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PRELIMINARY RECLASSIFICATION OF VENERACEAN PELECYPODS (1),

by Don L. Frizzell
(Stanford University, California, U. S. A.).

INTRODUCTION

Any attempt to identify a veneracean (2) pelecypod forces one to realize the extreme lack of agreement in the details of current classifications of the superfamily Veneracea. Although many authorities agree in placing only the families Veneridae and Petricolidae within the superfamily and others add only the Glaucomyidae (« Glaucomyacidae » of Dall, 1913) (3), there is little accord in the disposition of subfamilies and genera. The

(1) Some of the conclusions set forth in this paper have been made public as follows:
Classification of veneracean pelecypods (Abstract). Proc. Geol. Soc. Am. for 1935 (1936), p. 415.
Phylogeny of venerid pelecypods (Abstract). Proc. Geol. Soc. Am. for 1935 (1936), p. 415.
Genera of the Veneracea (Abstract). Proc. Geol. Soc. Am. for 1935 (1936), p. 365.

(2) The term « veneracean, » as employed in this paper, refers to any member of the superfamily Veneracea. Similar terms are « venerid, » referring to a member of the family Veneridae, and « meretricine, » pertaining to the subfamily Meretricinae. « Veneroid » is a less precise term implying « like a venerid, » but not belonging, necessarily, to the same family. Parallel terms are based upon other family and subfamily names.

(3) Dates within parentheses refer to publications listed in the table of references cited.

arrangements of Dall (1902, 1913), Jukes-Browne (1914), Cossmann and Peyrot (1910), Marwick (1927), A. E. Salisbury (1934), and Thiele (1934) show a marked contrast of views in regard to the content of the superfamily. Differing concepts in regard to systematic categories, rules of nomenclature, and even in regard to fundamental taxonomic principles have led to confusion. Moreover, the criteria for delineating the Veneracea are at considerable variance, as is the rank accorded the group. Thus, Pelseneer (1906, p. 270) and Cooke (1895, p. 454) defined a « sub-order » Veneracea solely on an anatomical basis, whereas Dall (1913, p. 492) defined a « superfamily » and Thiele (1934, p. 883) a « stirps » Veneracea on the basis of both shell morphology and anatomy.

To unify the classification of the Veneracea and to allocate properly the various systematic units which have been proposed, uniform bases of classification first must be established. A restricted definition, based upon such standardized criteria, then will limit definitely such biologic elements as must be considered, and thus automatically will eliminate extraneous units. Following the redefinition of the superfamily Veneracea, classificatory revision must proceed with a review of previously proposed arrangements and an attempt to evaluate the nomenclatural and biological units involved. The present paper follows this plan of attack and includes a synopsis of a revised scheme of family and subfamily classification.

A single new nomenclatural unit, *Netara* Frizzell, new subgenus, is proposed herein.

BASES OF CLASSIFICATION

Introduction.

Zoölogical classifications differ widely in the number and rank of systematic categories included between the order (or suborder) and species. For convenience in tabulation, however, as well as for the expression of inferred relationships, the descending series of superfamily, family, subfamily, genus, and subgenus is considered adequate. The term « section, » for reasons expressed on a following page, is rejected.

Systematic categories are merely names applied to groups, of varying content, of individuals. Whereas these groups may be considered realities in nature, possessing stability, and amenable

to objective treatment, their rank and extent are matters of opinion and are liable to fluctuation with changes of concept. The genus *Chione* of certain European malacologists, for instance, is equivalent to the families Chionidae and Veneridae of this paper. The subfamilies Gemminae and Tapetinae of Dall (1913) are included within the subfamily Venerinae of Jukes-Browne (1914). The genus *Venus* of Linné (1758) corresponds roughly to the family Veneridae of Dall (1902, 1913) and other authors, and to the superfamily Veneracea as revised herein. Evaluation of the rank of systematic categories, then, is a matter of correlating groups of objects with names which have been proposed.

Classificatory criteria.

Classifications of the larger nomenclatural categories have been based upon various criteria, of which the more important are comparative morphology, ontogeny, chronogenesis, stage of evolution, and ecology. Of these, comparative morphology is the major clue to relationship, furnishing a foundation essential to the erection of a taxonomic structure, whereas ontogeny, in turn, provides evidence for the differentiation of homologous and analogous morphologic elements. The data of chronogenesis, although necessarily limited by deficiencies in the geologic record, serve as a check upon the implications of morphology and ontogeny. Relative stage of evolution, on the other hand, rests upon inferences derived from morphology and chronogenesis and hence must occupy a subordinate position in the list of systematic criteria. Without minimizing the value of ecologic studies, one at present must discount entirely the use of ecology as a guide to natural relationships.The following paragraphs serve as a foundation for the revision of the taxonomy of the Veneracea and set forth the basis for my classification.

Comparative morphology. — In paleontology, at least, the majority of arrangements are based upon the relative classificatory importance of single characters. The assumption that a certain character has ordinal value, whereas another character possesses only specific value, may accord, in isolated instances, with the actual blood relationships. On the other hand, geneticists have demonstrated that sudden changes may occur in characters considered of fundamental taxonomic importance. So-called classifications based upon single characters are convenient in that they are, in fact, artificial keys for the identifi-

cation (4) of groups of individuals. The guiding principle in systematic work, however, must be degree of relationship rather than ease of definition. Consequently, the point of view adopted in this paper is that family, generic, or specific characters, of fixed importance, are non-existent. Nomenclatural units must be defined primarily on the basis of a summation of all available morphological characters.

The principle of the summation of characters is illustrated in the classification of the veneracean genera *Meretrix* Lamarck and *Antigona* Schumacher. Each possesses an anterior lateral tooth in the left valve, but is distinct in shape and sculpture. The *a priori* assignation of subfamily importance to the presence of the lateral tooth would necessitate referring both *Antigona* and *Meretrix* to a single family and subfamily. If, on the other hand, one accepts the evidence presented by numerous differences as opposed to a single character in common, one is forced to admit that the two genera are not related intimately. Their affinities must be inferred, instead, from the quantitative relations of similar genera, and from the other lines of evidence discussed below.

This attack of the problem of classification is fundamentally opposed to that of Jukes-Browne (1908, p. 175), the last worker to attempt a detailed revision of the entire family Veneridae, who considered that:

« On the whole it appears to me that those characters of the animal which impress themselves on the interior of the shell are not of generic value, though they are useful in the establishment of subgenera and sections. These characters are the sinuation of the pallial line and the scars of the adductors and pedal (or protractor) muscles. In the discrimination of genera more satisfactory results can be obtained by giving preference to certain characters of the shell itself; these are (1) the hinge plate and its teeth, (2) the features of the lunule and escutcheon, (3) the smoothness or crenulation of the valve margin. »

An approach which appears at first sight to involve elements different from those stressed in this paper is that of Davies (1933, p. 322), who followed Henri Douvillé in dividing morph-

(4) The distinction between identification and classification is fundamental. Identification is the process of associating a name with a specimen or group of specimens; it implies nothing in regard to an evaluation of relationship. Classification, in contrast, is concerned with the determination of relationship.

ologic characters in the Pelecypoda into three groups. These groups are: « (1) adaptive characters, the result of immediate adaptation to the conditions of life of the species, genus, or family; (2) progressive characters, which can be traced through a lineage and show a definite trend; (3) « static » or stable characters, which persist with least change while other characters change. » Davies considered that: « A truly natural classification must rest primarily on « static » characters when these have been found and proved. » The obvious difficulty with this approach is that the assignation of « adaptive, » « progressive, » or « static » importance to any morphologic character is a purely subjective matter and in no way amenable to objective treatment. On another page (p. 324), Davies gave the following qualification in a discussion of hinge characters: « Taken in conjunction with the relative development of the adductor muscles, *and subject always to checking by all other features that are ascertainable* [italics mine — DLF], they afford a good guidance to natural relationships. » In other words, summation of characters is admittedly the final court of appeal.

The danger of relying upon single characters in classification is demonstrated by the relative difference in variability of morphologic characters within the Veneracea. Dentition, usually stressed as a generic character, is constant in one subfamily (Pitarinae), whereas in another group (family Dosiniidae) it distinguishes only subgenera and species. Jukes-Browne (1908, p. 235-236) has recorded instances in two different veneracean genera in which teeth are variously grooved or entire within a single species. *Gemma gemma* (Totten) shows a more radical variation in that one cardinal tooth in some specimens is suppressed completely. In contrast, the genera *Amiantis, Macrocallista,* and *Pitar* (subfamily Pitarinae), with practically identical dentition, are separable on the basis of shape and sculpture, characters usually accorded no more than specific importance.

In considering the details of the classification of the Veneracea, characters of the internal anatomy, the soft parts, are omitted from consideration. The so-called zoölogical classification, as opposed to the conchological, is objectionable, first, in that it is inapplicable to fossils, and second, in that it ignores the shell. The shell is by no means a mere integument or container for the animal, but is rather an integral part of the organism. At least fifty major morphological characters may be observed in the pelecypod shell. Variations of these shell

characters, assuming no more than ten manifestations of each character, offer more than 10^{50} possible combinations of practical value in the determination of taxonomic hierarchies! In contrast, current zoölogical classifications do not distinguish genera or species, nor do they deal adequately with families and superfamilies. Finally, the great majority of specimens available to the systematist are shells from which the soft internal structures have long since been removed. The time and expense alone involved in collecting material for dissection would render impossible any critical revision based on soft parts.

To summarize : Classificatory schemes based upon single characters are unsound, as are those arrangements assigning an arbitrary taxonomic value to any group of morphologic elements. The alternative course is to base systematic conclusions upon a summation of all available anatomical structures. Thus, the relative variability of each character may be ascertained and its taxonomic value determined.

Ontogeny. — Although rigid application of the « biogenetic law » is inadvisable, nevertheless the ontogeny of species may furnish a valuable clue to homologous structures. One certainly would separate a species characterized by smooth margins throughout its ontogeny from a species in which immature specimens exhibited crenulate margins. Similarly, the work of Marwick (1927, p. 598) on the ontogeny of *Kuia vellicata* (Hutton), has suggested convergence in the development of dentition. As a general rule, however, the application of ontogenetic studies within the Pelecypoda is limited.

Chronogenesis. — Relative appearance in time of the members of a group is a useful check on classification. Obviously, ancestral stocks must precede descendent stocks. « Phylogenetic » classifications, such as that of Pelseneer (1889), based upon the anatomy of living genera and the uncritical use of paleontological evidence, cannot be accepted in detail. In the case of similar, but morphologically distinct groups, chronogensis may be a clue to relationship. The later group to appear may be postulated to have evolved from the earlier. If, on the other hand, both appeared at the same time, their relationships cannot be postulated, and they may well be separated.

Ecology. — H. Douvillé (1912), Swinnerton (1923), Davies (1933), and others, have adopted classifications of the Pelecypoda based at least in part upon supposed shell modifications

due to habitat. Actual observations lead one to doubt the accuracy of such inferences as those indicated by Swinnerton's figure (p. 219). These supposed habits and consequent modifications of the various bivalve mollusks are not entirely convincing to the field ecologist. Davies (p. 384) writes:

« Douvillé recognizes three divergent lines taken by lamellibranch evolution at the very beginning..., an adaptive radiation corresponding to the three principal modes of life of the class: i, the « normal » life on the sea-bottom, more or less actively mobile; ii, the sedentary life of an animal typically fixed by a byssus; iii, the protected life in a more or less permanent burrow. This primary radiation impressed on the three divergent branches certain characters which tended to persist through later secondary radiations. Thus the classification is not in the least an oecological classification. »

If this is not an ecological classification, it is certainly a classification based upon the assumed effect of ecological conditions, and upon ecological assumptions which may be open to question. Further, this classificatory arrangement depends entirely upon the relation of these assumed modifications to an unproved phylogeny. The inevitable inference from an examination of such classificatory schemes is that, until a great deal more is known of the actual habits and habitats of the Pelecypoda, such arrangements can be regarded only as speculative.

Stage of evolution. — Relative stages of evolution have been used as classificatory criteria within some classes of the Mollusca, but are not easily applicable to the Pelecypoda. Cox (1933, p. 387), however, has shown that in the Rudists evolutionary change is accompanied by a progressive increase in size. The major difficulty with this criterion lies in the fact that the determination of stage of evolution is altogether dependent upon the criteria of comparative morphology and chronogenesis, augmented by inferences drawn from ontogeny. Further, how can one differentiate « primitive » and « specialized » characters ? Unquestionable evolutionary trends exist within the Veneracea and these eventually may be of classificatory importance, but at present such trends remain a matter of conjecture. Moreover, the size of the taxonomic categories employed governs the ideas of stage of evolution. Thus, narrowly defined categories demonstrate evolutionary trends which the use of more broadly limited units obscures.

DEFINITION OF THE SUPERFAMILY VENERACEA

Previous Definitions.

The superfamily Veneracea has been defined in various ways, and has included various elements. The majority of modern investigators, however, have restricted the superfamily to the families Veneridae, Petricolidae, and Glaucomyidae (« Glaucomyacidae » of Dall, 1913), some omitting the last named. A complete review of the classifications and definitions would be voluminous; only the representative definitions of Cooke (1895), Pelseneer (1906), Dall (1913), and Thiele (1934), therefore, are considered herein.

Cooke (1895, p. 454) included within the « suborder » Veneracea the families Veneridae, Petricolidae, and Glaucomyidae, with the definition:

« Branchiae slightly folded, foot compressed, siphons generally short, pallial line variable, two adductor muscles. »

Pelseneer (1906, p. 270) granted the Veneracea the same rank (sub-ordinal) and content as did Cooke. His definition was:

« Eulamellibranchia with two pallial sutures; the siphons generally somewhat elongated and partially or wholly united. Gills slightly folded. A bulb on the posterior aorta. Ligament external. »

Contrasting with the definitions of Cooke and Pelseneer, the arrangement of Dall (1913, p. 492) deals as follows, with both shell and anatomical characters:

« Teleodonts with normal gills united to form a complete anal chamber, the mantle lobes free behind the siphonal region, subequal adductors, an external parivincular ligament seated in a groove, and the shell substance densely cellulocrystalline with inconspicuous epidermis. Complete hinge formula $\frac{\text{L1l. } \times 0 \times 01\ 10.\ 11}{\text{R2l. } \times 0 \times 010101.\ 21}$ of which a large part is usually deficient ».

Dall included the families Veneridae, Petricolidae, and « Glaucomyacidae. »

Thiele (1934, p. 883) defined his « stirps » Veneracea, including only the families Veneridae and Petricolidae, as follows:

« Schale meistens kräftig, glatt oder skulptiert, quer eiförmig oder dreieckig, gleichklappig, rechte Klappe mit Zentralzahn

und einem vorderen und hinteren Hauptzahn, zwischen denen die Zähne der linken Klappe eingreifen, ein vorderer Seitenzahn der linken Klappe ist oft rudimentär oder fehlend, Schliessmuskelnarben fast symmetrisch, eine Mantelbucht ist mehr oder weniger ausgebildet, selten ganz fehlend. Der Mantel ist unten meistens weit offen und hat hinten bald kürzere, bald längere, meistens zum Teil miteinander verwachsene, an den Endet gefranste Siphonen, an ihrer Scheidewand sitzt nich selten eine Klappe; kiemenblätter geflatet; Fuss meistens ohne Byssus. »

Restricted Definition.

The current families Petricolidae, Glaucomyidae, and Veneridae are by no means comparable units. Whereas the first two are small and genetically coherent entities, the latter is large and heterogeneous. Thus Dall (1913, p. 492) considered: « The family [Veneridae = Veneracea of this paper] must be divided into at least four subfamilies...,» and Marwick (1927, p. 569) was « inclined to think that the division of the Veneridae into at least seven or eight subfamilies would agree better with the relationships displayed... » Because of the heterogeneity of the family Veneridae, and because a proper understanding of its component subdivisions requires an expanded number of systematic categories, I have elevated the family to superfamily rank, making it the revised superfamily Veneracea. The families Petricolidae and Glaucomyidae are excluded from consideration.

The following tentative definition of the superfamily Veneracea is based solely upon shell morphology:

Shell equivalve, free, closed, with prosogyrate beaks, smooth or variably sculptured, ovate, trigonal, quadrate, or elongate in outline; inner margins smooth or dentate; adductor muscle scars peripheral, subequal; pallial line usually sinuated; resilium usually external, embraced by the ligament; three cardinal teeth in each valve, sometimes with an anterior lateral in left valve and a corresponding lateral pit (sometimes with subsidiary denticles above and/or below) in right valve, supplementary cardinal teeth or rugosities are present in a few specialized genera; shell material dense, never nacreous, epidermis usually inconspicuous.

The unity of the superfamily, as thus restricted, is confirmed by the stratigraphic range of the genera included. A single genus (*Eocallista* H. Douvillé) is known from the uppermost Jurassic.

By the Cretaceous, a number of genera had appeared, and by the early Tertiary a great deal of differentiation had taken place. The Veneracea has reached its greatest development at the present time.

HISTORICAL AND ANALYTICAL REVIEW OF THE RESTRICTED VENERACEA

Analytical review.

