

SYNOPSIS OF THE NAIADES, OR PEARLY FRESH-WATER MUSSELS.

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In 1836 Dr. Isaac Lea published a Synopsis of the Family of Naiades, which was followed by a second edition in 1838, a third in 1852, and a fourth in 1870. In this work Dr. Lea did not attempt to make any systematic classification, but divided the species into two great genera, *Margaron* and *Platiris*, and subdivided these genera into subgenera, and finally into smaller groups founded on the presence or absence of a dorsal wing, and on the form and sculpture of the shell. This arrangement was regarded by Dr. Lea as merely a temporary one, to be used until a knowledge of the soft parts could be obtained, on which to base a permanent classification.

Several other attempts at a classification of the Naiades have been made, and among these is that of Swainson in 1840, who believed that the whole family formed a circular group, that by beginning at a certain point in it the species or genera would be found closely related to others, and these to others still, and that by following up the chain of relationships one would be brought back to the place of starting. My studies have not borne out Swainson's conclusions, but I have adopted two of his divisions of the Unionidæ, the subfamilies Unioninæ and Hyriinæ. His subfamilies Anodontinæ and Alasmodontinæ have no value, and the subfamily Iridinæ belongs in the family Mutelidæ.

In 1847 Gray gave a classification of the Naiades in his List of Recent Genera, in which he divided them into three families: Unionidæ, with the genera *Anodonta*, *Margaritana*, *Monocondylwa*, *Unio*, *Barbala*, *Lamproscapha*, *Anodonta*, *Byssanodonta*, and *Glabaris*; Mutelidæ with *Mutela*, *Leila*, *Pleiodon*, *Paryodon* and *Prisodon*, and Mycetopodidæ, with the genus *Mycetopus*.

Troschel, in 1847, proposed a classification in which the genera were founded on anatomical characters, and though for lack of knowledge

he was led into several serious errors, his work has proved an important aid in classification.

H. and A. Adams followed with a classification in 1857, in which they recognized the families Unionidæ and Mutelidæ, dividing the former into two subfamilies, Unioninæ and Mycetopinæ, and giving a list of the then known species.

Agassiz, in 1852, published a classification of the North American Unionidæ, based more especially on the anatomy, but much of his work was hasty and careless, and as a result his groups are, for the most part, heterogeneous assemblages of unrelated species.

In 1893, von Ihering published his *Najaden von San Paulo*, in which he showed that while certain of the Naiades began their existence on hatching from the egg as a *glochidium*, with a bivalve shell capable of containing the soft parts, others developed into a *lasidium*, with three segments, the middle one alone having a single shell. He showed that the presence or absence of siphons by which the Mutelidæ had been separated from the Unionidæ was not a constant character, even in individual species, and placed the genera which he believed to have glochidia in the family Unionidæ, and those with lasidia in the Mutelidæ. I consider this the most important discovery that has yet been made in the study of the Naiades.

In 1896 the writer published a classification of the Naiades, based largely on his studies of shell characters. In that it was shown that throughout one great group all the genera had shells with schizodont hinge teeth or vestiges of them, and in the rest, a smaller group, they all had taxodont teeth, or vestiges of them. As all the genera whose shells have schizodont teeth were believed by von Ihering to possess a *glochidium*, and those with taxodont teeth have a *lasidium*, it seemed as though there was a natural division of the *Naiades* into two families Unionidæ and Mutelidæ.

Some years ago the Rev. and Mrs. L. T. Chamberlain, son-in-law and daughter of Dr. Lea, suggested to Mr. Dall that a new edition of the Synopsis, or if necessary a new work, should be prepared, and for this purpose they generously offered to contribute such sums as might be needed for the purchase of material to add to the great collection left by Dr. Lea to the U. S. National Museum at his death, and for literature that might be required in preparing the work. As the writer had made a special study of the Naiades, the task of preparing the new Synopsis fell to him. Since then Mrs. Chamberlain has been called away by death, greatly regretted, but her husband has continued to cheerfully furnish all the needed funds for carrying on the work to completion.

While the labor of preparing the synopsis has been arduous, and while it has been impossible to obtain material needed in many important groups, or all the necessary literature, I feel that my opportunities for study have been exceptionally good. I have had constant access to the great collection of Dr. Lea, the finest, no doubt, ever

made of the Unionidæ, and containing more types than any other in existence. In addition to this the U. S. National Museum possesses a large collection, including many types, and for the most part carefully determined by that able student Dr. James Lewis, as well as the entire Jeffreys collection. A great amount of valuable material has been lately added to it, including the Morelet collection of Naiades, a set of Burmese shells from Fea, a series of New Zealand forms from Suter, a large number of species from von Ihering, from South and Central America and Mexico, the entire series of types of Mr. S. H. and B. H. Wright, and types from many other sources. The writer has personally examined the collections of Say, Conrad, and Rafinesque, in the Academy of Natural Sciences in Philadelphia, as well as the excellent alcoholic series which was the basis of all of Dr. Lea's studies. Through the courtesy of the officers of the New York State Museum of Natural History the entire collection of Naiades of Dr. Gould was loaned to the U. S. National Museum, in order that he might study it. Besides this he has examined the fine collections of Mr. Bryant Walker, Mrs. George Andrews, Prof. A. G. Wetherby, and a great amount of material belonging to Mr. William A. Marsh, Mr. B. H. Wright, and many others. He has made critical examinations of the soft parts of more than four hundred species, American and foreign.

Aside from the careful work of Lea, Troschel, and Pelseneer, little has been done in the way of studying the anatomy of the Naiades. The soft parts of a good many foreign species have been examined, and descriptions published which do not describe. Authors have gone into details of the color of the organs and of insignificant characters, but have paid no attention to really important points.

In my paper on The Classification and Geographical Distribution of the Pearly Fresh-water Mussels,¹ I placed a great variety of forms under the generic name *Unio*. Since that time additional knowledge, gained largely from a study of the soft parts, has led me to the belief that it would be best to dismember this genus somewhat as the old group *Helix* has been dismembered by Pilsbry. Ordinarily the soft parts of most of the Unionidæ show but slight differential characters, but at the time when the ovules pass down into the gills a most remarkable change in those organs generally takes place. In the *Anodonta edentula* of Say, short, horizontal ovisacs are developed, which run directly across the animal, and which at maturity break through the outer walls of the outer gills and pass with their young entire into the water. In the forms typified by *Unio anodontoides* the young are contained only in very distinct vertical or oblique ovisacs in the hinder part of the outer gills; in *Unio crassidens*, *pictorum*, and the like, the embryos fill the entire outer gills, forming thick, smooth pads; in *Unio metanervus*, *trigonus*, *multiplicatus*, and allied forms, they occupy all four of the branchiæ throughout. In *Unio phaseolus* the smooth outer

¹Proc. U. S. Nat. Mus., XVIII, 1896, pp. 295-343.

gills begin to be crimped as they are being filled with embryos, until when full, they become a series of marvelous folds. In *U. irroratus* several ovisacs in the center of the outer gills grow out to a great length, become filled with young, and are closely coiled. In *U. cornutus* a few central ovisacs develop so as to project below in a long, straight flap. In all the South American and Australian Unios, so far as is known, the inner gills alone, as a rule, are filled with young, and this is probably the case with the species of the Ethiopian region and most of those of southeastern Asia. After the young have passed out into the water the gills of all the species change back into their ordinary condition, and when not gravid there is great similarity in those of most of the species formerly classed as Unios.

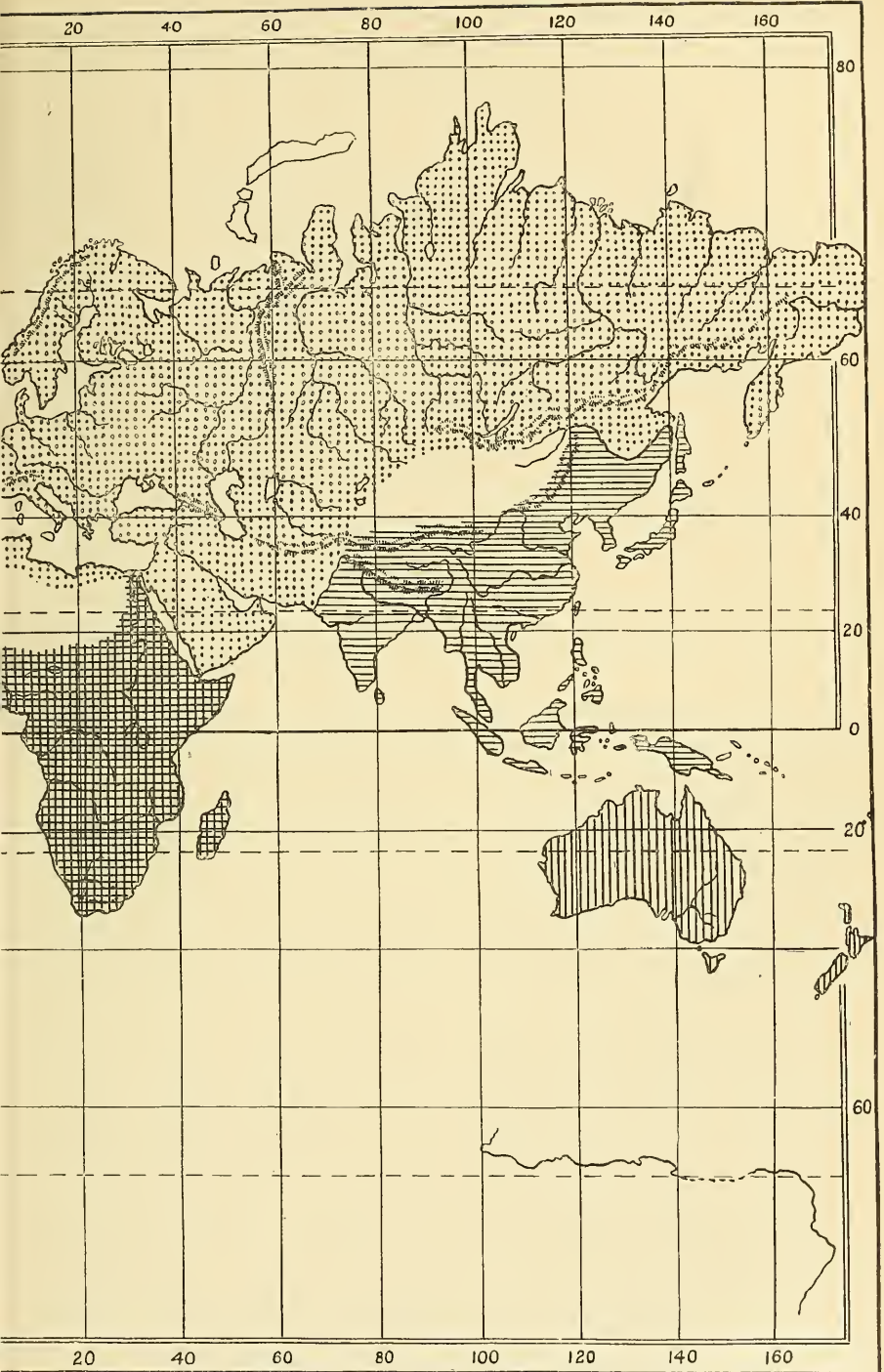
These peculiar evanescent characters, assumed when the gills are transformed into marsupia, seem to be quite constant, and I believe they can be used as a basis for the foundation of genera. When these are once discovered and understood it will be found, on careful examination, that there are minor shell characters that correspond with those of the marsupia, and which help us in placing certain forms of whose anatomy we know but little. Thus the principal shell characters of such species as *Unio trigonus*, *metanervus*, and *plicatus* are much like those of *U. gibbosus*, *crassidens*, and *buckleyi*. But in the former set all four gills will be found to be filled with young in the gravid female, while in the latter only the outer ones are full. And the former have generally shorter, solidier, more inflated shells and *deep beak cavities*, while the latter have longer, lighter shells, which have *shallow beak cavities*. In *Anodonta edentula* the ovisacs are short and run across the gills; in the very similar looking *A. ferussaciana* the outer gills are filled with oblique ovisacs, and the inner have (at least in some cases) more or less ovules. The beak sculpture of these two species is very different.

From the earliest period in which the Naiades have been studied to the present time it has been claimed by some that the sexes were separate, by others that the animals were hermaphroditic. Recent careful studies by such men as Sterki, Taylor, Kelly, and others appear to demonstrate that in the more highly organized Unionidæ (those which have two forms of shells, and have the ovisacs in the hinder part of the outer gills) the sexes are always separate. In the more simply organized Unionidæ (those with but one form of shell and with the embryos occupying the entire gill) the sexes may or may not be separate.

