; as syn. of *Sandalium* by Vaught (1989)
- = *Elana* Gray, 1867; as syn. of *Sandalium* by Vaught (1989)
- = *Crypta* Gray, 1867; as genus by Rochebrune (1883); as subg. of *Crep.* by Lamy (1909); I consider this name preoccupied by Mörch, 1852 (not by Humphrey); Dall (1889) suggested to take the name *Sandalium* for *Crypta* in Fischer (1888); Type: *Pat.aculeata* (cf. Cossm. & Peyr., 1917)
- subg.+ *Concavimargo* Eames, 1957, Type MD: *Crep.falconeri* Newton, 1922 (Eoc)
- subg. *Ianachus* Mörch, 1852; as "*Inacus*" H. & A. Adams; as "*Inachus*" by Gray (1867), B.D.D. (1882); as sect. "*Janachus*" by Paetel (1883), auctt.; as sect. "*Janachus*" by Cossm. & Peyr. (1917); as *Ianachus* by Haller (1892), Dall (1909); as syn. of *Crypta* by Gray (1867), of *Crep.* by Zittel (1887); Type: *Crep. plana* Say (= *unguiformis* Lam., teste Wenz, 1940), SD Harris, 1897 (cf. Burch, 1946) (Mio-Rec)
- subg. *Maoricrypta* Finlay, 1926, Type OD: *Crep. costata* Sow, 1824 (Olig-Rec)
- subg.+ *Spirocrypta* Gabb, 1864; as syn. of *Crep.* by Zittel (1887), Dall (1909), Stewart (1927); as sect. by Tryon (1886); Type MD: *Crypta* (*S.*) *pileum* (Cret)

- subg. *Syphopatella* Lesson, 1830 (* subg. of *Calyptraea*); as *Trochita* (S.) Brod., 1834, type *Cal. sordida*, by Gray (1847); as syn. of *Galerus* by Paetel (1883); as genus by Higo (1973); as *Siphopatella* by auct., e.g. by Zittel (1887, citing it as syn. of *Cruc.*) and Agassiz (1846) (non *Siphonipatella* Agass. as by Wenz (1940)); Type: *Crep. walshi* Reeve, 1859, SD Tryon, 1886; Kuroda & al. (1971) used the name *Ergaea* while type not included in Lesson; Tryon's error is no reason to punish Lesson; as other type: *Crep. plana* Ad. & Rve by Cossmann & Peyrot, 1917; (Plio-Rec)
- = *Ergaea* H. & A. Adams, 1854; as *Ergea* by Zittel (1887); as *Egaea* by Paetel (1883); with *E. walshi* Rve as sole spec. by Gray (1867); as syn. *plana* Ad. & Rve (not Say) by Paetel; as first spec. teste Dall (1909); with *Noicia* in tribe Ergaeina Gray, 1867 as genus with *Syphopatella* as syn. by Haller (1892)
- = *Noicia* Gray, 1867 (* in tribe Ergaeina Gray, 1867); in ? *Crucibulum* by Fischer P.H. (1955); Type MD: *N. chinensis* (not preoccupied by *Pat. chinensis* L.)
- Ahora* H. Adams, 1861; elevated to generic rank by Keen (1969, Veliger, 11:439)
- Crepipatella* Lesson, 1830; as subg. of *Cal.* by Broderip (1834); as *Crypta* (C.) Brod., 1834, type *Cal. foliacea*, by Gray (1847); as genus in tribe Cryptaina Gray, 1867; as syn. of *Crep.* by Tryon (1886) who considered *Garnotia* as a section; as genus by Higo (1973), Woodring (ms. in Burch, 1946, Conch. Club S. Calif.: 17), Vaught (1989); Keen (1971): "internal desk detached along a part of one side"; Type OD: *Crep. (C.) adolpheii* Lesson, 1830, (as *adolphi* by Dell, 1971), SD Gray, 1847 (= *dilatata* Lam., 1822) teste Dall (1909), auct., (Plio-Rec)
- = *Garnotia* Gray, 1857; in 1867 placed by Gray in the tribe Cryptaina which included *Crepipatella* and *Crypta*; as sect. by Tryon (1886), Thiele (1929); as subg. by Lamy (1909), Cossmann & Peyr. (1917); as syn. by Zittel (1887); Type MD: *Crep. adunca* Sow.; as other type: *Crep. solida* Hinds by Wenz (1940), (Mio-Rec)
- subg. + *Verticumbo* Berry, 1940; as subg. by Burch (1946, suggested by Woodward ms.), Vaught (1989); Type: *Crepipatella (V.) charabdis* (Pleist)
- + *Damesia* Holzapfel, 1888; near to *Crep.* by Cossm., 1890; assigned to Neritopsidae by Knight & al. (1960); possible affinity to Lepetodrioloidea by McLean (1988); Type: *Crep. cretacea* Muller (Cret)
- + *Galericulis* Seeley 1861; in Calyptraeidae but between brackets by Tryon (1886); with a ? by Wenz (1940); as syn. of *Cal.* by Fischer P.H. (1955); Type: *G. altus* (Cret)
- Galeropsidea* Zilch, 1949
- = *Galeropsis* Kutassy, 1937 (non Hupé, 1860, nec Conrad, 1866)
- CAPULIDAE** Férussac, 1821 (* Capuluside); as author Fleming, 1822 by Franc (1969), Nordsieck (1982), Barberini (1985 in Argonauta, N°1, p.23), Graham (1988); Gray (1853) included: *Cap.*, *Hipp.*, *Amalthia* (error), *Amalthina*; earlier mixed up with *Platyceras* Conrad and *Diaphorostoma* Fischer, teste Cossmann & Peyr. (1917); in Hipponicaceae by Cernohorsky (1972) and in Crepiduloidea by Vaught (1989); as superfam. by Cossmann (1921) and by Termier (in Grassé, 1968) who included Hipponycidae, Calyptraeidae, Capulidae; Thycinae (now in Eulimoidea) was included here by Franc (1968); *Hyalorisia* and *Phryx* are no longer in this fam.
- = Les cabochons Férussac, 1819 (vernacular, non available) (* in Calyptraciens)
- Capulus* Montfort, 1810; (= le Cabochon in french and by Lamarck); Type OD: *Pat. ungarica* L., 1758; as author of the type: L., 1766 by Carcelles (1944) and L., 1767 by McLean (1982) (Cret-Rec); as *hungaricus* (latin name) by Montfort and auct.; as *hongaricus* by Rochebrune (1884); if the letter "h" is a reason to change Linnaeus' appellation, I remember other recommendations of the Code and take an adjective name (*hungariensis*) or a genitive case (*hungaricae*); biological studies were made by Yonge (1938), Graham (1954)