Analysis of the various classificatory schemes applied to the restricted Veneracea requires a consideration at least of the following elements: (1) the date of publication, (2) the author, (3) names of the systematic units employed, and (4) the general complexion of the included entities. In the following tabulation, short statements of the inferred importance of the various arrangements are added.

1758. LINNÉ — genus *Venus;* included veneracean and unrelated genera.

1818. LAMARCK — family « Les Conques, » composed of seven teleodont genera, two of which belong to the Veneracea. Lamarck's classification is important in that it appears to have been the first attempt at grouping the veneracean and allied genera into a family. The family name must be dismissed from consideration because it is a vernacular expression, translatable as « conchs » or simply « shells. »

1819. LEACH — family Veneridae, including one tellinid and two astartid genera. Although Leach proposed the family Veneridae in this publication, he did not include a single veneracean genus or species. His concept of the family must be inferred from his manuscript list of 1820, published in 1852.

1825. DE BLAINVILLE — family Conchacea, with sixteen genera of teleodont pelecypods, only three of which may be referred to the Veneracea. The family Conchacea is a Latin equivalent of Lamarck's « Les Conques. »

1826. RISSO — family « Les Vénus, » including five genera, three of which are veneracean. A fourth veneracean genus was excluded from the family.

1830. Menke — family Veneracea, including three genera, two of which are veneracean. A third veneracean genus was excluded from the family. Menke proposed the term « Veneracea » in a sense parallel to that of the terms « Nymphacea » of Sowerby and « Conchacea » of de Blainville. Use of the term for a superfamily dates apparently from workers during the latter part of the nineteenth century.

1839. Sowerby — family Nymphacea, composed of twenty-two genera, of which five are veneracean. The Nymphacea is roughly equivalent to the Conchacea of de Blainville.

1840. Swainson — family Tellinidae: subfamily Cyclinae, with six genera; subfamily Tellininae, with six generic units (5); and subfamily Venerinae, with thirteen generic units. Of the entire list, only three of the « venerine » genera belong to the Veneracea as now understood. Although Swainson had an idea of very broad limits for the Venerinae, his work is important in clarifying the relations of some of the teleodont pelecypods. The subfamily Venerinae, although considerably emended by later authorities, has been accepted generally.

1847. Gray — family Veneridae: subdivisions Meretricina and Venusina, of indeterminate systematic rank; eighteen generic units were included, fifteen of which are veneracean. Gray apparently established in this paper the binary division of the restricted Veneracea which, as the subfamilies Meretricinae and Venerinae, has been accepted most generally.

1852. Leach — family Veneridae, subdivided into eleven « stir-

(5) The term « generic unit » is applied to any name proposed or considered as a nomenclatural genus, subgenus, or « section. » Inasmuch as the generic units under consideration have been used with varying rank by various authors, and as the first two categories are regarded as nomenclaturally equal by the International Rules of Zoölogical Nomenclature, they are taken as units in the sense of having identical standing. Their relative rank, moreover, is largely a matter of individual opinion. The term « section, » although ambiguous and neither defined nor sanctioned by the Rules of Nomenclature, has been used in a generic sense by many authors, and is here considered the nomenclatural equivalent of a genus.

pes, » including twenty-six generic units, only seven of which are now referred to the Veneracea. This work, prepared for publication and proofs struck off in 1820, was edited by Gray and printed, apparently, without any great change. In analyzing the history of veneracean classification, one must regard this arrangement as an anachronism, certainly not comparable in concept to the contemporary publications of Gray and Deshayes.

1853. Deshayes — family Veneridae : subdivisions Dosiniana, Meretricinia, Venusina and Tapesina, of indeterminate rank; fifteen generic units were listed, all of which are referable to the Veneracea. Deshayes' catalogue of species is extremely important and many of his conclusions have been accepted (often without acknowledgment) by subsequent workers. In his use of subfamily categories, Deshayes added two more than did Gray.

1857. Römer — genus *Venus* Linné, divided into subgenera and « families »; twenty-seven generic units were considered. Römer's systematic categories are paralleled by the following, in modern terminology: genus = family, subgenus = genus, « family » = subgenus. In terminology and concept of systematic categories, Römer's exposition represents a retrogression rather than an improvement upon earlier arrangements.

1858. H. and A. Adams — family Veneridae: subfamily Venerinae, sixteen generic units; subfamily Dosiniinae, three generic units; subfamily Tapesinae, seven generic units. Although H. and A. Adams contributed to knowledge of the Veneracea by their compilation and proposal of generic names, their chief contribution was in adopting three of Deshayes' subdivisions and emending two of them to acceptable subfamily form.

1871. Stoliczka — family Veneridae: subfamily Tapesinae, nine generic units; subfamily Venerinae, eighteen generic units; subfamily Sunettinae, three generic units; and subfamily Dosiniinae, eight generic units. Stoliczka attempted a critical revision, admittedly upon insufficient comparative material, and designated types for various generic units, a number of which are untenable according to modern requirements.

1884. Tryon — family Veneridae: subfamily Venerinae, thirty generic units; subfamily Meroëinae (= Sunettinae Stoliczka), three generic units; subfamily Dosiniinae, seven generic units; and Tapesinae, nine generic units. The wide scope of Tryon's manual renders his arrangement a compilation rather than a critical review.

1887. Fischer — family Veneridae : subfamily Meretricinae, twenty-one generic units; subfamily Venerinae, twenty generic units; subfamily Tapetinae, nineteen generic units; and genera of uncertain position, three generic units. Fischer's classification, as in the case of Tryon, is a compilation rather than a critical analysis.

1902. Dall — family Veneridae: subfamily Dosiniinae, thirteen generic units; subfamily Meretricinae, forty-four generic units; subfamily Venerinae, forty-nine generic units; and subfamily Gemminae, three generic units. Dall's synopsis is a critical revision, adhering to the then newly-formulated International Rules of Zoölogical Nomenclature.

1913. Dall — family Veneridae: subfamilies Venerinae, Circinae, Tapetinae, and Gemminae. Of necessity, in a publication intended as a text-book for students, only a limited number of generic units was included. The classification is important in showing Dall's later opinion in regard to subdivision of the family.

1914. Jukes-Browne — family Veneridae: subfamily Meretricinae, fifty-six generic units; and subfamily Venerinae, fifty-seven generic units. Although Jukes-Browne flouted certain fundamental principles of the International Rules of Zoölogical Nomenclature, and though some of his taxonomic concepts may be questioned, one must concede that his revision was critical and detailed.

1934. Thiele — family Veneridae, one hundred and eighteen generic units listed. Thiele, in compiling a handbook of the Mollusca, must have believed that discretion in subfamily arrangement, at least in the Veneracea, was advisable.

In a broad sense, the foregoing tabulation reveals definite trends within the history of classification of the Veneracea. The period from 1758 to 1818 is characterized by the proposal of a number of genera which, in the succeeding period, were allocated within variously-named families. By 1847, unification of the family Veneridae was well under way, and the foundation laid for the classificatory studies of 1847 to 1871. The period from 1871 to 1902, in contrast, was marked only by the appearance of compilations. During the years 1902 to 1914 a number of critical studies of the family Veneridae appeared. The only comprehensive treatment of the Veneracea since 1914 was the compilation of Thiele, published in 1934.

Classificatory concepts have been likened to a pendulum, swinging from the recognition of broadly-defined units (lumping) to a separation of narrowly-delimited entities (splitting). Consideration of all published work on any large systematic group might seem, at first glance, to confirm this idea. An alternative suggestion, however, is that inasmuch as only a few investigators concerned themselves with the broader phases of classification, and as each new classification, particularly in earlier times, required some time for circulation and consequent acceptance, the apparent difference in concept between contemporary workers might better be regarded in some cases as due to a « time lag » rather than to any real contrast in viewpoint. Further, concepts in regard to categories of different rank may differ widely and

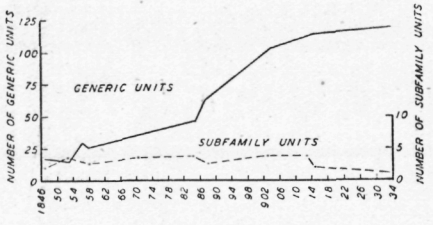

Figure 1. — A graphic representation of the relative numbers of generic and subfamily units employed within the restricted Veneracea during the years 1847 to 1934, based upon publications cited in the accompanying text. Frequency of generic units is indicated at left, frequency of subfamily units at right.

exhibit entirely different historical trends. Thus, a trend shown by categories of one rank might indicate an actual shift of opinions, whereas categories of a different rank might reveal definite trends in a single direction.

Graphic representation of the classification of the restricted Veneracea during the years 1847 to 1934 (fig. 1) illustrates the relative difference in trends of opinion. Whereas there has been a continuous refinement in the recognition of generic units, subfamily units show a sudden increase in number, followed by a gradual decrease. Not only has there been no relative increase in number of categories of subfamily rank recognized since 1853, but on the contrary, the latest classification employs only a single unit, the family.

A detailed analysis of family and subfamily arrangements within the Veneracea demands a standard of comparison, by which the contents of the various units which have been employed may be evaluated. On the basis of a study of several thousand specimens of a large number of veneracean genera, I am convinced that there are at least nine easily recognizable families within the restricted superfamily, typified by the relatively well-known genera *Dosinia* Scopoli, *Sunetta* Link, *Clementia* Gray, *Circe* Schumacher, *Venus* Linné, *Chione* Megerle von Mühlfeldt, *Meretrix* Lamarck, *Tapes* Megerle von Mühlfeldt, and *Gemma* Deshayes. These families, which form the basis for the revised arrangement of the Veneracea, are employed in this comparison, without consideration of their inter-relations, as objective groups indicating the contents of the Veneracea. In the accompanying correlation chart (Table I), the various classifications since 1858 are indicated in relation to the proposed taxonomic scheme.

Modern subfamily usage in the Veneracea dates from Gray (1847) and Deshayes (1853). Their nomenclature, however, was not in acceptable subfamily form, so their respective arrangements are of historical interest only. The first workers to propose subfamily names in proper form were H. and A. Adams (1858), who recognized three units. As the chart indicates, their Dosiniinae and « Tapesinae » were compact units, roughly equivalent to valid groups. Their Venerinae, in contrast, included all other groups now recognized. Stoliczka (1871) followed essentially the classification of the brothers Adams, but added a compact unit, the Sunettinae. Although changing the name Sunettinae to Meroëinae, Tryon (1884) made no essential change in the preceding arrangement of Stoliczka. Fischer (1887) recognized a compact unit, the Tapetinae, but referred the

H. & A. Adams 1858	Stoliczka 1871	Tryon 1884	Fischer 1887	Dall 1902	Dall 1913	Jukes-Browne 1914	Thiele 1934	Families recognized in this paper
					Circinae			Circidae
	Sunettinae	Meroëinae		Meretricinae				Sunettidae
			Meretricinae			Meretricinae		Meretricidae
Venerinae	Venerinae	Venerinae			Venerinae		Veneridae	Veneridae
Dosiniinae	Dosiniinae	Dosiniinae		Dosiniinae				Dosiniidae
				Venerinae				Clementiidae
			Venerinae			Venerinae		Chionidae
Tapesinae	Tapesinae	Tapesinae	Tapetinae		Tapetinae			Tapetidae
				Gemminae	Gemminae			Gemmidae

TABLE I. — Generalized correlation chart, showing a comparison of classificatory schemes employed in the years 1858-1934, with an evaluation of these arrangements in terms of the families recognized in the present paper.

remaining genera to two broadly-conceived subfamilies, the Meretricinae and Venerinae. In his synopsis of the Veneridae, Dall (1902) employed an extensive subfamily Meretricinae, and referred the genera of the Tapetinae to his modified Venerinae, but admitted two compact subfamilies, the Dosiniinae and Gemminae. His later arrangement (1913) contrasted the coherent elements Circinae, Tapetinae, and Gemminae with a large undifferentiated Venerinae. Jukes-Browne (1914) was content to divide the most diverse genera into two subfamilies (Meretricinae and Venerinae) solely because of the presence or absence of a lateral tooth. In the latest classification, Thiele (1934) avoided subdivisions entirely.

An effort to evaluate the various subfamily and generic units proposed or included within the restricted Veneracea has led to the compilation of the following lists. Obviously they are incomplete, especially the generic list, but as they include data essential to any research within the superfamily Veneracea, their inclusion in this paper is warranted.

Family and subfamily units included within the Veneracea.

Of the thirty-three names in the following list, the majority have been applied in family or subfamily sense within the Veneracea as restricted. The remainder (Conchacea de Blainville and Nymphacea Sowerby) are heterogeneous groups including veneracean species. The function of this tabulation is to assemble the supergenetic units which have been employed within the Veneracea, and to indicate their relation to the revised classification. Names in acceptable form are indicated in capital letters; bold-face type marks, in addition, those names which are accepted, in a sense similar to that in which they were proposed, in the modified arrangement of the superfamily. Names which are not in acceptable form are included for their historical interest.

CHIONIDAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

CIRCIDAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

CIRCINAE Dall 1913 (= Circidae Frizzell)
Dall, 1913, *in* Zittel, Text-book of Palaeont. (Eastman trans., ed. 2), Mollusca, p. 492.

CLEMENTIIDAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

Conchacea de Blainville 1825
De Blainville, 1825, Man. de Malac., p. 546.

CYCLININAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

Cythereina Gray 1838
Gray, 1838, Analyst, vol. 8, p. 302.

Cytheridae d'Orbigny 1837 (= Meretricidae Frizzell)
D'Orbigny, 1837, Moll. des Canar., p. 106 (according to Deshayes, 1853, Cat. Conch. Brit. Mus., pt. 1, p. 3).

Dosiniana Deshayes 1853
Deshayes, 1853, Cat. Conch. Brit. Mus., pt. 1, p. 3.

DOSINIIDAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

DOSINIINAE H. and A. Adams 1858 (= Dosiniidae Frizzell + Dosiniinae Adams)
H. and A. Adams, 1858, Gen, Rec. Moll., vol. 2, p. 416.

GEMMIDAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

GEMMINAE Dall 1902 (= Gemmidae Frizzell)
Dall, 1902, Proc. U. S. Nat. Mus., vol. 26, p. 365.

MERETRICIDAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

Meretricina Gray 1847
Gray, 1847, Proc. Zoöl. Soc. London, p. 183.

MERETRICINAE Fischer 1887 (= Meretricidae Frizzell + Meretricinae Fischer)
Fischer, 1887, Man. de Conch., p. 1078.

Meretricinia Deshayes 1853
Deshayes, 1853, Cat. Conch. Brit. Mus., pt. 1, p. 3.

MEROËINAE Tryon 1884 (= Sunettidae Frizzell)
Tryon, 1884, Struct. and Syst. Conch., vol. 3, p. 179.

Nymphacea Sowerby 1839.
Sowerby, 1839, Conch. man., p. 119.

PAPHIINAE Finlay 1928 (= Tapetidae Frizzell)
Finlay, 1928, Tr. Proc. N. Z. Inst., vol. 59, p. 278 (*not* H. and A. Adams, 1858, Gen. Rec. Moll., vol. 2, p. 413).

PITARINAE Stewart 1930
Stewart, 1930, Sp. Publ. n° 3, Acad. Nat. Sci. Philadelphia, p. 215.

SUNETTIDAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

SUNETTINAE Stoliczka 1870 (= Sunettidae Frizzell)
Stoliczka, 1870, Pal. Indica, Cret. Fauna S. India, vol. 3, p. 153.

Tapesina Deshayes 1853
Deshayes, 1853, Cat. Conch. Brit. Mus., pt. 1, p. 3.

Tapesinae H. and A. Adams 1858
H. and A. Adams, 1858, Gen. Rec. Moll., vol. 2, p. 434. Not in proper form.

TAPETIDAE Frizzell 1936
Proc. Geol. Soc. Am. for 1935 (1936), p. 415.

TAPETINAE Fischer 1887 (= Tapetidae Frizzell)
Fischer, 1887, Man. de Conch., p. 1078.

VENERACEA Menke 1830 (regarded as a superfamily)
Menke, 1830, Syn. meth. moll., p. 114.

Veneraceae Hinds 1844
Hinds, 1844, Zoöl. Voy. Sulphur, vol. 2, Mollusca, p. 65.

VENERIDAE Leach 1819
Leach *in* Ross, Voyage of Isabella and Alexander (ed. 2) (according to Leach, 1819, Ann. Phil., vol. 14, p. 201).

VENERINAE Swainson 1840 (= Veneridae Leach)
Swainson, 1840, Treatise on malac., p. 372.

Venusidae d'Orbigny 1844
D'Orbigny, 1844, Pal. Fr. Ter. Crét., vol. 3, p. 428 (according to Deshayes, 1853, Cat. Conch. Brit. Mus., pt. 1, p. 3).

Venusina Gray 1847
Gray, 1847, Proc. Zoöl. Soc. London, p. 183.

Generic Names referred to the Veneracea.

The list which follows is believed to include the majority of the generic, subgeneric, and « sectional » names which have been referred by various authors to the Veneracea as restricted in this paper. Results of a preliminary evaluation of these names are indicated by the following symbols :

(§) — a homonym, and hence unavailable;
(*) — a synonym, which may be revived in certain circumstances;
(⊙) — an emendation, error, *nomen nudum,* or other misusage; the name has no nomenclatural standing;
(†) — a name, valid or invalid, which has been removed to a family not included within the Veneracea; the family to which such a genus is referred is placed within parentheses following the generic name.