Further study has shown me that the provinces established in the paper I have quoted hold good as there laid down. There is evidently a very close relationship between many of the unionoid forms of southeastern Asia and tropical Africa. So close is this relation that the two regions might be united if it were not for the fact that a large



MAP SHOWING THE DISTRIBUTION

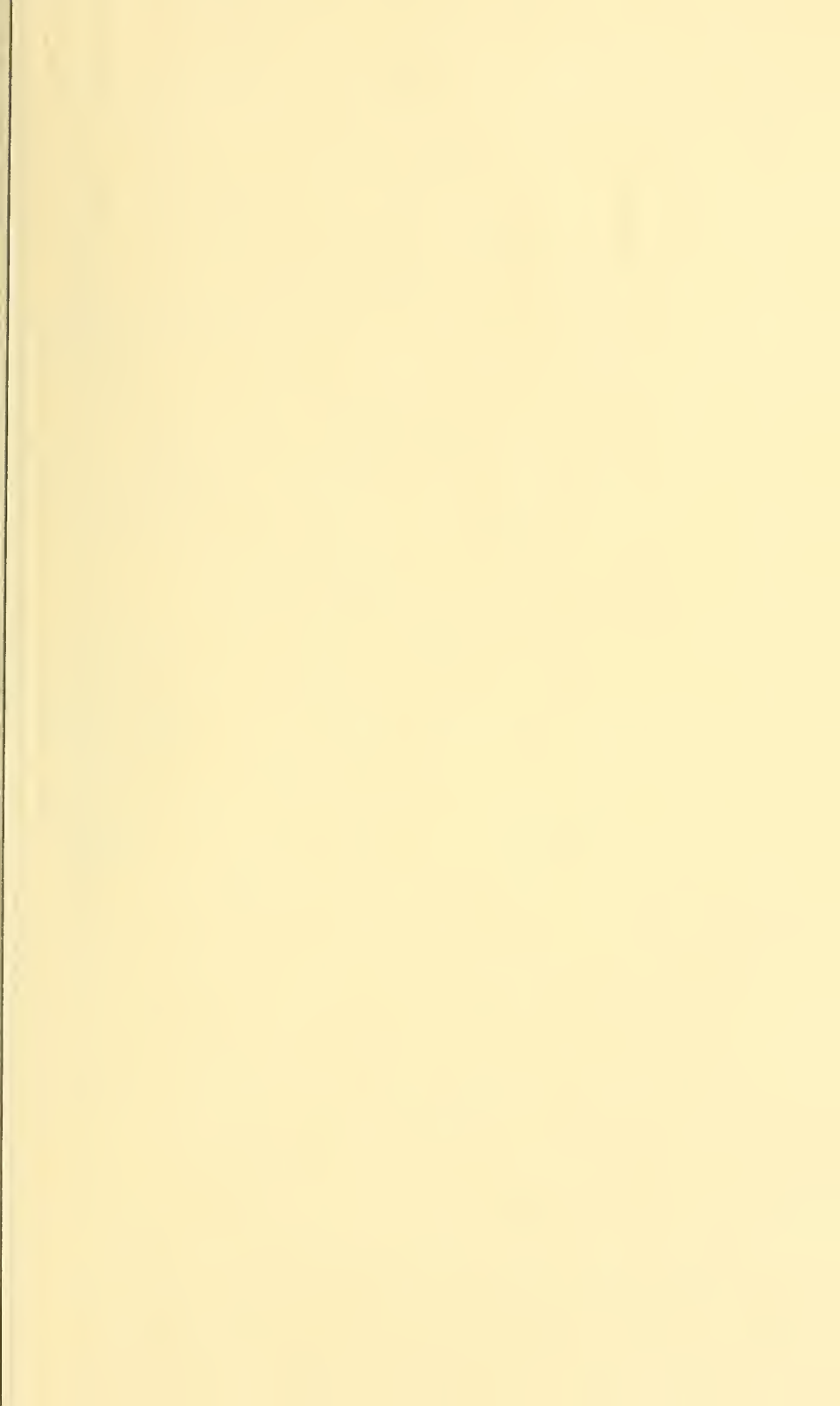


PEARLY FRESH-WATER MUSSELS



MAP SHOWING THE DISTRIBUTION

PEARLY FRESH-WATER MUSSELS



number of forms are found in each of them that are not at all closely related to any of those of the other.

These regions may be tabulated as follows:

AREAS OF THE NAIAD REGIONS.¹

	{	Europe.
Palearctic	{	Northern and Western Asia.
		North Africa to the Desert.
		Pacific drainage of North America.
Ethiopian	{	Africa, south of the Sahara.
Oriental	{	Asia, south of the Himalayas.
		East Indies to the Solomon Islands.
Australian	{	Australia.
		Tasmania.
		New Zealand. Part of New Guinea.
Neotropical	{	South America.
Central American	{	Central America.
		Mexico, east of the Cordillera.
		Cuba.
Mississippian	{	Entire Mississippi Valley and the Gulf drainage from west Florida to the Rio Grande.
		Mackenzie River system.
		Red River of the North.
		Great Lakes.
Atlantic	{	Lower St. Lawrence and rivers of eastern Canada.
		Atlantic drainage of the United States.

I have hesitated long before placing a considerable number of the species of Southeastern Asia in and near North American genera. I had hoped to be able to examine the soft parts of a number of these Oriental forms, but have been disappointed, and as nothing is known of the anatomy of most of them I have been compelled to classify by shell characters alone. It is certain that the beak sculpture of a large number of Naiades of this area is essentially concentric, and *not* zigzag radial, as it is in most of the forms of the Oriental region. The shell characters of the ponderous Chinese Uniones are certainly much like those of *Quadrula* in the form, the teeth, the beak sculpture, and especially the deep, compressed beak cavities. A great number of fossil forms from the Tertiary strata of Asia and Eastern Europe seem to show the closest relationship to the American *Quadrulas*. *Hyriopsis*, *Cristaria*, *Chamberlainia*, and *Pilsbryoconcha* seem to be related by shell characters to the alate forms of *Lampsilis*, and even the strange *Pseudospatha* of Africa would appear to belong here.

I recognize about one thousand species and 82 varieties of Unionidæ, having reduced to the synonymy a great many names that most authors have believed to stand for valid species. Of these, 533 species and 55 varieties belong in North America and 101 in South America. The list contains 117 species of Mutelidæ and 11 varieties, and of these 80

¹ For map of Naiad Regions see plate.

species are South American. The following list shows the number of species in each genus and the distribution of the genera:

UNIONIDÆ.

- | | |
|---|---|
| 19 Truncilla, United States.
3 varieties. | 6 Margaritana, Circumboreal. |
| 2 Micromya, United States.
8 varieties. | 145 Unio, North America, Palearctic.
13 varieties. |
| 128 Lampsilis, North America.
4 Pseudospatha, Tropical Africa. | 72 Plenrobema, United States.
1 variety. |
| 10 Hyriopsis, Eastern Asia.
3 Chamberlainia, Southeastern Asia. | 99 Quadrula, North America, Eastern Asia.
12 varieties. |
| 10 Cristaria, Eastern Asia.
2 Lepidodesma, Eastern Asia. | 2 Schistodesma, Eastern Asia.
1 Gibbosula, Eastern Asia. |
| 4 Pilsbryoconcha, Southeastern Asia.
6 Medionidus, United States. | 5 Cuncopsis, Eastern Asia. |
| 22 Nephronaias, Mexico, Central America, Cuba.
1 Glebula, United States. | 90 Nodularia, Eastern Asia, Asia Minor, Tropical Africa.
6 varieties. |
| 9 Obovaria, United States.
1 variety. | 1 Harmandia, Southeastern Asia.
8 Physunio, Southeastern Asia. |
| 8 Plagiola, North America.
2 Tritogonia, United States.
1 variety. | 7 Dalliella, Southeastern Asia.
11 Grandidieria, Tropical Africa. |
| 2 Cyprogenia, United States.
1 variety. | 23 Pseudodon, Eastern Asia.
1 variety. |
| 1 Obliquaria, United States.
6 Ptychobranchus, United States. | 38 Parreysia, Southeastern Asia, Tropical Africa.
8 varieties. |
| 8 Strophitus, North America.
1 variety. | 5 Ptychorhynchus, Eastern Asia.
1 variety. |
| 55 Anodonta, North America, Eastern Asia, Palearctic.
8 varieties. | 3 Virgus, Southeastern Asia.
2 Ctenodesma, Southeastern Asia. |
| 4 Colleopterum, Southeastern Europe.
3 Gabillotia, Asia Minor.
1 variety. | 5 Rectidens, Southeastern Asia. |
| 7 Leguminaia, Southern Europe, Asia Minor.
1 variety. | 12 Lamellidens, Southeastern Asia, Tropical Africa.
5 varieties. |
| 1 Lastena, United States.
9 Solenaia, Eastern Asia.
1 Gonidea, United States. | 5 Trapezoidens, Southeastern Asia.
1 variety. |
| 1 Anodontoides, North America.
2 varieties. | 3 Arconaia, Eastern Asia.
1 Pseudavicula, Tropical Africa. |
| 1 Pegias, United States.
1 Arcidens, United States. | 1 Arcidopsis, Southeastern Asia.
9 Tetraplodon, South America.
1 variety. |
| 7 Symphynota, North America.
1 variety. | 5 Castalina, South America.
1 Callonaia, South America. |
| 13 Alasmidonta, North America.
1 Hemilastena, United States. | 4 Hyria, South America.
8 Prisodon, South America. |
| | 94 Diplodon, South America, Australasia, South Africa.
6 varieties. |

MUTELIDÆ.

- | | |
|---|-----------------------------------|
| 27 Spatha, Tropical Africa.
3 varieties. | 2 Chelidonopsis, Tropical Africa. |
| 9 Mutela, Tropical Africa. | 5 Brazzea, Tropical Africa. |
| | 4 Pleidon, Tropical Africa. |

10 Monocondylæa, South America.	53 Glabaris, South America.
4 Iheringella, South America.	8 varieties.
2 Fossula, South America.	8 Mycetopoda, South America.
3 Leila, South America.	

Total: 61 genera of Unionidæ; 11 genera of Mutelidæ.

I am inclined to believe with von Ihering that the primitive beak sculpture of the Unionidæ was radial, and in two species of Unios from what are believed to be Triassic or Permian strata of the Staked Plains of Texas,¹ which are probably the oldest forms known, the beaks clearly show *strictly radial sculpture*. Four other species from the same lot are not in condition to exhibit this character.

Now I take this to belong to the simplest, earliest, and most lowly organized form of unionoid life. I believe that the earlier Unios had the young contained in the inner branchiæ alone, that there has been a gradual development from these primitive forms with simple, dull-colored, smooth shells, those of the male and female being alike, with radially sculptured beaks, the *Endobranchs*, up to the highest forms of to-day, with concentric, doubly looped beak sculpture, with highly painted shells, in which those of the male and female are very different, with the young contained in distinctly marked ovisacs in the hinder part of the outer gills alone, the *Exobranchs*.

The data for following these developments and the migrations of the *Naiades* are meager so far as fossil material is concerned. But, fortunately, while among the higher orders of life genera and even families appear, develop, grow old, and become extinct in a single geological age, the Unionidæ have held on unbroken from the Triassic or probably an earlier geological age until now, and while there has been slow progress in the development of higher characters *the primitive forms have not died out*. I know of no important type of the family among the fossil species that may not be found somewhere to-day among the living ones. They seem to have migrated to a certain region, made a slight advance over the characters of their predecessors, and to have continued down with but little change until to-day. When a new migration was made the same thing was enacted again.

If the Unionidæ originated in North America during the Triassic or some earlier period we may suppose that some members of the family migrated into South America during that or at a later period. All the species of that family in South America have radial beak sculpture (except *Callonaia* and *Prisodon*, in which the beaks seem to be smooth), and the young are contained in the inner gills alone, so far as we know. In some cases this sculpture is strictly radial; more often we find the central or all the bars curving a little toward each other below, and one or two of the middle pairs coalescing, the first move toward concentric beak sculpture. By an old, now partly submerged land bridge in the Antarctic region it is probable that a migration took place from South

¹Proc. U. S. Nat. Mus., XVIII, 1896, pp. 381-385.

America to New Zealand and Australia, and slight changes in the way of progress are shown there. The beak sculpture is still radial, but the bars are decidedly curved toward each other below; they become slightly broken or nodulous, and each set is generally removed from the other a little, so that a space in the middle of the young shell is smooth. The young are contained in the inner gills, though Suter reports a few in the outer gills of one or two species and in all these Southern Hemisphere forms the shell has a dull color, and is nearly or quite rayless. Another migration took place to Southeastern Asia, and from there there was another to tropical Africa, possibly from Southern India over an old but now lost landway. In the forms of this region the beak sculpture becomes irregularly and variously zigzag radial, the surface is nodulous in many cases, and the shell is often bright colored and painted. Some of the recent species, such as *Unio crispisulcatus*, show nearly strict radial sculpture all over the shells; others which I have placed in the genus *Lamellidens* have almost such sculpture as is seen in the beaks of the Australian forms. In others the sculpture becomes slightly nodulous. Reasoning from analogy, and the few gravid specimens I have examined of these forms with the zigzagged beak sculpture, I presume that they all carry the young in the inner gills, though it is quite probable that some of them may have them in all four gills, and this would be a step in an upward direction. Some of these Asiatic and African forms with zigzag sculpture are quite short, inflated, and solid, and, in general, show characters strongly allied to those of our heavy Mississippi Valley forms (the latter of which I place in *Quadrula*), the various members of the genus *Parreysia*, for example.

It is quite probable that from such forms the genus *Quadrula* sprung; that it developed in Asiatic streams, where it still seems to be represented. In the Tertiary strata of eastern Europe and in parts of Asia this genus seems to be abundantly represented. It is a little difficult to say from some of the living Asiatic forms whether the beak sculpture should be called sharply, doubly looped, or zigzag radial, and the same thing may almost be said of some of our North American forms. There probably existed at that period an old land way across from northeastern Asia to northwestern North America, and one which lasted a long time, or it may have been submerged and then reappeared again, for through long ages this has apparently been a highway for migrating Unionidæ. I think it not unlikely that the immediate progenitors of the magnificent and diversified series of Uniones found fossil in the Laramie beds came over from Asia among the earlier migrations; for it is a significant fact that among the Uniones of the Laramie formation in the United States we have a number of species which in general form closely resemble these recent Asiatic Parreysias, and that their beak sculpture is decidedly zigzag radial, just as it is to-day in these oriental forms. Associated with these Laramie species are others in

which the beak sculpture is somewhat concentric and of a peculiar pattern seldom found among living Uniones, the ridges being nearly straight below and sharply pointed behind in a chevron-shaped pattern.

I take it that the next step of progress was the development of the genus *Pleurobema*, or forms which are nearly allied to it; though the strange, smooth, elongated, wedge-shaped *Cuneopsis*, with its remarkably deep beak cavities and often distorted shells, and the curious *Gibbosula* seem like *Quadrulas* making an effort to shape their shells something like those of *Unio*. In *Pleurobema* the shell is solid and rather triangular, the beaks are high and typically well forward, the beak sculpture is broken, but most nearly concentric, the beak cavities are shallow, and the young occupy only the outer branchia. There are great numbers of species I should refer to this or closely allied genera in the oriental tertiaries, and many of them are knobbed. To-day the genus is confined to the Mississippi Valley and the northern drainage of the Gulf of Mexico, and all the species are smooth except *P. asopus* and *P. varicosa*, which I place in the genus with some hesitation.

This genus has an immense development in the waters of the Tennessee drainage, becoming less abundant as we advance northward, until in the Ohio River and its tributaries only three species are found, *Pleurobema clara* Lamarek, *P. varicosa* Lea, and *P. asopus* Green. In the Tennessee and Cumberland systems all the species except the two last mentioned belong to the group typified by *P. clara*. In the Alabama River drainage and a few adjacent streams emptying into the Gulf there is a great development of this genus, but none of the species belong to the *clara* group. Now, if the genus migrated into the Tennessee system from the northwest, and it seems quite probable that it did, its presence in the Alabama River system would seem to prove the theory entertained by some geologists that the Tennessee formerly emptied into the Gulf, flowing down into what is now the Coosa River and into the Alabama. Additional proof of this is found in the fact that quite a number of the common Mississippi Valley species, such as *Unio tuberculatus* Barnes, *U. rectus* Lamarek, *U. trigonus* Lea, *U. anodontoides* Lea, *U. ebenus* Lea, and others are met with in the Tennessee, the Coosa, and the Alabama River systems, and *Unio conradicus* and *U. cumberlandianus*, Tennessee River forms, occur in the Alabama system. That this southern outflow of the Tennessee ceased a long time ago is shown by the fact that in the Alabama drainage all the northern species of Uniones have a peculiar aspect, and several entire groups of *Pleurobema* have developed, which are distinct from anything found in the Tennessee.