- = *Ancilla* (pars) Gevers, 1787 (cf. Gray, 1847)
- = *Galerita* Brongniart, in Roissy, 1805 (non Fabr., in Coleoptera) (cf. Paetel, B.D.D.); non Rafinesque, 1814 (n.nud., in Ancyliodia)
- = *Pileopsis* Lamarck, 1822 with same type as *Capulus* (= Le Cabochon Lam., 1812, no available); de Koninck (1842) wondered why Lamarck changed the name; as genus by Krauss (1847) with *pilosus* Desh. as spec. (Sil-Rec)
- = *Concholepas* sensu Brewster, 1813 (non Lam., 1801, cf. above, under *Hipponyx*)
- = *Amalthea* (pars) Schumacher, 1817 (cf. Gray, 1847)
- = *Actita* Fischer de Waldheim, 1825; as syn. by de Koninck, 1843, Bischof, 1849, auctt.
- = + *Brocchia* Bronn, 1827; MacNeil & Dockery (1984) considered *Brocchia* Bronn, 1828 as subg. and gave diagnostic characters; as genus by Hoeninghaus (1831), Gray (1847); as sect. by Tryon (1886); as subg. of *Cap.* by Cossmann & Peyrot (1917), Wenz (1940); as "*Brocchia*. Brown. *Patella sinuata* ?" by Sow. (1852); Type: *Pat. sinuosa* Brocchi, 1814 (Plio); syn. of *C. hungaricus* and genus to resign by Jeffreys (1884), Crosse (1885)
- = *Leptonotis* Conrad, 1866
- = + *Neritoidei* de Koninck, 1883 (* as sect. of *Cap.* with *C. camelus* as first spec.)
- subg. *Capulella* Dall, 1924; as sect. by Thiele (1929) and as subg. by Wenz (1940); Type MD: *Capulus* (*C.*) *microceras* (Rec)
- subg. *Krebsia* Mörch, 1877; as syn. of *Hipponyx* by Tryon (1886), Dall (1889); as sect. by Thiele (1929) and as subg. by Wenz (1940); as genus by Vaught (1989) with subg. *Capulella* and *Tenpetasus*; Type: *Hipp. militaris* Mörch, 1877 (not homonym of *Pat. militaris* L., 1771 !) (= *Pileopsis intortus* Lam., 1822) (Eoc-Rec)
- = *Tenpetasus* Iredale, 1929 (* as genus), Type OD: *Cap. liberatus* Pease, 1868
- + *Acroculia* Phillips, 1841; as syn. of *Pat.* by de Ryckholt, 1852; as ? d'Orb., 1849, Paetel, 1883); as *Acrocyllia* Bischof & al., 1849; as valid genus by Oehlert (1853, Bull. Soc. géol.) who studied the muscles impressions of the devonian spec.; as syn. of *Platyceras* by Tryon (1886); Type: *A. sigmoidalis*
- + *Berthelinia* Crosse, 1875 (* capuliform, without fam.), Type MD: *B. elegans* (Eoc)
- Cyclothyca* Stearns, 1891 (Proc. USNM for 1890) (* as subg. of *Cap.*); as *Cyclothea* Stearns, 1890 by Petuch (1987) (Plio); Type MD: *C. corrugata*
- + *Gigantocapulus* Hayami & Kanie, 1980, Type MD: *Helcion giganteu* Schmidt, 1873 (Cret)
- Neojanacus* Suter, 1907; in Capulidae by Suter (1912), Powell (1962); in Calyptraeidae by Thiele, Wenz (1940), Fischer P.H. (1955, with a ?); Type MD: *N. perplexus*
- + *Platyceras* Conrad, 1840; as syn. of *Cap.* by Bischof & al. (1849), de Koninck (1883); as sect. of *Cap.* with *Pileopsis prisca* Goldf. as first of 7 spec. by Zittel (1887, trad.); as type genus of Platyceratidae by Knight & al., 1960; (Camb) by Tat (1892); as genus by Oehlert (1883, Dev), Lehmann & al. (1988) (Sil-Perm); as ex. *Cap. neritoideis* Phill. by Fischer P.H. (1962) (Carb)
- = *Spinosi* de Koninck, 1883 (* as sect. of *Cap.*, equivalent to *Platyceras*) with first spec. *Cap. tubulosus* (= *Cap. tubifer* de Ryckholt, 1847 (non J. Sow.) (Carb)
- subg. + *Orthonychia* Hall, 1843; as sect. of *Cap.* with *Acroculia conica* Barr. as first spec. by Zittel (1887); as sect. by Tryon (1886), Type: *P. spirale* Hall (Sil-Perm)
- = *Pileopsidei* de Koninck, 1883 (* as sect. of *Cap.*, equivalent to "*Orthonychia*") with *Cap. rectus* de Ryckholt, 1847 as first spec.; Type: *O. (Acroculia) elegans* Barr. (Sil)
- subg. + *Igoceras* Hall, 1859; as sect. by Tryon (1886); as sect. of *Cap.* with first spec. *Platyceras pileatum* Conrad by Zittel (1887, trad.) (Sil)

subg.+ *Exogyroceras* Meek & Worthen, 1868; as sect. by Tryon (1886); as sect. of *Cap.* by Zittel (1887, trad.); Type MD: *P.reversum* Hall

Thylacus Conrad, 1860; in ? *Capulidae* by Tryon (1886, with *Tylacus* as lapsus), as subg. of ? *Cap.* by Zittel (1887), Wenz (1940); as syn. of *Crep.* by Dall (1909); Type MD: *T.cretaceus* (Cret)

+ *Zinolia* Issel, 1922; as subg. of *Cap.* by Wenz (1940); Type MD: *Z.speciosa* (Plio)

NB: *Lippistes* Montfort, 1810, with the Japanese *L.rollei* v. Martens, 1894; seems a good *Capulus* in: Archiv Naturgesch., pl. xvi, fig. 21-22 (1897), Explanation plate, not text p. 174). This name has not been retained afterwards

TRICHOTROPIDAE Gray, 1850 (* as subfam.)

a small mesogastropod fam., in which Habe (1962) included 11 Japanese genera; turbinate shell except 2 patelliform genera *Amathina* and *Trichamathina*; other genera are not in this list, e.g.: *Trichotropis* Broderip & Sow., 1829, *Neoconcha* Smith, 1907 (* in Calyptraeacea), downgraded to subg. of *Torellia*, *Zelippistes*; *Amathina* was placed in *Capulidae* by Gray (1853), in *Pileopsidae* by Paetel (1883), in *Trichotropidae* by Habe (1962) who created *Trichamathina*; Ponder (1987) created the *Amathinidae* (in *Allogastropoda*: *Pyramidelloidea*); Ponder & Warén (1988) noted that *Cap.* and *Trichotropis* are members of *Capulidae*; Graham (1988) kept them in the *Hipponicacea*

Amathina Gray 1840; as date 1842 by Cossmann & al. (1917), Kuroda & al. (1970); as subg. of *Cal.* by Cossmann & al. (1917), of *Amalthea* by Thiele (1929) and of *Hipponix* by Wenz (1940); as *Amathina* (err.) Gray, 1848 by Xiutong (1987); Type: *Pat. tricarinata* L. 1767, SD Gray, 1847 (not *tricostata* Gmel., Sow., 1823); Ponder (1987) called it the "Pyramidellacean limpet" and said that a neotype should probably be selected, as Christiaens' lectotype (1982) is not valid

Trichamathina Habe, 1962, Type OD: *Amathina nobilis* A. Adams, 1867

Suborder **HETEROGLOSSA** Vaught, 1989

As single suborder in the order *Mesogastropoda* by Vaught (1989), including *Eulimoidea* H. & A. Adams, 1854, with as only patelliform group the *Thycidae*

THYCIDAE Thiele, 1929; as fam. in *Eulimoidea* by e.g. Vaught (1989), and **THYGINAE** (* in *Capulidae* (Calyptraeacea); not mentioned by Taylor & Sohl (1962) who put *Eulimacea* before *Hipponicacea*; in *Capulidae* by Wenz (1940), Franc & Ternier (1968); accepted in *Eulimidae* by Warén (1980), Shasky (1985)

