

SUPRASPECIFIC GROUPS IN THE SUBFAMILIES MURICINAE AND TRITONALIINAE (GASTROPODA: MURICIDAE)

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ABSTRACT

At least 90 supraspecific names have been proposed for groups in the subfamilies Muricinae and Tritonaliinae.¹ This paper is an attempt to assess the validity of these names, and herein, 36 taxa are recognized as representing valid groupings, 56 are placed in synonymy, and many emendations and errors are disposed of. The names accepted as valid, either on the generic or subgeneric level, are: *Murex* s.s., *Haustellum*, *Bolinus*, *Harmatia*, *Chicoreus*, *Siratus*, *Phyllonotus*, *Hexaplex*, *Murexsul*, *Murexiella*, *Maxwellia*, *Pterynotus*, *Naquetia*, *Pterochelus*, *Nothotyphis*, *Poirieria*, *Paziella*, *Panamurex*, and *Muricopsis* in the Muricinae; and *Tritonalia*, *Hadriana*, *Miocenebra*, *Jaton*, *Pterorytis*, *Ceratostoma*, *Pteropurpura*, *Ocinebrellus*, *Calcitrapessa*, *Purpurellus*, *Poropteron*, *Homalocantha*, *Eupleura*, *Vitularia*, *Crassilabrum*, *Urosalpinx*, and *Ocinebrina* in the Tritonaliinae. In addition, 2 specific homonyms are renamed: *Tritonalia inermicosta* (*Murex fasciatus* Sowerby, not Gmelin) and *Tritonalia (Hadriana) craticuloides* (*Murex craticulatus* Brocchi, not Linnaeus).

INTRODUCTION

The Tenth Edition of Linnaeus' *Systema Naturae* (1758) listed 59 species of *Murex*, of which only the first 9 are today included in the Muricidae. In the 200 years since the appearance of that work the number of known species has grown to over 2500, although, as in the case of Linnaeus' species, many are no longer referable even to the Muricidae. Of these less than 1000 should be placed in either the Muricinae or the Tritonaliinae, and many of that number probably represent synonyms. At least 90 supraspecific names have been proposed for groups in these 2 subfamilies alone. In this paper, which is an attempt to assess the usefulness of these numerous supraspecific names, 36 groups are recognized as valid, and 56 are placed in synonymy. In addition a number of emendations and errors are disposed of. By no means are all of the known spelling errors included, for to do so would needlessly extend the synonymies. Only those errors are included which, in my subjective opinion, are con-

sidered "important."

Since the time of Linnaeus there has been a trend toward finer and finer division of his genera. Röding, in 1798, assigned the Linnaean species to his genera *Distorsio*, "*Strombus*", *Neptunea*, *Volema*, *Turris*, *Vasum*, *Tritonium*, *Drupa*, *Thais*, *Cymatium*, *Galeodes*, *Cabestana*, *Busycon*, *Cantharus*, *Tudicla*, "*Purpura*", and *Murex*. Unfortunately the work of Röding was largely overlooked until the 20th Century and Lamarck, continuing the work of Bruguière, was generally considered the first to attempt refinement although his subdivisions were essentially the same as those of Röding. Lamarck divided the Linnaean species among the genera *Cerithium*, *Pleurotoma*, *Turbinella*, *Fasciolaria*, *Fusus*, *Pyrula*, *Struthiolaria*, *Ranella*, *Triton*, *Ricimula*, *Purpura*, and *Murex*.

The next worker to propose an extensive classification of the Mollusca was Swainson in his *Treatise on Malacology* (1840). He seems to have been the first to make use of the concept of "subgenera" and, in spite of a preoccupation with what he called "the circle of affinity," his

¹"Ocinebrinae" of authors.

divisions represent valid groupings. His classification of the Muricidae appeared as follows:

- Family: Muricidae
- Subfamily: Muricinae
- Genus: *Murex*
- Subgenera: *Murex* s.s., *Haustellaria*, *Phyllonotus*, *Muricanthus*, *Pteronotus*
- Genera: *Muricidea*, *Vitularia*, *Triton*, *Ranella*
- Subfamilies: Cassinae, Nassinae, Purpurinae, Buccinae

H. and A. Adams, in the *Genera of Recent Mollusca* (1853-1858), were the next to enlarge this classification. To Swainson's subgenera of *Murex* they added *Rhinocantha*, *Chicoreus*, *Homalocantha*, and *Ocenebra*. They also included in *Murex* Swainson's genera *Vitularia* and *Muricidea*.

In 1880, Jousseaume proposed a *Division Méthodique de la Famille des Purpuridés*. In this classification he listed 47 genera which, he said, comprised "les genres *Murex* et *Typhis* des auteurs." Of these 47 genera 33 were new names proposed by Jousseaume himself. Although the 1880 work was only a list of genera with their type species, it was actually an abstract of a longer work with generic descriptions which appeared subsequently in the *Revue et Magasin de Zoologie*. The exact date of publication of the longer memoir is not known, but it seems to be 1882. The date printed in the journal is 1879, but clearly it was issued after December, 1880, when the list appeared in *Le Naturaliste*. Jousseaume has been condemned by many writers for his superfluity of genera, and it is true that he did propose some unnecessary names, but on the whole his concept of important morphological differences parallels that of the best of modern "splitters."

In the *Manuel de Conchyliologie* (1880-1887), P. Fischer proposed the most complete classification up until his time, a classification providing the pattern for all subsequent workers. Fischer did not use subfamilies but included in the genera *Murex* and "*Ocenebra*" all those groups now placed in the Muricinae and Tri-

tonaliinae respectively. His classification of these two genera appeared thus:

- Genus: *Murex*
- Subgenus: *Murex* s.s.
- Sections: *Murex* s.s., *Acupurpura*, *Haustellum*, *Tubicauda*
- Subgenus: *Bolinus*
- Subgenus: *Pteronotus*
- Sections: *Pteronotus* s.s., *Marchia*, *Triremis*, *Poropteron*, *Alipurpura*, *Pteropurpura*
- Subgenus: *Chicoreus*
- Sections: *Chicoreus* s.s., *Siratus*, *Euphyllon*, *Inermicosta*, *Naquetia*
- Subgenus: *Muricantha*, emend.
- Sections: *Muricantha* s.s., *Hexaplex*, *Bassia*, *Favartia*, *Poirrieria* [sic], *Paziella*
- Subgenus: *Homalocantha*
- Subgenus: *Muricopsis*
- Genus: *Ocenebra*
- Subgenus: *Ocenebra* s.s.
- Sections: *Ocenebra* s.s., *Crassilabrum*, *Ocenebrina*, *Heteropurpura*
- Subgenus: *Ceratostoma*
- [including *Ocenebrellus*, *Pterohytis* (sic), and *Jaton* in synonymy]
- Subgenus: *Vitularia*
- Subgenus: *Hadriania*

Cossmann, in the *Essais de Paléoconchologie Comparée* (1903), was the first to recognize the need to separate a subfamily "*Ocenebrinae*" from the Muricinae, on the basis of the purpuroid operculum, characteristic of *Ocenebra*, as opposed to the muricoid operculum of *Murex*. At the same time he also proposed 3 other subfamilies, the Trophoninae, Typhinae, and Rapaninae, for the remainder of the family Muricidae.

Thiele in the *Handbuch der systematischen Weichtierkunde* (1929-1931) recognized *Tritonalia* as the correct name for *Ocenebra*, and placed *Cerastoma*, *Jatova*, *Ocenebrellus*, and *Poropteron* in that genus. *Favartia* he transferred to the genus *Aspella*. Thiele did not use the subfamilial designation, but treated the genera *Murex* and *Tritonalia* in the manner of Fischer.

The classification of the Muricidae in Wenz's *Handbuch der Paläozoologie* (1941) is essentially an amplification of that of Thiele. Some of the subfamilial groupings are difficult to accept, as the genera

here placed in the Tritonaliinae are located by him in the Drupinae, and the members of the Typhinae and the Trophoninae are included in the Muricinae.

Korobkov (1955) and Orlov *et al.* (1960) have most recently proposed classifications. In both of these a subfamily Tritonaliinae is recognized which is approximately that used by me. Otherwise there is little change from Thiele and Wenz.

I am a self-avowed "lumper" at the generic level. To my way of thinking one of the purposes of taxonomy is to demonstrate relationships, and this is not done by placing each species in a separate "pigeon-hole." Generic groupings should be broad enough to indicate the nearness or farness of related forms, not simply to indicate that one species is somewhat different from a similar species. The latter is achieved at the specific level. The following classification consists of generic and subgeneric names accepted as valid by me with an indication of relationships between groups.

MURICINAE

- Genus: *Murex*
Murex s.s., *Haustellum*, *Bolinus*,
Harmatia
- Genus: *Chicoreus*
Chicoreus s.s., *Siratus*, *Phyllonotus*
- Genus: *Hexaplex*
Hexaplex s.s., *Murexsul*
- Genus: *Murexiella*
Murexiella s.s., *Maxwellia*
- Genus: *Pterynotus*
Pterynotus s.s., *Naquetia*, *Pterochelus*, *Nothotyphis*
- Genus: *Poirieria*
Poirieria s.s., *Paziella*, *Panamurex*
- Genus: *Muricopsis*

TRITONALIINAE

- Genus: *Tritonalia*
Tritonalia s.s., *Hadriana*, *Miocenebra*
- Genus: *Jaton*
Jaton s.s., *Pterorytis*, *Ceratostoma*
- Genus: *Pteropurpura*
Pteropurpura s.s., *Ocinebrellus*,
Calcitrapessa, *Purpurellus*, *Poropteron*
- Genus: *Homalocantha*
- Genus: *Vitularia*
Vitularia s.s., *Crassilabrum*

- Genus: *Eupleura*
- Genus: *Urosalpinx*
Urosalpinx s.s., *Ocinebrina*

As was mentioned above, the operculum serves to distinguish the Muricinae from the Tritonaliinae. The Muricinae have a so-called "muricoid" operculum with a basal nucleus (Figs. 53-65). The Tritonaliinae have a "purpuroid" operculum with a lateral nucleus (Figs. 97-103). Other groups in the Muricidae have either muricoid or purpuroid opercula, and so the operculum is not an infallible guide to placement. Moreover the opercula of the various species within these subfamilies are slightly variable. In the Muricinae the nucleus, although essentially basal, may be on either the left or right side, or may even be almost central as in *Murex haustellum* (Fig. 55). In the Tritonaliinae the nucleus is always lateral but may vary from anterior to posterior (see Figs. 98 and 103). In general the shell form in the 2 subfamilies is remarkably parallel. A notable difference is the development in most groups of the Tritonaliinae of a completely closed siphonal canal, a trait confined to this subfamily and the Typhinae. In the Muricinae and the Tritonaliinae convergence has taken place to a considerable degree, and most of the species were originally described as "*Murex*." Throughout this paper in order to avoid confusion, all species will be cited by the genus to which they were originally referred. Thus under Tritonaliinae the reader will see the species called "*Murex*" although this is obviously a misnomer.

Of all the criteria for subfamilial differentiation the radula is the most consistent. The family Muricidae is grouped in the suborder Stenoglossa which is characterized by a radula consisting of a central tooth, one pair of cuspidate laterals, and no marginal teeth what so ever. The Muricinae have a central tooth which bears 5 unequal-sized cusps, the middle and outer ones being much larger than the 2 alternate ones (Figs. 39-52). The Tritonaliinae are distinguished by having a central tooth which has 2

or 3 larger cusps in the center, flanked by numerous smaller ones (Figs. 90-96). There may be, in addition, 2 large cusps at the outer extremities of the central tooth. The Trophoninae have a central tooth most like that of the Muricinae, differing in the development of 2 additional cusps at the outer extremity of the tooth. The Typhinae have a central tooth more akin to that of the Tritonaliinae, with 3 larger cusps and between each pair of these 3 smaller cusps. The Rapaninae are distinguished by having a central tooth with only the 3 larger cusps and the intermediate cusps reduced to small nodes, or completely lacking. In all groups the laterals are unicuspidate.

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Phylum MOLLUSCA

Class GASTROPODA

Subclass PROSOBRANCHIA (or STREPTONEURA)

Order NEOGASTROPODA

Suborder STENOGLOSSA

Superfamily MURICACEA

Family MURICIDAE

Subfamily MURICINAE

MUREX sensu stricto (Figs. 1-3, 39-41, 53, 54)

Linnaeus, 1758, *Systema Naturae*, ed. 10, p 746.

TYPE SPECIES: *Murex tribulus* Linn., (as *M. pecten* Montfort), by subs. design., Montfort, 1810.

PURPURA Martini, 1777, *Conchylien-Cabinet*, v. 3, p 287. (Martini did not apply the principles of binominal nomenclature and therefore this work was rejected for nomenclatorial purposes in I.C.Z.N. Direction 1, 1954).

Type species: *Purpura hystrix* Martini, by subs. design., Winckworth, 1945 (= *Murex tribulus* Linn.).

ARANEA Perry, 1810, *Arcana*, Pl. 47. Not *Aranea* Linn., 1758 (*Arachn.*).

Type species: *Aranea gracilis* Perry, by monotypy. (*Aranea gracilis* Perry, 1810, not *Murex gracilis* Montagu, 1803 = *Aranea triremis* Perry, 1811 = *Murex pecten* Montfort.)

TRIBULUS Kobelt, 1877, *Jb. Dtsch. Malak. Ges.*, v. 4, p 144. Not *Tribulus* H. and A. Adams (ex Klein), 1853 (*Moll.*). Type species: *Murex tribulus* Linn., by tautonymy.

ACUPURPURA Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

Type species: *Murex tenuispina* Lamarck, by orig. design. (= *M. pecten* Montfort).

TUBICAUDA Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

Type species: *Murex brevispina* Lamarck, by orig. design.

"Shell unattached, univalve, with the spire elevated, varixed and armed; mouth rounded; columella smooth; outer lip bordered, sharp, armed with long spines; basal canal tubular, very long and very spinose." (Montfort, 1810, *translated*)

Discussion: "*Murex tribulus* Linnaeus" is usually cited as the type species of *Murex* s.s., by the subsequent designation of Montfort (1810: 619). However, the shell figured by Montfort is that known today as *Murex tenuispina* Lamarck and consequently question arises as to the true type of *Murex*. Linnaeus' *M. tribulus* included 3 different spinose shells, all considered one "species" by him. The first person to restrict the polyspecific *M. tribulus* was Röding (1798: 145) who referred the name to the species figured by Martini (1777), Vol. 3, Figs. 1052-1054 (his reference to Fig. 1051 is evidently a *lapsus*, as the shell figured is a *Distorsio*). Figure 1052 of Martini is the form later named *Murex scolopax* by Dillwyn (1817: 681) and Figs. 1053-1054 are the species later named *Murex tenuispina* by Lamarck, usually considered *M. tribulus* of authors. Perry (1811, Pl. 45, Fig. 2) gives an excellent figure of this species under the name *Aranea tribulus*. The third species included by Linnaeus in his *M. tribulus* was named *Murex hystrix* by Röding, a name pre-occupied by *Murex hystrix* Linn. (vide I.C.Z.N. Code, Art. 58-2). This third species was subsequently given a variety of names by different authors, including: *Murex pecten* Montfort, 1810; *Aranea gracilis* Perry, 1810; *Aranea triremis*

Perry, 1811; *Haustellum nobile* Schumacher, 1817; and *Murex tenuispina* Lamarck, 1822. It is this species which Montfort figured as the type of the genus *Murex*. His figure is of this shell and all of his references are to figures of this species. Montfort was probably unaware of the work of Röding, and he was no doubt restricting the *M. tribulus* of Linnaeus to the form he felt most characteristic of the genus. Unfortunately we are bound by the International Code of Zoological Nomenclature to recognize Montfort's designation of "*Murex tribulus* Linn." as the type of *Murex*, for this is the name included in Linnaeus' original list of species. Since the form named *M. pecten* was a part of the *Murex tribulus* of Linnaeus, although not of subsequent authors, the species today recognized as *M. tribulus* must stand as the type of the genus.

Certainly nothing is changed whether *M. tribulus* or *M. pecten* is considered the type, for they are so closely related that they must be grouped in the same subgenus. It should be noted that Fischer (1884) cited *Acupurpura* Jousseaume as a subgenus of *Murex* s.s. This name had been used by Jousseaume for the typical spinose murices because he did not wish to use the name "*Murex*" but preferred to adopt the pre-Linnaean name of *Purpura* for the genus *Murex* of Linnaeus. Therefore there is no "*Murex*" in Jousseaume's list of genera. Subsequent workers up until the most recent (Orlov, *et al.*, 1960) have faithfully followed Fischer's example, although examination of the 2 species reveals no characteristics which can be said to be distinguishing. The point has been made by many authors that *M. pecten* is distinguishable by the "doubled" row of spines on the anterior canal, a trait which led to such early names as "*Murex tribulus duplicatus*", or "*Tribulus rostratus duplex*." However these same intercalary spines, although greatly reduced, also appear on *M. tribulus* and cannot be accepted as a basis for separation. If there is any basis for subgeneric differentiation it lies in the

nature of the operculum which in both *M. tribulus* and *M. pecten* has the nucleus located near the body wall, whereas in almost all the other Muricinae (including the other members of *Murex* s.s.) it is located toward the periphery. However the nucleus of the typical muricoid opercula varies slightly in position, and so its exact location probably is not of any great significance.

Murex brevispina Lamarck, type species of *Tubicauda*, differs from the *M. tribulus* group in the greatly reduced number of spines on the varices. However this characteristic is so exceedingly variable among the members of *Murex* s.s. that it does not seem to be a subgeneric criterion. *M. pecten* represents one extreme variation, *M. brevispina* the opposite one. *M. brevispina* bears a strong resemblance to *M. brandaris*, the type species of *Bolinus*, and presumably represents the intermediate form between *Bolinus* and *Murex* s.s. Because *M. brevispina* lacks the flaring inductura of *Bolinus*, and because it has 3 varices and the apertural tooth of *Murex* s.s., *Tubicauda* is placed in the synonymy of *Murex* s.s. rather than *Bolinus*.