It is probable that the true Uniones and their allies were next developed, with simple oval to elongated shells, and moderate beaks showing quite a variety of sculpture. It is generally concentric, being inclined to follow the growth lines, but sometimes the ridges are broken, and again they are somewhat doubly looped. The young occupy the outer

gills only, forming a pad-like marsupium. The genus is now found throughout a large part of the Palearctic region and North America generally, excepting the Pacific drainage. The *Unios* of what seems to be the *Gibbosus* group are abundant in the Tertiary of eastern Europe. *Unio davilai* from Roumania is almost exactly like *U. gibbosus*, a recent species of the Mississippi Valley, and there were species no doubt closely allied in the Tertiary of the western United States. There were forms in Eastern Europe which seemed to connect *Unio* and *Pleurobema*, some of which were like *P. clara* and formed a connecting link with *Quadrula*. There were *Quadrulas* showing relationship with our *Q. trigona*, *rubiginosa*, *pustulosa*, *pyramidata*, and other forms. *Psilunio crariovensis* looks much like our *Pleurobema asopus* and there are other striking examples of old forms resembling recent ones.

Now, in *Quadrula*, *Unio*, *Alasmidonta*, and some of the other allied genera we not unfrequently see species or specimens which have the ordinary concentric or doubly looped beak sculpture, and in addition to this a number of fine, regularly radiating ridges in front or behind, or sometimes at each end of the ordinary sculpture, an atavistic development, probably. In some groups this character is quite constant; in others it is only occasionally seen. I have never noticed it in any of the higher genera in which the male and female shells are different.

Up to this point the male and female shells had been essentially alike, and the ovisacks were not distinctly outlined, but formed smooth pads, the marsupium occupying practically the whole gill. In the American waters probably, a great change now began to take place in some of the *Unionidæ*. The ovisacs of many forms became distinctly marked out by a deep sulcus; a constriction developed in some instances around near the base of the marsupium, inside and out, so that the lower end of the ovisacs resembled little bulbs, and these were often filled with pigment of a different color from the rest of the ovisac. *Ptychobranchus*, with its folded marsupium, may have developed from *Unio*; *Cyprogenia* and *Obliquaria*, with their narrow central marsupia, and *Dromus*, in which it is hung all around the outer gills in short, distinct ovisacs, would seem to have descended from *Quadrula* by their shell characters. In all of these the shells of males and females are essentially alike. In *Medionidus* there is sometimes quite a well-marked swelling at the central or post-basal part of the female shell which is absent in the male, but sometimes it is impossible to separate the shells of the two sexes. The marsupium consists of irregular ovisacs just behind or almost at the center of the outer gills. In the strange *Tritogonia* the female shell differs remarkably from that of the male, having developed a broad, posterior wing, filled with a flap of the mantle, while that of the male is swollen, and truncate behind. Of the marsupia of this strange form I know nothing. *Obovaria*, with short, solid, full shells, sometimes having a slight post-basal inflation in those of the female, and *Plagiola*, with triangular shells, often showing the distinction between male and female, recall to some extent *Quadrula* in shell characters, but have the marsupia in the hinder part of the outer gills alone. The ovisacs are distinct, and there is a sulcus below, and this

is the highest type of a branchial uterus. *Lampsilis* is a step farther on, with oval to elongated shells, generally highly colored, with, as a rule, a decided post-basal swelling of that of the female, without (in most cases) a strong post ridge, and the beak sculpture consists of rather numerous, delicate bars, arranged in two distinct (anterior and posterior) loops.

Throughout the entire Mississippi Valley, a portion of the Atlantic drainage, in most of the streams flowing into the Gulf of Mexico, in eastern Mexico, and Central America there is found an extensive group of Uniones for which I have used the name *Proptera* of Rafinesque. Nearly all the shells are more or less dorsally winged, the beak sculpture is feeble, the epidermis is dull, the teeth are often imperfect, and they have a row of dorsal scars running obliquely downward and forward. The nacre generally is some shade of purple, and though the female shell may show a decided post inflation, it may be wanting. The ovisacs are usually fine and numerous, and are placed in the posterior ends of the outer gills. I have given this group subgeneric rank under *Lampsilis*. Now, it would seem probable that North America was the field in which these remarkable developments in the character of the Unionidæ had taken place, for I know of no fossil species elsewhere showing any of these higher characters. If, as I have elsewhere suggested, there is a relationship between *Proptera* and the *Cristarias*, *Hyriopsis*, *Pilsbryconcha*, *Chamberlainia*, and *Pseudospatha* of the Old World, then I should think it likely they, or their progenitors, had migrated thence from North America some time during the early or middle tertiaries. It is possible that the *Cristarias*, *Hyriopsis*, and the like, or closely related but now extinct groups, may have originated in oriental waters, and that the *Propteras*, and the typical *Lampsilis*, may be their offspring.

Truncilla marks the highest development of Naiad life, and may be taken to be the latest. Its shells are smooth and generally highly painted, the beak sculpture is fine and doubly looped, the hinge teeth are well developed. The post-basal area is very distinctly marked out and developed in the female. In most cases the shell of this part in the female is thin, of a different texture from the rest, often radially ridged, and decidedly toothed on its edge. There is usually a surprising difference in the shape of the shells of male and female aside from this, so much so that one would never suppose that they belonged to the same species, unless he traced the growth back to the young shells, which are quite alike in the different sexes. The marsupium is like a large kidney, very full, and totally different in appearance when gravid from the rest of the gill. It appears to be protected by a great flap which grows out from the mantle covering it, which is here double. The genus exhibits a great variety of form, so much so that several good subgeneric groups seem well marked out, and we must believe it has been in existence for some time.

Much of the foregoing may be mere conjecture; much is undoubtedly founded on fact. I believe that the living forms of the Unionidæ show a gradual development from the simplest, lowest, and earliest

types up to the highest, most recent, and most complicated, and stand as a sort of index to the progress of the family in the past.

I have not been able to study the Mutelidæ as carefully as I have the Unionidæ. All the species are foreign, and while I have seen the soft parts of a few South American forms, I have never had the opportunity to examine the anatomy of a single African species. I have not been able, from what knowledge I have obtained, to discover any considerable anatomical or conchological differences between the Mutelid genera of Africa and South America which might be used to separate the family into subfamilies.

I have treated the families of the Unionidæ and Mutelidæ together in this work because they have both been classed as Naiades. But the remarkable differences in the embryos, that of the former family being a glochidium with a bivalve shell inclosing the soft parts, and that of the latter a lasidium divided into three segments with a single shell on its middle section, and the shells of the one family having schizodont teeth, while those of the other have taxodont teeth, seem to show that the two great groups are not very nearly related.

In studying the Naiades I have been greatly perplexed on account of the unsatisfactory and confused condition of much of the literature. Early in this century Rafinesque collected the Unionidæ extensively in Kentucky and published a large number of genera, minor groups, and species.

It is probable that there will always be differences of opinion with regard to his work, just as there have been in the past. His figures are more like those made by children, or the caricatures drawn by aboriginal tribes, than the creations of an intelligent naturalist, and the descriptions are too brief in many cases to give any clear idea of the species. The work in the continuation of his monograph is even worse than that in the body of the paper, and tribes, genera, and subgenera are mingled in bewildering confusion, and all these are placed under two great genera. It is impossible in many cases to tell what his meaning is. I have carefully gone over his so-called types in the Academy of Natural Sciences in Philadelphia, making notes and sketches, and stating the names by which they are commonly known. Four times, separated by long intervals, I have studied his original descriptions, with specimens of the same species as these so-called types, in an attempt to determine his species, each time writing down my conclusions, and I believe that quite a number of his species will have to stand. There can be no doubt whatever that many of his so-called types are not types at all, as they do not fit the descriptions by any stretch of imagination.

In applying generic, subgeneric, and sectional names I have used those which have been previously applied wherever it has been possible to do so by the process of elimination, in order that no claim of priority might be urged for them.

A most unfortunate dispute arose among our earlier conchologists in regard to priority of names, one in which a great deal of ill feeling was displayed. I have endeavored wherever it was possible to ascertain the exact date of publication of these disputed names and to credit the species to the earliest described. In some cases it has been

impossible to tell which of two names appeared first, and in such cases I have used that which seemed to be best known.

Many of the species of Lamarek stand on about the same foundation as those of Rafinesque, having only a brief description and no figures. Dr. Lea on at least two occasions went over the types of most of Lamarek's species and has published his conclusions in the Observations, and I am obliged to abide by his decisions, never having seen the types myself.

One of the most perplexing problems has been the work done by European conchologists, and especially by the so-called new school of France. Previous to 1870, the date of issuance of Lea's last edition of the synopsis, thousands of names had been applied to the few species of Europe. But this work was conservative and reasonable compared with that of the new school since then. I have devoted much time and study to this fauna and its literature. To me it seems that there are not more than eighteen or twenty species of Unionidæ found in Europe, judging by the same standards I have applied to species elsewhere. Nearly all the authors seem to be more or less at sea as to certain forms of this area, and the reasons for this are probably their want of striking characters and their extreme variability. *Unio pictorum*, *tumidus*, *elongatulus*, and *platyrhynchoideus* have been often taken for each other. *Margaritana margaritifera* has repeatedly been mistaken for the very similar looking *M. crassa*, and each of these has been hopelessly confused with *Unio batavus*.

I have endeavored to consider names applied before 1870 in my synonymy. I have made no effort to do this with those applied by authors to the forms of Europe since that time, as I do not believe that any new species of *Unio*, *Margaritana*, *Anodonta*, or *Leguminaia* have been found there in the last thirty years. The genus *Colletopterum* (1881) is a doubtful one and is very likely only a mutation of the excessively variable *Anodonta cygnea*. In 1892 Arnould Locard, one of the great lights of the new school, stated that there were 208 species of Unios and 250 Anodontas in France alone.¹

Life is too short and valuable to be wasted in any attempt at deciphering such nonsense, and I have not even cumbered the pages of this work with a list of these new species. Those interested can find them in the works of Westerlund and Kobelt.

In cases where the new school has worked on the fauna of Africa or Asia, I have done the best I could to straighten out the synonymy.

I have not attempted to make any analytical key to genera and other groups, because I do not believe that it is possible to construct a key that will be of any real service to the student. At least four-fifths of the shells of the Naiades have the beaks so eroded that it is impossible to form any idea of what their sculpture is like, and the soft parts are inaccessible to the average student and collector. These are both vital characters that must be used in classification. The general arrangement of the groups down to genera is shown in the following table:

¹ Ann. Soc. Ag. Hist. Nat. Lyon, 1892, p. 55.

SYNOPSIS OF THE GENERA OF NAIADES.

Family Unionidae. Hinge with schizodont teeth; embryo a glochidium.	Subfamily Unioninae. Beak sculpture concentric; embryos in outer or all four of the gills. (<i>Esobranchiæ</i> .)	Ovisacs distinctly marked out by a sulcus.	Male and female shells different.	(<i>Heterogena</i> .)	<i>Truncilla</i> Rafinesque. <i>Micromya</i> Agassiz. <i>Lampsilis</i> Rafinesque. <i>Pseudospatha</i> Simpson. <i>Hyriopsis</i> Conrad. <i>Chamberlainia</i> Simpson. <i>Cristaria</i> Schumacher. <i>Lepidodesma</i> Simpson. <i>Pilsbryconcha</i> Simpson. <i>Medionidus</i> Simpson. <i>Nephronaias</i> Crosse and Fischer. <i>Glebula</i> Conrad. <i>Obovaria</i> Rafinesque. <i>Plagiola</i> Rafinesque.
				Female shell inflated at base in front of posterior ridge; marsupium in hinder part of outer gills.	(<i>Digenæ</i> .)
		Ovisacs not separated by a sulcus.	Male and female shells alike.	(<i>Mesogena</i> .)	<i>Cyprogenia</i> Agassiz. <i>Obliquaria</i> Rafinesque.
				Marsupium a few ovisacs in the center of outer gills.	(<i>Ptychogena</i> .)
				(<i>Eschatigenæ</i> .)	<i>Dromus</i> Simpson.
				Marsupium occupying the outer border of outer gills.	(<i>Diagenæ</i> .)
				(<i>Homogena</i> .)	<i>Anodonta</i> Bruguiere. <i>Colleopterum</i> Bourguignat. <i>Gabillotia</i> Servain. <i>Leguminaia</i> Conrad. <i>Lastena</i> Rafinesque. <i>Solenaia</i> Conrad. <i>Gonidea</i> Conrad. <i>Anodontoides</i> Simpson. <i>Pegias</i> Simpson. <i>Arcidens</i> Simpson. <i>Symphynota</i> Lea. <i>Alasmidonta</i> Say. <i>Hemilastena</i> Agassiz. <i>Margaritana</i> Schumacher. <i>Unio</i> Retzius. <i>Pleurobema</i> Rafinesque.
				Marsupium filling the entire outer gills and forming smooth pads.	(<i>Tetragena</i> .)
				Marsupium filling all four gills, forming smooth pads; beak cavities deep.	

Family Unionidae. Hinge with schizodont teeth; embryo a glochidium.

Subfamily Hyrianae. Beak sculpture radial; male and female shells alike; marsupium filling the inner gills. (*Endobranchiae*.)

(*Rosanorhamphus*.)

Beak sculpture generally zigzag-radial; epidermis often bright.

(*Lamphorhamphus*.)

Beak sculpture radial, often curved; shell dull colored.

Family Mutelidae.

Hinge teeth taxodont; male and female shells alike; embryo a *lasidium*.

- Nodularia* Conrad.
- Harmandia* Rochebrune.
- Grandidieria* Bourguignat.
- Physunio* Simpson.
- Dalliella* Simpson.
- Pseudodon* Gould.
- Parreysia* Conrad.
- Ptychorhynchus* Simpson.
- Virgus* Simpson.
- Ctenodesma* Simpson.
- Rectidens* Simpson.
- Lamellidens* Simpson.
- Trapezoidens* Simpson.
- Arconaiia* Conrad.
- Pseudavicula* Simpson.
- Arcidopsis* Simpson.