The allocation of those genera excluded from the Veneracea is based upon systematic treatises of varying authority and date of publication. Obviously, critical analysis of these units will show a number of necessary changes. Detailed investigation of these non-veneracean genera, however, is beyond the scope of this paper.

(†) *Acardo* Swainson (family Cardiidae ?)

(§) Acolus Jukes-Browne 1913 (= *Jukesena* Iredale 1914)
Ann. Nat. Hist., ser. 8, vol. 12, p. 479; genotype *Psephis foveolata* Preston and Cooper (original designation) ; proposed as a subgenus of *Gomphina* Mörch. *Not* A. Förster, 1856, Hym. Stud., vol. 2, pp. 100, 102 (according to Schulze, *et al,* (6) 1926, p. 33.

AEORA Conrad 1870
Am. Journ. Conch., vol. 6, p. 72; genotype *Aeora cretacea* Conrad (monotypy) ; proposed as a genus.

(6) To conserve space throughout this section, I have used this abbreviation for the important nomenclator initiated by Schulze. The complete reference is: Schulze, F. E., W. Kükenthal, K. Heider, T. Kuhlgatz, and R. Hesse, 1926-34, Nomenclator animalium generum et subgenerum, vols. 1-4, pp. 1-2728 (A-Platysteg), Preuss. Akad. Wiss., Berlin.

AGRIOPOMA Dall 1902

Proc. U. S. Nat. Mus., vol. 24, p. 509; genotype *Meretrix (Agriopoma) texasiana* (Dall) (monotypy); proposed as a « section » of *Meretrix* Lamarck.

AMEGHINOMYA von Ihering 1907

Les Moll. foss. du Tert. et du Crét. Supér. de l'Argentine, p. 71; genotype *Chione argentina* von Ihering (original designation); proposed as a subgenus of *Chione* Megerle von Mühlfeldt.

AMIANTIS Carpenter 1864

Rept. Brit. Assn. Adv. Sci. 1863, p. 640 formal description, Ann. Mag. Nat. Hist., ser. 3, vol. 15, 1865, pp. 177-178); genotype *Cytherea callosa* Conrad (monotypy); proposed as a genus.

(⊙) AMPHITHAEA (Leach) Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 346; an emendation of *Ampithaea* Leach 1852.

(*) AMPITHAEA Leach 1852 (= *Pectunculus* Da Costa 1778)

Syn. Moll. Gt. Brit., p. 312; genotype *A. exoleta* (Linné) [described as *Venus*] (monotypy); proposed as a genus.

(⊙) AMYANTIS (Conrad) Stoliczka 1870

Pal. Indica, Cret. Fauna S. India, vol. 3, p. 151, emendation of *Amiantis* Carpenter and error in crediting the name to Conrad.

AMYGDALA Römer 1857

Krit. Unters. *Venus*, p. 16; genotype *Venus decussata* Linné (monotypy); proposed as a « family » (= « section »). This name has been considered a homonym of an « *Amygdala* Phelsum » (Brief Nozeman, p. ..., 1774 — according to Schulze *et al*, vol. 1, p. 155, quoting N. Leske, Addit. Klein Echinoid., 1778, p. 72). Sherborn (Index Anim., Sec. 1, p. 46) lists « *Amygdala* Phelsum » as invalid, thus not preoccupying Römer's genus.

(⊙) AMYGDALEA (Römer)

Emendation or error for *Amygdala* Römer.

(§) ANAITIS Römer 1857

Krit. Unters. *Venus*, pp. 13, 16; genosyntypes *Venus tiara* Dillwyn, *V. Isabellina* Philippi, *V. calophylla* Philippi, *V.*

plicata Gmelin, and *V. gnidia* Broderip and Sowerby; proposed as a subgenus of *Venus* Linné. *Not* Duponchel *in* Godart, 1829, Hist. Lep., vol. 7, p. 3 (according to Schulze *et al,* vol. 1, p. 160).

(⊙) ANAITIS (Tryon) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 356.

ANISODONTA Deshayes 1858
Descr. An. s. vert., vol. 1, p. 542 (according to Schulze *et al,* vol. 1, p. 187).

(⊙) ANOMALOCARDA (Bruguière) (7) Demarest 1859
In Chenu, Enc. Hist. Nat. Tabl. Crust. Moll., p. 222 (according to Schulze *et al.* vol. 1, p. 194. Emendation for « *Anomalocardia* Bruguière. »

(⊙) ANOMALOCARDIA (Bruguière 1792) Schulze *et al,* 1926
Vol. 1, p. 194. Bruguière (Enc. Méth. vers., vol. 1, fasc. 2, p. 537, 1792) abstracted the classification of Klein (1753, hence out of consideration in nomenclature) as he abstracted the classificatory schemes of Langius (1722), Breynius (1732), d'Argenville (1742), and others, without accepting it. Generic names, then, cannot date from this publication, but can be valid only on the acceptance of subsequent workers.

ANOMALOCARDIA Schumacher 1817
Nouv. Syst. vers Test., pp. 134-135; genotype *A. rugosa* Schumacher (= *Venus flexuosa* Linné) (original designation); proposed as a genus.

ANOMALODISCUS Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 359; genotype *Cytherea squamosa* Lamarck (original designation); proposed as a « section » of *Anomalocardia* Schumacher.

ANTIGONA Schumacher 1817
Nouv. Syst. vers Test., pp. 154-155; genotype *A. lamellaris* Schumacher (original designation); proposed as a genus.

(⊙) ANTIGONA (Römer) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 355.

(7) Schulze *et al* consistently employed the erroneous spelling « Brugière. »

(⊙) ANTIGONE (Schumacher) Gray 1847.
Proc. Zoöl. Soc. London, vol. 15, p. 184. Emendation for *Antigona* Schumacher.

APHRODINA Conrad 1868
Am. Journ. Conch., vol. 4, p. 246; genotype *Meretrix Tippana* Conrad (original designation); proposed as a genus.

APHRODORA Jukes-Browne 1914
Proc. Malac. Soc. London, vol. 11, p. 62; genotype *Callocardia Birtsi* Preston; proposed as a new name to replace *Leucothea* Jukes-Browne 1913, a subgenus of « *Pitaria* Römer. »

(⊙) ARCTOA Hermannsen 1846
Ind. Gen. Malac. Primord., vol. 1, p. 76. Emendation for *Arctoe* Risso.

ARCTOE Risso 1826
Hist. Eur. mérid., vol. 4, p. 361; genosyntypes *A. nitidissima* Risso, *A. fulva* Risso, *A. lineolata* Risso, *A. reticulata* Risso, *A. parckinsoniana* Risso, and *A. punctata* Risso; proposed as a genus.

(⊙) ARTEMIDERMA (Poli) Blainville 1818
Dict. Sc. nat., vol. 10, p. 216 (according to Hermannsen, Ind. Gen. Malac. Primord., vol. 1, p. 81). Emendation of *Arthemiderma* Poli.

(⊙) ARTEMIDODERMA (Poli) Agassiz 1846
Nomencl. Zool. Index, p. 34 (according to Schulze *et al*, vol. 1, p. 283). Emendation of *Arthemiderma* Poli.

(⊙) ARTEMIS (Poli) Conrad 1831
Amer. mar. conch. (according to Schulze *et al*, vol. 1, p. 284, quoting Sherborn, Index Anim., sect. 2, p. 483, 1923). Emendation for *Arthemis* Poli.

(§) ARTENA Conrad 1870 (= *Netara* Frizzell, new subgenus)
Am. Journ. Conch., vol. 6, p. 76; genotype *Cytherea staminea* Conrad (subsequent designation, Stoliczka, 1871); proposed as a genus. *Not* F. Walker, List Lep. Brit. Mus., vol. 14, p. 1388, 1858 (according to Schulze *et al*, vol. 1, p. 284).

(⊙) ARTENIA (Conrad) Tryon 1884
Struct. and syst. conch., vol. 3, p. 178. Emendation or error for *Artena* Conrad.

(*) ARTHEMIDERMA Poli 1795 (= *Pectunculus* Da Costa 1778)
Test. Sicil., vol. 2, p. 252, 258; genotype *A. exoletum* (= *Venus exoleta* Linné) (monotypy).

(*) ARTHEMIS Poli 1791 (= *Pectunculus* Da Costa 1778)
Test. Sicil., vol. 1, Bivalv., p. 30 (according to Schulze *et al*, vol. 1, p. 284) ; vol. 2, 1795, p. 252; genotype *A. pudica* Poli (= *Venus exoleta* Linné).

(*) ASA (Defrance MS) Basterot 1825 (? = *Dosinia* Scopoli 1777)
Mém. Soc. Hist. nat. Paris, sér. 2, vol. 2, p. 90 (according to Schulze *et al*, vol. 1, p. 289).

(§) ASA Leach 1847
Ann. nat. hist., vol. 20, p. 272 (according to Schulze *et al*, vol. 1, p. 289).

(⊙) ASSA (Basterot) Gray 1841
List Brit. An. Brit. Mus., vol. 7, p. 3 (according to Schulze *et al*, vol. 1, p. 303). Emendation or error for *Asa* Basterot.

(†) *Astarte* Sowerby 1816 (family Astartidae)

ATAMARCIA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 625; genotype *Eumarcia sulcifera* Marwick (original designation) ; proposed as a subgenus of *Eumarcia* Iredale.

ATOPODONTA Cossmann 1886
Ann. soc. Malac. Belgique, vol. 21 (sér. 4, vol. 1), p. 110; genosyntypes *A. conformis* (Deshayes) and *A. tapina* Cossmann ; proposed as a genus.

AUSTRODOSINIA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 347 ; genotype *Cytherea anus* Philippi (original designation) ; proposed as a « section » of *Dosinia* Scopoli.

AUSTROVENUS Finlay 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 470; genotype *Chione stutchburyi* Gray (original designation). Proposed as a genus.

(†) *Autonoë* Leach 1852 (family ?)

BARODA Stoliczka 1870
Pal. Indica, Cret. Fauna S. India, vol. 3, p. 145; genotype *Venus (Tapes) fragilis* d'Orbigny *(not* Fabricius *nor* Lamarck) (original designation) ; proposed as a genus.

BASSINA Jukes-Browne 1914
Proc. Malac. Soc. London, vol. 11, p. 81; genotype *Venus paucilamellata* Sowerby « (= *V. alata* Reeve) » (original designation); proposed as a « section » of subgenus *Salacia* Jukes-Browne, genus *Venus* Linné.

BASSINARIA Marwick 1928
Trans. Proc. N. Z. Inst., vol. 58, p. 470; genotype *B. macclurgi* Marwick.

BLAGRAVEIA Cox 1931
Proc. Malac. Soc. London, vol. 19, pp. 183-184; genotype *B. corrugata* Cox; proposed as a genus.

(⊙) BLAINVILLEA (Hupé) Dall 1898
Trans. Wagner Free Inst. Sci., vol. 3, part 4, p. 933, 1898 (according to Schulze *et al,* vol. 1, p. 408). Emendation for *Blainvillia* Hupé.

(§) BLAINVILLIA Hupé 1854
Rev. Mag. Zool., sér. 2, vol. 6, p. 219; *not* Robineau-Desvoidy, Mém. prés. Ac. France, vol. 2, p. 514, 1830, *nor* Robineau-Desvoidy (*op. cit.*), p. 713, 1830 (according to Schulze *et al,* vol. 1, p. 408).

BONARTEMIS Iredale 1929
Mem. Qd. Mus., vol. 9, p. 265; genotype *B. stabilis* Iredale.

(⊙) CALISTA (Poli) Leach 1852
Syn. Moll. Gt. Brit., p. 305; error or emendation for *Callista* Poli. Inasmuch as Poli's terms were proposed in acceptable form, they must date from the original proposal. The subsequent usage of « *Calista* » Poli by Leach, and of *Callista* Poli by Mörch, contrary to general opinion, is irrelevant.

CALLANAITIS Iredale 1917
Proc. Malac. Soc. London, vol. 12, p. 329; genotype *Venus yatei* Gray (original designation); proposed as a genus to replace the preoccupied *Salacia* Jukes-Browne.

(*) CALLICISTRONIA Dall 1883 (= *Parastarte* Conrad 1862)
Science, vol. 2, p. 447 (according to Schulze *et al,* vol. 2, p. 498).

CALLISTA Poli 1791
Test. Sicil., vol. 1, p. 30 (according to Schulze *et al,* vol. 1, p. 505); genotype *Venus chione* Linné (subsequent designa-

tion, Meek, 1876, Rept. U. S. Geol. Surv. Terr., vol. 9, p. 178).

CALLISTINA Jukes-Browne 1908

Proc. Malac. Soc. London, vol. 8, p. 156; genotype *C. plana* (Sowerby) (original designation) ; proposed as a « section » of « *Callista* Mörch. »

(*) CALLISTODERMA Poli 1795 (= *Callista* Poli 1791)

Test. Sicil., vol. 2, p. 252; genotype *Venus chione* Linné, (here designated).

CALLISTOTAPES Sacco 1900

In Bellardi and Sacco, Moll. terz. Piemonte, vol. 28, p. 52; genotype *Venus vetula* Basterot (original designation) ; proposed as a subgenus of *Tapes* Megerle von Mühlfeldt.

CALLITHACA Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 364; genotype *Tapes tenerrima* Carpenter (original designation) ; proposed as a « section » of subgenus *Protothaca* Dall, genus *Paphia* Röding.

(§) CALLIZONA Jukes-Browne 1913 (= *Tinctora* Jukes-Browne 1914)

Proc. Malac. Soc. London, vol. 10, p. 335, 1913; genotype *Callista vulnerata* Broderip (original designation) ; proposed as a « section » of « *Pitaria* Römer ». *Not* Doubleday *in* Doubleday and Westwood, 1846-50, Gen. Diurn. Lep., pt. 1, p. 246, *nor* Greeff, SB Ges. Marburg, 1875, n° 10, pp. 125, 133 (according to Schulze *et al,* vol. 2, p. 507).

CALLOCALLISTA Weaver 1916

Univ. Wash. Publ. in Geol., vol. 1, p. 40; genotype *C. arnoldi* Weaver (monotypy) ; employed as a genus. Although this name was credited to Adams and was in all probability an error for *Callocardia* Adams, it must stand as a valid subgenus of *Pitar* Römer, displacing *Katherinella* Tegland, which was based upon the same genotype.

CALLOCARDIA A. Adams 1864

Ann. Mag. Nat. Hist., 3 ser., vol. 13, N° 76, pp. 307-308; genotype *C. guttata* Adams (monotypy) ; proposed as a genus.

CALPITARIA Jukes-Browne 1908

Proc. Malac. Soc. London, vol. 8, p. 155; genotype *C. sulca-*

taria (Deshayes) (original desingation) ; proposed as a subgenus of « *Pitaria* Römer. »

(§) Capsa Lamarck 1799
Mém. Soc. nat. Paris, vol. 1, p. 84 ; *not* Bruguière, Tabl. enc. méth. vers, pl. 231 (according to Schulze *et al,* vol. 2, p. 543).

(§) Capsa Leach 1852
Syn. Moll. Gt. Brit., p. 298 ; genosyntypes *C. irus* [Linné], *C. virginea* [Linné], *C. deflorata, C. perforans* [Montagu], *C. pullastra, C. reticulata* [Da Costa = *Venus decussata* Linné] ; proposed as a genus.

CAPSULA (Hwass MS) Schumacher 1817
Nouv. Syst. vers. Test., p. 130 ; genotype *Capsula rugosa* Schumacher (? = *Venus deflorata* Linné) (monotypy) ; proposed as a genus. If the genotypic species should prove a synonym of *Venus deflorata* Linné, *Capsula* must be removed from the Veneracea. That species is the monotypic genotype of *Asaphis* Modeer.

(†) *Cardium* Linné (family Cardiidae)

(†) *Cardissa* Swainson (family Cardiidae)

(⊙) Caryates (Römer) Whitfield 1891
Bull. Amer. Mus., vol. 3, p. 410 (according to Schulze *et al*, vol. 2, p. 557). Emendation for *Caryatis* Römer.

(§) Caryatis Römer 1862 (= *Pitar* Römer 1857)
Malak. Bl., vol. 9, p. 60 ; *not* Hübner, Verz. Schmett., p. 171, 1816 (according to Schulze, *et al,* vol. 2, p. 557).

(⊙) Catelysia (Römer) Fischer 1887
Man. de Conch., p. 1084, 1086. Emendation for *Katelysia* Römer.

(*) Cerana Gistel 1848 (= *Pectunculus* Da Costa 1778)
Naturg. Thierr., p. 8. Proposed to replace *Artemis* « Anton Catal., » that name having been considered to be preoccupied by *Artemisia* Linné (a plant).

(†) *Cerastes* Poli (family Cardiidae)

(†) *Chama* Linné (family Chamidae)

(⊙) Chamelaea (Bruguière 1792) Schulze *et al* 1929
Vol. 2, p. 630. *See Anomalocardia* for a discussion of names credited to Bruguière.