HAUSTELLUM

(Figs. 4, 55)

Schumacher, 1817, Essai Nouv. Syst. Vers Test., p 213 (ex Klein).

TYPE SPECIES: *Murex haustellum* Linn., by tautonymy.

BRONTES Montfort, 1810, Conchyl. Syst., v. 2, p 623. Not *Brontes* Fabricius, 1801 (Coleopt.).

Type species: *Murex haustellum* Linn., by orig. design.

BRONTESIA Reichenbach, 1828, Zoologie,, v. 1, p 91. New name for *Brontes* Montfort (not seen; *fide* Neave).

HAUSTELLUM Deshayes, 1830 (ex Klein, "*Haustellum* Bruguière" of authors), Encycl. Méth. (Vers), v. 2, p 188.

HAUSTELLARIA Swainson, 1833, Zool. Illus. (2) v. 3, expl. to Pl. 100.

Type species: *Murex erythrostoma* Swainson, by subs. design., Swainson, 1840. (*M. erythrostoma* Swainson, 1840, not *M. erythrostomus* Swainson, 1831 =

M. haustellum).

BRONTIS Griffith and Pidgeon, 1834, Anim. Kingdom, v. 12, p 79. Error.

BRONTA Pusch, 1837, Polens Paläontologie, p 130. Error.

"Shell more or less globose, the spire elevated, rarely depressed, with projecting apex. Aperture suborbicular; the beak long or very long, straight, rarely a little curved; the canal open the entire length by a slit; the outer lip crenulated, the inner lip formed of a lamella, almost a half-moon, the margin thickened and detached, but appressed and almost missing posteriorly." (Schumacher, 1817, *translated*)

Discussion: Although *Haustellum* has been placed by many recent writers in synonymy with *Murex* s.s., the unusual aperture and the operculum, with an almost central nucleus, distinguishes it from that group. MacNeil (1960: 62) has recently observed, "Probably most of the species that have been referred to *Haustellum* have been so referred on the more superficial characters. The sharp, often constricted, anal notch of *Haustellum* is so characteristic, however, it is doubtful that any species without it should be admitted to the genus." *Haustellum* is represented by only a few species other than the type, such as *Murex fallax* E. A. Smith and *M. hirasei* Hirase.

BOLINUS

(Figs. 6, 42, 43)

Pusch, 1837, Polens Paläontologie, p 134.
TYPE SPECIES: *Murex brandaris* Linn., by orig. design.

HAUSTELLARIA "Swainson" Mörch, 1852, Cat. Conchyl. Yoldi, v. 1, p 98.
Type species: *Murex brandaris* Linn., by subs. design., Kobelt, 1877.

RHINOCANTHA H. and A. Adams, 1853, Genera Recent Moll., v. 1, p 72.
Type species: *Murex brandaris* Linn., here designated.

RHYNOCANTHA Bellardi, 1872, Moll. Terr. Terz., v. 1, p 49. Error.

PURPURA Jousseaume, 1880 (*ex* Tournefort), Le Naturaliste, Année 2 (42), p 335. Not *Purpura* Bruguière, 1789 (Moll.).

Type species: *Murex brandaris* Linn., by orig. design.

MUREX Bucquoy, Dautzenberg, and Dollfus, 1882, Moll. Mar. Roussillon, v. 1, p 17. Not *Murex* s.s.

"Type species": "*M. cornutus* et *M. brandaris*" Linn.

BRANDARIA "Mörch" Monterosato, 1917, Boll. Soc. Zool. Ital., (3) v. 4, p 20.
Error for *Haustellaria* "Swainson" Mörch.
"Type species": *Murex brandaris* Linn.

"Shell subturreted, whorls rounded, varices 4-10, and even more, all of equal rank, nodose or spinose, or foliate." (Pusch, 1837, *translated*)

Discussion: This group as originally set forth by Pusch was a motley lot as might be expected from the generic diagnosis given. Nevertheless *Murex brandaris*, the type species, is distinctive and is characterized by the presence of 5 to 7 spinose varices and a flaring inductura on the parietal wall which is unlike that of *Murex* s.s. It does, however, have the elongated siphonal canal of that group and is closely related.

Rhinocantha H. and A. Adams as originally proposed included 2 species: *Murex brandaris* and *Murex cornutus*, neither designated as type. In the "Additions and Corrections" which appeared in Vol. 2, the Adams' repudiated their name, stating "for '*Rhinocantha* H. and A. Adams', read '*Haustellaria* Mörch', the name *Haustellaria* of Swainson not being in use." *Haustellaria* Swainson has as type *M. haustellum* Linn., but when Mörch attempted to resurrect and "redefine" the term he included in it only *M. brandaris* and *M. cornutus*, neither being selected as type. Kobelt (1877: 143) subsequently designated *Murex brandaris* as type of *Haustellaria* Mörch, but I have been unable to find any formal designation for the type of *Rhinocantha*. Therefore, *Murex brandaris* is here designated, assuring that it will also be an absolute synonym of *Bolinus*.

HARMATIA

(Fig. 5)

Noszky, 1940, Ann. Hist.-Nat. Mus. Natl.

Hungarici, Min., Geol., and Palaeont.,
v. 33, p 28.

TYPE SPECIES: *Murex* (*Harmatia*)
stephani Noszky, by orig. design.

"This new species is represented by a single specimen, but we must consider it as a new subgenus. Although it is of the *Murex* family it can be likened to *Fusus gothicus* Desh. (1-4, LXXIV, 9-10), as described from the French Auversian. However its siphonal canal is strongly prolonged, and bifurcated at the end, with one branch bending. This canal is not smooth as in *Fusus*, but is slightly wrinkled. The 16 mm wide shell which is preserved on the last two whorls (the tip of the spire is destroyed) is much smoother than the shell of *Murex* usually is. The portion above the suture is not steep and angular but bulbous as in *Fasciolaria*, and due to this it unites the characteristics of several forms. At the end of the 40 mm long canal there are wrinkled grooves. On the canal itself one can see several slight grooves, and the branch which is 8 mm long deviates from the main branch at an angle of 40 degrees. Although the branch which continues in a straight line was broken, one can see from the impression it made on the material beneath that it was barely half as long as the other. As regards this dual canal, to a certain extent it can be related to the subgenus *Alipurpura*, although in that case the canal is much shorter. Our specimen is somewhat broken, but in any case it is one of the most interesting representatives of the Kiscellian Clay molluscan fauna." (Noszky, 1940, *translated*)

Discussion: Due to the unusual nature of this subgenus based on a species from the Oligocene of Hungary, I have given a translation of the lengthy original description from the Hungarian. There is nothing that can be added to Noszky's statement, except perhaps to say that the canal represents 2/3 of the length of the shell, the total being 60 mm. The illustration shows no traces of varices, but appears to be completely smooth, a most un-muricoid trait. However the canal certainly looks muricine, and until I have opportunity to examine the type material, the assignment of Noszky will be followed.

CHICOREUS

(Figs. 7-9, 13, 17, 44, 45, 56)

Montfort, 1810, Conchyl. Syst., v. 2, p 611.

TYPE SPECIES: *Murex ramosus* Linn.,
by orig. design.

TRIPLEX Perry, 1810, Arcana, Pl. 23.
Type species: *Triplex foliatus* Perry, by
monotypy.

CICHORIUM Voigt, 1834, in Cuvier,
Thierreich, v. 3, p 359. Error.

CHICORACEA Griffith and Pidgeon,
1834, Anim. Kingdom, v. 12, p 79. Error.

CHICORAX Pusch, 1837, Polens Palä-
ontologie, p 130. Error.

FRONDOSARIA Schlüter, 1838, Kurz,
syst. Verz. Conch., p 20.
Type species: *Fronodosaria inflata* (Lam-
arck), here designated.

CICHOREUS Agassiz, 1846, Nomencl.
Zool., p 85. Emendation.

CHICORACEUS Herrmannsen, 1847,
Ind. Gen. Malakoz., v. 1, p 234. Emen-
dation.

CICHOREUM Paetel, 1875, Fam. Gatt.
Moll., p 43. Error for *Cichorium* Voigt.

EUPHYLLON Jousseaume, 1880, Le
Naturaliste, Année 2 (42), p 335.

Type species: *Murex monodon* Sowerby,
by orig. design. (= "*Purpura*" *cornu-*
cervi Roding.)

PIRTUS de Gregoria, 1885, Boll. Soc.
Malac. Ital., v. 10, p 257.

Type species: *Murex (Pirtus) fiatus* de
Gregorio, by monotypy (= *Murex*
dujardini Tournouër).

TORVAMUREX Iredale, 1936, Rec.
Australian Mus., Sydney, v. 19, p 323.
Type species: *Triplex denudatus* Perry,
by orig. design.

TORRAMUREX Salisbury, 1937, Zool.
Rec. (Mollusca), v. 73 (1936), p 88. Error
for *Torvamurex*.

FOVEOMUREX Wenz, 1941, Handb.
Paläozool., v. 6(1), pt. 5, p 1091. Error
for *Torvamurex* Iredale.

TORVOMUREX Vokes, 1963, Tulane
Stud. Geol., v. 1(4), p 154. Error.

"Shell unattached, univalve, spire elevated and foliaceous; mouth rounded; columella smooth; outer lip armed, frilled and curly; basal canal broad and covered by a prolongation of the columella." (Montfort, 1810, *translated*)

Discussion: In *Chicoreus*, as in *Murex* s.s., we have the problem of the identity

of the type species. Montfort designated *Murex ramosus* Linn., but his illustration is of the shell now known as *Murex brevifrons* Lamarck. According to Dodge (1957: 88), *Murex ramosus* of Linnaeus included at least the following species: *Murex palmarosae*, *M. inflatus*, *M. axicornis*, *M. adustus*, and *M. brevifrons*, all of Lamarck. In addition there are various other figures in the Linnaean references which are specifically unidentifiable and, to quote Dodge, "the hodge-podge of figures. . . sufficiently establishes that Linnaeus was dealing with a composite species." Montfort clearly was using the name *M. ramosus* in the same composite sense, for although he gives an illustration of *M. brevifrons*, his synonymy includes references to figures of *M. palmarosae*, *inflatus*, *axicornis* and *adustus* of Lamarck, plus *M. monodon* and *M. torrefactus* of Sowerby, and many more, in addition to *M. brevifrons*, so he can scarcely be said to be restricting the name to his figured specimen. In 1798 Röding had used the name "*Purpura*" *ramosus*, but unfortunately gave no references. He did, however, cite another species, "*Purpura*" *incarnata*, with a reference to the Martini figures (1777, III, Figs. 980, 981) of the shell which is now known as *Murex inflatus* Lamarck, based on the same Martini figures. Dodge is of the opinion that Lamarck restricted the name *M. ramosus* to his *Murex inflatus* (which is today so considered) by including the name in his synonymy of that species, and giving other names to the remainder of Linnaeus' references. This was evidently Lamarck's intention for he said of *M. inflatus*, "Linné comprenait avec elle, sous le nom de *M. ramosus*, plusieurs des espèces qui suivent." (1822: 160). Therefore it would seem safe to say that the type of *Chicoreus* is *Murex ramosus* Linn., as restricted by Lamarck to the large Indo-Pacific species figured by Martini (III, Figs. 980, 981), which Lamarck named *Murex inflatus*.

The name *Triplex* was proposed by Perry for another shell of the *Chicoreus*

form. Both were named in 1810. The exact date of issue of the Montfort work is not generally known and for this reason some authors have employed the Perry name for the group. However, Iredale (1915: 457) states that the Montfort work was reviewed in the *Göttinger Anzeiger*, issued May 28, 1810, and thus it certainly precedes the Perry work which did not appear until June.

The monotype of *Triplex* is *Triplex foliatus* Perry, a species better known as *Murex palmarosae* Lamarck. If *Chicoreus* were to be retained in *Murex* sensu lato, then the name would be a junior homonym of *Murex foliatus* Gmelin. Unfortunately this still would not save the familiar *M. palmarosae*, for Perry renamed his species *Triplex rosaria* the following year. Röding used the name "*Purpura*" *rosarium* ("*Murex rosarium* Chemnitz" of authors) in 1798, but for a species referable to *Hexaplex*, so that it could not be said to preoccupy *Triplex rosaria*. Therefore it is unavoidable, unless one wishes to call all of these species "*Murex*," that the name *M. palmarosae* must be replaced by *T. foliatus* Perry.

The name *Chicoreus* has been subjected to considerable "emendation" or misspelling due to Montfort's choice of orthography. The French word for chicory, or endive, is *chicoree*, but the Latin is *cichorium*. Classically-minded emendators felt that Montfort's usage was of the vernacular and hence was to be "latinized." The confusion is heightened by the name *Murex cichoreus* Gmelin. This species, long known as *Murex endivia* Lamarck (truly "vernacular"), is the type of *Hexaplex*, and is not even a member of *Chicoreus*.

Euphyllon, *Pirtus*, and *Torvamurex* are placed in the synonymy of *Chicoreus* as it is felt that their type species do not exhibit any characteristics which permit their supraspecific distinction. If *Torvamurex* were to be accepted on the grounds that the varical ornamentation has a tendency toward coalescing into a solid flange, then the older name *Pirtus* should be used as it was based on a similar

species. I prefer to leave both in *Chicoreus* at this time.

Fronodosaria, erected by Schlüter for all "frondose" species, included in addition to *Chicoreus* forms, *Murex erinaceus* and *Murex trunculus*. No type was indicated, only a list of species given - the first being "*inflata* (Lam.)." No subsequent type designation has been found and therefore *Murex inflatus* Lamarck is here selected as the type of *Fronodosaria* Schlüter, assuring its synonymy with *Chicoreus*.

SIRATUS (Figs. 10, 46)

Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

TYPE SPECIES: "*Purpura Sirat*" Adanson, by orig. design. (= *Murex senegalensis* Gmelin).

"Shell with more or less projecting conical spire, on each whorl three varices winged anteriorly and armed with simple spines or membranaceous extensions, between each [pair of] varices two or more nodes; canal shorter than the height of the spire, broad at the base, slender and bent anteriorly; aperture oval with a small posterior canal." (Jousseaume, 1882, *translated*)

Discussion: This subgenus represents a "link" between *Murex*, *Chicoreus*, and *Pterynotus*. It has the spines of the first, the recurved canal of the second, and the winged varices of the last. Jousseaume, in his list of species included in this group (1882: 324), cited several western Atlantic forms usually referred to *Murex* s.s. In a recent paper (1963: 95) I suggested that those species of *Murex* s.s. which have a deflected siphonal canal, and which correspond to Jousseaume's species of *Siratus*, are perhaps to be segregated from the true *Murex* s.s. It is possible that these species, including *Murex antillarum* Hinds, *M. ciboney* Clench and Pérez Farfante, *M. motacillus* Gmelin, *M. cailleti* Petit, *M. finlayi* Clench, and others of this type, may more correctly be assigned to *Siratus* in spite of seeming affiliation with *Murex* s.s.

Certain of these species, especially *M. motacillus* and *M. finlayi*, possess characters which place them in an intermediate position between the 2 groups. The species which definitely belong to *Siratus* include *Murex beaui* Fischer and Bernardi, *Chicoreus pliciferoides* Kuroda, *Murex percooides* Löbbecke, and *Murex alabaster* Reeve.

PHYLLONOTUS (Figs. 14, 47, 48, 57)

Swainson, 1833, *Zool. Illustr.* (2) v. 3, expl. to Pl. 100.

TYPE SPECIES: *Murex imperialis* var. *a* Swainson, by subs. design., *ibid*, Pl. 109. (*M. imperialis* var. *a* Swainson, 1833 = *M. imperialis* Swainson, 1831, not *M. imperialis* Fischer, 1807 = *M. margaritensis* Abbott)

PHYLLONOTA Conrad, 1847, *Proc. Acad. Nat. Sci. Phila.*, v. 3, p 286. Error.

PHYCONOTUS Simroth, 1907, *in* Bronn, *Klass. Ordn. Tierreichs*, v. 3 (2), p 1039. Error.

"Canal moderate; varices foliated, lacinated, compressed, or resembling leaves." (Swainson, 1840)

Discussion: *Phyllonotus* has been synonymized with *Hexaplex* or *Muricanthus* by many writers; however Keen (1960) recently discussed the problem and concludes, as I, that it is truly distinct. The strongly flaring inductura on the parietal wall, the most obvious differentiating characteristic possessed by *Phyllonotus*, was not noted by Keen or apparently by any other person. This unique feature distinguishes the shell of *Phyllonotus* from that of any other group. (*Bolinus* has the same type of structure, but otherwise is almost completely different.) Keen (1959: 3) and Abbott (1958: 62) both observed that *Murex regius* Swainson from the west coast of Mexico closely resembles the type of *Phyllonotus* and suggested that *Phyllonotus* was therefore a synonym of *Hexaplex*. Neither apparently considered the possibility that *M. regius* was correctly to be referred to *Phyllonotus* instead of *Hexaplex*. The pink coloration of the aperture attributed by Keen to the *Hexaplex* groups is, instead,

more characteristic of *Phyllonotus* where it is almost invariably present, while occurring only sporadically in *Hexaplex*, even among specimens of *Murex cichoreus*, the type species.