- Tetraplodon* Spix.
- Castalina* von Ihering.
- Castaliella* Simpson.
- Callonaia* Simpson.
- Hyria* Lamarek.
- Prisodon* Schumacher.
- Diplodon* Spix.

- Spatha* Lea.
- Mutela* Scopoli.
- Chelidonopsis* Ancey.
- Brazzava* Bourguignat.
- Pleiodon* Conrad.
- Monocondylaca* d'Orbigny.
- Iheringella* Pilsbry.
- Fossula* Lea.
- Glabaris* Gray.
- Leila* Gray.
- Mycetopoda* d'Orbigny.

In the preparation of this work I have received uniform courtesy and kindness from students and collectors generally. I am under especial obligations to Mr. Edgar A. Smith, of the British Museum, for examining and reporting on the original manuscript of Solander, and to Mr. H. A. Pilsbry, of the Academy of Natural Sciences of Philadelphia; Mr. A. G. Wetherby, of Magnetic City, North Carolina; Dr. H. von Ihering, Museo Paulista, San Paulo, Brazil; and Mr. H. Suter, Christ Church, New Zealand, for repeated assistance and advice. Mr. L. E. Daniels, of La Porte, Indiana; Mrs. George Andrews, of Knoxville, Tennessee; Hon. J. D. Mitchell, of Victoria, Texas; Mr. Berlin H. Wright, of Penn Yan, New York; Mr. Bryant Walker, of Detroit, Michigan; Dr. W. S. Strode, of Lewistown, Illinois; Mr. H. M. Kelly, of Mount Vernon, Iowa; Mr. William Moss, of Ashton-under-Lyne, England; and many others have contributed valuable material for study.

SYSTEMATIC ARRANGEMENT OF THE NAIADES.

Family UNIONIDÆ.

Shell nacreous, with a thick epidermis; beaks usually sculptured, often showing the remains of the nuclear shell; ligament opisthodontic; hinge with or without teeth, though with vestiges of them in every genus; when present schizodont and arranged as pseudocardinals and laterals; palleal line usually simple; prismatic border ordinarily narrow.

Animal with labial palpi almost always wider than long; anal opening usually separated from the superanal; embryo a glochidium, the soft parts being inclosed in a bivalve shell, and borne in the inner or outer or all four leaves of the branchiæ.

Subfamily UNIONINÆ Swainson, 1840. (Exobranchiæ.)

Shell having essentially concentric beak sculpture.

Animal with labial palpi somewhat drawn out, projecting posteriorly; embryos borne in the outer or in all four gills.

HETEROGENÆ.

Male and female shells different, the latter inflated in the post-basal region; beak sculpture usually doubly looped; embryos contained in ovisacs separated by a sulcus and occupying the hinder part of the outer gills.

Genus TRUNCILLA Rafinesque, 1819.

(Type, *Truncilla triquetra* Rafinesque.)

Truncilla RAFINESQUE, J. de Phys., Chimie, Hist. Nat., LXXXVIII, 1819, p. 427.

Shell rounded or oval, solid, inflated, generally smooth and rayed, with delicate beak sculpture which has a tendency to be doubly looped, that of the female having a very decided inflation in the post-basal region, which is thinner than the rest of the shell, of different texture, often toothed, and usually radiately sculptured; laterals double in each valve, the inner in the right valve smaller. Animal generally having the inner gills united to the abdominal sac; female with a heavy flap of the mantle which fills the post-basal swelling of the shell, and which has an inner ridge inside at some distance above the edge; marsupium very distinct, occupying the swollen part of the shell.

Subgenus TRUNCILLA Rafinesque, 1819.

Shell covered with broken rays, somewhat triangular, and without a wide, radiate, posterior furrow.

(Group of *Truncilla triquetra*.)

Shell greatly inflated, sharply truncate posteriorly; inflation of the female shell at extreme post-basal point.

† TRUNCILLA TRIQUETRA Rafinesque.

* *Truncilla triquetra* RAFINESQUE, Ann. Gen. Sci. Phys. Brux., XIII, 1820, p. 300, pl. LXXXI, figs. 1-4.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 15, pl. II, fig. 1.—*AGASSIZ, Arch. für. Naturg., I, 1852, p. 44.

Unio triquetra SHORT and EATON, Transylvania Jl., 1831, p. 79.—*SAY, Am. Conch., VI, 1834.—*CONRAD, New F.W. Shells, 1834, p. 72.—*FERUSSAC, Guer. Mag., 1835, p. 27.—*SAY, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—*PÆTEL, Conch. Sam., III, 1890, p. 170.

* *Unio triangularis* BARNES, Am. Jl. Sci., VI, 1823, p. 272, pl. XIII, fig. 17.—*HILDRETH, Am. Jl. Sci., X, 1828, p. 287, fig. —*SAY, Am. Conch., No. 1, 1830, pl. IV.—SHORT and EATON, Transylvania Jl., 1831, p. 78.—*DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 554; 3d ed., II, 1839, p. 674.—*REEVE, Conch. Syst., I, 1841, p. 118, pl. LXXXIX, fig. 9.—*HANLEY, Test. Moll., 1842, p. 183; *Biv. Shells, 1843, p. 183.—*CATLOW and REEVE, Conch. Nom., 1845, p. 64.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 10, pl. I, figs. 4, 4b; *Man., II, 1859, p. 137, fig. 662.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXVII, fig. 340.—*CALKINS, Pr. Ottawa Acad. Nat. Sci., 1874, p. 45.

* *Mya triangularis* EATON, Zool. Text Book, 1826, p. 221.

* *Margarita (Unio) triangularis* LEA, Syn., 1836, p. 18; 1838, p. 16.

* *Margaron (Unio) triangularis* LEA, Syn., 1852, p. 23; 1870, p. 36.

* *Unio cuneatus* SWAINSON, Phil. Mag., 1823, p. 112.

* *Unio formosus* LEA, Trans. Am. Phil. Soc., IV, 1834, p. 111, pl. XVI, fig. 41; *Obs. I, 1834, p. 121, pl. XVI, fig. 41.—*CHENU, III. Conch., 1858, pl. VIII, figs. 12, 12a, 12b; *Man., 1859, II, p. 138, fig. 664.

Ohio River drainage; western New York to southern Michigan; Iowa; eastern Nebraska to Indian Territory.

(Group of *Truncilla brevidens*.)

Shell somewhat quadrate, not sharply truncate behind; post-basal swelling of female in front of post-basal point and rounded below.

† TRUNCILLA BREVIDENS Lea.

Unio brevidens LEA, Trans. Am. Phil. Soc., IV, 1834, p. 75, pl. IV, fig. 6; *Obs. I, 1834, p. 85, pl. VI, fig. 6.—*HANLEY, Test. Moll., 1842, p. 198; *Biv. Shells, 1843, p. 198, pl. XX, fig. 41.—*CATLOW and REEVE, Conch. Nom., 1845, p. 56.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—*CHENU, III., Conch., 1858, pl. VIII, figs. 6, 6a, 6b.—*PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Margarita (Unio) brevidens* LEA, Syn., 1836, p. 29; 1838, p. 21.

* *Margaron (Unio) brevidens* LEA, Syn., 1852, p. 32; 1870, p. 50.

†A † placed before a species indicates that the type, or what are believed to be authentic specimens have been examined by the writer.

*An * in front of a reference indicates that it has been verified.

- * *Unio interruptus* CONRAD, New F. W. Shells, 1834, p. 69.—* SAY, Am. Conch., VI, 1834.—* CONRAD, Monog., X, 1838, p. 88, pl. XLVIII; * Pr. Ac. N. Sci., Phila., VI, 1853, p. 250.—* KUSTER, Conch. Cab. Unio, 1861, p. 182, pl. LVII, fig. 3; pl. LX, fig. 2.—* REEVE, Conch. Icon., XVI, 1864, pl. XIV, fig. 56.
- * *Truncilla interrupta* AGASSIZ, Arch. für Naturg., I, 1852, p. 44.

Tennessee drainage.

† TRUNCILLA PENITA Conrad.

- * *Unio penitus* CONRAD, New F. W. Shells, 1834, pp. 33, 70, pl. V, fig. 1.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 203.—* HANLEY, Test. Moll., 1842, p. 183; * Biv. Shells, 1843, p. 183.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* CHENU, Bib. Conch., III, 1845, p. 18, pl. III, fig. 9.—* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 254.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* REEVE, Conch. Icon., XVI, 1864, pl. XIV, fig. 55.—* P. ETEL, Conch. Sam., III, 1890, p. 162.
- * *Margarita (Unio) penitus* LEA, Syn., 1836, p. 19; 1838, p. 16.
- * *Margaron (Unio) penitus* LEA, Syn., 1852, p. 24; 1870, p. 36.
- * *Unio compactus* LEA, Proc. Ac. N. Sci. Phila., III, 1859, p. 154; * JI. Ac. N. Sci. Phila., IV, 1859, p. 218, pl. XXVIII, fig. 98; * Obs. VII, 1859, p. 36, pl. XXVIII, fig. 98.
- * *Margaron (Unio) compactus* LEA, Syn., 1870, p. 36.

Alabama and Tombigbee river drainage.

† TRUNCILLA MODICELLA Lea.

- * *Unio modicellus* LEA, Pr. Ac. Phila., III, 1859, p. 171; * JI. Ac. N. Sci. Phila., IV, 1860, p. 347, pl. LVII, fig. 172; * Obs., VIII, 1860, p. 29, pl. LVII, fig. 172.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) modicellus* LEA, Syn., 1870, p. 41.

Connasauga and Chattanooga rivers, northwest Georgia.

The following species² are unfigured and indeterminate:

- Truncilla (Unio) perplexus* Rafinesque.
Truncilla granulatus Rafinesque.
Unio (Truncilla) metaplata Rafinesque.

† TRUNCILLA LENIOR Lea.

- * *Unio lenis* LEA, Pr. Am. Phil. Soc., I, 1840, p. 286.³
- * *Unio lenior* LEA., Tr. Am. Phil. Soc., VIII, 1843, p. 204, pl. XII, fig. 18; * Obs., III, 1842, p. 42, pl. XII, fig. 18.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 251.—* CHENU, Ill. Conch., 1858, pl. XXVII, figs. 4, 4a, 4b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* REEVE, Conch. Icon., XVI, 1864, pl. XVII, fig. 75.—* P. ETEL, Conch. Sam., III, 1890, p. 157.
- * *Margaron (Unio) lenior* LEA, Syn., 1852, p. 39; 1870, p. 62.

Stone River, Tennessee; near Woodville, Alabama.

¹Four specimens of this species are in the U. S. National Museum collection, from the Connasauga River, Georgia, three of which are males, with a form something like that of *T. penita*; the fourth is a young female, which distinctly shows a radiately ridged post-basal swelling.

²These are in continuation of Monography, 1831, p. 4.

³Lea changed his name *lenis* to *lenior*, probably because Conrad had previously used the former for a species of *Unio*, which is no doubt a young *ventricosus*.

† TRUNCILLA METASTRIATA Conrad.

* *Unio metastriatum* CONRAD, Mon., XII, 1840, p. 104, pl. LVII, fig. 2.

Black Warrior River and Woodville, Alabama.

(Group of *Truncilla arcaformis*.)

Shell greatly inflated, with a sharp posterior ridge, and two lesser ridges above it; inflation of the female flattened on its base.

† TRUNCILLA ARCÆFORMIS Lea.

* *Unio arcaformis* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 116, pl. XVII, fig. 44; *Obs., I, 1834, p. 126, pl. XVII, fig. 44.—*ANTON, Verz. der Conch., 1839, p. 14.—DESHAYES, Tr. Element, Conch., 1839, p. 18, pl. XXIX, fig. 6.—*HANLEY, Test. Moll., 1842, p. 182; *Biv. Shells, 1843, p. 182, pl. XXII, fig. 40.—*CATLOW and REEVE, Conch. Nom., 1845, p. 55.—*DESHAYES, Traité Element., II, 1853, pl. XXIV, fig. 6.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CHENU, Ill. Conch., 1858, pl. XII, figs. 3, 3a, 3b.—*REEVE, Conch. Icon., XVI, 1864, pl. XIV, fig. 57.

**Margarita (Unio) arcaformis* LEA, Syn., 1836, p. 18; 1838, p. 16.

Margaron (Unio) arcaformis LEA, Syn., 1852, p. 23; 1870, p. 36.

**Truncilla arcaformis* AGASSIZ, Arch. für Naturg., I, 1852, p. 44.

Unio nexus SAY, Transylvania JI., IV, 1831, p. 527; *SAY, Am. Conch., Pt. 6, 1834, pl. LI.²—*CONRAD, New F. W. Shells, 1834, p. 70.—*FERUSSAC, Guer. Mag., 1835, p. 28.—*CONRAD, Monog., VIII, 1837, p. 68, pl. XXXVIII, fig. 1.—*KUSTER, Conch. Cab. Unio, 1854, p. 69, pl. XVII, fig. 2.—*CONRAD, Pr. Ac. N. Sei. Phila., VI, 1853, p. 252.—*PLETEL, Conch. Sam., III, 1890, p. 60.

Tennessee and Cumberland river systems.

Subgenus SCALENARIA (Rafinesque, 1820) Agassiz.

(Type, *Unio sulcatus* Lea.)

Male shell having a wide, radiating, shallow depression in front of the posterior ridge; that of the female having a small, rounded, well-defined, radial post-basal swelling. Animal with marsupium occupying the greater part of the outer branchiæ; mantle enlarged below; branchial opening, with few papillæ.

(Group of *Truncilla sulcata*.)

Shell elliptical, beaks high and well forward, male shell not radiately striated posteriorly.

¹This may be *T. triquetra*.

²According to Binney, *Unio nexus* was first published in December, 1831, (Bib. N. Am. Conch., I, p. 266), and Seudder states that the fourth volume of the Transactions, containing Lea's description of *Unio arcaformis*, was published at the latter end of 1831, and acknowledged by correspondents as received that year (Bib. of publications of Lea, 1885, p. 3). As I am not able to say which has precedence, I prefer retaining the well-known name of Lea rather than that of Say, which is less known.

†TRUNCILLA SULCATA Lea.