Thyca H. & A. Adams, 1854; as sect. of *Cap.* by Tryon (1886); of *Pileopsis* (= *Cap.*) by Paetel (1883); Type: *Cap. crystallina* Gld, 1846; spec. in *Bessomia* by Shasky (1985); as other type: *astericola* Ad. & Rve by Thiele (1929), Wenz (1940), Franc (1968); Parasitic on asteroids in warm seas, without radula (Rec)

subg. *Bessomia* Berry, 1959 (* as subg. of *Thyca*), Type MD: *T. (B) callista*

= + *Amathinoides* Sacco, 1896; as syn. by Thiele (1929), Wenz (1940); as sect. of *Cap.* (*Amathina*) by Cossmann & Peyr. (1917); Type: *Nerita sulcosa* Brocchi (Plio)

subg. *Kiramodulus* Kuroda, 1949; example: *sagamiensis* Kuroda & Habe, 1971
= *Granulitheca* Habe, 1976, cfr. Warén, 1980

Piliscus Lovén, 1859; Warén (1989) found no publication of *Capulacmea* Sars before 1859 and kept *Piliscus*; Type MD: *Pilidium commodum* Middendorff, 1851; as *commodus* teste Warén 51989) and with Middend., 1849 as n. nud.; in *Capulidae* by Dall (1921), auctt.; *Allerya*, as subg. of *Piliscus*, is syn. of *Williamia* (see below)

= *Capulacmea* M. Sars, 1859; as sect. of *Cap.* by Tryon (1886); in *Lamellariidae* by Sars (1850) (cf. Van Regteren Altena & al., 1965, with "*Capulacmaea*"); as subg. of *Cap.* by Cossmann & Peyrot (1917); in *Velutidinae* by Thiele (1929, *Lamellariidae*),

Abbott (1974); in Velutididae by Warén (1989); Type: *Cap. radiatus* Sars 1851; not in Ruhoff 1850-70

= *Pilidium* Middendorf, 1849 (non Forbes, 1849) which is syn. of *lothia* Gray, 1857 Mosk. 1977

Subclass **OPISTHOBRANCHIA** Milne Edwards, 1848

= Platycochliodes Ihering, 1876, (pars), including the Euthyneura and Cephalopoda; Ihering called it later Platymalakia

= Euthyneura Spengel, 1881, (pars), including Opisthobranchia, Pteropoda, Pulmonata and accepted by Pelseneer (1892); Wenz (1943, corr.) included in this subclass Opisthobranchia, Basommatophora, Stylommatophora; Boettger (1955) re-employed the Pulmonata, accepted by e.g. Wenz & Zilch (1959), Lindner (1984)

= Opisthobranchiata Fischer P., 1885 (latinizing the second root)

= Pentaganglionata Salvini-Plawen & Haszprunar, 1987

Opisthobranchia is arranged in several orders: 14 by Taylor & Sohl (1962), 13 by Franc (1963), 12 by Barnes (1974) and Boss (in Parker, 1982), 9 by Vaught (1980) and Thompson (1987), 8 by Russell-Hunter (1987). Sometimes this subclass includes the Pulmonata or is divided into 2 superorders: Tecti- and Nudibranchia (cf. Pagenstecher 1877). The first superorder, Tectibranchia, includes e.g. the herbivorous Aplysiomorpha (= Anaspidea, Aplysiacea, = Sea hares), the carnivorous Thecosomata (= sea butterflies) and the Notaspidea with the limpetshelled Umbraculidae and Tylodinidae. Notaspidea has also been considered as superfam. in the second order Nudibranchia (see the Zool. Records 1989/90) and as suborder of Acoela (= Nudibranchia, = Sea slugs) embracing *Umbraculum* and *Pleurobranchus* (see Rothschild, 1964). The limits of these superorders are not well defined and I don't list them here. For Agassiz (1846) it was easier while he put the genera *Umbraculum*, *Tyloдина*, *Siph.*, *Gadina*, *Lottia* in single superfam., the "Umbrellacea".

Order **NOTASPIDEA** Fischer, 1883

= ? Semiphyllidiana Lam., in which Jay (1839, 3 ed. Cat. Shells) and Sow. G.B. II (1842) included *Pleurobranchus* and *Umbrella*; called "Semiphyllidia Lm" by Philippi (1844) to which he added *Pleurobranchaea* and *Tyloдина*, partially taken over by Petit de la Saussaye (1852); as "Les Semi-phyllidiens" with *Umbrella* by Sganzin (1842)

= Pleurobranchacea Deshayes, 1830; Franc (1968) gave priority to this name

= Pleurobranchomorpha Pelseneer, 1906 (* as tribe in order Opisthobranchia)

= Side-gilled sea slugs

Odhner (1939) divided the Notaspidea into Umbraculacea (with external patelliform shell) and Pleurobranchacea (with internal or no shell, not treated here). Franc (1968) mentioned the Pleurobranchioidea (= Notaspidea) with Umbraculidae, Tylodinidae and Pleurobranchidae, while Boss, (in Parker, 1982, with the 3 same families) and Vietti & Chenello (1987, writing Pleurobranchaeidae Pils., 1895) gave priority to the name Notaspidea. The name Notaspidea was also kept by Marcus E. & E. (1968), the Nordic Code Centre, Richard (1985), Willan & Bertsch (1987), Vaught (1989). Thompson (1970) placed the Notaspidea in the order Pleurobranchomorpha and Russell-Hunter (1987) considered it as synonym. Pleurobranchomorpha is kept as order (embracing the Pleurobranchioidea and Umbraculoidea) by Thompson (1970, 1976), Bruschi & al. (1985), Smriglio & al. (1990), Doneddu & Manunza (1991, in Argonauta VI(4-5):104). Willan reviewed several genera of the Pleurobranchidae and created in 1983 the genus *Bathyberthella* with a transparent patelliform shell (Type MD: *B. zelandiae*), confirme

by *B. antarctica* Willan & Bertsch, 1987. This genus and fam. (or superfam.?) are not listed here and I keep in these notaspidean opisthobranchs only the Umbraculoidea.

UMBRACULOIDEA Gray, 1847; as author Dall, 1889 by auctt.; as author Thiele, 1931 by Piani (1980), Doneddu & al. (1991); considered as order by Schmekel

UMBRACULIDAE Dall, 1889 (1847) (Umbrella shells)

= Umbrellides by Cantraine, 1840, with *Umbrella* Martyn, 1786

= Umbrellidae Gray, 1847 (* Umbrellina); name still used by Carus (1889), Cossmann (1889), Nobre (1909), Dautzenberg & Bouge (1933); placed before in Pulmonata; in Capulacea by Bronn & Roemer (1853); sometimes written as Umbrellidae

Umbraculum Schumacher, 1817; name used e.g. by Kuroda & al. (1971, with *chinense* as monotype), Biagi (1974), Rehder (1980), Bruschi & al. (1985), Smiriglio & al. (1990); Type: *Pat. umbraculum* Lightfoot, 1786, cited by Busn (1959)

= *Umbrella* Lamarck, 1819; as "Ombrelle" by Lamarck, 1809, non available; as date 1812 by Dautzenberg & Bouge (1933), Cossmann (1889); as date 1819 by Agassiz (1846), Neave (1940); as author Chemnitz, 1788 by Bucquoy & al. (1882); in the Inferobranchia by Forbes; in Pleurobranchinae H. & A. Adams by Rochebrune (1884); as *Ombrella* by O.G. Costa (1839); Type MD: *Umbrella chinensis* Martini, 1769 (non binom.) (= *Pat. sinica* Gmelin, 1791); as other types: *Pat. umbellata* Gmel. by Cossmann (1889) and *Pat. umbella* Martyn by Powell (1961)

= *Acardo* Lamarck, 1799, with *Pat. sinica* Davila by Brookes (1815) and *umbella* Lam. by Schumacher (1817); as date 1801 by Agassiz (1846); as author Megerle by Rang (1829)

= *Gastroplax* Blainville, 1819; as date 1818 by Agassiz (1846); as syn. by Potiez & Michaud (1838), Thiele (1931)

= Operculatum (in Mus. Tessinianum, Linnaeus, 1753) (fide H. & A. Adams, 1859)

subg. + *Eosinica* Aldrich, 1903 (*subg. of *Umbraculum*), Type MD: *U. (E.) elevatum* (Eoc)

subg. *Bertinia* Jousseau, 1883; as uncertain in *Umbraculum* by Thiele (1931)

NB: subg. *Hyalopatina* Dall, 1889 is now in *Plesiothyreus*.