Murex brassica Lamarck² and *Murex erythrostomus* Swainson, also from the west coast of Central America similarly belong in *Phyllonotus*. Miocene and Pliocene specimens of *Murex globosus* Emmons from the Atlantic Coastal Plain, usually incorrectly synonymized with *Murex pomum*, are almost indistinguishable from Recent specimens of *M. erythrostomus*. Likewise *Phyllonotus peratus*, Keen's Pacific analog of *M. pomum*, is remarkably close to Florida Pliocene specimens of *M. pomum*, and it is obvious that *Phyllonotus* cannot be restricted to the Atlantic Ocean. The group seems to be descended from species in the Oligocene and Miocene of the Gulf Coast of the United States (*Murex mississippiensis* Conrad, *M. trophoniiformis* Heilprin, etc.) and is restricted to the Western Hemisphere.

The type species of *Phyllonotus* has been the subject of controversy of late. In the past it has most often been dismissed as a synonym of *Murex pomum*. Abbott (1958: 61) suggested, however, that the 2 forms are not synonymous and proposed the new name *Murex margaritensis* for the preoccupied *M. imperialis*. He declared that the two differ in several important characters, such as the number of varices per whorl, the nature of the intervarical nodes, and the overall shape.

²The placement of *M. brassica* is somewhat difficult as it possesses characteristics of both *Phyllonotus* and *Hexaplex*. It has the brown and white stripes of *Hexaplex* combined with the pink aperture and flaring (but only slightly) inductura of *Phyllonotus*. In addition, it has an operculum unlike either of these, but more like that of *Murex haustellum*, and a type of closed spine which seems to be unique unto itself. The formation of the varices, with a projecting labrum in front of the spines, characteristic of *Phyllonotus*, but never present in *Hexaplex*, seems to throw the weight of evidence in favor of reference to *Phyllonotus*. It is these "misfits", such as *M. brassica*, which remind us that all supraspecific groups are artificial and have no absolute boundary lines.

Subsequently Clench (1959: 333) reduced *M. margaritensis* to the status of a subspecies of *M. pomum*, saying that the only consistent difference that he could observe was the pink coloration of the aperture. I have examined many specimens of *M. margaritensis* and agree with Abbott that the form is different from typical *M. pomum*. Whether this difference represents more than geographical variation cannot be established at this time. As is the case with many abundant species, *M. pomum* is highly variable. Perhaps *M. margaritensis* should be no more than a subspecies. Regardless of the final decision, the subgeneric characteristics will not change. In fact the possession of the varying number of varices to be found in *M. margaritensis* is more characteristic of the group than the consistent number of 3 which occurs in *M. pomum*.

HEXAPLEX

(Figs. 11, 12, 15, 16, 18, 19, 49, 58-60)

Perry, 1810, *Arcana*, expl. to Pl. 23 (genus without species); 1811, *Conchology*, Pl. 8.

TYPE SPECIES: *Hexaplex foliacea* Perry, by subs. design., Iredale, 1915 (= *Murex cichoreus* Gmelin).

PURPURA Röding, 1798, *Museum Boltianum*, p 139. Not *Purpura* Bruguière, 1789 (Moll.).

Type species: *Murex trunculus* Linn., by subs. design., Winckworth, 1945.

POLYPLEX Perry, 1810, *Arcana*, expl. to Pl. 23 (genus without species).

Type species: *Polyplex purpurascens* Perry, by subs. design., Baily, 1960 (= *Murex trunculus* Linn.).

EXAPLEX Férussac, 1820, *J. de Physique*, v. 90, p 284. Error.

CENTRONOTUS Swainson, 1833, *Zool. Illustr.*, (2) v. 3, Pl. 100. Not *Centronotus* Schneider, 1801 (Pisces).

Type species: *Murex (Centronotus) euryostomus* Swainson, by monotypy (= *Murex saxatilis* of authors).

MURICANTHUS Swainson, 1840, *Treatise on Malacology*, p 296. New name for *Centronotus* Swainson.

BASSIA Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335. Not *Bassia*

Quoy and Gaimard, 1830 (Coel.).

Type species: *Murex stainforthi* Reeve, by orig. design.

MURICANTHA Fischer, 1884, Man. de Conchyl., p 641. Emendation.

TRUNCULARIA Monterosato, 1917, Boll. Soc. Zool. Ital., (3) v. 4, p 20. Not *Truncularia* Wiegmann, 1832 (Bryozoa). Type species: *Murex trunculus* Linn., by subs. design., Lamy, 1919.

TRUNCULARIOPSIS Cossman, 1921, Revue Crit. Paléozool., v. 25, p 79. New name for *Truncularia* Monterosato.

MURITHAIS Grant and Gale, 1931, San Diego Soc. Nat. Hist. Mem., v. 1, p 729. Type species: *Murex trunculus* Linn., by orig. design.

BASSIELLA Wenz, 1941, Handb. Paläozool., v. 6 (1), pt. 5, p 1089. New name for *Bassia* Jousseaume.

AARONIA Verrill, 1950, Minutes Conch. Club S. Calif., No. 103, p 4. Type species: *Murex (Aaronia) strausi* Verrill, by orig. design.

MURICANTUS Korobkov, 1955, Spravochnik i methodicheskoe rukovodstvo, Pl. 70. Error.

"Shell univalve, spiral, divided longitudinally by six folds, from whence its name is derived; these folds are membranaceous and tuberculous, and sometimes spreading out into branched horns; the mouth is round; the beak long, and armed with several calcaria or spurs, in a similar manner to the genus *Triplex*." (Perry, 1811)

Discussion: Jousseaume (1880: 335) was apparently the first to employ the name *Hexaplex* of Perry, designating the type as "*Murex cichoreus* Gmelin." However, in Perry's original publication of *Hexaplex* the name *cichoreus* does not appear, and thus is not "available" for selection as type, even though one of Perry's figures clearly is meant to represent that species. It was not until 1915 (:471) that Iredale correctly designated *Hexaplex foliacea* Perry as type species of this genus.

Unaware of (or ignoring) the Perry work, Swainson, in 1833, created the subgenus *Centronotus* for a species which he called *Murex eurystomus*, figuring the shell which is generally cited as *Murex*

saxatilis. This is however, the *M. saxatilis* of authors, not of Linnaeus, as the identity of Linnaeus' species is in doubt. Dodge (1957: 92) considers it a "*species dubia*", stating that "the *saxatilis* of Lamarck and authors, which is labeled *saxatilis* in most of our collections today, is certainly not the shell Linnaeus described." Most, if not all, of the figures cited by Linnaeus are referable to *Murex cichoreus*. Swainson was aware of this confusion when he named *Murex eurystomus*, saying "We feel some surprise that Lamarck should have viewed this large and imposing *Murex* as one of the varieties of *saxatilis*, from which it is unquestionably distinct." "*Purpura* *duplex* Röding, 1798, based on the excellent figure of this shell given by Martini (1777, III, Pl. 108, Fig. 1013) probably should be the correct name for the species.

Swainson, in 1840, noting that *Centronotus* was preoccupied, replaced that name with *Muricanthus*, to which he referred only 2 species, *Murex radix* and *Murex melanamathos*. *Murex eurystomus*, the type of *Centronotus*, he placed in *Phyllo-notus*. Therefore both Gray (1847) and Herrmannsen (1847) designated *M. radix* Gmelin as the type of *Muricanthus*. Under modern rules of nomenclature *M. eurystomus* should still be considered the type of *Muricanthus*, although *M. radix* is usually cited following Gray and Herrmannsen. There are those who feel that the *M. radix* group represents a subgenus distinct from the typical *Hexaplex* form, and for this reason wish to see *Murex radix* established as the type species of *Muricanthus*. To me the 2 forms are inseparable above the specific rank and such an action is unnecessary. However, it is possible that because *Murex (Centronotus) radix* was also figured by Swainson in the *Zoological Illustrations* (Pl. 113) *Murex eurystomus* should not be considered type of monotypy, and the subsequent designation of Herrmannsen and Gray would then be valid. *Zoological Illustrations* was issued in parts and Plate 111 which first presents *Centronotus* appeared in number 22, while Plate 113

with *M. radix* did not appear until number 25. I have been unable to find any reference to the actual dates of issue of the parts and they may well have been issued simultaneously.

Murex trunculus, the type species of several nominal genera, is obviously also a close relative of *Murex cichoreus*, even having the brown and white color stripes which are so conspicuous in that species. A tendency toward this color pattern is very nearly a subgeneric characteristic, as it appears with great frequency among the species of *Hexaplex*, though not universally present. *Murex trunculus* is involved in another problem, created quite unnecessarily by Baily who, in 1960, resurrected the long ignored name *Polyplex* of Perry and designated *Polyplex purpurascens* (= *M. trunculus*) as type species. *Polyplex* was originally proposed in 1810 in the explanation to Plate 23 of Perry's *Arcana*, wherein he stated: "The *Monoplex* has one fold on its body; the *Biplex* two folds; the *Hexaplex* six folds, and so on with the following species, until we arrive at the greatest number, the *Polyplex*, in which the folds are very numerous, but the number not defined." He did not mention any species of *Polyplex* in this work. The following year, however, in the *Conchology*, he gave a plate (Pl. 9) with 5 figures which bore the name *Polyplex*. These 5 figures are poorly executed and portray 5 different genera. No doubt for this reason the name *Polyplex* has never been accepted, and has never appeared in any of the major zoological literature. By definition it would certainly be classified as a *nomen oblitum*, or "forgotten name", and as such should have been assigned to the limbo of the Official Index of Rejected Generic Names in Zoology. Baily chose to designate a type species for this genus in spite of his own admission that no matter which of the figures he selected a currently accepted name would be affected. He therefore designated *Polyplex purpurascens* (= *Murex trunculus* Linn.) because "established usage clearly will be least disturbed" by this selection.

Even though the official rules concerning treatment of *nomina oblita* did not appear in print until 1961 (I.C.Z.N. Code, Art. 23-b), long-forgotten names had been the subject of discussion for many years. At both the Copenhagen (1953) and the London (1958) International Zoological Congresses resolutions were passed which would conserve taxa threatened by the discovery of a previously overlooked older name. (See Copenhagen Decisions, 1953: 25-26, 119-122 and Bull. Zool. Nomencl., 1958, 15: 621-642.) At Copenhagen it was decided that there should be included in the revised *Règles* "a provision limiting the application of the Law of Priority in such a way as to preserve any well-known name which had been in use for a considerable period from being sunk as a junior synonym of some much older name which had not been used more than a small number of times in a specified recent period of considerable length." The Commission was then given the duty of preparing such a provision. It was further advised in the Copenhagen Decisions (:103) that taxonomists should guide themselves, during the period which must elapse before the revised *Règles* would come into force, by the decisions taken by the Congress. Baily's action in 1960 therefore was not only ill-advised but contrary to this advice, and, in my opinion, invalid. If such is technically not the case the matter will be appealed to the International Commission on Zoological Nomenclature with a request that *Polyplex* Perry be declared a *nomen oblitum*.

Murex stainforthi, type (and only) species of *Bassiella*, is much like certain color forms of *Murex cichoreus*, and is clearly derived from that line. There is no reason to distinguish this one species from the others of the group. It was separated originally because it has more than the "characteristic" 6 varices of *Hexaplex*. However *Murex cichoreus* may itself have more than 6 varices, the true range being between 5 and 8.

Aaronia was based on a single species from the Caribbean. From Verrill's figure and description it would seem to be closely

related to the *Murex radix* group of the west coast of Central America. Although it is of interest to find a species of this type in the Caribbean fauna, it does not warrant the erection of a new subgenus as there is at least one other representative of the group in these waters, *Murex fulvescens* Sowerby.

MUREXSUL
(Figs. 20, 50, 61)

Iredale, 1915, Trans. Proc., New Zealand Institute, v. 47, p 471.

TYPE SPECIES: *Murex octogonus* Quoy and Gaimard, by orig. design.

MUREXUL Habe, 1961, Coloured Illustrations of the Shells of Japan, v. 2, p 49. Error.

"*Murex octogonus* . . . does not match easily with any other species. . . In the British Museum collection it has been placed under *Ocenebra*, but it is obviously out of place, and the radula show the characters of *Hexaplex*. It may, therefore, be so classed, but a subgeneric name should be used to emphasize the peculiarities of this form. I therefore propose "*Murexsul* subgen. nov.," and name *Murex octogonus* Quoy and Gaimard as type." (Iredale, 1915).

Discussion: *Murexsul* least resembles other groups in the Muricinae, especially when the shell is somewhat worn and lacks the delicate fronds. The spire is higher than in other forms but the radula and the operculum indicate placement here rather than in the Tritonaliinae to which it bears a strong resemblance. *Murexsul* also closely resembles *Muricopsis*, but may be distinguished from that group by the strongly denticulated outer lip of the latter.

MUREXIELLA
(Fig. 21, 22)

Clench and Pérez Farfante, 1945, Johnsonia, v. 1 (17), p 49.

TYPE SPECIES: *Murex hidalgoi* Crosse, by orig. design.

MINNIMUREX Woolacott, 1957, Proc. Roy. Zool. Soc. New South Wales (1955-1956), p 11.

Type species: *Minnimurex phantom* Woolacott, by orig. design.

"Shell possessing four to six varices with foliated spines. The spines are connected on each varix by a complex laminated webbing. This webbing is not formed of a single plate of material, but of several layers, the front margins separated and produced more or less horizontally to the vertical back. The forward side of this web appears as a series of layers between the foliated spines. Siphonal canal moderately broad and somewhat extended. Operculum unguiculate, with a subapical nucleus." (Clench and Pérez Farfante, 1945)

Discussion: Although this group superficially resembles *Hexaplex*, it may be distinguished by the regularly oval aperture, lacking any suggestion of an anal notch, as well as by the presence of the complex webbing between the varical spines. Some species of *Homalocantha* have a comparable type of webbing, but this represents convergence rather than close relationship.

Murexiella seems to have originated in North America, beginning in the Eocene with the species *Murex mantelli* Conrad. It continues through the Miocene with *Murex macgintyi facetus* Vokes, a subspecies of the Pliocene and Recent form *Murex macgintyi* M. Smith. In addition to the Caribbean representatives, at least one West coast species, *Murex humilis* Broderip, should be placed in this group. *Murexiella* also occurs in the Pliocene of Europe with the species *Murex absonus* Jan, and especially *Murex plioaspirata* Sacco, which is almost indistinguishable from *Murex macgintyi*.

In 1957 Woolacott proposed the genus *Minnimurex* for a new species of Australian Muricidae. The type species, *Minnimurex phantom*, closely resembles the species of *Murexiella*, especially *M. macgintyi* and *M. humilis*, and there seems to be little basis other than geographical separation for this new name. There is an unnamed species in the Pleistocene of Florida which is scarcely distinguishable from the illustration of Woolacott's

species.

MAXWELLIA
(Figs. 23, 62)

Baily, 1950, *Nautilus*, v. 64, p 11.

TYPE SPECIES: *Murex gemma* Sowerby,
by orig. design.

"Shell solidly built, with an elongated canal that is nearly closed, but at no point of which is the closure quite complete. Body whorl with approximately six varices, whose breadth exceeds that of the spaces alternating with them, as well as the elevation of the varices themselves. Varices extending across the suture to the periphery of the adjoining volution, resembling architectural buttresses. Suture rather deep, and divided by the varices into a series of pits which are the most distinctive feature of the shell. No sutural tubes as in *Typhis* and no expanded digitations of the outer lip as in *Homalocantha*. Operculum with marginal [i.e. basal] nucleus." (Baily, 1950)

Discussion: In addition to the type there is apparently only one other species referable to *Maxwellia*, which nevertheless seems to represent a valid subgroup. It is most closely related to *Murexiella*, as the type species seems to be an offshoot of the typical *Murexiella* in which the webbing of the varices has become fused into a solid, greatly thickened ridge of shell material. The second species of the group, *Murex santarosana* Dall, demonstrates this relationship more clearly than does *Murex gemma*.

PTERYNOTUS
(Figs. 24-27, 51, 63)

Swainson, 1833, *Zool. Illus.*, (2) v. 3, expl. to Plate 100.

TYPE SPECIES: *Murex pinnatus* Swainson, by subs. design., *ibid.*, pl. 122.

PTERONOTUS Swainson, 1833, *Zool. Illus.*, (2) v. 3, Pl. 122. Not *Pteronotus* Rafinesque, 1815 (Mamm.).

MARCHIA Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

Type species: *Murex clavus* Kiener,
by orig. design. (*M. clavus* Kiener,

1843, not *M. clava* Gmelin, 1791, nor *M. clavus* Michelotti, 1841 = *M. elongatus* Lightfoot).

TIMBELLUS de Gregorio, 1885, *Boll. Soc. Malac. Ital.*, v. 10, p 275.

Type species: *Murex latifolius* Bellardi, here designated.

MORCHIA Baker, 1891, *Proc. Rochester Acad. Sci.*, v. 1, p 159. Error.

TRIPLEX "Humphrey" Newton, 1891, *Edwards Coll. Eocene and Oligocene Moll.*, p x, 297. To "replace" *Pteronotus* Swainson.

PTERYMUREX Rovereto, 1899, *Atti Soc. Ligustica*, v. 10, p 105. New name for *Pteronotus* Swainson.

SUBPTERYNOTUS Olsson and Harbison, 1953, *Acad. Nat. Sci. Phila.*, Monogr. 8, p 246.

Type species: *Murex textilis* Gabb, by orig. design.

PTERYNOTIS Emerson, 1960, *Amer. Mus. Novitates*, No. 2009, p 4. Error.

"Varices three, compressed, fin-shaped; canal moderate, generally closed by the union of the two lips at their base." (Swainson, 1840)

Discussion: *Pterynotus* has been variously misspelled and renamed because of the confusion in Swainson's original spellings. The name first appeared as *Pterynotus* in the text to plate 100 of his *Zoological Illustrations* (series 2) in a synopsis of the Muricidae, and later in the text to Plate 109. However, on Plate 122, when first used for a species, it was spelled *Pteronotus*, and as such was used by Swainson in the *Treatise on Malacology* (1840). As this latter spelling was preoccupied, various substitute names have been proposed by authors unaware of the valid original spelling.