- * *Unio sulcatus* LEA, Tr. Am. Phil. Soc., III, 1830, p. 430, pl. VIII, fig. 2.—*SAY, Am. Conch., No. 1, 1830, pl. v.—SHORT and EATON, Transylvania Jl., 1831, p. 75.—*LEA Obs., I, 1834, p. 44, pl. VIII, fig. 12.—*HANLEY, Test. Moll., 1842, p. 188; *Biv. Shells, 1843, p. 188.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 11, pl. I, figs. 5, 5a.—*CATLOW and REEVE, Conch. Nom., 1845, p. 64.—*CHENU, Ill. Conch., 1858, pl. XIII, figs. 3, 3a, 3b.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—*REEVE, Conch. Icon., XVI, 1864, pl. XIV, fig. 60.—*PÆTEL, Conch. Sam., III, 1890, p. 169.
- **Margarita (Unio) sulcatus* LEA, Syn., 1836, p. 22; 1838, p. 18.
- **Margaron (Unio) sulcatus* LEA, Syn., 1852, p. 26; 1870, p. 40.
- **Unio sulcata* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 548; 3d ed., II, 1839, p. 672.
- Unio ridibundus* SAY, New Harm. Diss., II, 1829, p. 308; *Am. Conch., I, 1830, pl. v.—SHORT and EATON, Transylvania Jl., 1831, p. 75.—*CONRAD, New F. W. Shells, 1834, p. 71.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 11, pl. I, fig. 6.—*KUSTER, Conch. Cab. Unio, 1862, p. 276, pl. XCIII, fig. 2.—*REEVE, Conch. Icon., XVI, 1864, pl. XV, fig. 63.
- **Unio obliquatus* SAY, Am. Conch., VI, 1834.—*CONRAD, New F. W. Shells, 1834, p. 70.—*KUSTER, Conch. Cab., 1862, p. 274, pl. XCII, fig. 3.—*AGASSIZ, Arch. für Naturg., I, 1852, p. 43.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.
- **Unio gibbosus* var. *perobliquus* CONRAD, Monog., VI, 1836, p. 50, pl. XXVII, fig. 2.
- Unio perobliquus* CONRAD, Cover of Monog., VIII, 1837.
- **Unio pectitus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255; Jl. Ac. N. Sci. Phila., 1854, p. 297, pl. XXVII, fig. 4.

TRUNCILLA SULCATA var. DELICATA Simpson.¹

Ohio River drainage; the variety in the Detroit River and southern Michigan.

(Group of *Truncilla haysiana*.)

Shell shining, round-oval; posterior part of both male and female distinctly radially sculptured.

†TRUNCILLA HAYSIANA Lea.

- **Unio haysianus* LEA, Tr. Am. Phil. Soc., V, 1833, p. 35, pl. III, fig. 7; *Obs., I, 1834, p. 147, pl. III, fig. 7.—*HANLEY, Test. Moll., 1842, p. 188; *Biv. Shells, 1843, p. 188.—*CATLOW and REEVE, Conch. Nom., 1845, p. 59.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—*KUSTER, Conch. Cab. Unio, 1856, p. 209, pl. LXIX, fig. 4.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*REEVE, Conch. Icon., XVI, 1864, pl. XV, fig. 62.—*PÆTEL, Conch. Sam., III, 1890, p. 154.
- **Margarita (Unio) haysianus* LEA, Syn. 1836, p. 22; 1838, p. 18.
- **Margaron (Unio) haysianus* LEA, Syn. 1852, p. 26; 1870, p. 41.
- **Scalenaria haysiana* AGASSIZ, Arch. für Naturg., I, 1852, p. 48.
- **Unio sowerbyanus* LEA, Tr. Am. Phil. Soc., V, 1839, p. 68, pl. x, fig. 28;² *Obs. I, 1834, p. 180, pl. x, fig. 28.—*FERUSSAC, Guer. Mag., 1835, p. 29.—*CONRAD,

¹Mr. Bryant Walker has sent me specimens of a form which I refer to this species that are smaller and in every way more delicate. I propose the above varietal name for it.

²Male of *T. haysiana*. *Unio haysianus* and *U. sowerbyanus* were published in the same paper, the former having precedence.

Monog., VIII, 1837, p. 66, pl. xxxvii, fig. 1.—* HANLEY, Test. Moll., 1842, p. 185; *Biv. Shells, 1843, p. 185.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* KUSTER, Conch. Cab. Unio, 1852, p. 62, pl. xiv, fig. 3.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* REEVE, Conch. Icon., XVI, 1864, pl. xiv, fig. 58.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

**Margarita (Unio) sowerbyanus* LEA, Syn. 1836, p. 20; 1838, p. 17.

**Margaron (Unio) sowerbyanus* LEA, Syn. 1852, p. 25; 1870, p. 38.

Tennessee and Cumberland river systems.

† TRUNCILLA OTHCALOOGENSIS Lea.

**Unio othcaloogensis* LEA, Proc. Acad. N. Sci. Phila., IX, 1857, p. 32;¹ Jl. Ac. N. Sci. Phila., IV, 1858, p. 74, pl. xiv, fig. 54; Obs. VI, 1858, p. 75, pl. xiv, fig. 54.

**Margaron (Unio) othcaloogensis* LEA, Syn. 1870, p. 38.

Othcalooga Creek, Gordon County, Georgia.

Subgenus DYSNOMIA Agassiz. 1852.

(Type, *Unio foliatus* Hildreth.)

Shell of the male with a posterior and central radiating ridge, with a wide, flattened space between; that of the female with a greatly produced inflation, which is but little behind the center of the base, it being a continuation of the central ridge. Animal with mantle beautifully maculate on its border; female animal unknown.

† TRUNCILLA FOLIATA Hildreth.

**Unio foliatus* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 284, fig. 16.—* CONRAD, New F. W. Shells, 1834, p. 69.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* HANLEY, Test. Moll., 1842, p. 176; *Biv. Shells, 1843, p. 176.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Man., 1859, II, p. 143, fig. 705.—* HARPER, L. and F. W. Shells of Cinti., p. 4.

**Margarita (Unio) foliatus* LEA, Syn. 1836, p. 13; 1838, p. 14.

**Margaron (Unio) foliatus* LEA, Syn. 1852, p. 20; 1870, p. 30.

**Unio flexuosus* CONRAD, Monog. I, 1835, p. 8, pl. iv, fig. 2.—* KUSTER, Conch. Cab. Unio, 1852, pp. 46, 211, pl. ix, fig. 2; LXX, fig. 1.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* REEVE, Conch. Icon., XVI, 1864, pl. vi, fig. 22; XIII, fig. 53.

**Dysnomia flexuosa* AGASSIZ, Arch. für Naturg. I, 1852, p. 43.

Ohio River drainage.

† TRUNCILLA STEWARDSONI Lea.

**Unio stewardsoni* LEA, Tr. Am. Phil. Soc., X, 1852, p. 278, pl. xxiii, fig. 36; * Obs. V, 1852, p. 34, pl. xxiii, fig. 36.—* CONRAD, Pr. Acad. Nat. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* REEVE, Conch. Icon., XVI, 1864, pl. xv, fig. 66.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

**Margaron (Unio) stewardsoni* LEA, Syn. 1852, p. 20; 1870, p. 38.

Tennessee River.

¹ I have seen only the type of this species, apparently a young female, which is a reddish buff-colored, shining shell, somewhat more elongated than *T. haysiana*, but which probably groups with it.

Subgenus *PILEA* Simpson, 1900.(Type, *Unio personatus* Say.)

Male shell with a wide, shallow, radiating depression in front of the posterior ridge, that of the female with a rounded, foliaceous swelling at the posterior base. Animal with post basal flap of mantle of female very heavy; ovisacs not extending to the top of the marsupium.

(Group of *Truncilla personata*.)

Shell inflated, rather solid, nearly as high as long; female not having a central depression, post basal swelling small.

† *TRUNCILLA PERSONATA* Say.

Unio personatus SAY, New Harm. Diss. II, No. 20, 1829, p. 309.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* CONRAD, Monog. V, 1836, p. 47, pl. XXIV.—* HANLEY, Test. Moll., 1842, p. 202; * Biv. Shells, 1843, p. 202.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* KUSTER, Conch. Cab. Unio, 1852, p. 48, pl. X, fig. 1.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* REEVE, Conch. Icon., XVI, 1864, pl. XV, fig. 64.—* PÆTEL, Conch. Sam., III, 1890, p. 116.

* *Margarita (Unio) personatus* LEA, Syn. 1836, p. 33; 1838, p. 23.

* *Margaron (Unio) personatus* LEA, Syn. 1852, p. 35; 1870, p. 38.

* *Scalenaria personata* AGASSIZ, Arch. für Naturg. I, 1852, p. 43.

* *Unio pileus* LEA, Trans. Am. Phil. Soc., IV, 1834, p. 119, pl. XVIII, fig. 47.—* CONRAD, New F. W. Shells, 1834, p. 71.—* LEA, Obs. I, 1834, p. 129, pl. XVIII, fig. 47.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* HANLEY, Test. Moll., 1842, p. 185; * Biv. Shells, 1843, p. 185.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* CHENU, Ill. Conch., 1858, pl. XV, figs. 2, 2a, 2b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* REEVE, Conch. Icon., XVI, 1864, pl. XV, fig. 64.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Margarita (Unio) pileus* LEA, Syn. 1836, p. 20; 1838, p. 17.

* *Margaron (Unio) pileus* LEA, Syn. 1852, p. 24.

* *Unio capillaris* LEA, Tran. Am. Phil. Soc., V, 1834, p. 29, pl. II, fig. 2; * Obs. I, 1834, p. 141, pl. II, fig. 2.—* FERUSSAC, Guer. Mag., 1835, p. 29.

Ohio River drainage. Rare.

(Group of *Truncilla perplexa*.)

Shell of the male with median and posterior radiating ridges, both of which are usually somewhat nodose; postbasal expansion of the female rounded, large, thin, placed far back.

† *TRUNCILLA PERPLEXA* Lea.¹

* *Unio perplexus* LEA, Trans. Am. Phil. Soc., IV, 1831, p. 112, pl. XVII, fig. 42; * Obs. I, 1834, p. 122, pl. XVII, fig. 42.—* HANLEY, Test. Moll., 1842, p. 181; * Biv. Shells, 1843, p. 181, pl. XXII, fig. 39.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CHENU, Ill. Conch., 1858, pl. XVIII, figs. 5, 5a, 5b.

* *Margarita (Unio) perplexus* LEA, Syn. 1836, p. 17; 1838, p. 16.

¹ Lea's species was published, according to Scudder (Bibliography of Isaac Lea, p. 3), in the latter part of 1831. Rafinesque published a species, "*Truncilla, Unio perplexus*," in the Continuation of a Monograph in October, 1831, which I can not identify. I do not know which name appeared first, but I think it best to retain the well-known and properly described name of Dr. Lea.

- * *Margaron (Unio) perplexus* LEA, Syn., 1852, p. 23; 1870, p. 34.
 * *Unio gibbosus* FERUSSAC, Guer. Mag., 1835, p. 27.—CONRAD, Monog. VI, 1836, p. 50, pl. XXVII, fig. 1.—REEVE, Conch. Icon., XVI, 1864, pl. XI, fig. 41, 41a, 41b.
 * *Dysnomia gibbosa* AGASSIZ, Arch. für Nat., I, 1852, p. 43.
 * *Unio gibbosus*, Raf. v. *perplexus* PÆTEL, Conch. Sam., III, 1890, p. 153.
 * *Unio torulosus* CONRAD, New F. W. Shells, 1834, p. 72; *Proc. Acad. N. Sci. Phila., VI, 1853, p. 259.
 * *Unio obliquus* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 153, pl. LVIII, figs. 3, 4.

† TRUNCILLA PERPLEXA var. RANGIANA Lea.

- * *Unio rangianus* LEA, Trans. Am. Phil. Soc., VI, 1839, p. 95, pl. XVIII, fig. 56;¹
 * Obs., II, 1838, p. 95, pl. XVIII, fig. 56.—* TROSCHEL, Arch. für Naturg., V, 1839, p. 237.—* HANLEY, Test. Moll., 1842, p. 187; * Biv. Shells, 1843, p. 187, pl. XXI, fig. 48.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 256.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU., Ill. Conch., 1858, pl. XXIV, figs. 5, 5a, 5b.—* KUSTER, Conch. Cab. Unio, 1861, p. 257, pl. LXXXVII, fig. 1; LXXXIX, fig. 1.—* REEVE, Conch. Icon., XVI, 1864, pl. XIV, fig. 54.—* PÆTEL, Conch. Sam., III, 1890, p. 164.
 * *Margarita (Unio) rangianus* LEA, Syn., 1838, p. 18.
 * *Margaron (Unio) rangianus* LEA, Syn., 1852, p. 26; 1870, p. 40.
 * *Unio gubernaculum* REEVE, Conch. Icon., XVI, 1865, pl. XXVIII, fig. 146.—PÆTEL, Conch. Sam., III, 1890, p. 154.

† TRUNCILLA PERPLEXA var. CINCINNATIENSIS Lea.

- * *Unio cincinnatiensis* LEA, Proc. Am. Phil. Soc., I, 1840, p. 285; *Tr. Am. Phil. Soc., VIII, 1842, p. 194, pl. VIII, fig. 4; *Obs., III, 1842, p. 32, pl. VIII, fig. 4.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 246.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU., Ill. Conch., 1858, pl. XXX, figs. 3, 3a, 3b.—* PÆTEL, Conch. Sam., III, 1890, p. 148.
 * *Margaron (Unio) cincinnatiensis* LEA, Syn., 1852, p. 22; 1870, p. 33.
 * *Unio phillipsii* REEVE, Conch. Icon., XVI, 1864, pl. IV, fig. 15.

Ohio River drainage; southern Michigan? The variety *rangianus* to south Michigan.

† TRUNCILLA SAMPSONII Lea.

- * *Unio sampsonii* LEA, Pr. Ac. N. Sci. Phila., VI, 1861, p. 392; *Jl. Ac. N. Sci. Phila., V, 1862, p. 192, pl. XXV, fig. 261; *Obs., IX, 1863, p. 14, pl. XXV, fig. 261; Syn., 1870, p. 40.

Wabash River; Tennessee?

† TRUNCILLA PROPINQUA Lea.

- * *Unio propinquus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 83; *Jl. Ac. N. Sci. Phila., V, 1862, p. 63, pl. V, fig. 212; *Obs., VIII, 1862, p. 67, pl. V, fig. 212.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIX, fig. 417.—* PÆTEL, Conch. Sam., III, 1890, p. 164.
 * *Margaron (Unio.) propinquus* LEA, Syn., 1870, p. 34.