CHAMELEA (Klein) Mörch 1853
Cat. Conch. Yoldi, vol. 2, p. 23; genosyntypes *Venus gallina* Linné, *Pectunculus striatus* Da Costa, *Venus lusitanica* Gmelin, *V. mercenaria* Linné; proposed as a genus. *Mercenaria* Schumacher was indicated as a synonym.

(⊙) CHAMELEA (Chenu) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 360.

(⊙) CHIONA (Megerle) Mörch. 1853
Cat. Conch. Yoldi, vol. 2, p. 24. Emendation for *Chione* Megerle von Mühlfeldt.

CHIONE Megerle von Mühlfeldt 1811
Mag. Ges. F. Berlin, vol. 5, p. 51; genotype *C. dysera* (Linné) (subsequent designation, Gray, 1847, Proc. Zoöl. Soc., pt. 15, p. 183); proposed as a genus.

(§) CHIONE Gray 1838 (= *Callista* Poli 1791)
Analyst, vol. 8, p. 305; genotype *C. vulgaris* Gray (= *Venus chione* Linné) (absolute tautonymy); proposed as a genus.

(§) CHIONE Leach 1852 (= *Callista* Poli 1791)
Syn. Moll. Gt. Brit., p. 302; genosyntypes *C. coccinea* Leach 1852 (= *Venus chione* Linné) and *C. minima* (Montagu), the former is genotype by absolute tautonymy; proposed as a genus.

CHIONELLA Cossmann 1866
Ann. Soc. Belgique, vol. 21 (sér. 4, vol. 1), p. 117; proposed as a « section » of *Cytherea* Lamarck. *Chionella* has been presumed to be preoccupied by Swainson (Treatise on Malacology, 1840, p. 335). In a footnote to the genus *Macrosipra* « Guild, » Swainson wrote : « Subsequently named, inadvertently, *Chionella* by Mr. Jeffreys. » However, Jeffreys (Tr. Linn. Soc. London, vol. 16, fasc. 2, p. 347, 1830, according to Schulze *et al,* vol. 2, p. 702), used the name « *Cionella.* »

CHIONERYX Iredale 1924
Proc. Linn. Soc. N. S. Wales, vol. 49, p. 182; genotype *Venus striatissima* Sowerby (original designation) (= *C. cardioides* (Lamarck) according to Iredale, Rec. Austr. Mus., vol. 17, 1930, p. 395).

CHIONOPSIS Olsson 1932
Bull. Am. Pal., vol. 19, pt. 68, p. 11; genotype *Chione amathusia* Philippi (original designation); proposed as a « section » of *Chione s. s.*

(†) *Choristodon* Jonas (family Petricolidae)

CIRCE Schumacher 1817
Nouv. Syst. vers Test., p. 152; genotype *Circe violacea* Schumacher (original designation); proposed as a genus.

CIRCENITA Jousseaume 1888
Mém. Soc. Zool. France, vol. 1, p. 208 (according to Schulze *et al*, vol. 2, p. 703); genotype *Circe arabica* Chemnitz (according to Jukes-Browne, Proc. Malac. Soc. London, vol. 11, 1914, p. 67).

(⊙) Circomphalos (Bruguière 1792) Schulze *et al* 1929
Vol. 2, p. 703. *See Anomalocardia* for discussion of names credited to Bruguière.

« CIRCOMPHALUS Agassiz 1846 »
Nomencl. Zoöl. Index, p. 87 (according to Schulze *et al*, vol. 2, p. 703). Whether or not this is a *nomen nudum* remains to be determined.

(§) Circomphalus (Klein) Mörch 1853
Cat. Conch. Yoldi, vol. 2, p. 23; genosyntypes *C. peruviana* Sowerby, *C. dysera* Linné, *Venus foliacea-lamellosa* Chemnitz (binomial ?), *Chama aplustre pacis* Meusch. (apparently not binomial), *C. calophylla* Philippi, *C. major ?* (not available for designation, as it is only questionably referred to the genus), *C. lamellata* « Bolten, » *Concha veneris orientalis* Chemnitz (not binomial), *Venus thiara* Dillwyn, *C. Berrii* Gray, and *Venus dysera* Chemnitz; employed as a genus. Preoccupied by *Circomphalus* Agassiz ?

(⊙) Circomphalus (Adams) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 358.

(⊙) Circompholos (Klein) Gray 1847
Proc. Zoöl. Soc. London, vol. 15, p. 183; placed in synonymy of *Dosinia* Scopoli.

(*) Citherea Roissy 1805 (= *Meretrix* Lamarck 1799)
Probably an emendation of *Cytherea* Lamarck.

CLAUDICONCHA Fischer 1887
Man. Conch., p. 1887; genotype *Venerupis monstrosa* (Chemnitz) (monotypy); proposed as a « section » of *Venerupis* Lamarck as typified by « *V.* » *irus* (Linné).

(*) CLAUSINA Brown 1827 (= *Venus* Linné)
Ill. Conch. Gt. Brit., pl. 19, p. 2; genotype *Venus verrucosa* Linné (according to Jukes-Brown, Proc. Malac. Soc. London, vol. 11, 1914, p. 73).

(⊙) CLAUSINA (Römer) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 358.

CLAUSINELLA Gray 1851
List Brit. Anim., Brit. Mus., pt. 7, p. 12; genotype *Chione fasciata* [Da Costa] (monotypy). Gray employed the term *Clausinella* to denominate a biological unit of indeterminate rank within the genus *Chione* Megerle von Mühlfeldt.

(⊙) CLEMENTIA Gray 1840 (= *Clementia* Gray 1842)
Syn. Brit. Mus., ed. 42, p. 149 (according to Iredale, Proc. Malac. Soc. London, vol. 10, p. 298, 1913); a *nomen nudum*.

CLEMENTIA Gray 1842
Syn. Brit. Mus., ed. 44, p. 75 (according to Iredale, Proc. Malac. Soc. London, vol. 10, p. 304, 1913); proposed as a genus without species.

CLOTHO Faujas-Saint-Fond 1808
Ann. Mus. Paris, vol. 11, p. 390 (according to Schulze *et al*, vol. 2, p. 730).

COMPSOMYAX Stewart 1930
Sp. Publ., Ac. Nat. Sci. Phila., vol. 3, pp. 37, 234; genotype *Saxidomus gibbosus* Gabb «(= *V. subdiaphana* (Cpr.)» (original designation); proposed as a subgenus of *Venerella* Cossmann.

COMUS Cox 1930
Proc. Malac. Soc. London, vol. 19, p. 20; genotype *Venus platyaulax* Tomlin (original designation); proposed as a genus.

(†) *Coralliophaga* Blainville (family Pleurophoridae).

(§) CORBICULA Megerle von Mühlfeldt 1811
Mag. Ges. Fr. Berlin, vol. 5, p. 56; genotype *C. fluminalis*

Linné, Syst. Nat. Gen. 305, sp. 79; Chemn. Conch. 6, pl. 30, fig. 320) (original designation); proposed as a genus. *Not* « *Corbicula* Bruguière » nor « *Corbicula* Benson. »

(†) *Corbis* Cuvier (family *Lucinidae*).

CORDIOPSIS Cossmann 1910
Act. Soc. Linn. Bordeaux, vol. 64, p. 387 (according to Schulze *et al,* vol. 2, p. 792); genotype *Cytherea incrassata* Sowerby (according to Jukes-Browne, Proc. Malac. Soc. London, vol. 11, 1914, p. 64).

(†) *Cordula* Leach (family ?)
Syn. Moll. Gt. Brit., 1852, pp. 292-293; genotype *C. amnica*. At first glance, this would appear to be an error for « *Corbula.* » The spelling, however, is consistent for both genus and species.

(*) Costacallista Palmer 1927 (= *Amiantis* Carpenter 1864) Palaeont. Amer., vol. 1, n° 5, pp. 73, 84; genotype *Venus erycina* Linné (original designation); proposed as a subgenus of *Callista* Mörch. Comparison of the genotype with *Amiantis callosa* (Conrad), genotype of *Amiantis* Carpenter, shows conclusively that the two genera are synonymous.

(†) *Crassina* (Leach) Lamarck (family Astartidae).

(†) *Crassina* (Lamarck MS) Leach (family Astartidae ?)

(*) Crassivenus Perkins 1869 (= *Mercenaria* Schumacher 1817) Proc. Boston Soc. Nat. Hist., vol. 13, p. 147; genotype *C. mercenaria* Perkins (= *Venus mercenaria* Linné) (original designation); proposed as a genus.

(*) Crista Römer 1857 (= *Gafrarium* Röding 1798)
Krit. Unters. *Venus,* p. 15; genotype *Cytherea pectinata* Linné (monotypy); proposed as a « family » (= « section ») of subgenus *Cytherea* Lamarck, genus *Venus* Linné.

(*) Cryptogramma Mörch 1853 (= *Anomalocardia* Schumacher 1817)
Cat. Conch. Yoldi, vol. 2, p. 22; genotype (here designated) *Venus flexuosa* Linné; proposed as a genus.

(§) Cryptonema Jukes-Browne 1914
Proc. Malac. Soc. London, vol. 11, p. 80; genotype *Venus impressa* Hanley (original designation); proposed as a

« section » of subgenus *Chione* Megerle von Mühlfeldt, genus *Venus* Linné. *Not* Bigsby, Thesaur. silur., p. 93, 1868 (according to Schulze *et al,* vol. 2, p. 845). This homonym apparently never has been noticed; if there is no earlier name available for the group, and if the unit is taxonomically distinct, a new name must be proposed.

(⊙) CUNERUS (Costa) Paetel 1890
Cat. Conch., ed. 4, vol. 3, p. 56 (according to Schulze *et al*, vol. 2, p. 860). Emendation or error for *Cuneus* Da Costa.

CUNEUS Da Costa 1778
Hist. Nat. Test. Brit., p. 202; genosyntypes *C. reticulatus* Da Costa, *C. fasciatus* Da Costa, *C. foliatus* Da Costa, *C. truncatus* Da Costa, and *C. vittatus* Da Costa; proposed as a genus.

(§) CUNEUS Megerle von Mühlfeldt 1811 (= *Sunetta* Link 1807)
Mag. Ges. Fr. Berlin, vol. 5, p. 50; genotype *C. costatus* (monotypy); proposed as a genus.

(⊙) CUNEUS (H. and A. Adams) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 364.

(†) *Cyclas* Leach (family Cycladidae ?)

CYCLINA Deshayes 1850
Traité Conch., vol. 1, fasc. 2, pp. 623-626; genotype *Cyclina chinensis* Deshayes (= *C. chinensis* [Chemnitz]) (subsequent designation, Dall, 1902, as *Venus sinensis* Gmelin); proposed as a genus. *See Eocyclina* Dall, 1908.

CYCLINELLA Dall 1902
Nautilus, vol. 16, p. 44; genotype *Dosinia tenuis* Récluz; proposed as a genus.

CYCLINORBIS Makiyama 1926
Mem. Coll. Sci., Kyoto Imp. Univ., ser. B, vol. 2, n° 3, p. 158; genotype *Cyclina (Cyclinorbis) lunulata* Makiyama (original designation); proposed as a subgenus of *Cyclina* Deshayes.

CYCLORISMA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 357; genotype *Cyclothyris carolinensis* Conrad (original designation); proposed as a subgenus of *Cyprimeria* Conrad, to replace the preoccupied *Cyclothyris* Conrad.

CYCLORISMINA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 624; genotype *C. woodsi* Marwick (original designation) ; proposed as a genus.

(§) Cyclothyris Conrad 1875
In W. C. Kerr, Geol. Surv. N. Carolina, Rept., vol. 1, App. A, p. 8; *not* McCoy, Syn. Carbon. Foss. Ireland, p. 150, 1844 (according to Schulze *et al,* vol. 2, pp. 878-879).

(†) *Cydippe* Leach (family ?)

(⊙) Cyprimera (Conrad) Meek 1873
Ann. Rept. U. S. Geol. Surv. Terr., vol. 6, p. 476 (according to Schulze *et al,* vol. 2, p. 899). Emendation or error for *Cyprimeria*.

CYPRIMERIA Conrad 1864
Proc. Ac. Nat. Sci. Phila., 1864, p. 212; genotype *C. excavata* Morton (according to Dall, Proc. U. S. Nat. Mus., vol. 26, 1902, p. 357).

(†) *Cyprina* Lamarck (family Pleurophoridae)

(†) *Cyrachaea* Leach (family Lucinidae)

(*) « Cytheraea Defrance 1818 » (= *Meretrix* Lamarck 1799)
Dall, Proc. U. S. Nat. Mus., vol. 26, 1902, p. 352.

(§) Cytherea Röding 1798
Mus. Bolt., p. 177. *Not* Fabricius, 1794 (Ent. Syst., vol. 4, p. 413), *nor* Latreille, 1796 (Précis Caract. Ins., p. 190), *nor* Lamarck (according to Schulze *et al,* vol. 2, p. 910) ; genotype *C. puerpera* (Linné) (subsequent designation, Dall, 1902, Proc. U. S. Nat. Mus., vol. 26, p. 355, as *Venus*) ; proposed as a genus.

(§) Cytherea Lamarck 1805 (= *Meretrix* Lamarck 1799)
Ann. Mus. H. N. (Paris), vol. 7, pt. 38, p. 132 (according to Sherborn, Ind. Anim., sec 2, pt. 7, p. 1770).

(⊙) Cytherea (H. and A. Adams) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 358.

CYTHERIOPSIS Conrad 1865
Am. Journ. Conch., vol. 1, p. 146; genotype *C. hydana* Conrad (monotypy) ; proposed as a genus.

(§) DIONE Gray 1847 (= *Hysteroconcha* Dall 1902)
Proc. Zoöl. Soc. London, pt. 15, p. 183; *not* Hübner, Verz. Schmett., p. 31, 1816, *nor* Barrande, Not. prélim. Tril. Bohême, p. 32, 1846, *nor* Haan *in* Siebold, Fauna Jap. Crust., fasc. 4, p. 82, 1839 (according to Schulze *et al,* vol. 2, p. 1010).

DOLLFUSIA Cossmann 1886
Ann. Soc. malac. Belgique, vol. 21 (sér. 4, vol. 1), p. 128; genotype *D. crassa* Cossmann (monotypy); proposed as a genus.

(†) *Donax* Leach (family ?).

(⊙) DORSINA Gray 1840
Syn. Brit. Mus., ed. 42, p. 149 (according to Iredale, Proc. Malac. Soc. London, vol. 10, p. 304, 1913, and Schulze *et al*, vol. 2, p. 1057); error or emendation for *Dosina* Gray 1830. Iredale and Schulze *et al* regarded *Dorsina* as an error for « *Dosinia* Scopoli. » Gray, however, included *Artemis* Poli in his list of 1840, a name which in contemporary papers he consistently applied to species of *Dosinia*. Moreover, he himself, in 1838, listed « *Dorsina zelandica* Gray » as a species of *Dosina* (Analyst, vol. 8, p. 308, 1838).

DOSINA Gray 1830
In Yate, Account of New Zealand, etc., ed. 1, p. 309; genotype *D. zelandica* Gray (monotypy); proposed as a genus. Palmer's (Pal. Amer., vol. 1, n° 5, p. 330, 1927) type designation of *Venus reticulata* Linné is untenable inasmuch as that species was not included in the original proposal of the genus.

DOSINELLA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 347; genotype *Cytherea angulosa* Philippi (original designation); proposed as a « section » of *Dosinia* Scopoli.

DOSINIA Scopoli 1777
Intr. Hist. nat., p. 399 (according to Schulze *et al,* vol. 2, p. 1060); genotype *Dosinia africana* Hanley (according to Dall, 1902, Proc. U. S. Nat. Mus., vol. 26, p. 346).

DOSINIDIA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 347; genotype *Venus concentrica* Born (original designation); proposed as a « section » of *Dosinia* Scopoli.

DOSINIOPSIS Conrad 1864

Proc. Ac. Nat. Sci. Phila., p. 213 (according to Schulze *et al,* vol. 2, p. 1060) ; genotype *D. meekii* Conrad (according to Dall, 1902, Proc. U. S. Nat. Mus., vol. 26, p. 345).

DOSINISCA Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 347; genotype *Artemis alata* Reeve (original designation) ; proposed as a « section » of *Dosinia* Scopoli.

(⊙) Dosinopsis (Conrad) Paetel 1875

Fam. Gatt. Moll., p. 73 (according to Schulze *et al,* vol. 2, p. 1060). Emendation or error for *Dosiniopsis.*

DOSINORBIS Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 347; genotype *Artemis bilunulata* Gray (original designation) ; proposed as a « section » of *Dosinia* Scopoli.

(*) Dosinula Finlay 1927 (= *Dosina* Gray)

Trans. Proc. N. Z. Inst., vol. 57, p. 470; genotype *Dosina zelandica* Gray (original designation). Proposed as a genus.

EGESTA Conrad 1845

Foss. Med. Tert. U. S., n° 2, p. 70; genotype *Venus inoceriformis* Wagner (monotypy) ; proposed as a subgenus of *Venus* Linné.