In addition to the names intended to replace *Pteronotus*, there have been a number of names proposed which are based on species too closely related to *Murex pinnatus* to be supraspecifically differentiated. *Murex elongatus* Lightfoot³ (*M. clavus* Kiener, not Gmelin, nor Michelotti) is certainly of the same group

³This species, named in the Portland Catalogue, has been attributed to Solander, however Dance (1962: 31) has recently shown that the correct author is Dr. John Lightfoot.

as *M. pinnatus*, as is *Murex latifolius* Bellardi. This latter species is very close to *M. tristichus* Dall, a delicate deep-water form from the Gulf of Mexico. (The name *Murex tristichus* of Dall, 1889, is preoccupied by *Murex tristichus* of Beyrich, 1854. However, I strongly suspect that the Dall species is synonymous with *Murex phaneus* Dall, also from the western Atlantic, and therefore it is deemed advisable not to rename this homonym pending further study.) De Gregorio did not designate a type species for the subgenus *Timbellus*, stating that he was proposing the name for that section of the Muricidae of the "tipo del *M. latifolius* Bell. e *latilabris* Bell. Mich-tti." Sacco (1904: 18) placed the name in synonymy with *Pteropurpura*, *Pteronotus* and *Pterymurex* and did not designate a type. Therefore, *Murex latifolius* Bellardi is here designated as the type species of *Timbellus* de Gregorio.

Subpterynotus was based on a fossil species remarkable for the extreme length of the siphonal canal. The original description states that the new subgenus differs from *Pterynotus* "in having a perfectly straight anterior canal. . . . The former tip of the anterior canal is closely appressed to the main one and is not seen or noticed except on close scrutiny." This is the case in most specimens, but perfect specimens reveal that the distal end of the canal is recurved as in the species of *Pterynotus*, with the former canals in evidence on the side. These delicate appurtenances are usually broken off in the fossil state. This peculiar species persisted from the middle Miocene through the Pliocene in the Caribbean area and a similar species, *Murex graniferus* Michelotti, occurs in the Pliocene of Italy, but neither appears to have left any descendants.

The *Pterynotus* group is among the most ancient of the Muricinae, being first represented in the Paleocene of Alabama by the species *Murex matthewsensis* Aldrich. The only other known American Paleocene species of Muricinae is *Murex morulus* Conrad, exceedingly like *M.*

matthewsensis but bearing 6 varices. Presumably these oldest forms share a common ancestor, but it is not known whether that ancestral type possessed 3 or 6 varices.

The radula of *Murex pinnatus*, the type species of *Pterynotus*, is somewhat different from that of the normal Muricinae. It has lost the 2 smaller intermediate cusps of the central tooth (see Fig. 51). This appears to be a degenerate condition and may reflect feeding habits.

NAQUETIA

(Figs. 28, 29, 64)

Jousseume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

TYPE SPECIES: *Murex triqueter* Born, by orig. design.

TRIPLEX "Humphrey" Harris, 1897, *Moll. Brit. Mus.*, p 172.

"Type species": *Triplex flexuosa* Perry, (= *M. triqueter* Born).

RHIZOPHORIMUREX Oyama, 1950, *Geol. Surv. Japan*, Rept. 132, p 10.

Type species: *Murex capuchinus* Lamarck (sic), by orig. design. (*M. capuchinus* Lamarck 1822, not "*Purpura*" *capucina* Röding, 1798 = *M. permaestus* Hedley).

"Shell with elongated conical spire, whorls with three varices winged anteriorly, with two or three projecting nodes between the varices; canal in general short and broad at the base; aperture oval with a narrow posterior canal." (Jousseume, 1882. *translated*)

Discussion: This group differs from the typical winged *Pterynotus* in having flanges only on the anterior portion of the varices and in having a broad, short canal, as noted by Jousseume. *Murex capuchinus* Lamarck, type of *Rhizophorimurex*, is a variable species and frequently displays no flanges whatsoever. However many specimens have well developed caudal flanges indicating their placement here. If "*Purpura*" *capucina* Röding (probably = *Murex adustus* Lamarck) is placed in *Murex sensu lato*, then it pre-occupies *M. capuchinus* Lamarck, in which case *M. permaestus* Hedley is the next available name. Hedley (1914: 745) pro-

posed *M. permaestus* for "*M. capucinus*" of authors, because he had found upon examining the type of Lamarck's species in the Geneva Museum that it was a "large, massive, dark red shell, four and three-quarter inches long," and was probably related to *Murex torrefactus*. Lamarck, however, in his description cited Chemnitz figures (XI, Pl. 192, Figs. 1849, 1850) which represent "*Murex capucinus*" of authors, and we are faced with the problem of whether the subsequent discovery of a "type" specimen should take precedence over an author's original reference. Under these circumstances it is perhaps better to consider the name *M. capucinus* of Lamarck as being preoccupied and accept *M. permaestus* as the correct name for "*Murex capucinus*" of authors.

The name *Triplex* of Humphrey, as used by Perry in 1811, was revived by Harris for the *Pterynotus* group, to replace the preoccupied name *Pteronotus*. However he selected as "genotype" *Triplex flexuosa* (Perry's Pl. 7, Fig. 1), a figure which represents *Murex triqueter* Born, making his *Triplex* synonymous with *Naquetia*. Moreover his type designation was not valid for the name *Triplex* had been used by Perry in 1810, with *Triplex foliatus* type by monotypy, making it a synonym of *Chicoreus* Montfort.

PTEROCHELUS (Fig. 33)

Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

TYPE SPECIES: *Murex acanthopterus* Lamarck, by orig. design.

ALIPURPURA "Bayle MS" Fischer, 1884, *Man. de Conchyl.*, p 641.

Type species: *Murex acanthopterus* Lamarck, by orig. design.

"Shell with very long conical spire, whorls depressed near the suture and armed with three lamellar varices; aperture irregularly triangular, lacking posterior canal, columellar margin appressed almost the entire length; canal wide and rather long." (Jousseaume, 1882, *translated*)

Discussion: *Murex acanthopterus* dif-

fers from the typical *Pterynotus* in having an open spine at the shoulder, surrounded by the wing-like varix. This spine may be almost closed (approaching the closed tube of *Typhis*) but there always remains an open slit on the apertural side. The type species has this distinguishing feature much less developed than many others of the group. In fact if *M. acanthopterus* were the only included species there would be little reason to separate *Pterochelus* from *Pterynotus*. However such a separation is warranted by the existence of other species in the group such as *Murex angasi* (Crosse). A very extreme form in this line, in which the spine is completely closed, has been named *Nothotyphis* by Fleming.

The name *Pterochelus* was used by Oken in 1815 in a work which has been declared unavailable for nomenclatorial purposes (I.C.Z.N. Opinion 417, 1956) and therefore does not preoccupy *Pterochelus* Jousseaume. It is possible that Oken validated the name subsequently, in which case *Alipurpura* is available.

NOTHOTYPHIS (Fig. 34)

Fleming, 1962, *Trans. Roy. Soc. New Zealand Zool.*, v. 2 (14), p 116.

TYPE SPECIES: *Pterynotus* (*Nothotyphis*) *norfolkensis* Fleming, by orig. design.

"Small solid *Pterynotus* with closed siphonal and adapical canals, sculptured by broad rounded spiral cords on which are superposed fine intersecting spiral and radial threads, resulting in a trellised microtexture. Siphonal canal short. Protoconch paucispiral with bulbous nucleus." (Fleming, 1962)

Discussion: Fleming proposed this new subgenus of *Pterynotus* to distinguish those few species in which the adapical canal is completely closed in a manner resembling the genus *Typhis*. This resemblance is superficial for the tube formed is varical in origin in *Nothotyphis*, while in the *Typhinae* it is formed behind the varix. In *Tripterotyphis*, as noted by Fleming, the tube becomes enrolled in the varix and appear to be varical in origin,

thus simulating *Nothotyphis*.

According to Fleming the siphonal canal of *Pterynotus* (*Nothotyphis*) *norfolkensis* is completely closed in the adult, although open in the immature stage. If this is true then it is probable that *Nothotyphis* should be referred to the Typhinae, as the completely closed canal is typical of that group, but not of the Muricinae. It is not impossible, however, that this is also a case of convergence, paralleling the closed adapical canal.

POIRIERIA

(Fig. 35)

Jousseaume, 1880, Le Naturaliste, Année 2 (42), p 335.

TYPE SPECIES: *Murex zelandicus* Quoy and Gaimard, by orig. design.

POIRIERIA Fischer, 1884, Man. de Conchyl., p 641. Error.

"Swollen fusiform shell with elevated conical spire, whorls with five varices armed with long subulate and canaliculate spines; aperture rounded with wide and appressed columellar margins; canal rather long, narrow and curved." (Jousseaume, 1882, *translated*)

Discussion: Although *Poirieria* and *Paziella* have been placed in synonymy by many authors it is felt that the 2 groups are distinguishable. There is considerable morphological similarity; however, the Caribbean *Paziella* species close the varical spines thereby forming a distinct labrum bearing conspicuous denticles within the aperture, but the neozelanic *Poirieria* forms never close the spines and lack this labrum. Specimens of *Murex pazi*, type of *Paziella*, may be seen with the spines still open, but this represents incomplete development.

Both *Paziella* and *Poirieria* have fossil records in their respective provinces dating back to the Miocene. Moreover, they bear a strong resemblance to certain Eocene species such as *Murex vanuxemi* Conrad of the Gulf Coast of the United

States and *Murex calcitrapa* Lamarck⁴ of the Paris Basin, so their geologic history may be even more ancient. Apparently they represent 2 successful and closely related stocks which have had little reason to change in spite of long separation.

PAZIELLA

(Figs. 30, 31 36, 65)

Jousseaume, 1880, Le Naturaliste, Année 2 (42), p 335.

TYPE SPECIES: *Murex pazi* Crosse, by orig. design.

BATHYMUREX Clench and Pérez Farfante, 1945, Johnsonia, v. 1 (17), p 41.

Type species: *Murex* (*Bathymurex*) *atlantis* Clench and Pérez Farfante, by orig. design.

DALLIMUREX Rehder, 1946, Nautilus, v. 59, p 142.

Type species: *Murex nuttingi* Dall, by orig. design.

"Fusiform shell with elevated conical spire, whorls slightly depressed at the suture, with seven spinose varices, the posterior spine very long and canaliculate; aperture nearly round with appressed columellar margin, and straight lip internally striated; canal recurved anteriorly and encircled with long spines near the base." (Jousseaume, 1882, *translated*)

Discussion: The reasons for accepting *Paziella* as a group distinct from *Poirieria* have been discussed above. However, there are 2 other taxa, proposed for species from the Caribbean, which must be placed in the synonymy of *Paziella*. *Bathymurex* was established for a species which is undoubtedly of the *Paziella* group, even though it lacks the row of spines encircling the base. Kira (1962: 65) places *Bathymurex* in the genus *Trophonopsis* as the subgenus for the 2 Dall species *T. echinus* and *T. gorgon*. I am of the opinion that the 2 species in question

⁴*Murex calcitrapa* Lamarck, 1803, not *M. calcitrapa* Lamarck, 1822, a Recent species. In 1822 Lamarck invalidly renamed the Eocene species *M. calcitrapoides*, a name by which it is frequently cited.

are more correctly to be referred to *Poirieria* than to *Trophonopsis*. These 2 Japanese species, however, close the spines in a manner similar to *Paziella*, and perhaps should be referred to that group in spite of geography.

Study of a series of specimens reveals that *Murex muttingi*, type of *Dallimurex*, cannot be distinguished other than specifically from *Murex pazi*. *Dallimurex* was erected by Rehder to include certain species from the lower Miocene Alum Bluff Group, subsequently described by Gardner (1947). However his selection of the dissimilar *M. muttingi* as type species precluded their placement here, and Gardner's Miocene species were later placed in *Panamurex*, proposed by Woodring (1959) for a Panamanian Miocene species.

PANAMUREX

(Fig. 32)

Woodring, 1959, U. S. Geol. Surv. Prof. Paper 306-B, p 217.

TYPE SPECIES: *Murex gatumensis* Brown and Pilsbry, by orig. design.

"Of medium size, strongly shouldered. Axial sculpture consisting of sharp-edged varices, which bear a short, slender, erect spine on spiral cord at shoulder. Spiral sculpture strong, consisting of cords and threads. Interior of outer lip bearing strong elongate denticles or ridges. Siphonal canal moderately long, bent backward. Basal part of inner lip bearing three to five elongate denticles." (Woodring, 1959)

Discussion: This fossil group known from the Tertiary of the Gulf Coast of the United States and Panama may be distinguished from *Paziella* by the much stronger spiral sculpture and by the presence of the denticles on the basal part of the inner lip (both groups have a denticulated outer lip). In addition the type species bears a projecting tooth on the anterior portion of the outer lip, but this is not found in all members of the group. Although the type is from Panama, as the name implies, the form seems to be derived from Oligocene forms from

Mississippi: *Murex simplex* Aldrich, which occurs in the middle Oligocene, and *Murex simplex* var. *aspinosus* Meyer, from the lower Oligocene. The Florida Miocene species, for which Rehder originally intended the name *Dallimurex*, are: *Paziella lychnia* and *P. fusinoides* Gardner, and *Muricopsis laccapoia* Gardner, all of the Chipola Formation. In addition there are also "*Muricidea*" *alaquaensis* and "*M.*" *clarksvillensis* Mansfield from the upper Miocene Choctawhatchee Formation of Florida, and *Murex gilletteorum* Vokes from the lower Miocene Silverdale beds of North Carolina.

As I stated earlier, *Paziella* and *Poirieria* seem to be descended from certain Eocene species, and these may also be ancestral to the *Murex simplex* type. Since the Miocene fauna included *Paziella*-like species, *Panamurex* does not seem to be directly in the evolutionary sequence, but apparently represents a parallel development. The Miocene species of *Paziella* include: *Trophon dominicensis* Gabb from the Gurabo Formation, Dominican Republic (and its synonym *Murex weneri* Toulou from Tehuantepec, Mexico), and *Murex collatus* Guppy from the Bowden Formation of Jamaica.

MURICOPSIS

(Figs. 37, 38, 52)

Bucquoy, Dautzenberg, and Dollfus, 1882, Moll. Mar. Roussillon, v. 1, p 19.

TYPE SPECIES: *Murex blainvillei* Payraudeau, by orig. design.

MURICIDEA "Swainson" of authors, not of Swainson.

"Type species": *Murex hexagonus* Lamarck (*M. hexagonus* Lamarck, 1822, not *M. hexagonus* Gmelin, 1791 = *M. oxytata* Maxwell Smith).

JANIA "Bellardi" Cossmann, 1882, Cat. Ill. Coq. Foss., Suppl., p 68. Not *Janina* Bellardi.

"Shell elongated, subfusiform, ornamented with longitudinal folds or varices and elevated decurrent cords, bearing subcanaliculate spines or nodose tubercles. Aperture oval, terminated at the base by an open canal of moderate length. Lip thickened and denticulated in the interior.

Coloration ordinarily fawn. Operculum horny, concentric, subapical." (Bucquoy, *et al.*, 1882, *translated*)

Discussion: In his *Treatise on Malacology* (1840) Swainson proposed a new genus, *Muricidea*, which he indicated as having the progressive growth of the shell marked by longitudinal ridges. He clearly stated, "The type of *Muricidea* is the harp-like *Murex magellanicus*" (:65), thus creating a synonym of *Trophon* Montfort, the type species of which is also *M. magellanicus*. In his list of species in *Muricidea*, Swainson cited *Murex hexagonus* Lamarck along with several non-muricid species. Mörch (1852:95) later used the name with an indication that he was "redefining" it, for *Murex hexagonus* and *Murex blainvillei* only. Jousseaume, in the *Division Méthodique* (1880: 335), cited "*Muricidea* Swainson" giving as the type *Murex hexagonus* Lamarck, and the error became entrenched in the literature. Bucquoy, Dautzenberg, and Dollfus, recognizing the need for a subgenus to include shells of the *hexagonus-blainvillei* type, created *Muricopsis*, naming *Murex blainvillei* as the type species. In spite of the proposal of this valid genus for species of this type, use of the name "*Muricidea*" has persisted until recently. The shells of *Muricopsis* are not unlike those of the Australian *Murexsul* group. They may be distinguished by the extreme development of the denticles on the outer lip of *Muricopsis*.

Subfamily TRITONALIINAE

TRITONALIA

(Figs. 66-68, 90, 97)

Fleming, 1828, *History British Animals*, p 564 (index) and corrigenda.

TYPE SPECIES: *Murex erinaceus* Linn., by subs. design., Gray, 1847.

OCENEBRA "Leach MS" Gray, 1847 (? Oct.), *Ann. Mag. Nat. Hist.*, v. 20, p 269: 1847 (Nov.), *Zool. Soc. London, Proc.*, p 133.

Type species: *Murex erinaceus* Linn., by

monotypy (? Oct.); or orig. design. (Nov.).

OCINEBRA "Leach MS" Gray, 1852, *Syn. Moll. Gt. Brit.*, p 117. Error.

INERMICOSTA Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

Type species: *Murex fasciatus* "Sowerby," by orig. design. (*M. fasciatus* Sowerby, 1841, not *M. fasciatus* Gmelin, 1791 = *Tritonalia inermicosta*, nom. nov.).

HETEROPURPURA Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

Type species: *Murex polymorphus* Brocchi, by orig. design.

OCCENEBRA Hörnes and Auinger, 1885, *Die Gastropoden der Meeres-Ablagerung der Ersten und Zweiten Miocänen Mediterranstufe*, p 216. Error.