Tennessee and Cumberland river drainage.

¹ Dr. Lea claims that the animal of this form is lighter colored than that of *perplexus*, and quotes Mr. Clark, of Cincinnati, who states that this is known there as the White Mouth. The shells seem to absolutely blend together, and I have observed a wide range of color in the animals of a number of species of the genus.

† TRUNCILLA BIEMARGINATA Lea.

- * *Unio biemarginatus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 83; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 47, pl. XVI, fig. 45; *Obs., XI, 1867, p. 51, pl. XVI, fig. 45.
 **Margaron (Unio) biemarginatus* Lea, Syn., 1870, p. 38.

Tennessee River drainage.

† TRUNCILLA CAPSÆFORMIS Lea.

- * *Unio capsæformis* LEA, Tr. Am. Phil. Soc., VI, 1834, p. 31, pl. II, fig. 4; *Obs., I, p. 143, pl. II, fig. 4.—*CONRAD, Monog., VIII, 1837, p. 72, pl. XL, fig. 2.—*FERUS-SAC, Guer. Mag., 1839, p. 29.—*HANLEY, Test. Moll., 1842, p. 191, *Biv. Shells, 1843, p. 19, pl. XXI, fig. 5.—*CATLOW and REEVE, Conch. Nom., 1845, p. 57.—*KUSTER, Conch. Cab. Unio, 1852, p. 42, pl. VIII, fig. 5.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*REEVE, Conch. Icon., XVI, 1864, pl. XVII, figs. 79, 79a, 79b.—*PÆTEL, Conch. Sam., III, 190, p. 147.
 **Margarita (Unio) capsæformis* LEA, Syn., 1836, p. 24; 1838, p. 19.
 **Margaron (Unio) capsæformis* LEA, Syn., 1852, p. 27; 1870, p. 42.

Tennessee River drainage.

† TRUNCILLA FLORENTINA Lea.

- * *Unio florentinus* LEA, Pr. Ac. N. Sci. Phila., VII, 1857, p. 83; *Jl. Ac. N. Sci. Phila., V, 1862, p. 61, pl. v, fig. 213; *Obs., VIII, 1862, p. 68, pl. v, fig. 213.—*B. H. WRIGHT, Check List, 1888.
 **Margaron (Unio) florentinus* LEA, Syn., 1870, p. 42.
 * *Unio turgidulus* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 40; *Jl. Ac. N. Sci. Phila., V, 1862, p. 62, pl. v, fig. 211; *Obs., VIII, 1862, p. 66, pl. v, fig. 211.—*REEVE, Conch. Icon., XVI, 1864, pl. XVII, fig. 80.—*PÆTEL, Conch. Sam., III, 1890, p. 170.
 **Margaron (Unio) turgidulus* LEA, Syn., 1870, p. 42.
 * *Unio nux* KUSTER, Conch. Cab. Unio, 1861, p. 218, pl. LXXIII, fig. 2.
 * *Unio sacculus* REEVE, Conch. Icon., XVI, 1864, pl. xv, fig. 67.—*ANTHONY, Am. Jl. Conch., I, 1865, p. 157, pl. XII, fig. 3.
 * *Unio saccatus* KUSTER, Conch. Cab., 1861, p. 263, pl. LXXXIX, fig. 2.—*PÆTEL, Conch. Sam., III, 1890, p. 166.

Tennessee River drainage; Cumberland River.

† TRUNCILLA DEVIATA Reeve.

- * *Unio deviatu*¹ REEVE, Conch. Icon., XVI, 1864, pl. xv, fig. 61.—*ANTHONY, Am. Jl. Conch., I, 1865, p. 156, pl. XII, fig. 2.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 150.
 **Margaron (Unio) deviatu* LEA, Syn., 1870, p. 42.

Cumberland and Tennessee rivers.

Genus MICROMYA (Agassiz, 1852) Simpson.

(Type, *Unio fabalis* Lea.)

Micromya AGASSIZ, Arch. für Nat., 1852, p. 57.

Shell triangular oval, solid, dark, feebly rayed with undulating lines; beak sculpture almost wanting, consisting of a few feeble, doubly-looped

¹Reeve credits this name to Anthony's manuscript in Museum Cuming.

ridges; hinge teeth heavy, laterals club-shaped and truncated posteriorly; post-basal swelling of the female distinct and often rather abrupt, sometimes somewhat irregularly radially ridged, the shell of this part being rather thin.

Animal with mantle fringed below, maculate on the border, which is greatly thickened at the post-basal part in the female and developed into a flap, with a distinct, toothed ridge inside; marsupium occupying the posterior part of the outer branchiæ in numerous distinctly marked ovisacs; inner gills free from abdominal sac in part.

(Group of *Micromya fabalis*.)

Shell small, with faint undulate rays, inflated area of female scarcely radiately striated.

† MICROMYA FABALIS Lea.

* *Unio fabalis*,¹ LEA, Tr. Am. Phil. Soc., IV, 1831, p. 86, pl. x, fig. 6; *Obs., I, 1834, p. 96, pl. x, fig. 16.—*FERUSSAC, Guer. Mag., 1835, p. 27.—*HANLEY, Test. Moll., 1842, p. 196; *Biv. Shells, 1843, p. 196.—*CATLOW and REEVE, Conch. Nom., 1845, p. 59; *H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*CHENU, Ill. Conch., 1858, pl. VIII, figs. 1, 1a, 1b.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 196.

* *Margarita (Unio) fabalis* LEA, Syn., 1836, p. 28; 1838, p. 20.

* *Margaron (Unio) fabalis* LEA, Syn., 1852, p. 31; 1870, p. 49.

Unio capillus SAY, Transylvania Journ., IV, 1831, p. 528.

* *Unio lapillus* SAY, Am. Conch., V, 1832, pl. XLI; VI, 1834, No. 49.—*CONRAD, New, F. W. Shells, 1834, p. 70.; *Monog., VI, 1836, p. 54, pl. XXIX, fig. 12.—*CHENU, Bib. Conch., 1st ser. III, 1845, p. 52, pl. XIV, figs. 1, 1a, 1b.—*KUSTER, Conch. Cab., 1848, p. 53, pl. XI, fig. 3.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—*B. H. WRIGHT, Check List, 1888.—*PETEL, Conch. Sam., III, 1890, p. 156.

Ohio River drainage; Rouge River, near Detroit, Michigan; New York.

(Group of *Micromya cælata*.)

Shell triangular ovate, with a low, rounded posterior ridge; male and female shells distinctly wrinkled behind.

† MICROMYA CÆLATA Conrad.

* *Unio cælatus* CONRAD, Am. Jl. Sci. and Arts, XXV, 1834, p. 338, pl. I, fig. 1; New, F. W. Shells, 1834, p. 29, pl. III, fig. 4, p. 68.—*FERUSSAC, Guer. Mag., 1835, p. 29.—*MÖLLER, Syn. Nov. Gen., 1836, p. 199.—*HANLEY, Test. Moll., 1842, p. 175; *Biv. Shells, 1843, p. 175.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 16, pl. III, fig. 3.—*CATLOW and REEVE, Conch. Nom., 1845, p. 56.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—*REEVE, Conch.

¹According to Scudder the volume of the Transactions containing this species appeared in the latter part of 1831, and was acknowledged by correspondents as received that year. Say published his *U. capillus* in the Transylvania Journal for December, 1831, and in the American Conchology changed it to *lapillus*. It is probable that Lea's name was published first.

Icon., XVI, 164, pl. II, fig. 7.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL, Couch. Sam., III, 1890, p. 147.

* *Margarita (Unio) cælatus* LEA, Syn., 1836, p. 12; 1838, p. 14.

* *Margaron (Unio) cælatus* LEA, Syn., 1852, p. 20; 1870, p. 20.

Tennessee River drainage; cited from Michigan by Sager and Miles, certainly in error. They might have mistaken for this a rather high specimen of *fabalis*.

Genus *LAMPSILIS* Rafinesque, 1820.

(Type, *Unio oratus* Say.)

Lampsilis RAFINESQUE, Ann. Gen. Sci. Phys. Brux., 1820, p. 298.

Shell oval to elliptical, smooth or slightly concentrically sculptured, usually without a posterior ridge; epidermis generally smooth and shining, often brilliantly rayed; beak sculpture, for the most part, consisting of fine, parallel ridges, which show a tendency to fall into an anterior and posterior loop; hinge with one or two pseudocardinals and one lateral in the right valve, and two pseudocardinals and two laterals in the left; female shell having a moderate and gradual inflation in the post-ventral region opposite the marsupium. Animal with the inner gills usually attached nearly or quite their entire length to the abdominal sac; marsupium occupying the hinder part of the outer gills; ovisacs distinct, separated by sulci, rounded below, having a fold near their bases, the whole projecting below the inner gills; mantle edge double and thickened, often swollen behind into a sort of flap in the female.

Section *LAMPSILIS* Rafinesque.

(Type, *Unio oratus* Say.)

Shell inflated, rather thin, shining, sometimes having a posterior ridge; beak sculpture coarse, consisting of a few, more or less, parallel ridges, which scarcely fall into loops. Animal having the mantle of the female usually toothed and thickened on the post-basal portion, which develops into a large, curious flap when the gills are filled with ova.

+ *LAMPSILIS VENTRICOSUS* Barnes.

* *Unio ventricosus* BARNES, Am. Jl. Sci., VI, 1823, p. 267, pl. XIII, fig. 14 (outline).—

* SAY, Am. Conch., No. IV, 1832, pl. XXXII.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* C. B. ADAMS, Thompson's History of Vermont, 1842, p. 167; F. W. and L. S. of Vermont, 1842, p. 17.—* HANLEY, Test. Moll., 1842, p. 189; * Biv. Shells, 1843, p. 189, pl. XXIV, fig. 8.—* DE KAY, Zool. of N. Y., Pt. 6, 1843, p. 190.—* CHENU, Bib. Conch., 1st ser. III, 1845, p. 45, pl. XII, figs. 1, 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, pp. 492, 495.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIII, fig. 235.—* B. H. WRIGHT, Check List, 1888.

* *Mya ventricosus* EATON, Zool. Text-Book, 1826, p. 221.

* *Margarita (Unio) ventricosus* LEA, Syn., 1836, p. 23; 1838, p. 18.

* *Margaron (Unio) ventricosus* LEA, Syn., 1852, p. 26; 1870, p. 41.

* *Lampsilis ventricosus* BAKER, Moll. Chicago, Pt. 1, 1898, p. 94, pl. XII, figs. 3-5.—

* SMITH, Bull. U. S. Fish Com., 1899, p. 291, pl. LXXXIII.

- * *Lampsilis ventricosa* STIMPSON, Shells of N. Eng., 1851, p. 14.
- * *Unio radiatus* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 286.
- Unio occidens* LEA, Tr. Am. Phil. Soc., III, 1829, p. 435, pl. x, fig. 16.—SHORT and EATON, Transylvania Jl., 1831, p. 78.—* LEA, Obs., I, 1834, p. 49, pl. x, fig. 16.—* HANLEY, Test. Moll., 1842, p. 189; * Biv. Shells, 1843, p. 189.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* KUSTER, Conch. Cab. Unio, 1856, p. 170, pl. LI, figs. 1, 2.—* CHENU, Ill. Conch., 1858, pl. XII, figs. 5, 5a, 5b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 44.—* LATCHFORD, Tr. Ottawa Field. Nat. Club, 1882, p. 51.—* B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) occidens* LEA, Syn., 1836, p. 23; 1838, p. 18.
- * *Margaron (Unio) occidens* LEA, Syn., 1852, p. 26; 1870, p. 41.¹
- * *Unio suboratus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 118, pl. XVIII, fig. 46;² * Obs., I, 1834, p. 128, pl. XVIII, fig. 46.—* HANLEY, Test. Moll., 1842, p. 184; * Biv. Shells, 1843, p. 184, pl. XXII, fig. 43.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* CHENU, Ill. Conch., 1858, pl. XII, figs. 6, 6a, 6b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXI, fig. 163; 1868, pl. LXXXV, fig. 456.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL, Conch. Sam., III, 1890, p. 168.
- * *Margarita (Unio) suboratus* LEA, Syn., 1836, p. 19; 1838, p. 17.
- * *Margaron (Unio) suboratus* LEA, Syn., 1852, p. 24; 1870, p. 37.
- * *Unio cardium* CONRAD, New F. W. Shells, 1834, p. 68.³—SAY, Am. Conch., VI, 1834.—CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—KUSTER, Conch. Cab. Unio, 1856, p. 169, pl. L, figs. 1-4.
- * *Unio cardium* Raf. v. *occidens* P. ETEL, Conch. Sam., III, 1890, p. 174.
- * *Unio cardium* Raf. v. *ventricosus* P. ETEL, Conch. Sam., III, 1890, p. 147.
- * *Unio fasciolus*, FERUSSAC, Guer. Mag. 1835, p. 26.
- * *Unio ovata*, DESHAYES, An. sans. Vert., 3d ed. 1839, p. 669.
- * *Unio ovatus* KUSTER, Conch. Cab. Unio, 1852, p. 55, pl. XII, fig. 1.
- * *Unio tenuis* CONRAD, Monog., XII, 1840, p. 106, pl. LVIII, fig. 2.⁴
- * *Unio canadensis* LEA, Proc. Acad. N. Sci. Phila., I, 1857, p. 85;⁵ * Jl. Ac. Nat. Sci. Phila., IV, 1860, p. 268, pl. XLIV, fig. 148; * Obs., VII, 1860, p. 86, pl. XLIV, fig. 148.—B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) canadensis* LEA, Syn., 1870, p. 37.
- * *Unio dolabraformis* SOWERBY, Conch. Icon., XVI, 1867, pl. LIX, p. 298.
- * *Unio latissimus* SOWERBY?, Conch. Icon., XVI, 1868, pl. LXVI, fig. 337.

† LAMPSILIS VENTRICOSUS var. SATUR Lea.

- * *Unio satur* LEA, Pr. Am. Phil. Soc., V., 1852, p. 252;⁶ Tr. Am. Phil. Soc., X, 1852, p. 205, pl. XVII, fig. 19; * Obs., V, 1852, p. 21, pl. XVII, fig. 19.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857,

¹ Lea says this is so close to *U. ventricosus* that it would be well to unite them. Foot note in Synopsis, 1870, p. 41.

²This is, I am sure, a fine male *U. ventricosus* Barnes. Dr. Lea is inclined to this opinion in a footnote on p. 118 of the Transactions.