EOCALLISTA H. Douvillé 1921

Bull. Soc. géol. France (sér. 4), vol. 21, p. 123; genotype *Venus Brongniarti* Roemer (not *V. Brongniarti*; Payraudeau) (original designation) ; proposed as a genus.

(*) Eocyclina Dall 1908 (= *Cyclina* Deshayes 1850)

Bull. Mus. Comp. Zoöl., vol. 43, p. 241. *Cyclina* was presumed to be preoccupied by a *Cyclinus* Kirby 1837. According to Article 36 of the International Rules of Nomenclature, a difference in gender is sufficient to distinguish two generic names.

(†) *Eriphyla* Gabb (family Astartidae)

(†) *Erycina* Lamarck (family Leptonidae)

EUCALLISTA Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 352; genotype *Cytherea purpurata* Lamarck (original designation) ; proposed as a « section » of *Amiantis* Carpenter.

(†) *Euglesia* Leach (family ?)

EUMARCIA Iredale 1924
Proc. Linn. Soc. N. S. Wales, vol. 49, p. 182. Genotype *Venus fumigata* Sowerby « (= *nitida* Q. and G.) » (according to Marwick, Trans. N. Z. Inst., vol. 57, 1927, p. 625).

EUTAPES Chiamenti 1900
Riv. Ital. Sci. nat., vol. 20, p. 11; proposed as a « section » of *Venus* Linné.

EUTIVELA Dall 1891
Nautilus, vol. 5, p. 27; genotype *Meretrix (Eutivela) perplexa* « Stearns » Dall (subsequent designation, Dall, Proc. U. S. Nat. Mus., vol. 26, p. 349, 1902); proposed as a subgenus of *Meretrix* Lamarck.

(*) EXOLETA Brown 1827 (= *Pectunculus* Da Costa)
Ill. Conch. Gt. Brit., pl. 20, p. 2 (according to Schulze *et al*, vol. 2, p. 1295); genotype *Exoleta orbicularis* Brown (= *Venus exoleta* Linné) (absolute tautonymy); proposed as a genus.

FALLARTEMIS Iredale 1930
Mem. Queensland Mus., vol. 10, pp. 75, 87; genotype *F. amina* Iredale.

(†) *Felania* Récluz (family Diplodontidae)

(†) *Fimbria* Megerle von Mühlfeldt (family Lucinidae)

(§) FINLAYA Marwick 1927 (= *Marwickia* Finlay 1930)
Trans. Proc. N. Z. Inst., vol. 57, p. 596; genotype *F. parthiana* Marwick (original designation); proposed as a genus.

FLAVENTIA Jukes-Browne 1908
Proc. Malac. Soc. London, vol. 8, p. 167; genotype *Venus ovalis* Sowerby (monotypy); proposed as a subgenus of *Clementia* Gray.

FLUCTIGER Iredale 1924
Proc. Linn. Soc. N. S. Wales, vol. 49, pp. 182, 209; genotype *F. royanus* Iredale (original designation); proposed as a genus.

GAFRARIUM Röding 1798
Mus. Bolt., vol. 2, p. 176; genotype *Venus pectinata* Linné (subsequent designation, Dall, Proc. U. S. Nat. Mus., vol. 26, p. 350, 1902).

(§) *Galatea* Bruguière (family Cyrenidae ?)

(†) *Gastrana* Schumacher (family Tellinidae)

GEMMA Deshayes 1853
Cat. Conch. Brit. Mus., pt. 1, p. 112; genotype *Gemma gemma* (Totten) ; proposed as a genus.

GILBERTHARRISELLA Hodson, Hodson, and Harris 1927
Bull. Am. Pal., vol. 13, n° 49, pp. 54-58; genotype *Pitaria (Gilbertharrisella) lynei* Hodson, Hodson, and Harris.

(†) *Glaucomya* Bronn (family Glaucomyidae)

(†) *Glauconome* Gray (family Petricolidae ?)

(†) *Glauconomya* (Bronn) Herrmannsen (family Glaucomyidae)

GLOBIVENUS Coen 1934
Boll. Soc. Venez. Stor. Nat., vol. 1, pt. 4, p. 52; « for *Venus effossa* Bivona, » (according to the Zoöl. Record, vol. 71, 1934 (1935), Moll., p. 106).

(†) *Glocomene* Leach (family ?)

GOMPHINA Mörch 1853
Cat. Conch. Yoldi, vol. 2, p. 19; genotype *Venus undulosa* Lamarck (monotypy, only species not questionably referred to the genus) ; proposed as a genus.

(⊙) Gomphina (H. and A. Adams) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 359.

GOMPHINELLA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 631; genotype *Gomphina maorum* Smith (original designation) ; proposed as a subgenus of *Gomphina* Mörch.

GOMPHOMARCIA Kautsky 1929
Ann. Naturh. Mus. Wien, vol. 43, p. 379.

(†) *Goniophora* Phillips (family Pleurophoridae ?)

(⊙) Goodallia (Tryon) Dall 1900
Tr. Wagner Free Inst. Sci., vol. 3, pt. 6, p. 1332.

GOULDIA C. B. Adams 1847
Cat. gen. & sp. Rec. shells in coll: C. B. Adams, p. 29 (according to Dall, Proc. Zoöl. Soc. London, Feb. 4, 1879, p. 131). Genotype *Thetis cerina* C. B. Adams 1845 (sub-

sequent designation, Dall, 1883, Journ. Conch., vol. 4, p. 61, as the « first, largest and most conspicuous species of the two » — *T. cerina* C. B. Adams and *T. parva* C. B. Adams).

GOULDIOPA Iredale 1924
Proc. Linn. Soc. N. S. Wales, vol. 49, p. 182, 209; genotype *Gouldia australis* Ang. (original designation); proposed as a genus.

(†) *Grammysia* de Verneuil (family Pholadomyidae ?)

GRANICORIUM Hedley 1906
Proc. Linn. Soc. N. S. Wales, vol. 31, p. 477; genotype *G. indutum* Hedley (original designation); proposed as a genus.

(⊙) GRATELOUPEA (Desmoulins) Gray 1838
Analyst, vol. 8, p. 304. Emendation or error for *Grateloupia* Desmoulins.

GRATELOUPIA (Desmoulins 1828)
Corrected form for « *Gratelupia* Desmoulins. » Since the name apparently was proposed in honor of Grateloup, the emendation is necessary to correct an « obvious typographical error » (International Rules of Zoölogical Nomenclature, Art. 19).

(*) GRATELOUPINA Dall 1902 (= *Cytheriopsis* Conrad 1865)
Proc. U. S. Nat. Mus., vol. 26, p. 348; genotype *Cytherea hydana* Conrad (original designation); proposed as a subgenus of *Grateloupia* Desmoulins. « This is not *Cytheropsis* McCoy, 1849, and if the two names are judged incompatible, might be called *Grateloupina* » (Dall). According to the International Rules of Zoölogical Nomenclature, the names are distinct.

(⊙) GRATELUPIA Desmoulins 1828
Bull. Soc. Linn. Bordeaux, vol. 2, p. 241 (according to Schulze *et al,* vol. 3, p. 1415). An « obvious typographical error » for *Grateloupia* (*see* Art. 19, Int. Rules of Zoöl. Nomencl.).

(⊙) GRATTELOUPIA (Desmoulins) d'Orbigny 1852
Prodr. Pal., vol. 3, p. 105 (according to Schulze *et al,* vol. 3, p. 1415). Emendation or error for *Grateloupia* Desmoulins.

(†) *Hemicardium* Swainson (family Cardiidae)

HEMITAPES Römer 1864

Malak. Bl., vol. 11, p. 83 (according to Schulze *et al,* vol. 3, p. 1514) ; genotype *Venus rimularis* Lamarck (according to Jukes-Browne, Proc. Malac. Soc. London, vol. 11, 1914, p. 88).

(⊙) HEMITAPES (Stoliczka) Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 359.

(§) HERMIONE Leach 1852

Syn. Moll. Gt. Brit., p. 306; genosyntypes *H. gallina* (*Venus gallina* Linné), *H. laminosa* (*Venus laminosa* Laskey), and *H. reflexa* (*Venus reflexa* Laskey). *Not* Meigen (N. Classif. Mouches, p. 22, 1800), *nor* Blainville (Dict. Sci. Nat., vol. 57, p. 457, 1828) (according to Schulze *et al,* vol. 3, p. 1524).

HINA Marwick 1927

Trans. Proc. N. Z. Inst., vol. 57, p. 602; genotype *Marama (Hina) pinguis* Marwick (original designation) ; proposed as a subgenus of *Marama* Marwick. « *Not* Marx, P. ent. soc. Washington, vol. 2, fasc. 2, p. 190, 1892 (*nomen nudum*), *nor* (Leach MS) Gray, List. Gen. B. B., ed. 2, p. 96, 1841 » (according to Schulze *et al,* vol. 3, p. 1558). J. Marwick informed me (personal communication) that he has checked the references quoted from Sherborn (Ind. Anim.) : « *Hina* (Leach) G. R. Gray, Gen. Birds, 1840 (*sic* Agassiz, Nom. Zoöl., *sed err.* pro *Q. hina* Steph. » ; « *hina Querquedula* (Gm), J. F. Stephens *in* G. Shaw, Gen. Zoöl. (Aves), XII (2) 1824, 152- Anas, 1788. » The availability of the name *Hina* Marwick, therefore, seems unimpeached.

HINEMOANA Marwick 1927

Trans. Proc. N. Z. Inst., vol. 57, p. 621; genotype *Chione acuminata* Hutton (original designation) ; proposed as a subgenus of *Chione* Megerle von Mühlfeldt.

HUMILARIA Grant and Gale 1931

Mem. San Diego Soc. Nat. Hist., vol. 1, p. 325; genotype *Venus kennerleyi* (Carpenter MS) Reeve (original designation) ; proposed as a subgenus of *Venerupis* Lamarck.

HYPHANTOSOMA Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 354; genotype *Cytherea carbasea* Guppy (original designation) ; proposed as a « section » of « *Pitaria* Römer. »

(⊙) HYSTERCONCHA (Hermannsen) Paetel 1875
Fam. Gatt. Moll., p. 100 (according to Schulze *et al*, vol. 3, p. 1652). Emendation or error for *Hysteroconcha*.

(⊙) HYSTEROCONCHA (Bruguière) Hermannsen 1846
Ind. Gen. Malac. Primord., vol. 1, p. 549. The status of the names credited to Bruguière (Enc. méth.) is discussed under *Anomalocardia*. In addition to Bruguière's failure to accept the names which he reprinted, is the fact that « *Hysteroconchae* » was employed in a group sense rather than a generic connotation, being associated with such terms as « *Pholades,* » « *Dactyli,* » « *Conchae aliformes,* » and so on.

HYSTEROCONCHA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 354; genotype *Venus dione* Linné (original designation); introduced as a subgenus of « *Pitaria* Römer, » and credited to Fischer. Fischer (Man. Conch., 1887, p. 1079) did not accept the name « *Hysteroconcha* Lang 1722 » but regarded it as a synonym of *Dione* Gray. Dall accepted the name, published a description, and designated the genotype. Since *Hysteroconcha* cannot date from Lang (pre-Linnean), nor from Bruguière, Hermannsen, or Fischer, it must be accepted as of Dall 1902.

(⊙) ICANOTA (Stoliczka)
Emendation or error for *Icanotia* Stoliczka.

ICANOTIA Stoliczka 1870
Pal. Indica, Cret. Fauna S. India, vol. 3, p. 145; genotype *Psammobia impar* Zittel (original designation); proposed as probably a subgenus of *Baroda* Stoliczka.

(§) IRONA Finlay 1927 (= *Notirus* Finlay 1928)
Trans. Proc. N. Z. Inst., vol. 57, p. 471; genotype *Venerupis reflexa* Gray. *Not* Schiödte and Meinert, Naturh. Tids. skr., ser. 3, vol. 14, p. 325, 1883 (according to Schulze *et al*, vol. 3, p. 1686).

IRUS Oken 1815
Lehrb. Naturg., vol. 3, p. 230 (according to Schulze *et al*, vol. 3, p. 1686).

(⊙) ISCANOTIA (Stoliczka) Dall 1913
In Zittel, Text-book of Pal. (Eastman translation, ed. 2), p. 494. Emendation or error for *Icanotia* Stoliczka.

(†) *Isocardia* Leach (family ?)

(†) *Isodoma* Deshayes (family Cyrenidae)

JUKESENA Iredale 1914
Proc. Malac. Soc. London, vol. 11, p. 299; genotype *Psephis foveolata* Cooper and Preston; proposed to replace the preoccupied *Acolus* Jukes-Browne.

KAKAHUIA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 584; genotype *Dosinia suteri* Marwick (original designation); proposed as a subgenus of *Dosinia* Scopoli.

KANEHARAIA Makiyama 1936
Mem. Coll. Sci., Kyoto Imp. Univ., ser. B, vol. 11, n° 4 (Art. 8), p. 213; genotype *Dosinia kaneharai* Yokoyama (original designation); proposed as a subgenus of *Dosinia* Scopoli.

(⊙) KATELISEA (Römer) Marschall 1873
Nomencl. Zoöl., p. 122 (according to Schulze *et al*, vol. 3, p. 1722). Emendation or error for *Katelysia* Rcmer.

KATELYSIA Römer 1857
Krit. Unters. *Venus*, p. 17; genosyntypes *Venus scalarina* Lamarck and *V. exalbida* Chemnitz; proposed as a « family » (= « section ») of subgenus *Murcia* Römer, genus *Venus* Linné.

(*) KATHERINELLA Tegland 1929 (= *Callocallista* Weaver 1916)
Univ. Calif. Publ., Bull. Geol. Sci., vol. 18, p. 280; genotype *Callocallista arnoldi* Weaver. *See Callocallista* for discussion.

KEREIA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 583; genotype *Dosinia greyi* Zittel (original designation); proposed as a subgenus of *Dosinia* Scopoli.

KUIA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 597; genotype *Chione vellicata* Hutton (original designation); proposed as a genus.

(†) *Laevicardium* Swainson (family Cardiidae)

(†) *Lajonkairia* Deshayes (family Tellinidae)

LAMELLICONCHA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 354; genotype *Cytherea*

concinna Sowerby (original designation) ; proposed as a « section » of subgenus *Hysteroconcha* Dall, genus « *Pitaria* Römer. »

LEGUMEN Conrad 1860

Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 4, p. 277 (according to Schulze *et al,* vol. 3, p. 1784).

LEPIDOCARDIA Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 356; genotype *Chione floridella* Gray « (+ *Venus africana* Philippi) » (original designation) ; proposed as a subgenus of *Cytherea* Röding.

(⊙) LEUCOMA (Römer) Stoliczka 1871

Pal. Indica, Cret. Fauna S. India, vol. 3, p. 148. *Not* Hübner (Tentamen Lep., p. 1, 1806), *nor* Stephens (Ill. Brit. Ent., Haust., vol. 2, p. 64, 1828) (according to Schulze *et al,* vol. 3, p. 1830). Emendation or error for *Leukoma* Römer.

(⊙) LEUCOMA (Stoliczka) Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 358. *See* above.

(§) LEUCOTHEA Jukes-Browne 1913 (= *Aphrodora* Jukes-Browne 1914)

Proc. Malac. Soc. London, vol. 10, p. 346; genotype *Callocardia Birtsi* Preston (original designation) ; proposed as a subgenus of « *Pitaria* Römer. » *Not* Mertens (Mém. Ac. St.-Petersb., ser. 6, vol. 2, p. 499, 1833) ; *nor* Rafinesque (Anal. Nat., p. 154, 1815) (*nomen nudum)* (according to Schulze *et al,* vol. 3, p. 1834).

LEUKOMA Römer 1857

Krit. Unters. *Venus,* p. 17; genosyntypes *Venus granulata* Gmelin and *Venus marica* Linné; proposed as a « family » (= « section ») of subgenus *Murcia* Römer, genus *Venus* Linné. Genotype (here designated) *Venus marica* Linné.

(*) LEVIMARCIA Cox 1927 (= *Marcia* H. and A. Adams)

Rept. Palaeont. Zanzibar Protectorate, pp. 52-53; genotype *Marcia (Levimarcia) opima* (Gmelin). Stewart (Sp. Publ. n° 3, Acad. Nat. Sci. Phila., p. 221, 1930) considered *Venus pinguis* Chemnitz (Conch.-Cab., vol. 6, 1782, p. 355, pl. 34, fig. 355-357), the genotype of *Marcia* H. and A. Adams, and « *Marcia opima* (Gmelin) » (Linn. Syst. Nat., 13th ed. 1791, p. 3279) to be synonymous, the latter name being valid. If his conclusions are correct, there can be no doubt that *Levi-*

marcia Cox is an objective synonym of *Marcia* H. and A. Adams.

(†) *Libitina* Schumacher (family Pleurophoridae)

(†) *Limicola* Leach (family ?)