"Ovate, oblong, canal produced, sub-ascending, or bent to the left; ribs alternate or remote, not continuous on the whorls." (Fleming, 1828)

Discussion: The status of the name *Tritonalia* has been uncertain due to the peculiar nature of its proposal. Fleming, on p 356 of his *British Animals*, cited the genus *Triton* and listed below it *Murex erinaceus* and 8 "extinct species" referable to various genera. As he had already used the name *Triton* (presumably Laurenti, 1768, not Linnaeus, 1758) on p 157 for a group of salamanders, he changed the second *Triton* in the corrigenda to read *Tritonalia*. It has been suggested by many authors (e.g. Winckworth, 1934) that *Tritonalia* is therefore a new name for *Triton* Montfort, 1810, now known as *Charonia* Gistel, 1847. While species of *Charonia* could well be included in the group defined by Fleming's generalized description, nowhere does Fleming mention Montfort's name, and not one of the species which he places in this genus is actually referable to *Charonia*. Thus, whatever Fleming's intentions were, we can only conclude that *Tritonalia* was a new name for *Triton* Fleming and no one else. Gray (1847: 133) accepted it as such, placing it not in the synonymy of *Triton* Montfort, but of *Ocenebra* "Leach MS" with the type, *Murex erinaceus* Linn. Gray dated the Leach manuscript as 1818, and thus gave it priority over Fleming,

1828. The modern rules of nomenclature, however, would date *Ocenebra* from Gray's usage in 1847, so *Tritonalia* is the older name.⁵ To add to the general confusion, Gray later published the name as "*Ocinebra*" and subsequent authors have vacillated between the 2 spellings.

Inermicosta was based on *Murex fasciatus* "Sowerby" by Jousseaume, but Sowerby cited the species as "*Murex fasciatus* Risso?" Whether the specific name be attributed to Risso, 1826, or to Sowerby, 1841, it is nevertheless preoccupied by *Murex fasciatus* Gmelin, 1791, and consequently a new name is necessary. Therefore I here propose:

TRITONALIA INERMICOSTA nom. nov.

Murex fasciatus "Risso?" Sowerby, 1841, Conchol. Illustr., *Murex*, Pl. 192, Fig. 86.

Not *Murex fasciatus* Gmelin, 1791, Systema Naturae, ed. 13, v. 1, pt. 6, p. 3528.

This species is exceedingly like *Murex erinaceus*, and clearly represents the same group. There is no valid basis for subgeneric separation. Likewise, *Murex polymorphus* Brocchi, type of *Heteropurpura*, cannot be subgenerically distinguished from typical *Tritonalia*. Cossmann (1903: 37) placed *Heteropurpura* in synonymy with *Ocenebra*, stating that *Murex polymorphus* differs from *Murex erinaceus* only by specific characteristics and that it is impossible to perceive any sectional differences.

⁵As both names appear almost equally in the literature this problem should be referred to the I. C. Z. N. for a final ruling. Bradley and Palmer (1963) have requested that the Commission place *Tritonalia* on the Official List of Generic Names in Zoology. However they did not submit a petition presenting the facts of the case, but only a letter to the Commission, basically on a completely different subject. By the time this paper appears in print a true petition by Myra Keen will be before the Commission. It is probable that the name *Ocenebra* will ultimately be given official sanction but until that time I shall use the nomenclatorially correct name *Tritonalia*.

HADRIANIA (Figs. 69, 91)

Bucquoy, Dautzenberg, and Dollfus, 1882, Moll. Mar. Roussillon, v. 1, p. 33.

TYPE SPECIES: *Murex craticulatus* Brocchi, by orig. design. (*M. craticulatus* "L." Brocchi, not of Linnaeus, = *Tritonalia* (Hadriania) *craticuloides*, nom. nov.)

HADRINA Tryon, 1883, Struct. Syst. Conch., v. 2, p. 127 (Error, *fide* Neave, not seen).

ADRIANIA Cossmann, 1903, Essais Paléo. Comp., v. 5, p. 45, "Suggested" emendation.

"Shell fusiform, with pointed conical spire. Whorls angular in the upper portion, ornamented by rather numerous, rounded, varicose longitudinal ribs, and rugose decurrent striae. Last whorl very convex. Aperture oval, terminated at the base by a rather long, stout canal, slightly twisted and closed anteriorly. Labium subsalient, angular at the apex. Color grayish or fawn, aperture whitish." (Bucquoy, *et al.*, 1882, translated)

Discussion: *Hadriania* was erected by Bucquoy, Dautzenberg and Dollfus for those shells which bear the characteristics of both *Murex* and "*Fusus*". The muricoid characters they cite are the closed canal and the varix-like longitudinal ribs; the fusoid characteristics are the general form and the salient labium. The closed canal, the purpuroid operculum, and the radula suggest close affiliation with the genus *Tritonalia* and the group is placed herein.

Murex craticulatus "L." of Brocchi is not the *Murex craticulatus* of Linnaeus; consequently it was renamed *Murex brochii* by Monterosato in 1875. Unfortunately that name is preoccupied by *Murex "brochii"* Cantraine, 1835, and another is still necessary. Therefore I here propose:

TRITONALIA (HADRIANIA) CRATICULOIDES nom. nov.

Murex craticulatus "L." Brocchi, 1814, Conch. Subap., v. 2, p. 406, Pl. 7, Fig. 14.

Not *Murex craticulatus* Linnaeus, 1758,
Systema Naturae, ed. 10, p 755.

MIOCENEBRA
(Fig. 70)

E. H. Vokes, 1963, Tulane Stud. Geology,
v. 1 (4), p 162.

TYPE SPECIES: *Tritonalia (Miocenebra)*
silverdalense E. H. Vokes, by orig. design.

"Shell greatly elongated, spire much elevated, constricted above the shoulder with an appressed suture. Formation of the varices irregular, with one always present at the aperture, although the others may be reduced to strong nodes. Aperture oval, margin complete, outer lip slightly crenulated. Canal elongated and completely closed over to form a tubular structure." (Vokes, 1963)

Discussion: *Miocenebra* is based on a lower Miocene species from North Carolina. The closed siphonal canal and irregular formation of varices suggests that its closest relatives are the members of *Tritonalia* s.s. This subgenus is not unlike *Hadriana*, differing primarily in the presence of varices which are not found in that group. It may represent the intermediate form between *Tritonalia* s.s. and *Hadriana*. There is at least one living species, *Murex wakasanus* Nomura and Ninno (? = *Trophon fimbriatulus* A. Adams), off the coast of Japan.

JATON
(Fig. 71)

Pusch, 1837, Polens Paläontologie, p 135.
TYPE SPECIES: *Murex decussatus*
"Linn.," by orig. design.

JATON Gray, 1847, Proc. Zool. Soc.
London, p 133. Emendation.

JATOVA Jousseaume, 1880, Le
Naturaliste, Année 2 (42), p 335.

Type species: "*Purpura jaton*" Adanson,
by orig. design.

"Shell oblong, subturreted, five distinct whorls, deeply canaliculate above, three or four transverse plications, plicae (or costae) wide, smooth, rounded, separated by deep, slightly striated grooves; aperture oval, labrum with three or four plications, canal short, scarcely re-

curved." (Pusch, 1837, *translated*)

Discussion: The species figured by Adanson (1757, Pl. 9, Fig. 21) as "Le Jatou" has been burdened with more than the usual number of superfluous names. The oldest name seems to be that given by Gmelin, who in the references for his species *Murex decussatus* (1791: 3527) cited first the figure of "*Jaton*" (*sic*) Adanson, and then 3 figures from Martini which do not represent Le Jatou but *Murex erinaceus* Linn. For this reason many authors have placed *Murex decussatus* in synonymy with *M. erinaceus*, and consequently, *Jaton* and *Jatova* in synonymy with *Tritonalia*, of which *M. erinaceus* is the type. The 2 species are very different, and as Gmelin gives the habitat of *M. decussatus* as the West African seas, which would fit with Le Jatou but not with the Mediterranean *M. erinaceus*, I here restrict the name to the species figured by Adanson. Dillwyn (1817: 688), in effect, did this when he placed Le Jatou and *M. decussatus* in the synonymy of *M. lingua* "Chemnitz," stating that "Gmelin, under the name of *M. decussatus* appears, both in his description and references, to have strangely confounded this shell with some varieties of *M. erinaceus*." Pusch did essentially the same thing by naming his genus *Jaton*, with the type species *M. decussatus*, a form of "Linnaean tautonymy" (vide I.C.Z.N. Code, Art. 68-d-i). If the name *decussatus* should not prove satisfactory there are several later ones from which to choose. In chronological order they are: *Murex jatonus* Lamarck, 1816; *M. hemitripteris* Lamarck, 1816; *M. lingua* Dillwyn, 1817; *M. gibbosus* Lamarck, 1822; and *M. lingua-vervicina* Reeve (*ex* Chemnitz), 1845.

Jaton is the Recent member of an evolutionary sequence which goes back to the upper Miocene subgenus *Pterorytis*. This group has never been large at any time in its history. There are only 3 Miocene and 1 Pliocene species of *Pterorytis*. *Jaton* apparently has been reduced to the single type species. If *Murex hemitripteris* Lamarck is not just

a young individual of *M. decussatus*, as has been suggested by several authors, then it is the second species of the group.

Murex festivus Hinds, from the California coast, has been referred to *Jaton* by authors; however, it probably should be placed in *Pteropurpura*. The boundary lines between these groups is somewhat obscure. It is possible to consider a series of species grading imperceptibly from *Jaton* to *Pteropurpura* and to *Ceratostoma*. In this case one must resort to geography and phylogeny in order to make subgeneric assignments. The principal difference between *Jaton* and *Pteropurpura*, other than geographical separation, is the presence in *Jaton* of the monoceroid tooth on the outer margin of the aperture. This tooth is lacking in *M. festivus*, and consequently placement in *Pteropurpura* is suggested. But actually there is a faint trace on *M. festivus* of what may originally have been such a tooth. However, this controversial species bears a strong resemblance to *Murex trialatus* Sowerby, also from the California coast, which seems more definitely referable to the true *Pteropurpura*. I have recently described a species, *Tritonalia festivoidea*, from the lower Miocene of North Carolina which appears closely related to the Recent West American *M. festivus*. This species also possesses a faint apertural tooth, and so might justifiably be placed in *Jaton* if it were not for the fact that the phylogenetic history of *Jaton* with its upper Miocene pterorytid ancestry seems to preclude this affiliation. Undoubtedly the simplest solution would be to erect another subgenus for these intermediate species, but this solution seems, to me, to evade the issue. I believe it is better to accept the philosophical position that if we are to do more than pay lip service to the concept of evolution, we must admit that there necessarily have to be intermediate forms between supraspecific groups.

Maxwell Smith described a species from Key West, Florida, *Murex (Jaton) gaza*, which he compared with *Murex festivus*. Judging by his photograph it well may be

referable to *Jaton*, but as I have not seen a specimen I would prefer to withhold judgement.

PTERORYTIS

(Figs. 72, 74)

Conrad, 1863, Proc. Acad. Nat. Sci. Phila., v. 14, p 560.

TYPE SPECIES: *Murex umbrifer* Conrad, by monotypy.

PTERORHYTIS Conrad, 1868, Amer. J. Conch., v. 4, p 64. Emendation?

Not *PTERORHYTIS* Conrad, 1875, North Carolina Geol. Surv., v. 1, Appendix A, p 21 (Pelecypod).

PTEROHYTIS Tryon, 1880, Man. of Conch., v. 2, p 136. Error.

PTERORHYTHIS Cossmann, 1903, Essais Paléo. Comp., v. 5, p 205 (index). Error, not emendation as often cited.

PTEROPHYTIS Simroth, 1907, in Bronn, Klass. Ordn. Tierreichs, v. 3 (2), p 1040. Error.

PTEROHYTUS Neave, 1940, Nomencl. Zool., v. 3, p 1026. Error for "*Pterohytis*" Tryon.

NEURARHYTIS Olsson and Harbison, 1953, Acad. Nat. Sci. Phila., Monogr. 8, p 252.

Type species: "*Purpura (Pterorhytis) fluviana*" Dall, by orig. design. (*Pterorhytis fluviana* of Dall).

"Fusiform; six prominent recurved foliated ribs; aperture ovate; channel closed." (Conrad, 1863)

Discussion: *Murex umbrifer*, the type species of *Pterorytis*, has 6 varices and the genus was therefore described as being characterized by 6 varices. However I have collected specimens from the Yorktown Formation at Hampton, Virginia, near the type locality of *Murex umbrifer* (Yorktown, Va.), which have only 4 varices in the adult but otherwise are identical with *M. umbrifer*. In the early stages the number of varices is irregular with as many as 9 in some specimens, gradually decreasing with each whorl. Whether these specimens represent a different species or only a subspecies of *M. umbrifer* is not yet determined, but their presence nevertheless necessitates a reevaluation of the generic diagnosis of

Pterorytis. *Neurorhytis* was distinguished from the typical form because it has only 4 varices, and consequently is not valid.

This group is known only from fossils with 3 Miocene species and 1 Pliocene species, all from the Atlantic Coastal Plain of the United States. The Miocene species are: *M. umbrifer*, from the upper Miocene of Virginia; "*Purpura*" *marshalli* Mansfield, from the upper Miocene of northern Florida; and *Murex conradi* Dall (= *Murex conradi* Dall, 1890, not *Murex conradi* d'Orbigny, 1850) from the upper Miocene of South Carolina, Florida, and Maryland. The Pliocene species is *Pterorytis fluviana* Dall.

Emerson (1959) has recently monographed the group and proposed a new subgenus, *Microrhytis*, here placed in *Ceratostoma*.

CERATOSTOMA

(Figs. 73, 75, 76, 92, 98)

Herrmannsen, 1846, Indiciis Generum Malakoz., v. 1, p 206. Emendation of *Cerostoma* Conrad.

TYPE SPECIES: *Murex* (*Cerostoma*) *nuttalli* Conrad, by monotypy.

"*PURPURA* Martyn, 1784" of authors (The Universal Conchologist is not consistently binominal, and has been declared unavailable for nomenclatorial purposes in I. C. Z. N. Opinion 456, 1957).

"Type species": *Purpura foliata* Martyn (= *Murex foliatus* Gmelin), by monotypy.

CEROSTOMA Conrad, 1837, J. Acad. Nat. Sci. Phila., v. 8, p 263. Not *Cerostoma* Latreille, 1802 (Lepidopt.).

Type species: *Murex* (*Cerostoma*) *nuttalli* Conrad, by monotypy.

CERASTOMA Herrmannsen, 1846, Ind. Gen. Malakoz., v. 1, p 206. Error. Not *Cerastoma* Koch, 1839 (Arachn.).

SPINOSTOMA Coen, 1943, Acta Pont. Acad. Sci., v. 11, p 90.

Type species: *Murex nuttalli* Conrad, here designated.

MICRORHYTIS Emerson, 1959, Amer. Mus. Novitates, No. 1974, p 6.

Type species: *Pterorytis* (*Microrhytis*) *pecki* Emerson, by orig. design.

"Shell as in the genus *Murex*; labium with an erect tooth as in *Monoceros*."

(Conrad, 1837)

Discussion: This genus has been monographed recently by Hall (1959), who discusses other genera which have been confounded with it, but who neglects to consider *Jaton*, perhaps confusing it with *Tritonalia* for reasons discussed above. *Murex nuttalli*, type of *Ceratostoma*, is similar to *M. decussatus*, type of *Jaton*, differing only in the greater height of the spire and in having a denticulate outer lip. These forms seem to represent the end members of 2 lineages separated since Miocene time, but which nevertheless have maintained strong resemblances.

Coen, in 1943, reviewed the genus *Tritonalia* and proposed a new subgenus *Ternaria* for those forms having 3 varices at 120° angles, with one intervarical node between each pair. At the same time he proposed a new section for this subgenus, *Spinostoma*, for those shells with a labial tooth. In this new section he included only *Murex nuttalli* Conrad and *Purpura foliosa* (sic) Martyn; thus it is a synonym of *Ceratostoma*. As neither of these species was selected as type, *Murex nuttalli* is so designated here.

Pterorytis (*Microrhytis*) *pecki*, from the upper Miocene of Oaxaca, Mexico, is placed here with *Ceratostoma*, rather than with *Pterorytis*, because it also has a denticulate labrum. Although it has a somewhat lower spire than typical *Ceratostoma* it is not felt that this is sufficient basis for supraspecific separation. Perhaps *P. pecki* is the link between the *Pterorytis/Jaton* group in the Atlantic and the *Ceratostoma* group in the Pacific.

There is another Miocene species from the Atlantic Coast province of the United States which seems closely related to the *Ceratostoma* line. This is *Murex kellumi* Richards from the lower Miocene "Silverdale beds" of North Carolina, known from a single worn specimen. It seems more closely allied with the Pacific *Ceratostoma* line than with the subsequent Atlantic *Pterorytis* line. There are various strange

muricids in the Silverdale fauna which seem to bear no relation to the later Miocene faunas of the area.

Gray (1847: 134) listed "*Cerastoma* Conrad," but cited *Murex monodon* Sowerby as the type. One must assume that he confused it with *Murex monoceros* Sowerby, a shell similar to *M. nuttalli*. This citation is of course inconsequential since *M. nuttalli* had already been fixed as type by monotypy.

PTEROPURPURA (Figs. 77, 78, 99, 100)

Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

TYPE SPECIES: *Murex macropterus* Deshayes, by orig. design.

CENTRIFUGA Grant and Gale, 1931, *San Diego Soc. Nat. Hist. Mem.*, v. 1, p 706.

Type species: *Murex centrifuga* Hinds, by orig. design.

"Shell with spire elongated to triangular pyramid, whorls ornamented by three wide lamellar varices reaching almost the middle of the canal; aperture small, oval, margins continuous and detached; canal wide at the base, subulate anteriorly." (Jousseaume, 1882, *translated*)

Discussion: The shells of this group bear a striking resemblance to those of *Pterynotus* but the radula and the purpuroid operculum indicate that this is due to convergence rather than close relationship. There is also a strong resemblance to the more alate members of the *Cerastoma* group such as *Murex foliatus*, but *Pteropurpura* may be distinguished by the lack of the monoceroid tooth and denticulate aperture characteristic of *Cerastoma*.