³Conrad refers this species to Rafinesque. From the latter author's figure and description of *Lampsilis cardium* it is evident that it is a member of the *ventricosus* group, but whether it is the *U. ventricosus* of Barnes, the *U. capax* of Green, or some other species, I am unable to determine. Conrad and some other authors believe it to be Barnes's species.

⁴The type in the Philadelphia Academy is a young *U. ventricosus*.

⁵The type is a diseased individual, and is probably a compressed male *ventricosus*.

⁶I believe this to be merely a rather delicate, dark-colored variety of *ventricosus*, which inhabits the southwestern part of the Mississippi drainage.

p. 496.—* CHENU, *Man.*, 1859, II, p. 138, fig. 666.—* SOWERBY, *Conch. Icon.*, XVI, 1868, pl. XCII, fig. 501.—* B. H. WRIGHT, *Check List*, 1888.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 166.

* *Margaron (Unio) satur* LEA, *Syn.*, 1852, p. 24; 1870, p. 37.

Entire Mississippi drainage; St. Lawrence system; Nelson River and tributaries; the variety *satur* in the Southwest to the Sabine River, Texas.

† LAMPSILIS EXCAVATUS Lea.

* *Unio excavatus* LEA, *Pr. Ac. N. Sci. Phila.*, IX, 1857, p. 32; * *Jl. Ac. N. Sci. Phila.*, IV, 1858, p. 71, pl. XIII, fig. 52; * *Obs.*, VI, 1858, p. 71, pl. XIII, fig. 52.—* CHENU, *Man.*, 1859, II, p. 138, fig. 665.—* SOWERBY, *Conch. Icon.*, XVI, 1868, pl. LXX, VII, p. 403.—* B. H. WRIGHT, *Check List*, 1888.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 152.

* *Margaron (Unio) excavatus* LEA, *Syn.*, 1870, p. 37.

*? *Unio ovatus* SAY var. *ornatus* CONRAD, *Monog.*, I, 1835, p. 4.¹

* *Unio ornatus* SOWERBY, *Conch. Icon.*, XVI, 1866, pl. XXXI, fig. 162.—* B. H. WRIGHT, *Check List*, 1888.

Tombigbee and Alabama river drainage.

† LAMPSILIS BINOMINATUS Simpson.²

* *Unio lineatus* LEA, *Pr. Am. Phil. Soc.*, I, 1840, p. 287; * *Tr. Am. Phil. Soc.*, VIII, 1842, p. 206, pl. XII, fig. 20; * *Obs.*, III, 1842, p. 44, pl. XII, fig. 20.—* CONRAD, *Pr. Ac. N. Sci. Phila.*, VI, 1853, p. 251.—* H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 497.—* CHENU, *Ill. Conch.*, 1858, pl. XXVIII, figs. 1, 1a, 1b.—* KUSTER, *Conch. Cab. Unio*, 1862, p. 278, pl. XCIV, fig. 1.—* SOWERBY, *Conch. Icon.*, XVI, 1868, pl. LXI, fig. 309.—* B. H. WRIGHT, *Check List*, 1888.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 157.

* *Margaron (Unio) lineatus* LEA, *Syn.*, 1852, p. 27; 1870, p. 41.

Chattahoochee and Flint rivers, Georgia.

† LAMPSILIS CARIOSUS Say.

Unio cariosus SAY, *Nich. Encyc.*, II, 1816, pl. III, fig. 2.³—SHORT and EATON *Transylvania Jl.* 1831, p. 70.—* SAY, *Am. Conch.*, VI, 1834.—* CONRAD, *New F. W. Shells*, 1834, p. 68.—* FERUSSAC, *Guer. Mag.*, 1835, p. 26.—* CONRAD, *Monog.* IV, 1836, p. 40, pl. XIX.—* GOULD, *Inv. of Mass.*, 1841, p. 111, fig. 72.—* BINNEY, *Inv. of Mass.*, 1870, p. 172, fig. 475.—* REEVE, *Conch. Syst.*, I, 1841, p. 119, pl. LXXXIX, fig. 10.—* HANLEY, *Test. Moll.*, 1842, p. 190.—* DE KAY, *Zool. of N. Y.*, Pt. 5, 1843, p. 193, pl. XXI, figs. 243, 244.⁴—* HANLEY, *Biv. Shells*, 1843, p. 190, pl. XX, fig. 22.—* CATLOW and REEVE, *Conch. Nom.*, 1845, p. 57.—* KUSTER, *Conch. Cab. Unio*, 1852, p. 24, pl. I, figs. 2, 3.—* CONRAD, *Pr. Ac. N. Sci. Phila.*, VI, 1855, p. 246.—* DEWEY, *Ninth Rep. N. Y. State Cab.*, 1856, p. 35.—* H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 493.—* SOWERBY,

¹ It is hard to tell just what this is, as Conrad does not figure or describe it. He states that while it is probably *excavatus* it is not certainly so, and he does not think it wise to displace Lea's properly described and figured species for it.

² Lea's name was preoccupied by Valenciennes (*Encyc. Meth.*, II, 1827, p. 151, pl. CCXLVIII, fig. 5) for what is probably *U. radiatus*. I change it to *binominatus*.

³ The first edition of Nicholson's *Encyclopedia* is dated 1816, fide W. G. Binney, *Bib. N. Am. Conch.*, I, 1863, p. 25, and by Lea, *Synopsis*, 4th ed., pp. 154, 159.

⁴ The figures are very probably taken from *U. ventricosus*.

Conch. Icon., XVI, 1867, pl. LVIII, fig. 294.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 38, fig. 183.—* LATCHFORD, Tr. Ottawa Field Nat. Club, 1882, p. 51.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 117.—* SIMPSON, Nautilus VIII, 1895, p. 122, 2 figures.¹

* *Margarita (Unio) cariosus* LEA, Syn., 1836, p. 23; 1838, p. 18.

* *Margaron (Unio) cariosus* LEA, Syn., 1852, p. 27; 1870, p. 42.

* *Unio cariosa* LAMARCK, An. sans Vert., VI, 1819, p. 80.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 545; 3d ed., II, 1839, p. 671.

* *Mya cariosa* EATON, Zool. Text Book, 1826, p. 218.

* *Lampsilis cariosa* STIMPSON, Shells of N. Eng., 1851, p. 14.

* *Unio oratus* var. b. LAMARCK, An. sans Vert., VI, 1819, p. 75.

* *Unio ovata* VALENCIENNES, Rec. Obs. Zool. Anat., II, 1833, p. 226, pl. L, figs. 1, 1a, 1b, 1c.

* *Unio viridis* FERUSSAC, Guer. Mag., 1835, p. 27.

* *Unio oratus* CONRAD, Ann. and Mag. Nat. Hist., IV, 1849, p. 301; * Pr. Ac. N. Sci. Phila., IV, 1849, p. 153; * JI. Ac. N. Sci. Phila., 1850, p. 276, pl. XXXVII; fig. 6; Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.

Atlantic drainage from Georgia to the lower St. Lawrence.²

† LAMPSILIS ALTILIS Conrad.

* *Unio altilis* CONRAD, New F. W. Shells, 1834, p. 43, pl. II, fig. 1, and p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 207.—* HANLEY, Test. Moll., 1842, p. 190; Biv. Shells, 1843, p. 190.—* CATLOW and REEVE, Conch. Nom., 1845, p. 55.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 21, pl. I, fig. 1.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 244.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

Margarita (Unio) altilis LEA, Syn., 1836, p. 24; 1838, p. 19.

* *Margaron (Unio) altilis* LEA., Syn., 1852, p. 27; 1870, p. 42.

Alabama River drainage; Little Red River, Clinton, Arkansas?

† LAMPSILIS DOLABRÆFORMIS Lea.

* *Unio dolabraformis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 103, pl. XXIV, fig. 113; * Obs., II, 1838, p. 103, pl. XXIV, fig. 113.—* TROSCHEL, Arch. für Naturg., V, 1839, II, p. 237.—* HANLEY, Test. Moll., 1842, p. 189; * Biv. Shells., 1843, p. 189, pl. XXI, fig. 47.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* CHENU, III. Conch., 1858, pl. XXIII, figs. 6, 6a, 6b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab., 1861, p. 170, pl. LI, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

* *Margarita (Unio) dolabraformis* LEA, Syn., 1838, p. 18.

* *Margaron (Unio) dolabraformis* LEA, Syn., 1852, p. 27; 1870, p. 41.

Savannah, Ogeechee, and Altamaha rivers, Georgia.

† LAMPSILIS CAPAX Green.

* *Unio capax* GREEN, Cab. Nat. Hist., II, 1832, p. 290.—* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* CONRAD, Monog., IX, 1837, p. 75, pl. XLII.—* KUSTER, Conch. Cab. Unio, 1852, pp. 21, 65, pl. XV, fig. 3.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A.

¹ By an error the figures of this species and *U. ochraceus* were changed.

² The specimens referred to this species that are often reported from the Mississippi drainage are no doubt *L. ventricosus*.

- ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LII, fig. 274.—* CALKINS, Pr. Ottawa Ac. Nat. Sci., 1874, p. 41.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.
- * *Margaron (Unio) capax* LEA, Syn., 1852, p. 27; 1870, p. 42.
- * *Lampsilis capax* SMITH, Bull. U. S. Fish Com., 1899, p. 291, pl. LXXXIV.
- * *Symphynota globosa* LEA, Tr. Am. Phil. Soc., V, 1832, p. 41, pl. IV, fig. 12; * Obs., I, 1834, p. 153, pl. IV, fig. 12.—* FERUSSAC, Guer. Mag., 1835, p. 25.
- * *Margarita (Unio) globosa* LEA, Syn., 1836, p. 23.
- * *Unio globosus* HANLEY, Test. Moll., 1842, p. 188; * Biv. Shells, 1843, p. 189.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.
- * *Margarita (Unio) globosus* LEA, Syn., 1838, p. 18.

Lower Ohio River drainage; southwest to St. Francis River, Arkansas; north to eastern Iowa; Elkhorn and Blue rivers, Nebraska? (Aughey). Abundant locally.

† LAMPSILIS OVATUS Say.¹

- Unio oratus* SAY, Nich. Encyc., II, 1816, pl. II, fig. 7.—* LAMARCK, An. sans Vert., VI, 1819, p. 75.—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 287.—SHORT and EATON Trans. Jl., 1831, p. 78.—* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 70; * Monog. I, 1835, p. 4, pl. II.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* HANLEY, Test. Moll., 1842, p. 184; * Biv. Shells, 1843, p. 184.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* KUSTER, Conch. Cab. Unio, 1852, p. 22, pl. III, fig. 2.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXI, fig. 164.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 162.
- * *Margarita (Unio) oratus* LEA, Syn., 1836, p. 19; 1838, p. 17.
- * *Margaron (Unio) oratus*, LEA, Syn., 1852, p. 24; 1870, p. 37.
- * *Unio ovata* LAMARCK, An. sans Vert., VI, 1819, p. 75.—* STARK, Nat. Hist., II, 1828, p. 90.—* VALENCIENNES, Coq. Marines, Biv., 1833, pl. I, figs. 1a, 1b, 1c.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 538; 3d ed., II, 1839, p. 669.
- * *Lampsilis ovata* RAFINESQUE, Ann. Gen. Sci. Phys. Brux., V, 1820, p. 298.
- * *Mya ovata* EATON, Zool. Text Book, 1826, p. 218.
- * *Eglia ovata* SWAINSON, Treat. on, Mal., 1840, p. 266, fig. 49.

Ohio River drainage.

† LAMPSILIS OCHRACEUS Say.

- Unio ochraceus* SAY, Nich. Encyc., 1816, pl. II, fig. 8.—* CONRAD, New F. W. Shells, 1834, p. 70.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* CONRAD, Monog., IV, 1836, p. 37, pl. XVIII, fig. 2.—* GOULD, Inv. Mass., 1841, p. 112, fig. 74; 1870, p. 173, fig. 476.—* HANLEY, Test. Moll., 1842, p. 190; * Biv. Shells, 1843, p. 190, pl. XX, fig. 48?—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 193, pl. LXIX, figs. 237, 238.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* KUSTER, Conch. Cab. Unio, 1856, p. 163, pl. XLVII, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIII, fig. 317.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 39, fig. 184.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 161.—* SIMPSON, Nautilus, VIII, 1895, p. 122, fig.²
- * *Margaron (Unio) ochraceus* LEA, Syn., 1852, p. 27; 1870, p. 42.
- * *Mya ochracea* EATON, Zool. Text Book, 1826, p. 218.

¹The name *oratus* was used for *Unio tumidus* Retz, by Lister, Donovan, and others, but as it was called a *Mya* and the generic name *Unio* was never used with it, Say's name can stand for this species.

²The figure given for this species, by an error of the printer, is a female *cariosus*.

- **Symphynota ochracea* LEA, Tr. Am. Phil. Soc., III, 1830, p. 455; *Obs. I. 1834, p. 69.
 **Margarita (Unio) ochracea* LEA, Syn., 1836, p. 23; 1838, p. 18.
 **Lampsilis ochracea* STIMPSON, Shells of N. Eng., 1851, p. 14.
 **Unio crocatus* LEA, Pr. Am. Phil. Soc., II, 1841, p. 31; *Tr. Am. Phil. Soc., VIII, 1842, p. 238, pl. XXII, fig. 52; *Obs., III, 1842, p. 76, pl. XXII, fig. 52.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—*CHENU, Ill. Conch., 1858, pl. XXXIII, figs. 1, 1a, 1b.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 149.
 **Margarita (Unio) crocatus* LEA, Syn., 1852, p. 27; 1870, p. 42.
 **Unio rosaceus* CONRAD, Pr. Acad. N. Sci., Phila., IV, 1849, p. 153; *Ann. and Mag. Nat. Hist., IV, 1849, p. 303; *Jl. Acad. N. Sci., Phila., I, 1850, p. 275, pl. XXXVII, fig. 5.
 **Unio troostensis* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVIII, fig. 210.
 **Unio affinis* SOWERBY? Conch. Icon., XVI, 1868, pl. LXIII, fig. 318.

Atlantic drainage, from New England to the Ogeechee River, Georgia.

† LAMPSILIS SPLENDIDUS Lea.