+ *Spiricella* Rang, 1828; date repeated by Rang (1829); not 1827 by auctt., and rejected by Neave (1940); as syn. of *Pileopsis* by Nyst (1844), Paetel (1883); in Capulidae by Gray (1847), Bronn (1862); in Calyptraeidae but "it may belong near *Umbrella*" by Tryon (1886); in Notaspideea by Peyrot (1932); near to *Umbraculum* by Hoeksema & Janssen (1984); Type MD: *S. unguiculus* (Mio)

TYLODINIDAE Gray, 1847 (* as Tylodinina); as Tylodinadae by Gray (1856); separated from Umbraculidae by Pruvot-Fol (1954), Burn (1959); Bertsch (1980) included *Roya* which is now syn. of *Williamia*

Tylodina Rafinesque, 1819 (* in J. Phys. Chim. H.N., 89:152); as date 1814 by Neave (1940) (1814 is n.nud.); as 1820 by Bronn & Roemer (1853); as (Raf. 1819) Joannis, 1834 by Franc (1968); Type MD: *T. punctulata*; as other type: *Pat. perversa* Gmelin, 1791 by Barash & Danin (1971) with *citrina* Joannis, 1853 as syn.; *citrina* is cited in *T. (Joannisia)* by Pallary (1912) and as syn. of *Lepetella laterocompressa* by Mienis (1981)

= *Joannisia* Monterosato, 1884; as syn. by Thiele (1931)

Tylodinella Mazzarelli, 1897; as ? syn. of *Tylodina* by Bertsch (1980), Marshall (1981); as subg. by Thiele (1931); as genus by Burn (1959), Franc (1968), Willan (1983), Willan & Bertsch (1987, with *duebenii* Lovén, 1846 as type); Type: *T. trinchesei* (as *trinchesei* by Piani, 1980), (= *perversa* by Bertsch, 1980)

Subclass **PULMONATA** Cuvier, 1817 (Fleming, 1822, teste Burch, 1987)

= Coelopnoa Schweigger, 1820 (cf. Bronn, 1862)

- = Pneumonobranchia Gray, 1820 (cf. Bronn, 1862)
- = Pulmobranchiata Blainville, 1825 (cf. Bronn, 1862)
- = Pulmonifera Woodward 1851-54 (cf. Bronn, 1862)
- = Euthyneura Spengel 1881, (pars); by Janus (1961), Habe & Burch (1965), Burch (1987)

The Pulmonata, considered as superorder by Shimer & Shrock (1944), are basically air-breathers using the mantle cavity as a lung. In species that live at great depths or in fast-running water, the lung fills with water and the snails breathe the oxygen dissolved in it. Salvini-Plawen (1980) dropped the Strepto- and Euthyneura and included 3 orders, orders more detailed by Boss (1982, in Parker, Synopsis:1058): Archaeopulmonata (with Ellobioidea as sole superfam.), Basommatophora (with 8 superfam. of which I only retain Siphonarioidea) and Stylommatophora (with 4 suborders and 28 superfamilies). The separation of the Basom- and Stylommatophora, made by A. Schmidt (1855), was a good one and is generally kept. Solem (1987, McGraw-Hill Encycl.) grouped the pulmonates into 3 superorders: Systellommatophora, Basommatophora (with 11-15 families of which only some Ellobiidae are terrestrial) and Stylommatophora (with 56 families including in the Helicidae the edible snails (= escargot, Schnecken). Haszprunar & Huber (1990) with respect to the CNS, changed the 3 main pulmonate groups into: Basommatophora, Systellommatophora and the new order, Eupulmonata, including Ellobiidae, Trimusculidae and Stylommatophora. Sowerby G.B. II (1842) mentioned the order Monopleurobranchiata Blainville, including the fam. Patelloidea Blainville (with *Umbrella* and *Siphonaria*).

Order **BASOMMATOPHORA** A. Schmidt 1855

In this order 4 stirps are placed by Thiele (1931) of which the third, Patelliformia, contains the fam. Gadiniidae and Siphonariidae; the last stirps, Hygrophila, has 6 families of which Ancyliidae (with Ancyliinae and Acroloxinae) is here retained. Fischer (1883), Cossmann (1889), Carus (1889), Dautzenberg (1900), placed the Siphonariidae and Gadiniidae in the suborder Thalassophila Gray, 1850, preceded by Martens & Langkavel (1871), who placed *Fiss.* and *Pat.* in Edriophthalma. Minichev & Starobogatov (1975) included in Divasibranchia their new subclasses, the Macluritida and Siphonariida, the latter extracted from the Pulmonata (id. by Piani, 1980 and Bruschi & al., 1985). J.B. Burch (1984, 1987) placed Basommatophora Keferstein, 1864 in part as syn. of the order Limnophila Férussac, 1812. Golikov & Starobogatov (1989) named this subclass Siphonariiones, giving to the superorders the ending -formii (Macluritiformii Cox & Knight, 1960 and Siphonariiformii Minichev & Star., 1975) and to the orders the ending -formes (Siphonariiformes). Macluritida is now in the Vetigastropoda and I mention *Siphonaria* in the Pulmonata, order Basommatophora. Van Goethem (1984) treated 4 freshwater families (Lymnaeidae, Planorbidae, Ancyliidae, Acroloxidae) and didn't mention the superfamilies. Vaught (1989) separated in the Basommatophora 8 superfam., of which I cite: Siphonarioidea (Siph., Trimusculidae), Acroloxoidea, Planorboidea. Recently a new order has been separated from the Basommatophora: Eupulmonata Haszprunar, 1990 including the Trimusculidae. The fam. Clivunellidae Kochansky Devidé & Sliskovic, 1972, with + *Clivunella* Katzer, 1918, and Delminiella Kochansky-Devidé & al., 1972, (Mio) is not listed here.

SIPHONARIOIDEA Gray, 1840; **SIPHONARIIDAE** (False limpets)

(* as Siphonariidae Gray, 1840); as date 1824 by Piani (1980; not Piani, 1981); Fairbridge (1979, Encycl. Paleont.) characterized this group with: "mantle cavity modified for air breathing"; Starobogatov (1976) included the fam. Anisomyonidae,

kept by Kanie (1977) in the Patelloidea, and created the fam. Siphonacmaeidae, not considered here as fam.; Iredale (1940) created ten "group names" in the Siphonariidae (not in *Siphonaria*) and mentioned only *Torqui-* and *Talisiphon* explicitly as genus. Most of Iredale's names are syn. of existing subgenera.

= Patelliformia Thiele, 1921; in 1931 as stirps with Gadiniidae and Siphonariidae

= Thalassophila Gray, 1850; Fischer (1883) included here Gadiniidae, etc.