Murex macropterus Deshayes, the type of *Pteropurpura*, has been the subject of much debate, for the type locality was not known and the species had never been identified with certainty. Recently Emerson (1964) has located the type specimen at the École des Mines in Paris and identified Deshayes' species as that one known today as "*Pteronotus*" *carpenteri* Dall from the coast of California. The

reader is also referred to Emerson's earlier discussion of the problem (1960).

From the description and discussion given by Grant and Gale of their subgenus *Centrifuga* it is obvious that they were proposing a name for the form now known as *Calcitrapessa* Berry, type: *Murex leeanus* Dall. However their selection of *Murex centrifuga* as the type species negated this usage. Emerson (1960) has shown that *Murex centrifuga*, "a long-misunderstood and therefore neglected species," is a senior synonym of *Pterynotus swansoni* Hertlein and Strong, a not uncommon species referable to *Pteropurpura* from the west coast of tropical America (Gulf of California to Panama).

The vast majority of the shells of this group are found in the northern Pacific, both in Japan and on the coast of California. A few species range into tropical waters such as the above mentioned *Murex centrifuga*, *Murex erinaceoides* Valenciennes (synonym: *Murex californicus* Hinds), and *Murex rhyssus* Dall. *Pteropurpura* is also represented in the fauna of the western Atlantic by *Murex bequaerti* Clench and Pérez Farfante, the species reported by Dall in the "Blake Report" (1889: 201) as "*Murex macropterus* Deshayes."

OCINEBRELLUS (Figs. 83, 93, 101)

Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

TYPE SPECIES: *Murex eurypteron* Reeve, by orig. design. (= *Murex falcatus* Sowerby).

OCINEBRELLUS Cossmann, 1903, *Essais Paléo. Comp.*, v. 5, p 204 (Index). Error, not emendation as often cited.

TERNARIA Coen, 1943, *Acta Pont. Acad. Sci.*, v. 11, p 89.

Type species: *Murex eurypteron* Reeve, here designated.

"Shell with moderate spire, whorls very depressed at the suture, with four winged varices extending to the middle of the canal; aperture oval, the margins detached and continuous; closed canal rather long

and subulate in the anterior half." (Jousseaume, 1882, *translated*)

Discussion: This group is exceedingly close to *Pteropurpura* and possibly should not be separated even in subgeneric rank. *Ocinebrellus* consists of a few Japanese species differing from *Pteropurpura* in the irregular arrangement of the varices. The number of varices is usually more than 3; however in the original description of *Murex eurypteron*, the type of *Ocinebrellus*, Reeve declared that the species had but 3 varices and was therefore distinct from *Murex falcatus* Sowerby. This species is variable in the number of varices, and there are specimens which have only 3 varices to a whorl. In such specimens the varical arrangement is not in the regular succession of *Pteropurpura*, but is irregular, and thus the 2 forms may be distinguished. Most authors place a great deal of supraspecific emphasis upon the number of varices possessed by different forms, but to me this seems a minor characteristic. There are far too many species such as *Murex eurypteron* having a variable number of varices for the number of 3, as opposed to 4, 5, 6, or a dozen, to be of any tremendous taxonomic value.

Ternaria was proposed by Coen as a subgenus of *Tritonalia* to include those species with 3 varices 120° apart and 3 intervarical "costole." He referred to this new subgenus *Murex eurypteron* Reeve plus various unfigured new or otherwise unrecognizable species. *M. eurypteron* was included even though it has more than the "characteristic" number of varices (see above comments) and in spite of Coen's admission that it properly belongs in *Ocinebrellus* Jousseaume. This latter subgenus he dismissed with the statement that "non ritengo . . . abbia alcuna ragione di essere." As *M. eurypteron* is the only well-known species in his list it is here designated as the type of *Ternaria*. This will assure its synonymy and unregrettable demise.

CALCITRAPESSA (Fig. 82)

Berry, 1959, Leaflets in Malacology, v. 1 (18), p 113.

TYPE SPECIES: *Murex leeanus* Dall, by orig. design.

"Shell of moderate size, nearly smooth, bearing 3 low varices which usually are nearly obsolete except for the elevation from each of a very long erect spine which is strongly guttered along its face when first formed, but the gutter sometimes becomes largely closed by the folding over and fusion of the margins; an intervarical knob appears between each varix and its neighbor, with sometimes a hint of a rib leading down onto the body of the whorl; canal very long and nearly straight, slightly recurved, roofed over at the varical stage except near the tip." (Berry, 1959)

Discussion: The type species of this monotypic taxon has been placed with *Murex centrifuga* in the subgenus *Centrifuga*, but that group too closely resembles *Pteropurpura* to be separated from it. *Murex leeanus* seems to be a bizarre offshoot of the *Pteropurpura* lineage, but is sufficiently far removed from the main evolutionary line to warrant treatment as a separate subgenus. (It is necessary to keep in mind that every generic divergence started with one "bizarre offshoot.")

The appearance of this form is somewhat trophonoid but Dall's description of *Murex leeanus* (1890: 330) states, "The dentition is typically muricoid, the radula small and narrow, the central tooth very wide, very short, and with three inconspicuous denticles on its cusp. The soft parts hardly differ externally from those of *Murex brandaris*." What Dall did not say, although his illustration shows it, is that the operculum is purpuroid, and for this reason *Calcitrapessa* should be placed in the Tritonaliinae and not the Muricinae.

PURPURELLUS

(Fig. 79)

Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

TYPE SPECIES: *Murex gambiensis* Reeve, by orig. design.

TRIEMIS "Bayle MS" Fischer, 1884, *Man. de Conchyl.*, p 641.

Type species: *Murex gambiensis* Reeve, by orig. design.

PURPURELLA Korobkov, 1955, *Spravochnik i methodicheskoe rukovodstvo*, p 283. Error.

TRIEMIA Korobkov, 1955, *Spravochnik i methodicheskoe rukovodstvo*, p 283. Error.

TRIMERIS Ovečkin, 1960, in Orlov *et al.*, *Osnovy paleontologii*, v. 4, p 205. Error.

"Shell with pointed spire in the form of a triangular pyramid, whorls ornamented by three winged varices, falcate and folded back superiorly; aperture small, oval, with margins continuous and detached; canal long and closed, bearing a wide lamella separated from the wing of the corresponding varix by a large indentation." (Jousseaume, 1882, *translated*)

Discussion: Although *Murex gambiensis* Reeve (? = *Murex osseus* Reeve) is closely related to *Pteropurpura*, the disruption of the foliaceous varices at the base of the body whorl, separating them into anterior and posterior portions, together with the greatly widened siphonal canal, permits *Purpurellus* to be distinguished from that subgenus. The distribution of this group is odd, with the type species occurring off West Africa, and the only other species of the group, *Murex pinniger* Broderip and *Centrifuga inezana* Durham, occurring off the west coast of tropical America. These latter 2 species are very similar and may prove to be synonymous; however they are geographically separated by about 3000 miles (*M. pinniger* comes from Ecuador, and *C. inezana* from the vicinity of Guaymas, Mexico.)

Thiele (1929: 289) has figured a radula said to be that of *Murex gambiensis* Reeve. If this is correct then *Pur-*

purellus should be placed in the subfamily Muricinae, for the radula depicted is of the typical muricine form. However, the shell morphology seems so more nearly akin to the *Pteropurpura* group that an error is suspected.

POROPTERON

(Fig. 80)

Jousseaume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

TYPE SPECIES: *Murex uncinarius* Lamarck, by orig. design.

"Subtrigonal shell with rather elevated pyramidal spire, whorls ornamented by three lamellar varices, thick and crenulated by projecting canaliculate rays, terminated posteriorly by a rather long and recurved hook-like spine; aperture oval with margins continuous and detached; canal short and closed." (Jousseaume, 1882, *translated*)

Discussion: In the original citation of *Poropteron* the type species was given as "*Murex tubifer* Bruguière," but in the following number (Année 3, no. 43, Jan., 1881), it was corrected to *Murex uncinarius*. There is no doubt that this was a genuine error, for the name "*Murex tubifer* Bruguière" also appeared as the type of the genus *Typhis* immediately following *Poropteron*.

Murex uncinarius, the type species and apparently only representative of *Poropteron*, is most closely related to *Purpurellus*, but is sufficiently different with its digitate varices to be ranked in a monotypic subgenus. The canaliculate, recurved posterior spine of *M. uncinarius* has caused writers to associate the species now referred to *Nothotyphis* with *Poropteron*. According to Fleming, who described *Nothotyphis*, the 2 groups are strikingly different in sculpture. The shell of *Poropteron* is porcellanous, with the axial sculpture limited to a single intervarical node. The surface of *Nothotyphis* is ornamented with spiral cords and fine intersecting spiral and radial threads.

Murex uncinarius is confined to the African coast between the Cape of Good

Hope and Natal. This species, incidentally, has at least 2 synonyms, *Murex capensis* and *Murex mitraeformis*, both of Sowerby.

HOMALOCANTHA

(Figs. 81, 102)

Mörch, 1852, Cat. Conchyl. Yoldi, v. 1, p 95.

TYPE SPECIES: *Murex scorpio* Linn., by monotypy.

HOMALACANTHA Kobelt, 1877, Jb. Dtsch. Malak. Ges., v. 4, p 143. Error.

HOMOLOCANTHA Ludbrook, 1958, Trans. Roy. Soc. S. Australia, v. 81, p 58. Error.

Discussion: The characteristics of this group are so unmistakable that even though there was no "original description", merely a name in a catalogue, the association with *Murex scorpio*, the type by monotypy, was sufficient to diagnose the group. Because it has 5 to 6 foliaceous varices it might be considered as most closely related to *Hexaplex*, but the differences of the operculum and other features indicates that this resemblance is superficial.

In 1955 Burch (:12) made the following observations on *Hexaplex* Perry: "Before an intelligent use of *Hexaplex* can be made, one of Perry's species must be designated as type. Inasmuch as the first three species mentioned and figured by Perry are obviously those now assigned to the genus *Homalocantha*, it would seem logical to designate Perry's *Murex anatomica* [Perry's *Hexaplex anatomica*] as type in which case *Hexaplex* should certainly replace *Homalocantha*. This designation is clearly valid and should at least take the name *Hexaplex* out of consideration in connection with the species listed under *Muricanthus*. . ." If *M. anatomica* were to be taken as type of *Hexaplex*, the chaos wrought would be unbelievable, for the name *Homalocantha* is firmly entrenched in the literature, and conversely *Hexaplex* has never (except for Perry) been applied to the shells of that genus. Fortunately in 1915 Iredale had designated the type of *Hexaplex* as *Hexaplex foliacea* (= *Murex cichoreus* Gmelin), a shell which had long

been so considered on the basis of Jousseaume's invalid citation of *Murex cichoreus* as the type.

VITULARIA

(Figs. 84, 85, 103)

Swainson, 1840, Treatise on Malacology, p 297.

TYPE SPECIES: *Vitularia tuberculata* Swainson, by orig. design. (= *Murex vitulinus* Lamarck, *fide* Swainson).

VITULINA Swainson, 1840, Treatise on Malacology, p 64.

Type species: *Murex vitulinus* "of authors", by orig. design.

TRANSTRAFER Iredale, 1929, Mem. Queensland Mus., v. 9, p 290.

Type species: *Transtrafer longmani* Iredale, by orig. design.

"General habit of Muricidea, but the inner lip is depressed and flattened as in the Purpurinae; varices simple, nearly obsolete." (Swainson, 1840)

Discussion: The type species of this genus is generally considered to be *Murex miliaris* Gmelin, of which *Murex vitulinus* Lamarck is a synonym. Swainson, to avoid tautonymy, changed the name of the type species to *V. tuberculata*. The name *Vitulina* actually has "page priority" but usage has sanctioned the later *Vitularia*, evidently a *lapsus* on the part of Swainson. Lest there be any question of legality, *Vitularia* is here selected as the correct name by right of the "first reviser."

The genus *Transtrafer* was proposed by Iredale for a species that is exceedingly like *Murex vitulinus*. Iredale separated the Australian shell because, as he stated, "the lamellae are more developed, and therefore the window-like depressions are more pronounced." This difference in degree does not seem to be of supra-specific importance.

CRASSILABRUM

(Fig. 86)

Jousseaume, 1880, Le Naturaliste, Année 2 (42), p 335.

TYPE SPECIES: *Murex crassilabrum* "Gray", by orig. design. (*M. crassilabrum* Gray in Sowerby, 1834 = *M. labiosus*

Gray, 1828, not *M. labiosus* Wood, 1828).

ANTIMUREX Cossmann, 1903, *Essais Paléo. Comp.*, v. 5, p 12. New name for *Crassilabrum* Jousseume, not Megerle. (Neave cites only "*Crassilabrum* (Megerle MS) Scudder, *Nomen. Zool. Syst.*, p 88, nom. nud.," therefore this is probably an unnecessary name.)

"Shell with conical spire, the whorls grooved by longitudinal lamellae and circled by rather projecting ribs; aperture oval with columellar margin appressed, with the inner curve less rounded than that of the outer lip, the latter, very wide and thick, is internally denticulate; canal very wide and short." (Jousseume, 1882, *translated*)

Discussion: The shells of this group most closely resemble those of *Vitularia*, but they lack the peculiar shagreened surface so characteristic of that genus. However the surface texture of the only representative of the *Vitularia* line found on the west coast of Central America, *Murex salebrosus* King and Broderip, varies from rough to almost smooth so that the smooth shell of *Crassilabrum* may be the logical derivative of the form. The type and apparently only species of this group occurs along the west coast of South America from Peru to Chile.

EUPLEURA (Figs. 87, 95)

Adams, H. and A., 1853, *Genera Recent Mollusca*, v. 1, p 107.

TYPE SPECIES: *Ranella caudata* Say, by sub. design., F. C. Baker, 1895.

"Spire moderate; front canal long, nearly closed; no posterior canal; inner lip smooth; varices spiny, fimbriated between the spines." (Adams, 1853)

Discussion: Although originally described as a subgenus of *Bursa* by H. and A. Adams, the radula of the type species shows clearly that this group is allied with the Tritonaliinae. *Eupleura* is a small group, including only some half-dozen species, found on both sides of the American continent.

UROSALPINX (Figs. 88, 96)

Stimpson, 1865, *Amer. J. Conch.*, v. 1, p 58.

TYPE SPECIES: *Fusus cinereus* Say, by orig. design.

"Shell elongated oval, or short fusiform, longitudinally ribbed or undulated and spirally striated; aperture with a short canal. Operculum somewhat like that of *Purpura*, semi-cordate, with the nucleus at the outer edge a little below the middle. Lingual dentition nearly like that of *Trophon*, the lateral teeth having an elongate base of attachment; but the rhachidian tooth has numerous minute denticles between the principal ones, corresponding to ridges on the surface of the tooth, as in the Murices. . . It differs from *Trophon* in its operculum, and from *Ocenebra* in its smoother shell, want of varices, and open canal." (Stimpson, 1865)

Discussion: This genus appears most closely related to *Ocenebrina* and both lack the typical varices usually associated with the family Muricidae. They are placed in the Tritonaliinae because of the resemblance of their radulae to that of *Murex erinaceus*, rather than because of any strong conchological resemblances.

The genus *Scalaspira* Conrad, based on a species from the Miocene of Virginia, *Fusus strumosus* Conrad, has been placed in the synonymy of *Urosalpinx* by Tryon (1880: 152) and Cossmann (1903: 48) but it is not felt that this synonymy is justified. Until I have seen type material of Conrad's genus, no disposition will be made of the taxon.

OCINEBRINA (Figs. 89, 94)

Jousseume, 1880, *Le Naturaliste*, Année 2 (42), p 335.

TYPE SPECIES: "*Fusus corallinus*" Scacchi, by orig. design. (*Murex corallinus* of Scacchi = *Murex aciculatus* Lamarck).

CORALLINIA Bucquoy, Dautzenberg, and Dollfus, 1882, Moll. Mar. Roussillon, v. 1, p 24.

Type species: *Murex aciculatus* Lamarck, by orig. design.

OCENEBRINA Cossmann, 1903, Essais Paléo. Comp., v. 5, p 38. Emendation.

DENTOCENEBRA Monterosato, 1917, Boll. Soc. Zool. Ital., (3) v. 4, p 21.

Type species: *Murex edwardsii* (Payraudau), by sub. design., Lamy, 1919.

"Shell with rather elevated conical spire, whorls ornamented by numerous longitudinal ribs, cut by circular striae, aperture oval with columellar margin appressed and much less curved than the outer margin, the latter internally denticulate; canal very short and closed anteriorly." (Jousseume, 1882, *translated*)

Discussion: Although this group was placed in *Murex* by Bucquoy *et al.*, it bears little resemblance to that genus. The radula of the type species is almost identical with that of *Urosalpinx cinerea* indicating its true position. *Ocinebrina* has, however, a closed anterior canal which is unlike that of *Urosalpinx*, and is presumably even more closely related to the *Tritonalia* line.

* * * *

The following taxa have been referred to the Muricinae or Tritonaliinae either by the original author, or by subsequent author(s). In my opinion they do not belong to either group.

DERMOMUREX Monterosato, 1890, Natural. Sicil., v. 9, p 181. New name for *Poweria* Monterosato not Bonaparte.

Type species: *Murex scalarina* Bivona, by orig. design.

POWERIA Monterosato, 1884, Nom. gen. spec. Conch. Medit., p 113. Not *Poweria* Bonaparte, 1840 (Pisces).

= Subgenus of *ASPELLA* (The genus *Aspella* seems to be intermediate between the Muricinae and Tritonaliinae with the operculum of the first and a radula which is closer to the second. It is a small group which has been largely ignored by authors, who place it variously in the Trophoninae, Muricinae, or any other likely place.)