LIOCONCHA Mörch 1853

Cat. Conch. Yoldi, vol. 2, p. 26; genosyntypes *L. castrensis* (Linné), *L. fulminata* (Menke), *Cytherea ornata* Lamarck, *L. polita* « (Bolten), » *Cytherea sulcatina* Lamarck, *L. ornata* (Dillwyn), *Venus castrensis* var. Chemnitz, *Venus pectunculus* Gmelin ? (not available for subsequent designation), *Venus picta* Lamarck, *L. implena* « *(Cardium)* » Martyn, « *C.* » *tigrina* Lamarck, *L. hebraea* (Lamarck), « *C.* » *rubiginosa* Philippi, *L. affinis* (Gmelin), *C. laeta* « Lamarck *non* Linné, » *L. modesta* (Philippi), *Venus Kingii* Gray, *L. albida* « *Cardium)* » (Martyn), *L. tumens* (Gmelin), and *L. rostrata* (Kock) ; proposed as a genus.

LIOCYMA Dall 1870

Proc. Boston Soc. Nat. Hist., vol. 13, p. 256; genotype *Venus fluctuosa* Gould (original designation) ; proposed as a genus.

LIROPHORA Conrad 1863

Proc. Acad. Nat. Sci. Phila., vol. 15, p. 586 ; genotype *Venus athleta* Conrad [= *Chione latilirata* (Conrad)] (according to Palmer, Palaeont. Amer., vol. 1, n° 5, 1927, p. 170).

(†) *Lithophagella* Gray (family Pleurophoridae)

(†) *Lucina* Lamarck (family Lucinidae)

(†) *Lucinopsis* Forbes and Hanley (family Tellinidae)

(⊙) Lyocima (Dall ?) Barrois 1887

In Zittel, Traité de Pal., vol. 2, p. 109 (according to Palmer, Palaeont. Amer., vol. 1, n° 5, 1927, p. 418). Emendation or error for *Liocyma* Dall.

(⊙) Lyocyma (Dall) Norman 1888

Mus. Norman, n° 4-5, p. 26 (according to Schulze *et al*, vol. 3, p. 1921). Emendation or error for *Liocyma* Dall.

MACRIDISCUS Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 359 ; genotype *Venus aequilatera* Sowerby (original designation) ; proposed as a « sec-

tion » of subgenus *Gomphina* Mörch, genus *Chione* Megerle von Mühlfeldt.

MACROCALLISTA Meek 1876

Rept. U. S. Geol. Surv. Terr., vol. 9, p. 179; genotype *Venus gigantea* Gmelin (= *V. nimbosa* Solander) (monotypy); proposed as a « section » of *Callista* Poli.

MARAMA Marwick 1927

Trans. Proc. N. Z. Inst., vol. 57, p. 601; genotype *M. murdochi* Marwick (original designation); proposed as a genus.

MARCIA H. and A. Adams 1857

Gen. Rec. Moll., vol. 2, p. 423; genotype *Venus pinguis* Chemnitz [= *Marcia opima* (Gmelin)] (subsequent designation, Kobelt, Ill. Conch., vol. 2, 1881, p. 339) (according to Stewart, Sp. Publ. N° 3, Acad. Nat. Sci. Phila., 1930, p. 221); proposed as a genus. Stewart quoted Iredale (Linn. Soc. N. S. Wales, Pr. 49, 1924, p. 211) as stating that *Marcia* H. and A. Adams is preoccupied by a « *Marcia* Warlow » (Jr. As. Soc. Beng., vol. 2, 1833, p. 100), but pointed out that the latter is an error for « *Mareca*. »

MARWICKIA Finlay 1930

Trans. Proc. N. Z. Inst., vol. 61, p. 38; proposed to replace the preoccupied *Finlaya* Marwick.

MEGAPITARIA Grant and Gale 1931

Mem. San Diego Soc. Nat. Hist., vol. 1, p. 346; genotype *Cytherea aurantiaca* Sowerby (original designation); proposed as a subgenus of « *Pitaria* Römer. »

MEISENIA Makiyama 1936

Mem. Coll. Sci., Kyoto Imp. Univ., ser. B, vol. 11, n° 4 (art. 8), p. 215; genotype *M. tateiwai* Makiyama (original designation); proposed as a genus.

MERCENARIA Schumacher 1817

Ess. Nouv. Syst. vers Test., p. 135; genotype *M. violacea* Schumacher (= *Venus mercenaria* Linné) (monotypy); proposed as a genus.

(⊙) MERCENARIA (Cossmann) Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 361.

MERCIMONIA Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 361; genotype *Venus Ber-*

nayi Cossmann (original designation) ; proposed as a « section » of subgenus *Katelysia* Römer, genus *Marcia* H. and A. Adams.

MERETRISSA Jukes-Browne 1908
Proc. Malac. Soc. London, vol. 8, p. 160 ; genotype *Cytherea depressa* Deshayes (subsequent designation, Jukes-Browne, Proc. Malac. Soc. London, vol. 11, 1914, p. 67) ; proposed as a subgenus of *Tivelina* Cossmann.

MERETRIX Lamarck 1799
Mém. Soc. Hist. nat. Paris, vol. 1, p. 85 ; genotype *Venus meretrix* Linné (absolute tautonymy).

MERIDOSINIA Iredale 1930
Rec. Aust. Mus., vol. 17, p. 394 ; genotype *M. nedigna* Iredale (original designation) ; proposed as a genus.

(*) Meroë Schumacher 1817 (= *Sunetta* Link 1807)
Ess. Nouv. Syst. vers Test., p. 49 ; genotype *M. picta* Schumacher (= *Venus meroë* Linné) (original designation) ; proposed as a genus.

MEROËNA Jukes-Browne 1908
Proc. Malac. Soc. London, vol. 8, p. 164 ; genotype *Sunetta trigonula* Deshayes (original designation) ; proposed as a subgenus of *Sunetta* Link.

(⊙) Meroina (Jukes-Browne) Jukes-Browne 1914
Proc. Malac. Soc. London, vol. 11, p. 66. Emendation or error for *Meroëna* Jukes-Browne 1908.

(§) Metis H. and A. Adams 1857 (= *Myrsus* H. and A. Adams 1858)
Gen. Rec. Moll., p. 436. *Not* H. and A. Adams 1856 (Gen. Rec. Shells, p. 399).

MICROCALLISTA Stewart 1930
Sp. Publ. n° 3, Acad. Nat. Sci. Phila., p. 244 ; genotype *Cytherea proxima* Deshayes (original designation) ; proposed as a genus.

(§) Murcia Römer 1857 (= *Anomalocardia* Schumacher)
Krit. Unters. *Venus*, p. 16. *Not* Koch, 1835. This subgenus of *Venus* Linné included the « families » (= « sections ») *Antigona* Schumacher, « *Chamelea* Klein, » *Leukoma* Römer, *Anomalocardia* Schumacher, and *Katelysia* Römer. Genotype (here designated) *Venus flexuosa* Linné.

MYRSOPSIS Sacco 1900

In Bellardi and Sacco, Moll. terz. Piemonte, vol. 28, p. 57; genotype *Venerupis pernarum* Bonelli; proposed as a subgenus of *Tapes* Megerle von Mühlfeldt.

MYRSUS H. and A. Adams 1858

Gen. Rec. Moll., vol. 2, p. 660; proposed to replace *Metis* H. and A. Adams 1857, not 1856.

MYSIA Lamarck 1818.

Hist. An. s. Vert., vol. 5, p. 543.

(†) *Neomiodon* Fischer (family Cyrenidae)

NETARA Frizzell, new subgenus

Genotype *Cytherea staminea* Conrad (Foss. Med. Tert., cover of n° 1, 1839, pl. 21, fig. 1); proposed as a subgenus of *Dosina* Gray, to replace the preoccupied *Artena* Conrad (Am. Journ. Conch., vol. 6, 1839, p. 76).

(†) *Nicania* Leach (family Astartidae)

NOTIRUS Finlay 1928

Trans. Proc. N. Z. Inst., vol. 59, p. 278; proposed to replace the preoccupied *Irona* Finlay.

NOTOCALLISTA Iredale 1924

Proc. Linn. Soc. N. S. Wales, vol. 49, p. 182, 210; genotype *Cytherea kingii* Gray (original designation); proposed as a genus.

NOTOPAPHIA Oliver 1923

Proc. Malac. Soc. London, vol. 15, p. 185; genotype *Venerupis elegans* Deshayes (original designation); proposed as a genus.

(⊙) NYMPHA (Mörch 1853) Schulze *et al* 1932

Vol. 3, p. 2290. *Not* Fitzinger (Classif. Rept., p. 25, 31, 1826), *nor* Krause (Fauna Thüring., vol. 4, fasc. 4-5, p. 11, 1839) (according to Schulze *et al*, vol. 3, p. 2290). Mörch (Cat. Conch. Yoldi, vol. 2, p. 25, 1853) placed « *Nympha* Mart. Verz. » in the synonymy of *Meretrix* Lamarck and did not accept the name. Consequently, the name cannot date from « Mörch 1853. »

OMALIA Ryckholt 1851

Mém. com. Ac. Belgique, vol. 24, fasc. 2, p. 72, 1852 (sepa-

rates circulated in 1851) (according to Schulze *et al,* vol. 3, p. 2333, quoting Koninck, Ann. Mus. Belgique, vol. 11, p. 140, 1885).

OMNIVENUS Palmer 1927

Palaeont. Amer., vol. 1, n° 5, p. 115; genotype « *Cytherea discoidalis* Conrad *(Cytherea subcrassa* Lea) » (original designation) ; proposed as a genus.

(⊙) OMPHALOCLATHRUM (Bruguière 1792) Schulze *et al* 1932

Vol. 3, p. 2338. The name as reprinted by Bruguière was « *Omphalo-Clathrum.* » For a discussion of generic names credited to Bruguière see *Anomalocardia.*

(*) OMPHALOCLATHRUM (Klein) Mörch 1853 (= *Antigona* Schumacher)

Cat. Conch. Yoldi, vol. 2, p. 241. Genotype (here designated) *O. lamellaris* (Schumacher) (= *Antigona lamellaris* Schumacher).

(⊙) OMPHALOCLATHRUM (Tryon) Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 358.

(§) ONCOPHORA Rzehak 1882

Verh. geol. Reichanst., vol. 16, p. 41; *not* Diesing (Syst. Helm., vol. 2, p. 81, 296, 1851), *nor* Bergh (Danske Selsk. Skr., ser. 5, vol. 3, p. 345, 1853) (according to Schulze *et al,* vol. 3, p. 2343). This homonym does not appear to have been renamed.

(⊙) ONCOPHORUS (Rzehak ?) Carus 1889

Zoöl. Anz. (Regist. 1-10), p. 302; *not* Eppelsheim (D. ent. Z., vol. 29, fasc. 1, p. 46, 1885), *nor* Glocker (N. Acta Ac. Leop., vol. 22, fasc. 2, p.937, 185...), *nor* Rudow (Z. Naturn., vol. 35-n. s., vol. 1, pp. 299, 445, 1870) (according to Schulze *et al,* vol. 3, p. 2344). Apparently an emendation or error for *Oncophora* Rzehak.

(*) ORBICULUS Megerle von Mühlfeldt 1811 (= *Pectunculus* Da Costa 1778)

Mag. Ges. Fr. Berlin, vol. 5, p. 58; genotype *Venus exoleta* Linné (subsequent designation, Dall, Proc. U. S. Nat. Mus., vol. 26, 1902, p. 346) ; proposed as a genus.

(⊙) ORTHYGIA (Leach) Mörch 1853

Cat. Conch. Yoldi, vol. 2, p. 23; emendation or error for *Ortygia* Brown 1827 ; included in the synonymy of *Chamelea.*

(§) ORTYGIA Brown 1827
Ill. Conch. Gt. Brit., pls. 19-20, p. 2; genosyntypes *O. sulcata* and *O. subcordata* (= *Venus laminosa* Laskey); proposed as a genus. *Not* Boie (Isis, vol. 19, p. 978, 1826) (according to Schulze *et al*, vol. 3, p. 2401).

PACHYDESMA Conrad 1854
Proc. Acad. Nat. Sci. Phila., vol. 7, p. 31; proposed to replaced the preoccupied *Trigonella* Conrad 1837.

PAPHIA Röding 1798
Mus. Bolten, vol. 2, p. 175; genotype *P. alapapilionis* Röding « (= *Venus rotundata* (part) Gmelin *not* Linnaeus) » (subsequent designation, Dall, Proc. U. S. Nat. Mus., vol. 26, 1902, p. 362).

(§) PAPHIA Oken 1815 (= *Gafrarium* Röding 1798)
Not Röding *nor* Lamarck.

PAPHIRUS Finlay 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 471; genotype *Venus largillierti* Philippi (original designation); proposed as a genus.

(†) *Papyridea* Swainson (family Cardiidae)

(*) PARADIONE Dall 1909 (= *Chionella* Cossmann)
Prof. Paper 59, U. S. Geol. Surv., p. 120; proposed as a « section » of *Macrocallista* Meek to replace *Chionella* Cossmann. *See Chionella* for discussion of that name.

PARADOSINIA Iredale 1929
Mem. Queensland Mus., vol. 9, pp. 264-265; genotype *P. colorata* Iredale.

PARASTARTE Conrad 1862
Proc. Acad. Nat. Sci. Phila., 1862, p. 288; genotype *Astarte triquetra* Conrad (according to Dall, Proc. U. S. Nat. Mus., vol. 26, 1902, p. 365).

PARATAPES Stoliczka 1870
Pal. Indica, Cret. Fauna S. India; vol. 3, p. 144; genotype *P. textrix* Chemnitz (original designation); proposed as a genus.

(*) PAREMBOLA Römer 1857 (= *Tapes* Megerle von Mühlfeldt 1811)
Krit. Unters. *Venus*, p. 16; genotype *Venus literata* Linné

(monotypy) ; proposed as a « family » (= « section ») of subgenus *Tapes* Megerle von Mühlfeldt, genus *Venus* Linné.

(§) PARMULINA Dall 1902 (= *Parmulophora* Dall 1905)
Proc. U. S. Nat. Mus., vol. 26, p. 351; genotype *Circe corrugata* (Dillwyn) (original designation) ; proposed as a « section » of subgenus *Circe* Schumacher, genus *Gafrarium* Röding. *Not* Penard (Faune rhizopod. Leman, p. 206, 1902) (according to Schulze *et al,* vol. 4, p. 2535).

PARMULOPHORA Dall 1905
Nautilus, vol. 18, p. 113; proposed to replace the preoccupied *Parmulina* Dall.

(⊙) PARMULOPLIORA (Dall) Cossmann 1905
Rev. crit. Paléozool., vol. 9, p. 117 (according to Schulze *et al,* vol. 4, p. 2535). Emendation or error for *Parmulophora* Dall.

PARVIVENUS Sacco 1900
In Sacco and Bellardi, Moll. Terz. Piemonte, vol. 30, p. 145; genotype *Venus marginatus* Hoernes.

(§) PASIPHAË Leach 1852 (= *Timoclea* Brown 1827)
Syn. Moll. Gt. Brit., p. 308; genotype *P. pennantia* Leach 1852 (= *Venus ovata* Pennant) (monotypy) ; proposed as a genus. *Not* Spinola *in* Gay (Hist. Chile, Zoöl., vol. 6, p. 226, 1851 (according to Schulze *et al,* vol. 4, p. 2543), *nor* Risso, 1826 (according to Dall, Proc. U. S. Nat. Mus., vol. 25, p. 358, 1902).

PECTUNCULUS Da Costa 1778
Hist. Test. Brit., p. 183; genotype *P. capillaceus* Da Costa (= *Venus exoleta* Linné) (subsequent designation, Jukes-Browne, 1911) ; proposed as a genus.

PELECYORA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 346; genotype *Cytherea hatchetigbeënsis* Aldrich (original designation) ; proposed as a subgenus of *Dosiniopsis* Conrad.

(†) *Pera* Leach (family ?)

(*) PERIGLYPTA Jukes-Browne 1914 (= *Cytherea* Röding)
Proc. Malac. Soc. London, vol. 11, p. 72; genotype *Venus puerpera* Linné (original designation) ; proposed as a subgenus of *Antigona* Schumacher.

(†) *Petalocardia* E. Vincent (family Pleurophoridae ?)

(⊙) PETRIFORA Latreille 1827
Fam. Thierr., p. 211; *nomen nudum;* (according to Schulze *et al,* vol. 4, p. 2601).

(⊙) PHACOSMA (Jukes-Browne) Preston 1913
Zoöl. Record, vol. 49, 1912 (1913), Moll., p. 913 (according to Schulze *et al,* vol. 4, p. 2606) ; error or emendation for *Phacosoma* Jukes-Browne.

PHACOSOMA Jukes-Browne 1912
Proc. Malac. Soc. London, vol. 10, p. 100; genotype *Dosinia japonica* Reeve (original designation) ; proposed as a « section » of *Dosinia* Scopoli.

PITAR Römer 1857
Krit. Unters. *Venus,* p. 15; genotype *Cytherea tumens* Gmelin (monotypy) ; proposed as a « family » (= « section ») of subgenus *Cytherea* Lamarck, genus *Venus* Linné.