= ? Petrophila (Grant & Gale (1931) including here Gadiniidae and Siphonariidae)

Siphonaria Sowerby, 1824; as date 1823 by Neave (1940), auctt.; as 1835 by Agassiz (1846); as subg. of *Pat.* by Swainson (1840); as genus in Patellacea by Anton (1839), Jay (1839); in Fissuracea by Gray (1852); Type: *S. siphon*, SD Gray, 1824 (= *Pat. javanica* Lam., 1819); syn. of *S. siphon* is also *Pat. laciniosa* L. sensu auctt. (non L., 1758), e.g. SD. Hubendick (1946), MacPherson (1962); "le Mouret" Adanson is by many authors typical for the genus

= *Lyrja* Gray, 1847; as *Liria* Gray, 1824, n.nud.; as "Le Liri" by Adanson, 1757; Type: *Pat. perversa* Gmelin, 1791

Mestosiphon Iredale, 1940; as genus by Kuroda & al. (1971), Higo (1973); Type OD: *M. eumelas* (= *S. atra* by Hubendick (1946), (= *S. laciniosa* L., 1758, form *subatra* Pilsbry, 1904))

= *Mallorsiphon* Iredale, 1940, Type MD: *M. oppositus* (= *S. atra* var. by Hubendick, 1946)

= *Triellsiphon* Iredale, 1940, Type MD: *T. acervus* (= *S. siphon* sensu Rve, 1856, by Hub.)

= *Parellsiphon*, Iredale, 1940; as subg. by Higo (1973) with *Perellsiphon* (lapsus); Type OD: *P. zanda* (in *S. (S.)* by Hubendick (1946))

= *Legosiphon* Iredale, 1940, Type OD: *L. optivus* (= *S. laciniosa*, by Hubendick, 1946)

= *Hebesiphon* Iredale, 1940; in *S. (S.)* by Hubendick (1946) and as sect. by Morrison, 1972; Type MD: *H. monticulus*

Torquisiphon Iredale, 1940 (* as genus), Type MD: *T. percea*, (= *S. plicata* Q.G., 1833)

subg. *Anthosiphonaria* Kuroda & Habe (in Kuroda, Habe & Oyoma, 1971, (* as genus), Type OD: *Siph. sirius* Pilsbry, 1894

subg. *Benhamina* Finlay, 1926, (* as genus); as sect. of *Liriola* by Thiele (1931), Hubendick' (1946); as genus by Borland (1950), Powell (1962); Type OD: *Siph. obliquata* Sowerby, 1825

subg. *Heterosiphonaria* Hubendick, 1945 (* sect. in *S. (S.)*, Type OD: *S. gigas* Sow., 1825

subg. *Hubendickula* McAlpine, 1952 (* as genus); as genus by Iredale & al. (1962); Type OD: *Siph. diemenensis* Q.G., 1833

= *Ellsiphon* Iredale, 1940, Type MD: *E. marza* (= doubtfully distinct from *denticulata*, cf. McAlpine, 1952, which is var. of *diemenensis*)

subg. *Mouretus* Blainville, 1824 (* as genus); as genus by Iredale (1962); Type *mouretus* Blv., 1824 and *adansonii* Blv., 1827 (both are *Pat. pectinata* L., 1758 with a fig. of Klein (1753) as ref., the last being an african spec. of Lister, 1685); Iredale (1915) cited *adansonii* as type of "the overlooked syn."

= *Patellopsis* Nobre, 1886; as sect. in subg. *Liriola* by Hubendick (1946); Type: *Siph. algesirae* Q.G., 1833 (= *Pat. pectinata* L.)

subg. *Perusiphonaria* Starobogatov, 1976 (* as genus, with same status as *Tali-* and *Planesiphon*), Type OD: *Siph. laeviuscula* Sow., 1835

subg. *Ductosiphonaria* Hubendick, 1945 (* as sect. of subg. *Siph.*); McAlpine (1952) gave priority to *Ductisiphonaria*, while in *Planesiphon* Iredale, 1940 no genotype was given; as syn. of *S. (Siph.)* by Jenkins (1983); Type OD: *Siph. bifurcata* Reeve, 1856 (= *Siph. zealandica* Q.G., 1833, teste Hubendick, 1954)

- = *Planesiphon* McAlpine, 1952 (ex Iredale, 1940, invalid); near to subg. *Hubendickula* by Hubendick (1954); as genus by Iredale & McMichael (1962), Higo (1973), Starobogatov (1976); Type: *P.elegans* Iredale, 1940 (as SD. McAlpine, 1952) (= *zealandica* Q.G., 1833, teste Hubendick, 1954); as type OD: *P.soranus* Kuroda & al. (1971), Starobogatov (1976)
- subg. *Sacculosiphonaria* Hubendick, 1945 (* sect. of subg. *Siph.*); as genus by Kuroda & al. (1971), Higo (1973); Type OD: *Pat. japonica* Donovan, 1834
- subg. *Simplicisiphonaria* Hubendick, 1945 (* sect. of subg. *Siph.*); as syn. of *Siph.* (*Siph.*) by Jenkins (1983); Type MD: *Siph.cookiana* Suter, 1909
- subg. *Talisiphon* Iredale, 1940 (* as genus); as sect. of *S. (Liriola)* by Morrison (1963); Type: *Siph.tasmanica* Ten.Woods, SD. Starobogatov (1976); Iredale & McMichael (1962) cited *Siph.virgulata* Hedley, 1915 as type OD, but Iredale's mention (1940) "The genus *Talisiphon* nov. is based on *virgulata*" is not a rigid designation
- = *Pachysiphonaria* Hubendick, 1945 (* as sect. of subg. *Liriola*); as subg. of *Siph.* by Dell (1978); as full genus by Worsfold (1991, *Conch. Newsletter* 116:344); Type OD: *Siph.lessoni* Blv., 1824
- Liriola* Dall, 1870; as subg. by Thiele (1931) including the sections: *Liriola* (with *Kerguelenia* as syn.), *Pugillaria* and *Benhamina*; Hubendick (1946) put in this subg. the sect. *Pachysiphonaria*, *Benhamina*, *Kerguelenia* and *Patellopsis*; as genus by Franc (1968); generally as subg. of *Siph.*, e.g. Keen (1971); Type: *Siph.thersites* Carpenter, 1864.
- subg. *Kerguelenella* Powell, 1946 (* as n. nov. pro *Kerguelena* R. & M., 1889, (non Stebbing, 1888), Type: *Siph.redimiculum* Reeve, "SD Powell, 1939" fide Dell (1964); as other type *Siph.lateralis* Gould, 1846, by Dell (1971)
- = *Kerguelenia* Rochebrune & Mabille, 1889; introduced for *Siph.redimiculum* Reeve, 1856, spec. considered by Suter as syn. of *lateralis* Gould, 1846; both spec. a different by Iredale (1915) who assumed "*Benhamina obliquata*" in *Kerguelenia*
- = *Pugillaria* Iredale, 1924 (* as genus); as sect. of *Liriola* by Thiele (1931), Morrison (1963); as genus by Iredale & McMichael (1972); as syn. of *Kerguelenia* by Hubendick (1945); Type OD: *Siph.stowae* Verco, 1906
- Siphonacmea* Habe, 1958; in Siphonacmaeidae by Starobogatov (1976); in ? Siphonariidae by Franc (1968); in *Lepeta (Cryptobranchia)* by Hatai & al. (1925); Type MD: *Acmaea + oblongata* Yokoyama, 1926 (Plio-Rec)
- Williamia* Monterosato 1884 (1877) (* n. nov. pro *Allerya* Morch, 1877 (non Bourguignat, 1876); as subg. of *Siph.* by Thiele (1931); Type MD: "*Ancylus ? gussonii*" O.G. da Costa, 1829; SD Cossmann, 1895 (SD is unnecessary while MD)
- = *Patelloidea* Cantraine, 1835; Type MD: *P.vitrea* pro *Ancylus gussonii* (new name (unnecessary!); as subg. of *Tectura* by Gray (1847) with *gussonii* Costa as type
- = *Brondelia* Bourguignat, 1862; as sect. of *Ancylus* by Thiele (1931); as ? syn. of *W.* by Marshall (1981); as subg. by Fischer (1883) with *gibbosa* as ex.; Type: *Ancylus drouetianus* Bourg., 1854, SD Rehder, 1984, rejected Opinion 1410; Bourguignat included *Ancylastrum* and *Velletia*, the latter containing a linnean shell: *Pat. lacustris* L., 1758; both nominal species are *W.gussoni*, teste Burch
- = *Scutulium* Monterosato, 1877, Type: *Ancylus ? gussonii* Costa, 1829; as subg. of *Siph.* by Fischer P., 1883; new name *Parascutum* by Cossmann (1889) (cf. below)
- = *Allerya* Morch, 1877 (* provisionally as subg. of *Piliscus* Lovén, 1859, with 2 spec. and without type); *Piliscus* now as syn. of *Capulacmea*; Neave (1940) gave priority to *Allerya* while Bourguignat, 1878 (not 1876) is not preoccupying; Rehder (1980) proposed to the ICZN to reject *Allerya* what is done in Opinion 1410, ICZ (1986); Type: *P. (A.) krebsii* or *P. (A.) gussoni*