FAVARTIA Jousseume, 1880, Le Naturaliste, Année 2 (42), p 335.

Type species: *Murex breviculus* Sowerby, by orig. design.

= Subgenus of *ASPELLA*

FORRERIA Jousseume, 1880, Le Naturaliste, Année 2 (42), p 335.

Type species: *Murex belcheri* Hinds, by orig. design.

= *RAPANINAE*

GRACILIMUREX Thiele, 1929, Handb. syst. Weichtierkunde, v. 1, p 289.

Type species: *Murex bicolor* Thiele, by orig. design. (Not *Murex bicolor* Risso, 1826; nor Valenciennes, 1832; nor Cantraine, 1835).

= *ASPELLA*

GRACILIPURPURA Jousseume, 1880, Le Naturaliste, Année 2(42), p 335.

Type species: *Fusus strigosus* Lamarck, by orig. design.

GRACILLIPURPURA Jousseume, 1882, Rev. Mag. Zool., (3) v. 7 (1879), p 331. Error.

= *FUSINUS*

HANETIA Jousseume, 1880, Le Naturaliste, Année 2 (42) p 335.

Type species: *Murex haneti* Petit, by orig. design.

= *CANTHARUS*

HERTLEINELLA Berry, 1958, Leaflets in Malacology, v. 1 (16), p 95.

Type species: *Hertleinella leucostephes* Berry, by orig. design. (*H. leucostephes* Berry, 1958 = *Tritonalia turrita* Dall, 1919)

= *CANTHARUS*

HEXACHORDA Cossmann, 1903, Essais Paléo. Comp., v. 5, p 47.

Type species: *Murex tenellus* Mayer-Eymar, by orig. design.

EXACHORDA Sacco, 1904, Moll. Terr. Terz., v. 30, p 20. Error.

= Subgenus of *ASPELLA*

LANGFORDIA Dall, 1924, Proc. Biol. Soc. Washington, v. 37, p 89.

Type species: *Murex cuspidifera* Dall, by orig. design.

Incertae sedis (In the summer of 1963 a search of the collections of the United States National Museum failed to disclose the type specimen or any other specimens of *Murex cuspidifera* Dall.)

ORANIA Pallary, 1900, J. de Conchyl., v. 48, p 285.

Type species: *Murex spadae* Libassi, by orig. design.

= *CORALLIOPHILIDAE*

PSEUDOMUREX Monterosato, 1872, Not. conch. foss. Pellegrino and Ficarazzi, p 15, 33.

Type species: Not yet correctly designated, *teste* Myra Keen

= *CORALLIOPHILIDAE*

* * * *

The following genera are based on fossil species. Their subfamilial placement has not been determined.

LYROPURA Jousseaume, 1880, Le Naturaliste, Année 2 (42), p 335.

Type species: *Murex crassicosatus* Deshayes. Eocene of Paris Basin.

MUOTRITON De Gregorio, 1890, An. Géol. Paléont., v. 7, p 97.

Type species: *Murotriton grassator* de Gregorio. Eocene of Alabama.

ODONTOPOLYS Gabb, 1860, J. Acad. Nat. Sci. Phila., (N.S.) v. 4, p 377.

Type species: *Murex compsorhytis* Gabb. Eocene of Texas, Louisiana, Alabama. (This genus is characterized by having 2 plaits on the columella, and probably does not belong in the Muricidae.)

YASILA Olsson, 1930, Bulls. Amer. Paleont., v. 17 (62), p 59.

Type species: *Yasila paytensis* Olsson. Eocene of Peru.

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The illustrations of shells, unless otherwise noted, are from the pen of George B. Sowerby, Jr. They are taken from the following works:

Conchologia Iconica, by L. A. Reeve, Vol. III. *Murex*, 1845.

Thesaurus Conchyliorum, by G. B. Sowerby, Jr., Pts. 33 and 34, *Murex*, 1879.

The illustrations of radulae, unless otherwise noted, are from:

Das Gebiss der Schnecken, by F. H. Troschel, Vol. II, pt. 3, 1869.

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PLATE I - MURICINAE
(all figures approximately X 1/2)

Figure

- | | |
|---|--|
| 1 MUREX S. S.
<i>Murex pecten</i> Montfort (<i>M. tenuispina</i> Lamarck, Icon., Fig. 85) | 11 HEXAPLEX
<i>Murex cichoreus</i> Gmelin (Icon., Fig. 27b) |
| 2 MUREX S. S.
<i>Murex tribulus</i> Linn. (Icon., Fig. 82) | 12 HEXAPLEX
<i>Murex eury stomus</i> Swainson (<i>Murex saxatilis</i> "Linn.," Thesaurus, Fig. 177) |
| 3 MUREX S. S.
<i>Murex brevispina</i> Lamarck (Icon., Fig. 77) | 13 CHICOREUS
<i>Triplex denudatus</i> Perry (from specimen) |
| 4 HAUSTELLUM
<i>Murex haustellum</i> Linn. (Kiener, 1843, Pl. 13, Fig. 1) | 14 PHYLLONOTUS
<i>Murex imperialis</i> Swainson (Icon., Fig. 35) |
| 5 HARMATIA
<i>Murex stephani</i> Noszky (Ann. Hist.-Nat. Mus. Natl. Hungarici, 1940, v. 33, Pl. 2, Fig. 4) | 15 HEXAPLEX
<i>Murex trunculus</i> Linn. (Icon., Fig. 22a) |
| 6 BOLINUS
<i>Murex brandaris</i> Linn. (Kiener, 1843, Pl. 3, Fig. 1) | 16 HEXAPLEX
<i>Murex radix</i> Gmelin (Kiener, 1843, Pl. 38, Fig. 1) |
| 7 CHICOREUS
<i>Murex ramosus</i> Linn. (Icon., Fig. 3) | 17 CHICOREUS
<i>Murex fiatus</i> de Gregorio (<i>Murex dujardini</i> Tournouër, J. de Conchyl., 1875, v. 23, Pl. 5, Fig. 4a) |
| 8 CHICOREUS
<i>Triplex foliatus</i> Perry (<i>Murex palmarosae</i> Lamarck, Icon., Fig. 30) | 18 HEXAPLEX
<i>Murex strausi</i> Verrill (Minutes Conch. Club S. Calif., 1950, No. 103, text figure p 5) |
| 9 CHICOREUS
<i>Murex monodon</i> Sowerby (= " <i>Purpura</i> " <i>cornucervi</i> Röding) (Icon., Fig. 21a) | 19 HEXAPLEX
<i>Murex stainforthi</i> Reeve (Icon., Fig. 68) |
| 10 SIRATUS
<i>Murex senegalensis</i> Gmelin (Kiener, 1843, Pl. 11, Fig. 2) | 20 MUREXSUL
<i>Murex octogonus</i> Quoy and Gaimard (Voy. "Astrolabe," 1833, Pl. 36, Fig. 8), X 3/4 |

MURICINAE

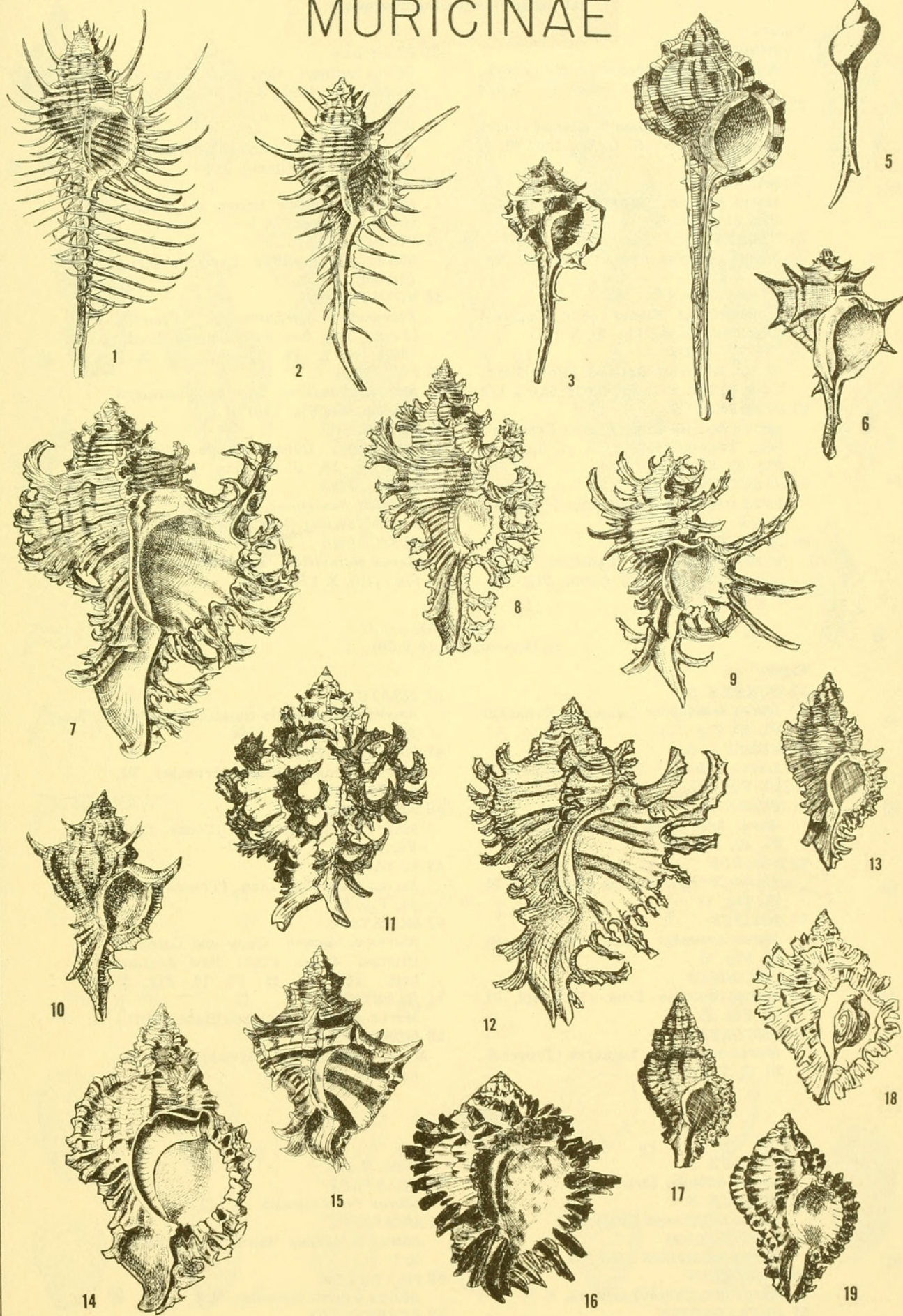


PLATE II - MURICINAE
(all magnifications approximate)

Figure

- 21 *MUREXIELLA*
Murex hidalgoi Crosse (J. de Conchyl., 1871, v. 19, Pl. 1, Fig. 4), X 3/4
- 22 *MUREXIELLA*
Minnimurex phantom Woolacott (Proc. Roy. Zool. Soc. N. S. W., 1957 Pl. 3, Fig. 8), X 2
- 23 *MAXWELLIA*
Murex gemma Sowerby (Thesaurus, Fig. 214), X 3/4
- 24 *PTERYNOTUS*
Murex pinnatus Swainson (Icon., Fig. 57), X 1/2
- 25 *PTERYNOTUS*
Murex clavus Kiener (= *M. elongatus* Lightfoot) (Icon., Fig. 9), X 1/2
- 26 *PTERYNOTUS*
Murex latifolius Bellardi (Moll. Terr. Terz., 1872, v. 1, Pl. 4, Fig. 5a), X 1/2
- 27 *PTERYNOTUS*
Murex textilis Gabb (Wagner Free Inst. Sci., Trans., 1890, v. 3, pt. 1, Pl. 9, Fig. 4), X 1/2
- 28 *NAQUETIA*
Murex triquetra Born (Icon., Fig. 4), X 1/2
- 29 *NAQUETIA*
Murex capucinus Lamarck (= *M. permaestus* Hedley) (Icon., Fig. 10), X 1/2
- 30 *PAZIELLA*
Murex nuttingi Dall (Bull. Iowa Nat. Hist. Lab., 1896, v. 4, Pl. 1, Fig. 1), X 3/4
- 31 *PAZIELLA*
Murex atlantis Clench and Pérez Farfante (from specimen), X 1
- 32 *PANAMUREX*
Murex gatunensis Brown and Pilsbry (from specimen), X 1
- 33 *PTEROCHELUS*
Murex acanthopterus Lamarck (Icon., Fig. 64), X 1/2
- 34 *NOTHOTYPHIS*
Pterynotus norfolkensis Fleming (Trans. Roy. Soc. New Zealand, Zool., 1962, v. 2, Pl. 1, Fig. 18), X 2
- 35 *POIRIERIA*
Murex zelandicus Quoy and Gaimard (Thesaurus, Fig. 150), X 1/2
- 36 *PAZIELLA*
Murex pazi Crosse (J. de Conchyl., 1870, v. 18, Pl. 1, Fig. 4), X 1/2
- 37 *MURICOPSIS*
Murex hexagonus Lamarck (= *M. oxytata* Smith) (Icon., Fig. 120b), X 1
- 38 *MURICOPSIS*
Murex blainvillei Payraudeau (Icon., Fig. 110), X 1

RADULAE

(approximately X 30)

Figure

- 39 *MUREX* S. S.
Murex tenuispina Lamarck (Troschel, Pl. 10, Fig. 19)
- 40 *MUREX* S. S.
Murex tribulus Linn. (Troschel, Pl. 10, Fig. 21)
- 41 *MUREX* S. S.
Murex brevispina Lamarck (Troschel, Pl. 10, Fig. 20)
- 42 *BOLINUS*
Murex brandaris Linn. (Troschel, Pl. 11, Fig. 1)
- 43 *BOLINUS*
Murex cornutus Linn. (Troschel, Pl. 11, Fig. 2)
- 44 *CHICOREUS*
Murex ramosus Linn. (Troschel, Pl. 11, Fig. 3)
- 45 *CHICOREUS*
Murex brevifrons Lamarck (Troschel, Pl. 11, Fig. 4)
- 46 *SIRATUS*
Murex senegalensis Gmelin (Troschel, Pl. 11, Fig. 5)
- 47 *PHYLLONOTUS*
Murex pomum Gmelin (Troschel, Pl. 11, Fig. 7)
- 48 *PHYLLONOTUS*
Murex regius Swainson (Cooke, 1895, Fig. 119)
- 49 *HEXAPLEX*
Murex trunculus Linn. (Troschel, Pl. 11, Fig. 8)
- 50 *MUREXSUL*
Murex octogonus Quoy and Gaimard (Hutton, Trans. Proc. New Zealand Inst., 1882, v. 15, Pl. 13, Fig. 3)
- 51 *PTERYNOTUS*
Murex pinnatus Swainson (Habe, in litt.)
- 52 *MURICOPSIS*
Murex blainvillei Payraudeau (Troschel, Pl. 11, Fig. 9)

OPERCULA

Figure

- 53 *MUREX* S. S.
Murex tribulus Linn., X 1
- 54 *MUREX* S. S.
Murex antillarum Hinds, X 1
- 55 *HAUSTELLUM*
Murex haustellum Linn., X 1
- 56 *CHICOREUS*
Murex brevifrons Lamarck, X 1
- 57 *PHYLLONOTUS*
Murex pomum Gmelin, X 3/4
- 58 *HEXAPLEX*
Murex cichoreus Gmelin, X 3/4
- 59 *HEXAPLEX*
Murex fulvescens Sowerby, interior view, X 1/2
- 60 *HEXAPLEX*
Murex radix Gmelin, X 1/3
- 61 *MUREXSUL*
Murex octogonus Quoy and Gaimard, X 1
- 62 *MAXWELLIA*
Murex gemma Sowerby, X 2
- 63 *PTERYNOTUS*
Murex pinnatus Swainson, X 1
- 64 *NAQUETIA*
Murex permaestus Hedley, X 1
- 65 *PAZIELLA*
Murex pazi Crosse, X 1 1/2