PITARELLA Palmer 1927
Palaeont. Amer., vol. 1, n° 5, p. 35; genotype *Pitaria gatunensis* (Dall) (original designation) ; proposed as a subgenus of « *Pitaria* Römer. »

(⊙) PITARIA (Römer) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 353. An emendation for *Pitar* Römer. Dall considered that : « Römer's original name, *Pitar,* is a vernacular African word, not really entitled to be used without Latinization, for which, in 1862, he substituted *Caryatis,* which is preoccupied in Lepidoptera since 1816. It is probable that a Latinized form as above should be adopted for the group. » It is obvious from the proposal of *Pitar* that it must be regarded as a valid name. Further, Stewart (Sp. Publ. n° 3, Acad. Nat. Sci. Phila., 1930, p. 233) quotes Adanson (Hist. Nat. Senegal, 1857, p. 226) to the effect that the African name for this shell was *Boukch* or *Bouikch.*

PITARINA Jukes-Browne 1913
Proc. Malac. Soc. London, vol. 10, p. 346; genotype *Cytherea citrina* Lamarck (original designation) ; proposed as a « section » of « *Pitaria* Römer. »

PLACAMEN Iredale 1925
Rec. Austr. Mus., vol. 14, p. 255; « for *Venus placida* Phil. » (according to the Zoöl. Record, 1925, Moll., p. 90).

PLURIGENS Finlay 1930
Trans. Proc. N. Z. Inst., vol. 51, p. 245; genotype *P. phenax* Finlay.

POLITITAPES Chiamenti 1900
Riv. Ital. Sci. Nat., vol. 20, p. 11; genotype *Venus aurea* Gmelin (according to Jukes-Browne, Proc. Malac. Soc. London, vol. 11, 1914, p. 92).

(†) *Potamophila* Sowerby (family Donacidae)

(†) *Pronoë* Agassiz (family ?)

(†) *Pronoella* Fischer (family ?)

PROSOCOELOGETON Quensted 1929
Res. Norske Stats. Spitsbergenekspedi, Oslo, vol. 1, pt. 2, p. 23.

PROTAPES Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 362; genotype « *Venus gallus* Gmelin (= *V. malabarica* Dillwyn) » (original designation); proposed as a « section » of subgenus *Paphia* Röding *s. s.*

PROTOTHACA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 364; genotype « *Venus thaca* Molina (+ *V. dombeyi* Lamarck) » (original designation); proposed as a subgenus (with typical « section » and « section » *Callithaca* Dall 1902) of *Paphia* Röding.

PROXICHIONE Iredale 1929
Aust. Zoöl., vol. 5, p. 339.

(†) *Psammobia* Lamarck (family Psammobiidae)

PSATHURA Deshayes 1858
Genotype *Venus fragilis* Lamarck (according to Jukes-Browne, Proc. Malac. Soc. London, vol. 11, 1914, p. 86); *not Venus fragilis* Fabricius *nor V. fragilis* d'Orbigny).

PSEPHIDIA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 366; genotype *Psephis lordi* (Baird) (original designation); proposed as a genus, to replace the preoccupied *Psephis* Carpenter.

(§) PSEPHIS Carpenter 1874 (= *Psephidia* Dall 1902)
Rept. Brit. Assn. Adv. Sci. 1863, p. 640; genotype *P. lordi* (Baird). *Not* Guénée 1854.

PTYCHOMYA Agassiz 1845
Étude crit. Moll. foss., vol. 2, pt. 2, p. XVIII; *not* Lycett, 1850 (Ann. Mag. N. H., ser. 2, vol. 6, p. 408); (according to Sherborn, Ind. Anim., sec. 2, pt. 21, p. 5211).

PULLASTRA Sowerby 1826
Genera of Shell; genotype *Venus pullastra* (absolute tautonymy).

(⊙) PULLASTRA (Chenu) Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 362.

PUYSEGERIA Powell 1927
Rec. Canterbury Mus., vol. 3, p. 122; genotype *P. cuneata* Powell.

RADIOCRISTA Dall 1902
Proc. U. S. Nat. Mus., vol. 26, p. 350; genotype *Venus pulcherrima* Deshayes (original designation); proposed as a « section » and questionably referred to *Gafrarium* Röding.

RAINA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 583; genotype *Dosinia bensoni* Marwick (original designation); proposed as a subgenus of *Dosinia* Scopoli.

RHABDOPITARIA Palmer 1927
Palaeont. Amer., vol. 1, n° 5, pp. 211-212; genotype *Pitaria* (*Rhabdopitaria*) *astartoides* (Gardner); proposed as a subgenus of « *Pitaria* Römer. »

RHOMALEA Jukes-Browne 1914
Proc. Malac. Soc. London, vol. 11, p. 84; genotype *Venus rufa* Lamarck (original designation); proposed as a subgenus of *Protothaca* Dall.

RUDITAPES Chiamenti 1900
Riv. Ital. Sci. Nat., vol. 20, p. 12; genotype (apparently) *Venus decussata* Linné; proposed as a « section » of *Venus* Linné.

RUPELLARIA Fleuriau de Bellevue 1802
Journ. de Physique, vol. 54, p. 347 (according to Sherborn, Ind. Anim., sec. 2, pt. 22, p. 5686).

(§) SALACIA Jukes-Browne 1914 (= *Callanaitis* Iredale 1917)
Proc. Malac. Soc. London, vol. 11, p. 81; genotype *Venus*

lamellata Lamarck (original designation) ; proposed as a subgenus of *Venus* Linné. « ... invalid, having been used several times previously, » (Iredale, Proc. Malac. Soc. London, vol. 12, p. 329, 1917).

SAMARANGIA Dall 1902

Proc. U. S. Nat. Mus., vol. 26. p. 361 ; genotype *Venus quadrangularis* Adams and Reeve (original designation) ; proposed as a « section » of subgenus *Katelysia* Römer, genus *Marcia* H. and A. Adams.

(†) *Sanguinolaria* Lamarck (family Psammobiidae)

SAXIDOMUS Conrad 1837

Journ. Acad. Nat. Sci., vol. 7, p. 249 ; genotype *S. nuttallii* Conrad (monotypy).

(†) *Scaldia* Ryckholt (family Unicardiidae)

SIMILIVENUS Cossmann 1910

Act. Soc. Linn. Bord., vol. 64, p. 33 ; genotype *Venus solida* Deshayes (original designation) ; proposed as a « section » of *Marcia* H. and A. Adams.

SINODIA Jukes-Browne 1908

Proc. Malac. Soc. London, vol. 8, pp. 151-154 ; genotype *Dosinia trigona* Reeve (original designation) ; proposed as a subgenus of *Dosinia* Scopoli.

(*) SOLANDERINA Dall 1902 (= *Sunettina* Pfeiffer, *not* Jousseaume)

Proc. U. S. Nat. Mus., vol. 26, p. 350 ; genotype *Sunetta solandri* Gray (original designation) ; proposed as a « section » of *Sunetta* Link.

(†) *Sowerbya* d'Orbigny (family Sowerbyidae)

SUNEMEROE Iredale 1930

Rec. Aust. Mus., vol. 17, pt. 9, p. 395 ; genotype *Sunetta adelinae* Angas (original designation) ; proposed as a genus to replace *Sunettina* Jousseaume.

SUNETTA Link 1807

Beschr. Rostock Samml., p. 148 ; genotype *Donax scripta* Linné (according to Dall, Trans. Wagner Free Inst. Sci., vol. 3, pt. 6, p. 1245, 1903).

SUNETTINA Pfeiffer

Iredale (Rec. Austr. Mus., vol. 17, p. 395, 1930) credited this genus to Pfeiffer *in* Kobelt (Ill. Conch., 10th lief., p. 335, 1883), stating that the name was « introduced for *S. solandri* Gray. » Thiele (Handb. d. Syst. Weicht., pt. 3, p. 887, 1934), however, although giving no reference, dated the genus 1869.

(§) SUNETTINA Jousseaume 1891 (= *Sunemeroe* Iredale)

Le Nat., vol. 5, p. 208 (according to Fulton, Proc. Malac. Soc. London, vol. 15, 1922. p. 31) ; genotype *S. sunnettina* Jousseaume (monotypy and absolute tautonymy).

(†) *Tanysiphon* Benson (family Petricolidae)

TAPES Megerle von Mühlfeldt 1811

Mag. Ges. Fr. Berlin, vol. 5, p. 51; genotype *T. literatus* (Linné) (monotypy) ; proposed as a genus.

(⊙) TAPES (Sacco) Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 363.

TAUROTAPES Sacco 1900

I Moll. terr. terz. Piemonte, vol. 28, p. 58; genotype *Venus craverii* Micht.

TAWERA Marwick 1927

Trans. Proc. N. Z. Inst., vol. 57, p. 613; genotype *Venus spissa* Deshayes (original designation) ; proposed as a genus.

(†) *Tellina* of authors (family Tellinidae)

(†) *Tenea* Conrad (family Diplodontidae)

TERENTIA Jukes-Browne 1914

Proc. Malac. Soc. London, vol. 11, p. 86; genotype *Clementia granifera* Sowerby (original designation) ; proposed as a « section » of *Clementia* Gray.

(⊙) TETHIOPSIS (Meek) Fischer 1887

Man. Conch., p. 1085. Emendation or error for *Thetiopsis* Meek.

TEXTIVENUS Cossmann 1886

Mém. Soc. Roy. Mal. de Belgique, vol. 21 (sér. 4, vol. 1), p. 109; genosyntypes *Venus texta* Lamarck and *V. scobinellata* Lamarck; proposed as a « section » of *Venus* Linné.

(§) TEXTRIX Römer 1857 (= *Paratapes* Stoliczka 1870)
Krit. Unters. *Venus,* p. 16; genotype « *V. textrix* Chemn. (*textile* Gmelin) » (monotypy); proposed as a « family » (= « section ») of *Tapes* Megerle von Mühlfeldt, genus *Venus* Linné. *Not* Sundeval 1833 (according to Dall, Proc. U. S. Nat. Mus., vol. 26, 1902, p. 362.

THETIOPSIS Meek 1876
Rept. U. S. Geol. Surv. Terr., vol. 9, p. 191; genotype *Thetis ? circularis* (Meek & Hayden) (monotypy); proposed as a genus for the American species tentatively referred to *Thetis* Sowerby, in the event that they should be proved distinct from the genotype of *Thetis.*

THETIRONIA Stoliczka 1870
Pal. Indica, Cret. Fauna S. India, vol. 3, p. 158; genotype *Thetis minor* Sowerby (original designation); proposed as a genus to replace the preoccupied *Thetis* Sowerby.

(§) THETIS Sowerby 1826 (= *Thetironia* Stoliczka 1870)
Genera of Shells; *not* Oken, 1815.

(§) THETIS C. B. Adams 1845 (= *Gouldia* C. B. Adams)
Not Sowerby, 1826, *nor* Oken 1815.

(†) *Thyasira* Leach (family Thyasiridae)

TIGAMMONA Iredale 1930
Rec. Austr. Mus., vol. 17, p. 396; genotype *T. persimilis* Iredale (original designation); proposed as a genus.

TIKIA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 595; genotype *Callista thomsoni* Woods (original designation); proposed as a subgenus of *Callistina* Jukes-Browne.

TIMOCLEA Brown 1827
Ill. Conch. Gt. Brit., pl. 19, p. 11; genotype *T. ovata (Venus ovata* Pennant) (monotypy).

TINCTORA Jukes-Browne 1914
Proc. Malac. Soc. Lond., vol. 11, p. 62; genotype *Cytherea vulnerata* Broderip (original designation); proposed as a subgenus of « *Pitaria,* » to replace *Callizona* Jukes-Browne.

TIVELA Link 1807
Beschr. Rostock Samml., vol. 2, p. 152; genotype *Venus*

mactroides Born (according to Dall, Trans. Wagner Free Inst. Sci., vol. 3, pt. 6, p. 1245, 1903).

TIVELINA Cossmann 1886
Mém. Soc. Roy. Mal. de Belgique, vol. 21 (sér. 4, vol. 1), p. 119; genotype *Cytherea tellinaria* Lamarck (according to Jukes-Browne, Proc. Malac. Soc. London, vol. 11, 1914, p. 60); proposed as a « section » of *Cytherea* Lamarck.

(⊙) TOTTENIA (Perkins 1869)
Emendation or error for *Totteniana* Perkins.

(*) TOTTENIANA Perkins 1869 (= *Gemma* Deshayes 1853)
Proc. Boston Soc. Nat. Hist., vol. 13, p. 148; genotype *T. gemma* Perkins [= *Gemma gemma* (Totten)] (monotypy); proposed as a genus.

TRANSENNELLA Dall 1883
Proc. U. S. Nat. Mus., vol. 6, p. 340; genotype *Cytherea (T.) Conradina* Dall; proposed as a subgenus of *Cytherea*.

(†) *Trapezium* Megerle von Mühlfeldt (family Pleurophoridae)

(†) *Tridonta* Schumacher (family Astartidae)

(§) TRIGONA Megerle von Mühlfeldt 1811 (= *Tivela* Link 1807)
Mag. Ges. Fr. Berlin, vol. 5, p. 55; genosyntypes *T. radiata* (Linné), *T. Donacina* (Chemnitz); proposed as a genus. *Not* of Jurine.

(§) TRIGONELLA Conrad 1837 (= *Pachydesma* Conrad)
Journ. Acad. Nat. Sci. Phila., vol. 7, p. 253, genotype *Cytherea (T.) crassatelloides* Conrad (monotypy); proposed as a subgenus of *Cytherea* Lamarck. Not Da Costa, 1778, Hist. Nat. Test. Brit., p. 196.

TRIGONOCALLISTA Rennie 1930
Ann. S. Afr. Mus., vol. 28, pp. 197-198; genotype *Meretrix umzambiensis* Woods.

(§) TRIQUETRA Anton 1839
Presumably proposed by Anton, 1839 (Verz. Conch. Samml. Anton), although not listed by Sherborn (Ind. Anim.). *Not* de Blainville, 1828 (Dict. Sci. Nat., vol. 57, p. 255), *nor* Conrad, 1846 (Am. Journ. Sci., ser. 2, vol. 1, p. 217), both proposed for pelecypod genera (according to Sherborn, Ind. Anim., sec. 2, pt. 27, p. 6625).

TUANGIA Marwick 1927
Trans. N. Z. Inst., vol. 57, p. 623; genotype *Venus crassicosta* Deshayes (original designation); proposed as a subgenus of *Protothaca* Dall.

TURIA Marwick 1927
Trans. Proc. N. Z. Inst., vol. 57, p. 611; genotype *T. chattonensis* Marwick (original designation); proposed as a genus.

VENERELLA Cossmann 1886
Mém. Soc. Roy. Malac. de Belgique, vol. 21, 1886 (sér. 4, vol. 1), genotype *Venus hermonvillensis* Deshayes (according to Jukes-Browne, Proc. Malac. Soc. London, vol. 11, 1914, p. 94); proposed as a « section » of *Venus* Linné.

(⊙) VENERERUPES (Lamarck ?) Swainson.
Emendation for *Venerupis* Lamarck 1818.

(†) *Veneriglossa* Dall (family ?)

(⊙) VENERIRUPIS (Lamarck ?) Sowerby
Emendation for *Venerupis* Lamarck 1818.

VENERITAPES Cossmann 1886
Mém. Soc. Roy. Malac. de Belgique, vol. 21 (sér. 4, vol. 1); genotype *V. Bervillei* (Deshayes) (described as *Psammobia*) (monotypy); proposed as a genus.

VENERUPIS Lamarck 1818
Hist. Nat. Anim. sans Vert., vol. 5, p. 506 (according to Stewart, Sp. Publ. n° 3, Acad. Nat. Sci. Phila., p. 221, 1930); genotype *Venus perforans* Montagu (subsequent designation, Children, Lam. Gen. Shells, 1823, p. 30, according to Stewart).

(†) *Veniella* Stoliczka (family Pleurophoridae)

(†) *Venilia* Morton (family Pleurophoridae)

VENTRICOLA Römer 1867
Malak. Blätt., vol. 14, p. 115; genotype *Venus rugosa* Gmelin (according to Dall. Trans. Wagner Free Inst. Sci., vol. 3, pt. 6, p. 1272, 1903).

(*) VENTRICOLOIDEA Sacco 1900 (= *Dosina* Gray)
I. Moll. Terr. terz. Piemonte, vol. 28, p. 30; genotype *Venus (Ventricola) multilamella* (Lamarck) (original designation);

proposed as a subgenus of *Venus* Linné. In proposing the term, Sacco did not use it, but placed all of the species, including the genotype, in the subgenus *Ventricola* Römer.

VENULITES Schlotheim

« ... *Venulites,* under which name Schlotheim made known a large number of fossil shells, externally resembles *Venus* (in the old sense of the term and rather applying to *Cytherea,* as restricted [Meretricidae of this paper — DLF]). » (Stoliczka, 1871, Cret. Fauna S. India, vol. 3, pp. 292-293.)

(†) *Venulithes* Nillson (family ?)

Petrif. Suecana, 1827, p. 17; genotype apparently *Venus exuta* Nillson (according to Stoliczka, 1871, Cret. Fauna S. India, vol. 3, p. 162). Stoliczka states that although the assumed genotypic species is not veneracean, the name *Venulithes* apparently was proposed for Cretaceous species of « *Venus* ».

VENUS Linné 1758

Syst. Nat., ed. 10, p. 684; genotype *V. verrucosa* Linné (subsequent designation, Gray, Proc. Zoöl. London, pt. 15, 1847, p. 183); proposed as a genus.