- = "*Anisomyon Meek*", sensu Carus, 1888 (not Meek, 1860) by Dall (1879), Tryon (1886)
- = *Parascutum* Cossmann, 1891 (* n.nov.pro *Scutulum* Monterosato, 1877 (non Tournouer, 1870) (non Tourn., 1869 by Thiele, 1931), Type OD: *Ancylus ? gussonii* Costa, 1829
- = *Roya Iredale*, 1912 (* in Trochidae), Type MD: *R. kermadecensis* (= *Capulus nutatus* Hedley, 1908, subsp. of *W. radiata* (Pse); in Stomatiinae by Thiele (1929); in Stomatiidae by Iredale (1962), Franc (1968); as genus in Tylodinidae by Bertsch (1980); as a basommatophoran pulmonate, syn. of *W.* by Marshall (1981)
- = *Aporemodon* Robson, 1913; as date 1930 in Hubendick (1946); as syn. of *W.* by Thiele (1931), Zilch (1959), Marshall (1981); Type: *A. tomlini*
- + *Pseudohercynella* Kaunhowen, 1898 (Cret); in ? Anisomyonidae by Starobog. (1976)
- + *Ptychogyra* Harbort, 1905, Type: *P. canalifera* (teste Zool. Rec., 1906) (Cret)
- ACRORIIDAE** Cossmann, 1889; in "Siphonariacea: + ? Acroreidae" by Taylor & Sohl, 1962)
 - + *Acroria* Cossmann, 1885, emend. of *Acroreia* by Cossmann, 1889 (* n.nov.pro *Nacella* Cossm., 1882 (non Schumacher, 1817); in ? Lepetellidae by Warén (1972)
 - = *Nacella* Cossmann, 1882 (ex Bayle, ms.) (* in Gadiniidae), Type MD: *N. baylei* (Eoc)
 - + *Rhytidopilus* Cossmann 1895 (* with a query in Acroriidae); id. Wenz; Type: *Pat. humbertina* Buvignier, 1852, (Jura-Cret.); Cox, in Knight & al. (1960) referred *R.* to the Acroriidae "also assumed to belong to the Pulmonata", but kept it, with the 2 next genera, with a query in the suborder Patellina
 - + *Pseudorhytidopilus* (Haber, 1932, invalid) Cox, in Knight & al., 1960, Type OD: *P. lennieri* (ex * *Scurria* (P.) *lennieri* Haber, 1932, n.nud.) pro *Helcion castellana* (Thurm.) Lennier, 1867 (non *Pat. castellana* Thurmann, in Thurmann & Etalon, 1861) (Jura-Cret)
 - + *Berleria* de Loriol 1903, Type: *B. ledonica* (Jura); in ? fam. by Wenz, 1938; in ? Patellina by Knight & al., 1960.

Order EUPULMONATA Haszprunar, 1990

Order separated from the Basommatophora and including the Trimusculidae (J. Zool., Lond., 220(2):185)

- TRIMUSCULIDAE** Burch, 1945 (1840); family name replaced before 1961 and maintained according ICZN Art. 40 (see also Rehder, 1980); as other authors: Habe (1958), Zilch (1959) by Piani (1980), Bruschi & al. (1985)
- = Gadiniidae Gray, 1840; as Gadiniadae by Gray M.E., 1850; as Gadinidae by Nobre (1909); family name kept by Iredale & McMichael (1961); in Thalassophila by Fischer (1883); in superfam. Petrophila by Grant & Gale (1931)
- Trimusculus* Schmidt 1818; as date 1898 (in error) by Franc (1968), who cited "*mammillaria* (L.)" as type; as date 1832 by Philippi (1853), and as "*Trimusculus* (Schmidt) Moller, 1832 by Thiele (1931) who considered *Trim.* preoccupied by *Siph.* and used the name *Gadinia*; it was also syn. of *Gadinia* by Hubendick (1946) who retained 1833 (1832 as date in the Index !); the name *Trimusculus* is in use since Iredale (1940); Type: *Pat. mammillaris* L., 1758, SD Rehder, 1940;
- = *Gadinia* Gray 1824, (ex le Gadin, Adanson, 1757); as *Gardinia* by Pictet (1855); as subg. by Yonge (1958) who studied the "pulmonate limpet *Trimusculus* (*Gadinia*) *reticulatus* (Sow.)"; Type MD: *Pat. afra* Gmelin, 1791
- = *Clypeus* Scacchi, 1833 (non Broderip); as *Clipeus* Scacchi 1836 by Bucquoy & al. (1881)
- = *Mouretia* Sow., 1835; as "le Mouret" Adanson, 1757; as *Muretia* (err.) by d'Orb. (1846); "non Gray" by Agassiz (1846); as "*Mouretia* Gray" by Krauss (1848) with *M. costata*

- = *Pileopsis* "Lam., 1812" (non Lam.) in Payraudeau, 1836, with *P. garnoti*
- = *Lyria* Gray, 1847 in H. & A. Ad., 1858; (= *Liria* Gray in Gray M.E., 1850)
- = *Rowellia* (Cooper, ms) Carpenter, 1864 (* as subg. of *Gadinia*); as author also Gabb, 1865 (see e.g. Neave, 1940); Type MD: *G.(R.) radiata*
- subg. *Gadinalea* Iredale, 1940 (* as genus); as genus by Iredale & McMichael (1962); Type OD: *Gadinia conica* Angas, 1867

ACROLOXOIDEA; *Acroloxus* still in "Ancyloea" by Agassiz (1846)

ACROLOXIDAE "Represent specialization toward limpet form" (Solem, 1987, in McGraw-Hill Encycl.); the apex is right-hand turning

Acroloxus Beck, 1837 (* as subg. of *Ancylus Geoffroi* in Lymnaeidea) (pond limpets, live on reed stalks), Type: *Pat. lacustris* L., 1758 (SD Herrmannsen, 1846) (sensu Müller, 1774, validated Op. 363 (1955); only genus mentioned by Vaught (1989)