MURICINAE

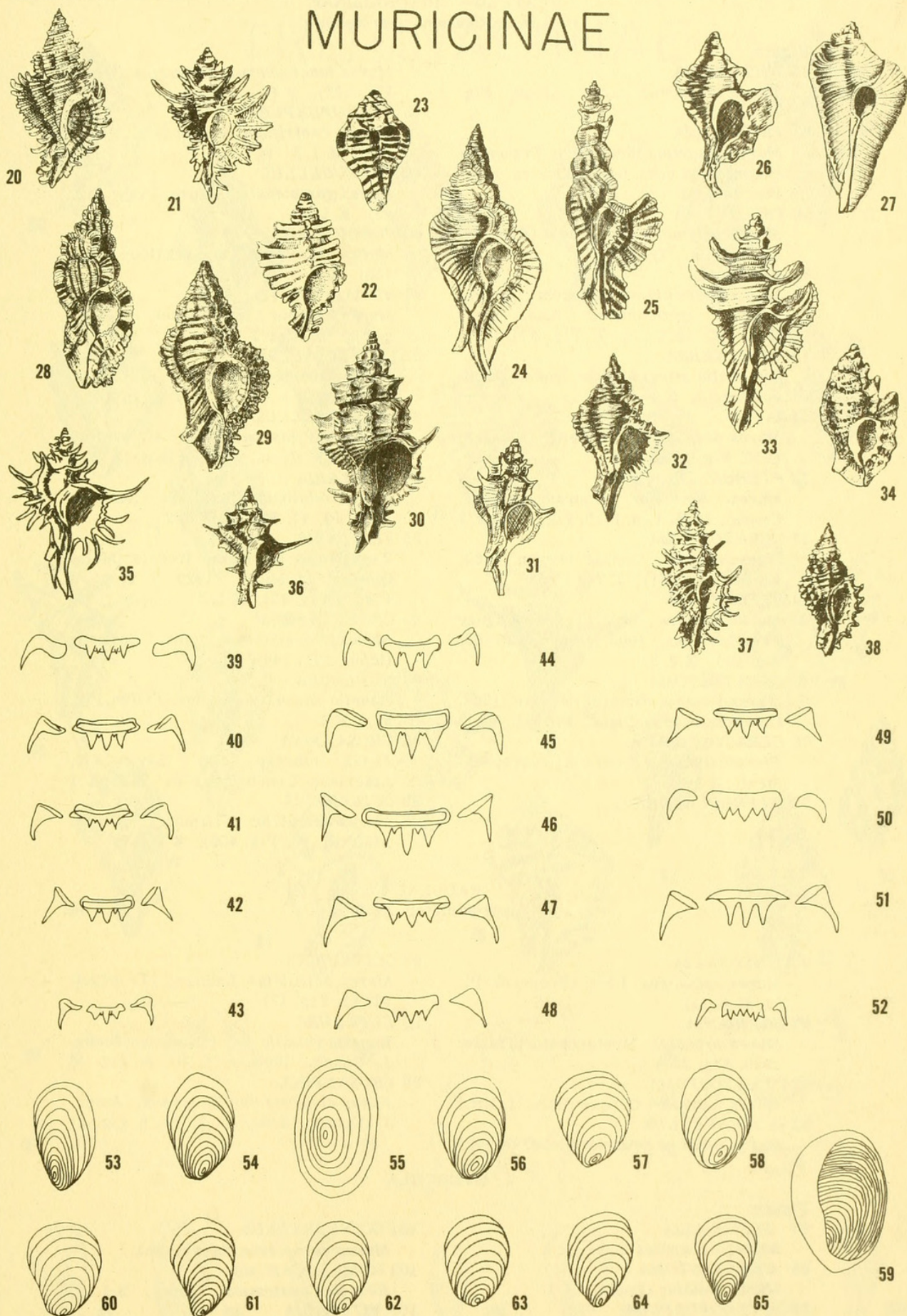


PLATE III - TRITONALIINAE
(all magnifications approximate)

Figure

- 66 *TRITONALLA*
Murex erinaceus Linn. (Icon., Fig. 11), X 1/2
- 67 *TRITONALLA*
Murex fasciatus Sowerby (= *Tritonalia inermicosta* nom. nov.) (Nicklès, 1950, Fig. 156), X 1
- 68 *TRITONALLA*
Murex polymorphus Brocchi (Brocchi, 1814, Pl. 8, Fig. 4), X 1
- 69 *HADRIANLA*
Murex craticulatus Brocchi (= *Tritonalia craticuloides* nom. nov.) (Brocchi, 1814, Pl. 7, Fig. 14), X 1
- 70 *MIOCENEBRA*
Tritonalia silverdalense Vokes (from specimen), X 1
- 71 *JATON*
Murex decussatus Gmelin (Nicklès, 1950, Fig. 155), X 1
- 72 *PTERORYTIS*
Murex umbrifer Conrad (Am. J. Conch., 1868, v. 4, Pl. 5, Fig. 7), X 2/3
- 73 *CERATOSTOMA*
Murex nuttalli Conrad (Tryon, 1880, Pl. 35, Fig. 381), X 2/3
- 74 *PTERORYTIS*
Murex fluviana Dall (Trans. Wagner Free Inst. Sci., 1903, v. 3, pt. 6, Pl. 60, Fig. 21), X 2/3
- 75 *CERATOSTOMA*
Murex foliatus Gmelin (Martyn, 1784, Universal Conchologist, Pl. 66), X 1/2
- 76 *CERATOSTOMA*
Pterorytis pecki Emerson (from specimen), X 1
- 77 *PTEROPURPURA*
Murex macropterus Deshayes (Icon., Fig. 123), X 1
- 78 *PTEROPURPURA*
Murex centrifuga Hinds (Icon., Fig. 130), X 1/2
- 79 *PURPURELLUS*
Murex gambiensis Reeve (Icon., Fig. 65), X 1/2
- 80 *POROPTERON*
Murex uncinarius Lamarck (Icon., Fig. 156), X 1
- 81 *HOMALOCANTHA*
Murex scorpio Linn. (Kiener, 1843, Pl. 9, Fig. 3), X 1/2
- 82 *CALCITRAPESSA*
Murex leeanus Dall (Proc. U.S. Natl. Mus., 1890, v. 12, Pl. 7, Fig. 1), X 1/2
- 83 *OCINEBRELLUS*
Murex eurypteron Reeve (= *M. falcatus* Sowerby) (Icon., Fig. 176b), X 1/2
- 84 *VITULARIA*
Murex vitulinus Lamarck (Kiener, 1843, Pl. 47, Fig. 2), X 1/2
- 85 *VITULARIA*
Transtrofer longmani Iredale (Mem. Queensland Mus., 1929, v. 9, pt. 3 Pl. 31, Fig. 10), X 1/2
- 86 *CRASSILABRUM*
Murex crassilabrum "Gray" Sowerby (Icon., Fig. 146), X 1
- 87 *EUPLEURA*
Ranella caudata Say (Icon., *Triton*, Fig. 57), X 1
- 88 *UROSALPINX*
Fusus cinereus Say (Say, 1830, American Conchology, Pl. 29), X 1
- 89 *OCINEBRINA*
Murex aciculatus Lamarck (Tryon, 1880, Pl. 36, Fig. 409), X 1

RADULAE
(approximately X 30)

Figure

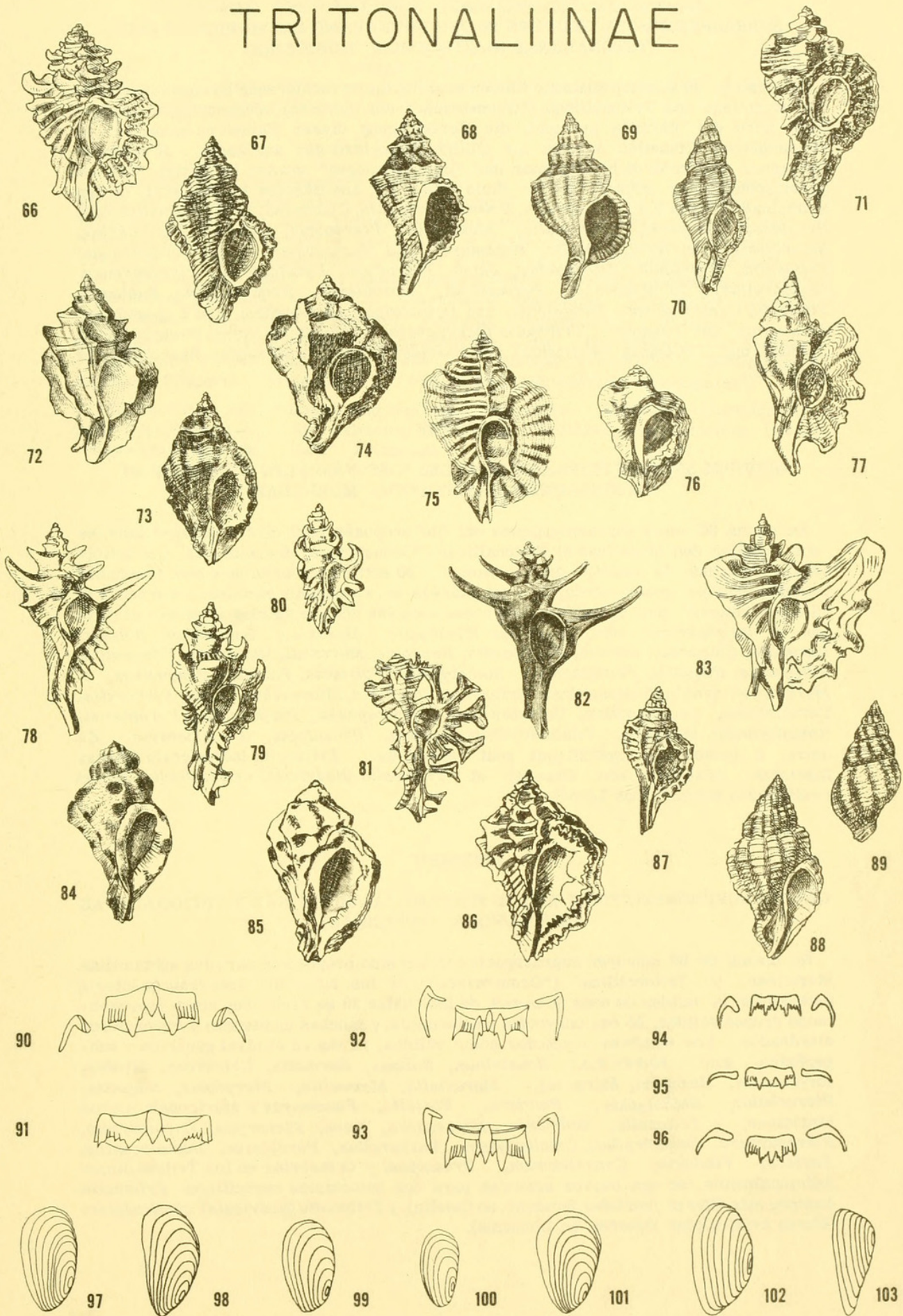
- 90 *TRITONALLA*
Murex erinaceus Linn. (Troschel, Pl. 11, Fig. 11)
- 91 *HADRIANLA*
Murex brocchii Monterosato (Thiele, 1929, Fig. 327)
- 92 *CERATOSTOMA*
Murexournieri Crosse (Habe, in litt.)
- 93 *OCINEBRELLUS*
Murex aduncus Sowerby (Habe, in litt.)
- 94 *OCINEBRINA*
Murex aciculatus Lamarck (Troschel, Pl. 11, Fig. 13)
- 95 *EUPLEURA*
Ranella caudata Say (Stimpson, Amer. J. Conch., 1865, v. 1, Pl. 8, Fig. 5)
- 96 *UROSALPINX*
Fusus cinereus Say (Stimpson, Amer. J. Conch., 1865, v. 1, Pl. 8 Fig. 6)

OPERCULA

Figure

- 97 *TRITONALLA*
Murex erinaceus Linn., X 2
- 98 *CERATOSTOMA*
Murex foliatus Gmelin, X 1
- 99 *PTEROPURPURA*
"Pteronotus" carpenteri Dall, X 1
- 100 *PTEROPURPURA*
Ocenebra modesta Fulton, X 1 1/2
- 101 *OCINEBRELLUS*
Murex eurypteron Reeve, X 1
- 102 *HOMALOCANTHA*
Hexaplex anatomica Perry, X 1 1/2
- 103 *VITULARIA*
Murex salebrosus King and Broderip, X 2

TRITONALIINAE



ZUSAMMENFASSUNG

SUPRASPEZIFISCHE GRUPPEN IN DEN UNTERFAMILIEN MURICINAE UND TRITONALIINAE (GASTROPODA: MURICIDAE)

Mindestens 90 supraspezifische Namen sind für die verschiedenen Gruppen innerhalb der Muricinae und Tritonaliinae ("Ocenebrinae" der Autoren) vorgeschlagen worden. Hier wird der Versuch gemacht, die Berechtigung dieser Namen zu bewerten: 36 taxonomische Einheiten werden als gültige Gruppierungen anerkannt, 56 fallen in Synonymie und zahlreiche Irrtümer und "Berichtigungen" wurden beiseitigt. Die auf generischer oder subgenerischer Stufe als gültig anerkannten Namen sind, in den Muricinae: *Murex* s.s., *Haustellum*, *Bolinus*, *Harmatia*, *Chicoreus*, *Siratus*, *Phyllonotus*, *Hexaplex*, *Murexsul*, *Murexiella*, *Maxwellia*, *Pterynotus*, *Naquetia*, *Pterochelus*, *Nothotyphis*, *Poirieria*, *Paziella*, *Panamurex*, und *Muricopsis*; in den Tritonaliinae: *Tritonalia*, *Hadriana*, *Miocenebra*, *Jaton*, *Pterorytis*, *Ceratostoma*, *Pteropurpura*, *Ocenebrellus*, *Calcitrapessa*, *Purpurellus*, *Poropteron*, *Homalocantha*, *Eupleura*, *Vitularia*, *Crassilabrum*, *Urosalpinx*, und *Ocenebrina*. Ausserdem sind 2 spezifische Homonyme neu benannt: *Tritonalia inermicosta* (*Murex fasciatus* Sowerby, nicht Gmelin) und *Tritonalia (Hadriana) craticuloides* (*Murex craticulatus* Brocchi, nicht Linnaeus).

RÉSUMÉ

GROUPES SUPRASPECIFIQUES DANS LES SOUS-FAMILLES MURICINAE ET TRITONALIINAE (GASTROPODA: MURICIDAE)

Au moins 90 noms supraspécifiques ont été proposés pour divers groupes dans les sous-familles des Muricinae et Tritonaliinae ("Ocenebrinae" des auteurs). Cet article essaie d'évaluer la validité de ces noms: 36 entités taxonomiques sont reconnues valables comme groupements, 56 sont placées en synonymie et nombre d'erreurs et "d'amendements" sont éliminés. Les noms acceptés comme valides au niveau générique et subgénérique sont, dans les Muricinae: *Murex* s.s., *Haustellum*, *Bolinus*, *Harmatia*, *Chicoreus*, *Siratus*, *Phyllonotus*, *Hexaplex*, *Murexsul*, *Murexiella*, *Maxwellia*, *Pterynotus*, *Naquetia*, *Pterochelus*, *Nothotyphis*, *Poirieria*, *Paziella*, *Panamurex*, et *Muricopsis*; dans les Tritonaliinae: *Tritonalia*, *Hadriana*, *Miocenebra*, *Jaton*, *Pterorytis*, *Ceratostoma*, *Pteropurpura*, *Ocenebrellus*, *Calcitrapessa*, *Purpurellus*, *Poropteron*, *Homalocantha*, *Eupleura*, *Vitularia*, *Crassilabrum*, *Urosalpinx*, et *Ocenebrina*. En outre, 2 homonymes spécifiques sont renommés: *Tritonalia inermicosta* (*Murex fasciatus* Sowerby, non Gmelin) et *Tritonalia (Hadriana) craticuloides* (*Murex craticulatus* Brocchi, non Linné).

RESUMEN

GRUPOS SUPRAESPECIFICOS EN LAS SUBFAMILIAS MURICINAE Y TRITONALIINAE (GASTROPODA: MURICIDAE)

No menos de 90 nombres supraespecíficos han sido propuestos para las subfamilias Muricinae y Tritonaliinae ("Ocenebrinae" de los autores). Este trabajo intenta determinar la validez de esos nombres, de los cuales 36 se reconocen como representando grupos válidos, 56 son colocados en sinonimia, y muchas enmiendas y errores son eliminados. Los nombres aceptados como válidos, ya sea en el nivel genérico o subgenérico, son: *Murex* s.s., *Haustellum*, *Bolinus*, *Harmatia*, *Chicoreus*, *Siratus*, *Phyllonotus*, *Hexaplex*, *Murexsul*, *Murexiella*, *Maxwellia*, *Pterynotus*, *Naquetia*, *Pterochelus*, *Nothotyphis*, *Poirieria*, *Paziella*, *Panamurex* y *Muricopsis* en los Muricinae; y *Tritonalia*, *Hadriana*, *Miocenebra*, *Jaton*, *Pterorytis*, *Ceratostoma*, *Pteropurpura*, *Ocenebrellus*, *Calcitrapessa*, *Purpurellus*, *Poropteron*, *Homalocantha*, *Eupleura*, *Vitularia*, *Crassilabrum*, *Urosalpinx* y *Ocenebrina* en los Tritonaliinae. Adicionalmente, se dan nuevos nombres para dos homónimos específicos: *Tritonalia inermicosta* (*Murex fasciatus* Sowerby, no Gmelin), y *Tritonalia (Hadriana) craticuloides* (*Murex craticulatus* Brocchi, no Linnaeus).

СВЕРХВИДОВЫЕ ГРУППЫ В ПОДСЕМЕЙСТВАХ
MURICINAE TRITONALLNAE (GASTROPODA: MURICIDAE)

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А Б С Т Р А К Т

Классификация подсемейств *Muricinae* и *Tritonaliinae* содержит не менее 90 сверхвидовых названий. В настоящей статье сделана попытка оценить обоснованность этих наименований, причем 36 названий признаны действительными, 6 отнесены к синонимам, и устранены многие найденные неточности и ошибки. Следующие родовые или подродовые названия признаны действительными: *Murex* s.s., *Haustellum*, *Bolinus*, *Harmatia*, *Chicoreus*, *Siratus*, *Phyllonotus*, *Hexaplex*, *Murexsul*, *Murexiella*, *Maxwellia*, *Pterynotus*, *Naquetia*, *Pterochelus*, *Nothotyphis*, *Poirieria*, *Paziella*, *Panamurex*, и *Muricopsis* *Muricinae*; *Tritonalia*, *Hadriana*, *Miocenebra*, *Jaton*, *Pterorythis*, *Ceratostoma*, *Pteropurpura*, *Ocienbrellus*, *Calcitrapessa*, *Purpurellus*, *Poropteron*, *Homalocantha*, *Eupleura*, *Vitularia*, *Crassilabrum*, *Urosalpinx*, *Ocinebrina* *Tritonaliinae*.

Кроме того, два видовых омонима переименованы: *Tritonalia inermicosta* (*Murex fasciatus* Sby., non Gmelin) *Tritonalia* (*Hadriana*) *craticulocidus* (*Murex craticuloides* Brocchi, non Linnaeus).



1964. "Supraspecific groups in the sub-families Muricinae and Tritonaliinae (Gastropoda: Muricidae)." *Malacologia* 2, 1-41.

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