(⊙) VENUS (Megerle 1811) Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 354.

(⊙) VENUS (Swainson 1840) Dall 1902

Proc. U. S. Nat. Mus., vol. 26, p. 355.

(⊙) VENUSARIUS Duméril 1806

Zoöl. Anal., p. 168, 1806 (according to Iredale, Proc. Malac. Soc. London, vol. 12, p. 80-81, 1916). *Nomen nudum.*

(*) VENUSARIUS Froriep 1806 (= *Venus* Linné)

Froriep, « C. Duméril's... Analytische Zoöl., » p. 189, 1806; genotype *Venus verrucosa* Linné (monotypy). According to Iredale (Proc. Malac. Soc. London, vol. 12, pp. 80-82, 1916), Froriep translated Duméril's « Zoologie Analytique, » including with each generic name a species cited from Gmelin's edition of Linné's Systema Naturae.

VEREMOLPA Iredale 1930

Rec. Austr. Mus., vol. 17, p. 397; genotype *V. ethica* Iredale (original designation); proposed as a genus.

VOLUPIA Defrance 1829

Dict. Sci. Nat., vol. 58, p. 451 (according to Sherborn, Ind. Anim., sec. 2, pt. 28, p. 6976).

(*) ZUCLEICA Leach 1852 (= *Clausinella* Gray 1851)
Syn. Moll. Gt. Brit., p. 357; genotype *Z. fasciata* (author?; « *Venus fasciata* Lister » in synonymy) (monotypy); proposed as a genus.

To make the foregoing list complete would require years of labor as well as excellent library facilities. Some tentative conclusions, however, are offered. At least three hundred and eighty-six different names have been applied to generic units referred to the Veneracea. Of these, sixty-three have been removed from the superfamily, sixty-eight are emendations, *nomina nuda,* or errors, thirty-nine are homonyms, and at least thirty are synonyms. One hundred and eighty-six names remain for consideration, sixty-eight more than have been recognized in any previous compilation. To what extent this discrepancy indicates the presence of synonyms, or whether it implies added generic units, are at present unsolved problems.

NEED FOR A REVISED CLASSIFICATION

Status of existing classificatory schemes.

No additional evidence need be presented to demonstrate the chaotic state of current arrangements of the family Veneridae (superfamily Veneracea of this paper). Divergence of opinion in regard to supergeneric categories is evident, as is the lack of agreement concerning the relationship and relative rank of generic units. Granting that detailed systematic and nomenclatural studies would solve many of the problems involved, the question remains whether any of the proposed classificatory structures is adequate for a complete understanding of the Veneracea, or whether even a composite arrangement of all subfamilies proposed could show natural relationships. If not, one may well suggest that an expansion of supergeneric categories is a fundamental step in alleviating the present confusion.

Inadequacy of a composite classification.

Consideration of the subfamilies which have been proposed (Table I, p. 16) indicates that none of the arrangements extant is entirely adequate. If, however, one accepts every published subfamily name, disregarding synonyms, one finds a somewhat more logical arrangement. Such a composite classification would

consist of the subfamilies Venerinae, Meretricinae, Circinae, Sunettinae, Dosiniinae, Tapetinae, Gemminae, and Pitarinae. Although this arrangement is preferable to any published scheme, it does not distinguish the groups of genera characterized by *Clementia* and *Chione,* nor does it express the interrelationships between the various other groups of genera. The remaining alternative is to regard the family Veneridae of previous writers as equivalent to a revised superfamily Veneracea. Families and subfamilies, then, may be erected on the basis of the inferred relationships of the various groups of genera. This course is followed in the present paper.

Application of the expanded classification.

To the systematist, the advantage of the objectivity gained through the expanded classification should be obvious. The evolutionist and the stratigrapher or field geologist, in contrast, might well ask for a more practical justification of the modified taxonomic structure and of the nomenclatural changes involved. Inferred phylogenies are the chief tools of the evolutionist, and the identification of specimens a primary concern of the stratigrapher. The application of the revised systematic arrangement of the Veneracea to the fields of evolution and stratigraphy, then, lies in its relation to the problems of phylogeny and identification.

Application to phylogenetic studies.

The few attempts at phylogenetic treatment of the Veneracea have been hampered by an ambiguous subfamily terminology. Thus Dall (1902, p. 337) stated: « No true Venerid, in the strict sense, appears before the Tertiary. » This statement, however, is rendered meaningless by his inclusion within the Venerinae, certainly venerids in the strictest sense, such Cretaceous genera as *Cyprimeria, Cyclorisma, Thetironia,* and *Thetiopsis.* Jukes-Browne (1914, p. 75) wrote: « ... I do not wish it to be supposed that I regard these two subfamilies [Meretricinae and Venerinae] as two distinct lines of evolution. On the contrary, I think each series includes several stirpes or branches of development, and I think that the *Chione* group [placed by Jukes-Browne in the Venerinae] has been developed directly from the *Antigona* stock [placed in the Meretricinae] by suppression and elimination of the anterior lateral tooth. » The most fundamental elements in

his classification, his ideas of relationship, were obscured almost completely by the taxonomic structure which he employed.

H. Douvillé (1921, p. 123, figs. 23-27) has suggested a phylogeny of the family unit « Les Cythérées, » postulating the derivation of the Cretaceous genus *Callistina* from the uppermost Jurassic (Portlandian) *Eocallista* by the modification of the base of the anterior cardinal in the left valve, and its subsequent separation as an anterior « lateral » denticle. In the light of Marwick's figures (1927, p. 599, fig. 2) of *Kuia vellicata* (Hutton), in which the ontogeny of the species illustrates a development apparently identical, Douvillé's postulation is suggestive. A similar ontogeny, moreover, was reported by Marwick (1927, p. 580) for *Dosinia*. To advocates of the so-called « Biogenetic Law, » these ontogenies would be conclusive proof of phylogenetic development of the Veneracea from *Eocallista* as a radicle, through *Callistina* to the Venerinae, with the Dosiniidae being split off during the Cretaceous. The Tapetidae and Chionidae might be regarded, in turn, as « primitive » forms in which the anterior lateral tooth had never developed.

The question of the validity of such hypothetical «phylogenies» as the foregoing need not be considered here. Manifestly, the construction of a phylogeny on the basis of a single character is open to question, especially as nothing is known of convergent or « orthogenetic » trends even in that single character. The significant fact, however, is that such inferred lines of descent cannot be discussed without reference to supergeneric groups at present unnamed. Objectivity may be attained and vagueness avoided by the proposal and definition of family and subfamily names for these groups.

Application to stratigraphy.

As phylogenies are the raw material of the evolutionist, generic and specific identifications are the primary tools of the biostratigrapher. Obviously, then, any taxonomic scheme which would lead to rapid and accurate identification is desirable. Probably even the specialist in malacology could not memorize the diagnostic characters of the hundred and twenty or more generic units comprising the undifferentiated « family Veneridae. » The stratigrapher or field geologist, necessarily concerned with significant species of other phyla in addition to the Mollusca, is faced with almost insurmountable difficulties in attempting to identify specimens beyond the « family. » The advantage of the

revised arrangement is that it distributes the genera among eleven family units, the characters of which may readily be memorized. Reference of a specimen to any one of these units would at once limit the number of genera to which the specimen might pertain.

Application to nomenclature.

The need of the systematist for expressing relationship and of the stratigrapher, ecologist, pathologist, geneticist, physiologist, experimental biologist, and general zoölogist for designating accurately concrete entities has led to the formulation of the legalistic system expressed in the International Rules of Zoölogical Nomenclature. To abide by these Rules, at the same time expressing relationship in the citation of a « binomial » specific name, requires a modified set of taxonomic categories. The hierarchy of family, subfamily, genus, subgenus, « section, » and species, employed by the more conservative systematists, is inadequate. The only form of citation authorized (Int. Rules Zöol. Nomen. Art. 10) is *genus (subgenus) species*. Thus the group of species nominated by the « sectional » name is completely suppressed. Systematists, such as Dall (1902), who have cited *genus (section) species*, not only fail to conform to the Rules of Nomenclature, but also completely submerge the subgeneric unit. Some workers have sought to avoid this confusion by regarding the most finely limited superspecific units as genera and subgenera. Since these authors, however, have not modified the supergeneric classificatory structure, they have eliminated the unit represented by the genus in the conservative scheme of classification. The revised arrangement, in contrast, furnishes a classificatory structure fitting all the biological units. Thus the series family, subfamily, genus, subgenus, « section, » and species is replaced by the series superfamily, family, subfamily, genus, subgenus, and species.

A criticism frequently leveled at the taxonomist is that the use of finely drawn generic units is undesirable because such procedure renders generic identification impossible for the naturalist and general zoölogist. Such a condition, unfortunately, is unavoidable in any group containing a large number of genera. The zoölogist may identify a specimen accurately by placing it within the correct family, whereas he would identify it inaccurately in referring it to a genus which extensive limits had rendered vague or meaningless. Malacologists are faced with a fact

that entomologists long have realized — that, in groups containing large numbers of species and genera, only the specialist can be conversant with the details of classification.

Summary.

My reasons for presenting an expanded classification of the Veneracea may be summarized as follows: (1) existing classificatory schemes do not show relationships within the group, nor do they provide categories for the groups of genera characterized by *Clementia* and *Chione*, (2) phylogenetic studies demand the recognition of natural units which are not included within current arrangements of the Veneracea, (3) additional family units are necessary to enable more facile identifications by the stratigrapher and general paleontologist, (4) an expanded classificatory structure is essential to prevent omission or ambiguity in citation.

Synopsis of the Veneracea.

The units in the following synopsis are defined in terms of the type and characteristic genera included within the various families and subfamilies. The appended descriptive paragraphs are interpretive statements and not intended as rigidly applicable definitions. Certainly no one at the present time can formulate definitions to which there will be no exceptions. Allocation of some of the anomalous forms, the so-called intergradations, is largely a matter of personal opinion. Characteristic genera, however, will give a definite basis for the use of the various family and subfamily groups. The principles of nomenclature followed in constructing this classification are in the main those suggested by H. G. Schenck (1934, p. 58) :

« As a corollary of a definition of the family is the matter of nomenclature. For the Foraminifera Galloway... recently applied the « international » rules of zoölogical nomenclature to families and subfamilies as rigidly as to genera and species. Was Galloway correct in applying the law of priority to families ? This question, I think, needs to be discussed by systematists in general before following in Galloway's footsteps. The most logical system [quoting L. R. Cox] to follow in family nomenclature appears to be as follows: The family name is derived from the name of the type genus and changes with it [International Rules of Zoölogical Nomenclature, Articles 4 and 5]. The type genus is the

genus taken as type by the author who first separates the family (and not the oldest described genus included in the family). If two genera which have been made family types are brought together into the same family, the latter takes its name from the one first made a family type [Rules, Article 28, indicate a parallel procedure in the case of genera]. »

To the foregoing discussion, I would add only the recommendation that, in the case of the proposal of a new family which is equivalent to an existing subfamily, the new family should be based upon the same type genus as the previous subfamily.

SUPERFAMILY VENERACEA MENKE 1830

Family DOSINIIDAE Frizzell 1936.
Type genus: Dosinia Scopoli 1777.

Shell equivalve, compressed, orbicular, concentrically striate; pallial sinus always present, in varying degree; dentition of three cardinal teeth in each valve, usually with a left anterior lateral (Dosiniinae), or completely lacking a lateral (Cyclininae). Cretaceous to Recent.

Subfamily Dosiniinae H. and A. Adams 1858.
Type genus: Dosinia Scopoli 1777.

Shell typical, with a defined lunule, usually with an anterior lateral in the left valve. Containing : *Dosinia* Scopoli, *Phacosoma* Jukes-Browne, *Pectunculus* Da Costa, *Austrodosinia* Dall, *Dosinisca* Dall, *Dosinorbis* Dall, *Dosinidia* Dall, and *Dosinella* Dall. Cretaceous to Recent.

Subfamily Cyclininae Frizzell 1936.
Type genus: Cyclina Deshayes 1853.

Anterior lateral tooth absent, no lunule. Includes : *Cyclina* Deshayes, *Cyclinella* Dall, *Cyclinorbis* Makiyama.

Family SUNETTIDAE Frizzell 1936.
Type genus: Sunetta Link 1807.

Includes: *Sunetta* Link, *Meroëna* Jukes-Browne, and *Dosiniopsis* Conrad. Cretaceous to Recent.

Family CLEMENTIIDAE Frizzell 1936.
Type genus: Clementia Gray 1842.

Includes: *Clementia* Gray, *Flaventia* Jukes-Browne, *Egesta* Conrad, *Terentia* Jukes-Browne. Cretaceous to Recent.

Family MERETRICIDAE Frizzell 1936.
Type genus: Meretrix Lamarck 1799.

Elongate veneraceans never orbicular-compressed; characterized by the presence of an anterior lateral tooth in the left valve, with a corresponding lateral pit — often flanked with dorsal and ventral denticles — in the right valve. The origin of the lateral tooth, according to Marwick (1927, p. 598), is independent, not arising from prolongation of the anterior cardinal. Jurassic (?) to Recent.

Subfamily MERETRICINAE Fischer 1887.
Type genus: Meretrix Lamarck 1799.

Shell nearly equilateral, teeth tending to radiate; in the case of *Tivela* Link there are subsidiary cardinals. Includes: *Meretrix* Lamarck, *Tivela* Link, *Grateloupia* Desmoulins, *Eutivela* Dall. Eocene to Recent.

Subfamily PITARINAE Stewart 1930.
Type genus: Pitar Römer 1857.

Shell inequilateral, beaks anterior; teeth not tending to radiate. Includes: *Pitar* Römer, *Macrocallista* Meek, *Saxidomus* Conrad, *Amiantis* Carpenter, *Lamelliconcha* Dall, *Hysteroconcha* Dall. Jurassic (?) to Recent. The Jurassic genus *Eocallista* H. Douvillé tentatively is assigned to the Pitarinae awaiting more intimate knowledge of Lower Cretaceous and Jurassic specimens.

Family CHIONIDAE Frizzell 1936.
Type genus: Chione Megerle von Mühlfeldt 1811.

Characterized by trigonal shape, bevelled escutcheons, impressed lunule, cancellate sculpture, crenulate inner margins, short ascending pallial sinus. Includes : *Chione* Megerle von Mühlfeldt, *Anomalocardia* Schumacher, *Timoclea* Brown, *Lirophora* Conrad, *Mercenaria* Schumacher. Oligocene to Recent.

Family VENERIDAE Leach 1819.
Type genus: Venus Linné 1758.

Shell similar to *Chione*, but possessing an anterior lateral tooth. The derivation of this anterior lateral tooth is from a prolongation of the anterior cardinal. The tooth is formed during the ontogeny of the individual, young shells lacking the distinct anterior lateral. The family includes: *Venus* Linné, *Antigona* Schumacher, *Kuia* Marwick, *Marama* Marwick, *Hina* Marwick, *Ventricola* Römer, *Cytherea* Röding, *Dosina* Gray, *Ameghinomya* von Ihering. Eocene to Recent.

The earliest valid type designation for the genus *Venus* Linné is that of Gray (1847, p. 183). Gray selected *V. verrucosa* Linné as genotype. The shells typified by *Venus mercenaria* Linné, and which are accepted almost universally as true venerids, now fall within the Chionidae.

Family TAPETIDAE Frizzell 1936.
Type genus: Tapes Megerle von Mühlfeldt 1811.

Includes: *Tapes* Megerle von Mühlfeldt, *Paratapes* Stoliczka, *Protapes* Dall, *Baroda* Stoliczka, *Icanotia* Stoliczka, *Polititapes* Chiamenti, *Pullastra* Sowerby. Cretaceous to Recent.

Family CIRCIDAE Frizzell 1936.
Type genus: Circe Schumacher 1817.

Includes : *Circe* Schumacher, *Parmulophora* Dall, *Circenita* Jousseaume. Eocene to Recent.

Family GEMMIDAE Frizzell 1936.
Type genus: Gemma Deshayes 1853.

Includes at least *Gemma* Deshayes and *Parastarte* Conrad. Eocene to Recent.

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Mr. Theodore Holway, Seattle, Washington.
Dr. Myra Keen, Stanford University, California.
Mr. H. N. Lowe, Long Beach, California (deceased).
Prof. J. Makiyama, Kyoto Imperial University, Kyoto, Japan.
Dr. W. Mansfield, U. S. National Museum, Washington, D. C.
Dr. J. Marwick, Wellington, New Zealand.
Prof. Siemon W. Muller, Stanford University, California.
Mrs. Ida S. Oldroyd, Stanford University, California.
Dr. H. A. Pilsbry, Academy of Natural Sciences of Philadelphia.
M. A. Peyrot, Bordeaux, France.
Dr. P. W. Reinhart, Tracy, California.
Mr. Frank Tolman, formerly of Stanford University, California.
Mr. Nathan Van Patten, Stanford University, California.
Mr. E. G. Vanatta, Academy of Natural Sciences of Philadelphia.
Mr. D. A. Welch, Honolulu, T. H.
Dr. W. Woodring, U. S. Geological Survey, Washington, D. C.

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