= *Velletia* Gray, 1840; as Gray, 1842 in Sow. by Agassiz (1846); as subg. of *Ancylus* by Bourguignat (1853), Fischer (1883, with *lacustris* as ex.), Zittel (1887, with "*Acroloxia*" Beck as syn. and *latirostris* Sandb. as only spec. (Plio)

= *Ancylus Geoffroy*, 1767 (pars); invalid, see below

subg. *Baicalancylus* Starobogatov, 1967, Type MD: *Ancylus laricensis* Dybowski, 1913

Pseudancylastrum Lindholm 1909; as subg. by Franc (1968) with *Acr.(Ps) troscheli* Dybowski; Type: *Ancylus sibiricus* Gerstfeldt, 1859

NB.1: + Neoplanorbinae Hannibal, 1912 has 2 genera: *Neoplanorbis* Pilsbry, 1906 and *Amphigyra* Pilsbry, 1906

NB.2: In the fam. Lymnaeidae (in superfam. Lymnaeoidea Raf.) I mention shortly the subfam. Lancinae Hannibal, 1914 with the genus *Lanx* Clessin, 1882, (Type *Ancylus newberryi* Lea) and *L.(Walkerola)* Hannibal, 1912 (Type *L.(W.) klamathensis*.) These 2 species are well photographed by Burch & Tottenham (1980, in Walkerana 1(3), fig. 633, 634) and seem to be freshwater limpets. Vaught (1989) included also in the fam. L. the genus *Fisherola* Hannibal, 1912

ANCYLOIDEA Rafinesque, 1815 (fresh-water limpets)

Name used by J.B. Burch (1984, 1989) but not by Franc (1968) and Vaught (1989) who kept the name Planorbioidea. Solem, 1987 (in McGraw-Hill Encycl. 2: 427) wrote: "The Planorbidae and Ancyloidea (as "Ancyloidea" in err.) typically are readily separable by the limpet-shaped shell of the latter, but discoveries of intermediate taxa and studies of anatomy have demonstrated that the limpet shape was evolved several times, and some authors propose uniting them into one family." Several fam. are included (Planorbidae, Bulinidae, Protancyloidea, Patelloplanorbidae, Neoplanorbidae, Ancyloidea) of which I retain here the last one.

ANCYLIDAE Rafinesque, 1815 (* Ancyloidea) (corrected by Fischer, 1883, cf. ICZN. Dir. 41); (= stream limpets; the apex is left-hand turning); as author Menke, 1830, by Basch (1963); Hannibal (1912) made an arrangement contested by Walker (1917) who retained Lancinae (actually in Lymnaeoidea) and created Ferrissiniinae and Rhodacmeinae as new subfam.; Burch (1963) mentioned 4 subfam.: A., Laevapeciinae, Ferrissiniinae (err.), Ancylostrominae; Meskal (1967) included *Burnupia* and "*Ferrisia*" in the Ancyloidea and placed *Ancylus* in the "Lymnaeidae"; as another subfamily, currently adopted, Franc (1968) cited Gundlachiinae; Thiele (1931) cited the superfam. Hygrophila;

Not to confound with Ancillinae H. & A. Adams, 1853 (in Olividae). The subfamilies are not retaken in this list while some genera are not clearly placed.

Ancylus Muller O.F., 1774 (* in Vermes terr. fluv.: 199); id. in Zool. Dan., 1776;

in *Patella* by De Roissy (1805); in Otidea (Scutibranchiata), together with *Haliotis* by Blainville (1825); in Calyptraeidae (cf. Lamarck, 1822); in Ancyloidea Menke, 1830,

- Ancylodoidea Fitzinger, 1833, Ancyliens Mauduyt (1839) (cf. Bourguignat, 1853); in Limneidae (in Pulmonbranchiata Gray) by Rochebrune (1884); also mentioned in Auricules, Semiphillidia, Lymnaeadae; not *Ancylus* Costa, considered by Gray (1847) as syn. of *Tectura* (*Patelloidea*); divided into 2 subg (*Ancylastrum* and *Velletia*) by Bourguignat (1853); Type *A. fluviatilis* (ICZN, Dir. 41, accepts the type and rejects *Ancylus* Geoffroy, 1767 (used e.g. by Fischer, 1883) and its type *Pat. lacustris* L.); Hubendick (1972) listed 97 syn. of the spec. *fluviatilis*
- = *Pseudancylus* Walker, 1921 (cf. Thiele, 1931, Franc, 1968)
 - subg. *Ancylastrum* Bourguignat, 1853; as sect. by Clessin (1882); as subg. by Fischer (1883), with Moquin-Tandon, 1853 as author and *fluviatilis* as ex.; as syn. by Thiele (1931); Type OD: *A. (A.) cumingianus*
 - = *Cumingia* Clessin, 1882 (non Sow., 1833); as syn. of *Tasmancylus* by Thiele (1931)
 - = *Legrandia* Hanley, 1872
 - = *Tasmancylus* Iredale, 1926 (cf. Franc, 1968); as sect. of *Burnupia* by Thiele (1931); Type: *A. cumingianus*
 - NB: *Brondelia* Bourgt, 1862; as sect. of *Ancylus* by Thiele (1931), as subg. by Fischer (1883), as syn. by Franc (1968); it is syn. of *Williamia*
 - + *Acrochasma* Reuss, 1860, Type : *A. tricarinarum* (Mioc)
 - Burnupia* Walker, 1912; as subg. of *Protancylus*, by Thiele (1931) with the sect.: *B.*, *Tasmancylus*, *Uncancylus*, *Anisancylus*, *Hebetancylus*; Type: *B. caffer* Krauss (cf. Franc, 1968)
 - Ferrissia* Walker, 1903 (* as sect. of *Ancylus*); in Ferrissinae Walker, 1917; as "Ferrissinae" by Burch); Type OD: *Ancylus rivularis* Say, 1817
 - = *Haldemania* Clessin, 1882 (non Tryon, 1862), Type: *Anc. obsurus* Haldemann
 - subg. *Pettancylus* Iredale, 1943 (* as genus); as genus by J.B. Burch (1984, 1987); Type OD: *Ancylus tasmanicus* T.W. 1876
 - = *Problancylus* Iredale, 1943 (* as genus, without diagnose), Type OD: *Gundlachia petterdi* Johnston, 1879 (Johnston, 1878 is n.nud.)
 - = *Forsancylus* Iredale, 1944 (* as genus), Type OD: *Pettancylus enigma*
 - = *Watsonula* Mirolli, 1960 (* as genus), Type MD: *W. wautieri* (see also Franc, 1968)
 - Gundlachia* Pfeiffer, 1849; Neave (1939) added "(1850)"; in Gundlachiinae by Franc (1968); Type: *G. ancyliformis*
 - = *Latia* Gray, 1850 (see Neave, 1939); date 1849 by Fischer (1883)
 - = *Poeya* Bourguignat, 1862; as syn. by Fischer (1883), Walker (1917)
 - = *Uncancylus* Pilsbry, 1914; as sect. of *Burnupia* by Thiele (1931); Type *barilensis* Moricand
 - = *Anisancylus* Pilsbry & Vanatta, 1924; as sect. of *Burnupia* by Thiele (1931); Type *obliquus* (Brod & Sow);
 - subg. *Kincaidilla* Hannibal, 1912; as subg. by Walker (1917), Burch (1964) etc.; "Kincaidella" as sect. by Thiele (1931); Type OD: *Ancylus fragilis* Tryon, (June) 1863 (= *Gundlachia californica* Rowell, (March) 1863)
 - + *Hannibalina* Hanna & Gester, 1963, Type MD: *H. dorrisensis* (Plio)
 - Hebetancylus* Pilsbry, 1914; as date 1913 by auctt.; as sect. of *Burnupia* by Thiele (1931); as genus "Hebetoncyclus" by Shells & Sea Life (1985, vol. 17(2):55; as genus in Laevapecinae by Burch & al. (1980); Type: *moricanidi* d'Orbigny, 1836
 - Laevapex* Walker, 1903 (* as sect. of *Ancylus*); as genus by Basch (1959), in Laevapecinae by Burch & al. (1980); Type OD: *Ancylus fuscus* C.B Adams, 1841
 - Protancylus* P. & F. Sarasin, 1897; in Protancylidae by Walker (1923); in Lymnaeodea by Franc (1968), Vaught (1989); with the subg. *P.*, *Burnupia*, *Ferrissia*, *Gundlachia*,

- by Thiele (1931); as pond limpet perhaps in Acroloxoidea; Type: probably *P. adhaerens*, spec. cited by Thiele, Franc
- Rhodacmea* Walker 1917 (* with Rhodacmeinae, n.subfam. in Ancyliidae); as "Rhodacme" in Shells & Sea Life, 17(2), 1985; in Ancylinae by Burch & al. (1970)
Type OD: *Ancylus filiosus* Conrad, 1834
- = *Rhodocephala* Walker, 1917 (* as sect. of *Rhodacmea*); id. by Thiele (1931); as syn. by Basch, 1962; Type OD: *R.(R.) rhodacme*
- Stimulator* Iredale, 1944, Type MD: *S.consetti*
- + *Valenciennia* Rousseau, 1842 (emend. Bourguignat, 1855 for *Valenciennius* Rouss.); as *Valenciennesia* Fischer, 1859, emend. for *Valenciennensis* Rouss., and as "cabochon" near to *Ancylus*; in ? Siphonariidae by Zittel (1887); Type MD: *V.annulata* (Mio)
- = *Camptonyx* Benson, 1858 (terrestrial, recent); as syn. by Fischer (1859); Type MD: *C.theobaldi*

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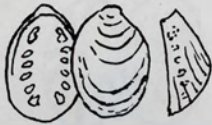
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Tryblidium



Actinoconus



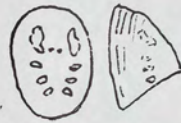
Archaeophiala



Palaeacmaea



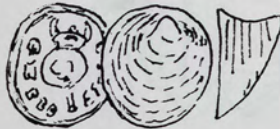
Scenella



Kirengella



Romaniella



Neopilina



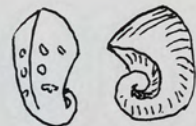
Archinacella



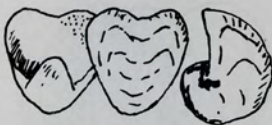
Patelloconus



Chalarostrepsis



Cyrtolytes



Sinuites



Helcionella



Coreospira



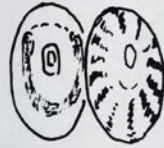
Scissurella



Incisura



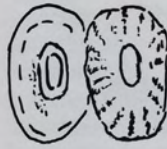
Sinezona



Fissurella



Diodora



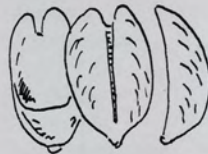
Megatebennus



Macroschisma



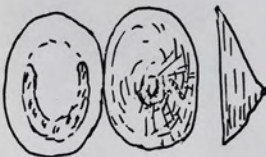
Emarginula



Zeidora



Broderipia



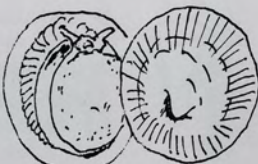
Cocculina



Bathysciadia



Lepetella



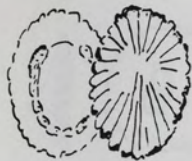
Addisonia



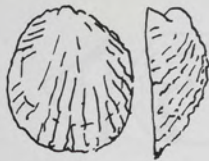
Cocculinella



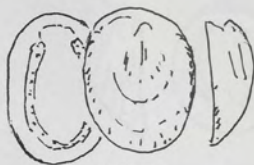
Plesiothyreus



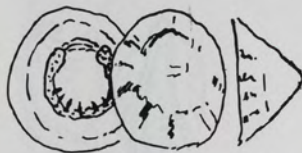
Patella



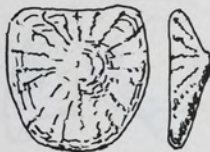
Helcion



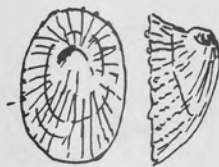
Ansates



Damilina



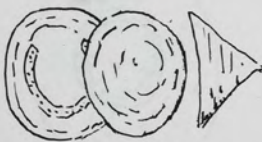
Metoptoma



Nacella



Cellana



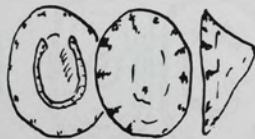
Acmaea



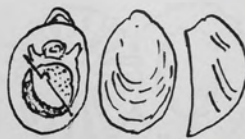
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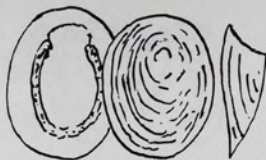
Lottia



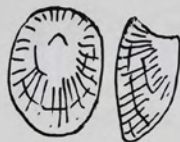
Patelloida



Rhodopetala



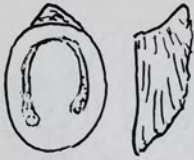
Lepeta



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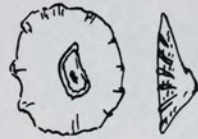
Neolepetopsis



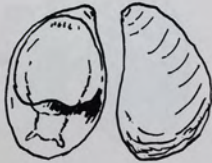
Hipponix



Calyptraea



Crucibulum



Crepidula



Capulus



Amethina



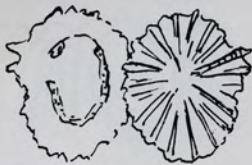
Thyca



Umbraculum



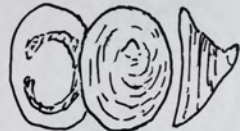
Tylodina



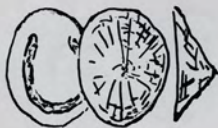
Siphonaria



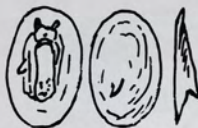
Siphonacmea



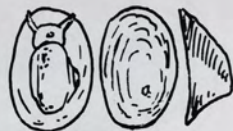
Williamia



Trimusculus



Acroloxus



Ferrissia

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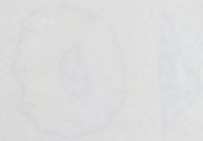
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Hydrozoa



Cystodina



Cystodina



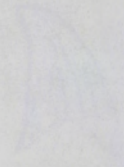
Hydrozoa



Cystodina



Alveolata



Hydrozoa



Cystodina



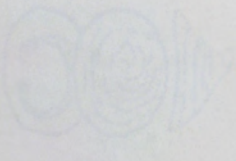
Tricodina



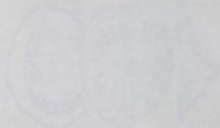
Hydrozoa



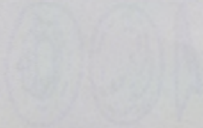
Cystodina



Tricodina



Hydrozoa



Cystodina



Tricodina

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