- **Unio splendidus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 70, pl. XIX, fig. 61; *Obs., II, 1838, p. 70, pl. XIX, fig. 61.—*TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 237.—*HANLEY, Test. Moll., 1842, p. 190; *Biv. Shells, 1843, p. 190.—*CATLOW and REEVE, Conch. Nom., 1845, p. 64.—*KUSTER, Conch. Cab. Unio, 1852, p. 55, pl. XII, fig. 2.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CHENU, Ill. Conch., 1858, pl. XVII, figs. 7, 7a, 7b.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XXXI, fig. 161.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 168.
 **Margarita (Unio) splendidus* LEA, Syn., 1836, p. 23; 1838, p. 18.
 **Margarou (Unio) splendidus* LEA, Syn., 1852, p. 27; 1870, p. 42.
 **Unio regularis* SOWERBY, Conch. Icon., XVI, 1868, pl. XXXIV, fig. 181.

Altamaha and Ogeechee rivers, Georgia.

LAMPSILIS DELUMBIS Conrad.¹

- **Unio delumbis* CONRAD, New F. W. Shells, 1834, p. 35, pl. v, fig. 3; p. 69.—*FERUSSAC, Guerin Mag., 1835, p. 29.—*MÖLLER, Syn. Nov. Gen., 1836, p. 204.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 18, pl. II, fig. 10.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1857, p. 248.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 150.

Small streams near Cooper River, South Carolina.

† LAMPSILIS PEROVALIS Conrad.

- **Unio perovalis* CONRAD, New F. W. Shells, 1834, p. 43, pl. II, fig. 2, p. 71.—*FERUSSAC, Guerin Mag., 1835, p. 29.—*MÖLLER, Syn. Nov. Gen., 1836, p. 207.—*HANLEY, Test. Moll., 1842, p. 191; *Biv. Shells, 1843, p. 191.—*CATLOW and REEVE, Conch. Nom., 1845, p. 62.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 21, pl. I, fig. 2.—*CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 254.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*KUSTER, Conch. Cab. Unio, 1861, p. 257, pl. LXXXVII, fig. 2.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 163.
 **Margarita (Unio) perovalis* LEA, Syn., 1836, p. 24; 1838, p. 19.
 **Margarou (Unio) perovalis* LEA, Syn., 1852, p. 27; 1870, p. 42.

Alabama and Black Warrior rivers.

¹This may be a valid species, but it looks from the figure like an elongated *ochraceus*.

† LAMPSILIS PERPASTUS Lea.

* *Unio perpastus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 60; *Jl. Ac. N. Sci. Phila., V, 1862, p. 69, pl. VII, fig. 219; *Obs., VIII, 1862, p. 73, pl. VII, fig. 219.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) perpastus* LEA, Syn., 1870, p. 43.

Swamp Creek, Georgia; Coosa River, Alabama.

† LAMPSILIS CLARKIANUS Lea.

* *Unio clarkianus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 251; *Tr. Am. Phil. Soc., X, 1852, p. 273, pl. XXI, fig. 30; *Obs., V, 1852, p. 29, pl. XXI, fig. 30.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margaron (Unio) clarkianus* LEA, Syn., 1852, p. 27; 1870, p. 42.

*† *Unio spillmanii* LEA, Pr. Ac. N. Sci. Phila., XIII, 1861, p. 39; *Jl. Acad. N. Sci. Phila., V, 1862, p. 98, pl. XV, fig. 246; *Obs., VIII, 1862, p. 102, pl. XV, fig. 246.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) spillmanii* LEA, Syn., 1870, p. 42.

Williamsport, Tennessee; near Columbus, Mississippi; Cahawba and Black Warrior rivers, Alabama.

* † LAMPSILIS GERHARDTII Lea.

* *Unio gerhardtii* LEA, Pr. Acad. N. Sci. Phila., VI, 1862, p. 168; *Jl. Ac. N. Sci. Phila., V, 1862, p. 208, pl. XXXI, fig. 277; *Obs., IX, 1863, p. 30, pl. XXXI, fig. 277.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) gerhardtii* LEA, Syn., 1870, p. 35.

Chattanooga (river?), Georgia; Shorter, Alabama.

† LAMPSILIS MULTIRADIATUS Lea.

* *Unio multiradiatus* LEA, Tr. Am. Phil. Soc., III, 1829, p. 434, pl. IX, fig. 15; *Obs. I, 1834, p. 48, pl. IX, fig. 15.—* CONRAD, N. F. W. Shells, 1834, p. 70.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 549; 3d ed., II, 1839, p. 673.—* HANLEY, Test. Moll., 1842, p. 190; *Biv. Shells, 1843, p. 190, pl. XXI, fig. 10.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XII, figs. 2, 2a, 2b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXX, fig. 506a.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 160.

* *Margarita (Unio) multiradiatus* LEA, Syn., 1836, p. 24; 1838, p. 19.

* *Margaron (Unio) multiradiatus* LEA, Syn., 1852, p. 31; 1870, p. 42.

* *Unio fasciolus* SAY, Am. Conch., VI, 1834.—* CONRAD, Monography, III, 1836, p. 26, pl. XI, fig. 2.—* KUSTER, Conch. Cab. Unio, 1852, p. 32, pl. v, fig. 4.

*† *Unio perradiatus* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 40; *Jl. Ac. N. Sci. Phila., V, 1862, p. 66, pl. VI, fig. 215; Obs., VIII, 1862, p. 70, pl. VI, fig. 215.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) perradiatus* LEA, Syn., 1870, p. 37.

* *Unio alt'lis*, REEVE, Conch. Icon., XVI, 1865, pl. XXIII, fig. 109.

* *Unio perovalis* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVIII, fig. 209.

Entire Ohio River drainage; Southern Michigan; New York? (Marshall).

† LAMPSILIS DOLIARIS Lea.

Unio doliaris LEA, Pr. Ac. N. Sci. Phila., XVII, 1865, p. 88; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 260, pl. XXXII, fig. 75; *Obs., XII, 1869, p. 20, pl. XXXII, fig. 75.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) doliaris* LEA, Syn., 1870, p. 42.

Alabama and Tombigbee drainage.

† LAMPSILIS BREVICULUS Call.

* *Unio breviculus* CALL, Pr. U. S. Nat. Mus., X, 1887, p. 499, pl. XXVIII; *Tr. Ac. Sci. St. Louis, VII, 1895, p. 6, pl. XVII.

† LAMPSILIS BREVICULUS var. BRITTSI Simpson.

* *Lampsilis brittsi* Simpson, Pr. Ac. N. Sci. Phila., 1900, p. 76, pl. v, figs. 1, 2.¹

White and Current rivers, Arkansas; Texas County, Missouri.

† LAMPSILIS BIANGULATUS Lea.²

* *Unio biangulatus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 288; *Tr. Am. Phil. Soc., VIII, 1843, p. 197, pl. IX, fig. 8; *Obs., III, 1842, p. 35, pl. IX, fig. 8.—* CONRAD, Pr. Ac. N. Sci. Phila., 1853, p. 245.—* CHENU, Ill. Conch., 1858, pl. XXX, figs. 7, 7a, 7b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* KUSTER, Conch. Cab. Unio, 1861, p. 189, pl. LX, fig. 1; pl. LXI, fig. 1.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXX, fig. 421.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

Margaron (Unio) biangulatus LEA Syn., 1852, p. 38, 1870, p. 61.

Tennessee drainage.

LAMPSILIS SUBVEXA Conrad.³

* *Anodonta subvexa* CONRAD, Am. Jl. Sci., XXV, 1834, p. 341, pl. I, fig. 1; *New F. W. Shells, 1834, p. 73.—* FERUSSAC, Guer. Mag. 1835, p. 25.—* MÖLLER, Syn. Nov. Gen., 1836, p. 194.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

¹At the time I published the *L. brittsi* I believed it to be a valid species. Since then I have seen additional material which seems to be a connecting link between it and *L. breviculus*. I can not be certain as to the relationships of this form, which seems on the one hand to have characters belonging to the typical section of *Lampsilis* and on the other to be related to *L. spatulatus* and *L. pleasi*.

²The systematic position of this species is a little uncertain. In the form of the shell and the teeth it seems to belong in the *Ventricosus* group, but the texture and broken rays apparently ally it to the *Ligamentinus* group. The soft parts agree best with those of members of the former assemblage, so I place it here.

³I do not know what this is, nor where it belongs, but it is certainly not a true *Anodonta*. The shell, according to Conrad's figure, is rayed throughout, and looks very much like a young *U. ventricosus*. He says that it has a callus resembling an incipient tooth; that it inhabits the Black Warrior River, and that it is very rare. It is just possible that it is related to some of the so-called Margaritanas of the Southern States, such as *M. spillmani*, but I think it more likely some young form of the *Ventricosus* group in which the hinge has been injured. I place it here with the greatest hesitation.

**Margarita (Anodonta) subvexa* LEA, Syn., 1836, p. 52; 1838, p. 31.

**Anodon subvexa* CATLOW and REEVE, Conch. Nom., 1845, p. 68.

**Margaron (Anodonta) subvexa* LEA, Syn., 1852, p. 50; 1870, p. 81.

Black Warrior River, Alabama.

Section EURYNIA Rafinesque, 1820.

(Type, *Unio recta* Lamarck.)

Shell oval to oblong; beak sculpture delicate, doubly looped; mantle double edged and often toothed below; that of the female sometimes developed into a thickened flap at the post base.¹

(Group of *Lampsilis luteolus*.)

Shell shining, generally rayed; beak sculpture often broken, with the posterior loop open behind; pseudocardinals rather small, compressed, smooth inside, and often curved slightly upward.

† LAMPASILIS LUTEOLUS Lamarck.

**Unio luteola* LAMARCK, An. sans Vert., VI, 1819, p. 79.—*DESHAYES, An. sans Vert., 2d ed. VI, 1835, p. 544; 3d ed. II, 1839, p. 671.

**Unio luteolus* HANLEY, Test. Moll., 1842, p. 192.—*DE KAY, Zool. of New York, Pt. 5, 1843, p. 190, pl. xx, fig. 241.—*HANLEY, Biv. Shells, 1843, p. 192, pl. xxiii, fig. 16.—*CATLOW and REEVE, Conch. Nom., 1845, p. 60.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*SOWERBY, Conch. Icon., XVI, 1867, pl. LVIII, fig. 293, 293a, 293b.—*LATCHFORD, Tr. Ottawa F. Nat. Club, 1882, p. 51.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 158.—*CALL, Tr. Acad. Sci. St. Louis, VII, 1895, p. 25, pl. III.

**Margarita (Unio) luteolus* LEA, Syn., 1836, p. 25; 1838, p. 19.

**Margaron (Unio) luteolus* LEA, Syn., 1852, p. 28; 1870, p. 44.

**Lampsilis luteolus* BAKER, Moll. Chicago, Pt. 1, 1898, p. 103, pls. XI, XXXVII, fig. 12.

**Unio inflatus* BARNES, Am. Jl. Sci., VI, 1823, p. 266.—*CONRAD, New F. W. Shells, 1834, p. 69.

**Mya inflata* EATON, Zool. Text-Book, 1826, p. 221.

**Unio siliquoideus* BARNES, Am. Jl. Sci., VI, 1823, p. 269, pl. XIII, fig. 150 (outline).—*FERUSSAC, Guer. Mag., 1835, p. 27.—*CONRAD, Monog., II, 1836, p. 22, pl. x, fig. 1.—*C. B. ADAMS, Thompson's Hist. of Vermont, 1842, p. 167; F. W. and L. S. of Vermont, p. 17, 1842.

**Unio siliquoidea* KUSTER, Conch. Cab. Unio, 1852, p. 30, pl. v, fig. 2.

**Mya siliquoidea*, EATON, Zool. Text-Book, 1826, p. 221.

**Lampsilis siliquoidea* STIMPSON, Shells of New Eng., 1851, p. 14.

**Unio childreni* HANLEY, Biv. Shells, 1843, p. 193, pl. xxiii, fig. 57.

**Unio hydianus* KUSTER, part, Conch. Cab. Unio, 1861, p. 201, pl. LXVII, fig. 1.²

**Unio distans* ANTHONY, Am. Jl. Conch., I, 1865, p. 156, pl. XIII, fig. 2.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 151.

**Unio multiradiatus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXI, fig. 306.³

**Unio affinis* SOWERBY, Conch. Icon., XVI, 1868, pl. LXI, fig. 307.

¹ Lea has figured a female animal of *L. radiatus* in Observations II, pl. xv, which has a curious, winglike projection on the mantle at its posterior base.

² There are two figures; the first is *luteolus*, the second is *hydianus*.

³ Changed in errata to *luteolus*. The figure 306a, pl. LXX, is a genuine *multiradiatus*.

† LAMPSILIS LUTEOLUS var. ROSACEUS De Kay.

- * *Unio rosaceus* DE KAY, Zool. of New York, V, 1843, p. 192, pl. xxxix, figs. 355, 356; pl. xl, fig. 357.¹—CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 257.—B. H. WRIGHT, Check List, 1888.

Entire Mississippi drainage, southwest to the Brazos River, Texas; St. Lawrence drainage; entire Dominion of Canada east of the Rocky Mountains; the variety *rosaceus* in the St. Lawrence area.

† LAMPSILIS SUPERIORENSIS Marsh.²

- * *Unio superioensis* MARSH, Naut., X, 1897, p. 103, pl. i, figs. 1, 2, 5.

Upper Great Lakes region.

† LAMPSILIS BOREALIS A. F. Gray.³

- * *Unio borealis* A. F. GRAY, Tr. Ottawa Field Nat. Club, 1882, p. 53, pl., 3 figures.—* B. H. WRIGHT, Check List, 1888.

Lower St. Lawrence drainage, to Lake Michigau; Lake of the Woods.

† LAMPSILIS RADIATUS Gmelin.

- * *Mya radiata* GMELIN, Syst. Nat., 13th ed., 1792, p. 3220.—* WOOD, Gen. Conch., I, 1815, p. 109.—* DILLWYN, Cat. I, 1817, p. 51.—* WOOD, Index Test. 2d ed., 1825, p. 12, pl. II, fig. 2.—* EATON, Zool. Text-Book, 1826, p. 220.—* HANLEY, Index Test., 3d ed., 1856, p. 16, pl. II, fig. 32.

- * *Unio radiata* LAMARCK, An. sans. Vert., VI, 1819, p. 73.—* DESHAYES, Hist. Nat. des Vers., II, 1830, p. 581; * An. sans. Vert., 2d ed., VI, 1835, p. 535; 3d ed., 1839, p. 668.—* HANLEY, Test. Moll., 1842, p. 212.

- * *Lampsilis radiata* STIMPSON, N. Eng. Shells, 1851, p. 13.

- * *Unio radiatus* SPENGLER, Skriv. Nat. Selsk., V, 1792, p. 3; III, 1793, p. 62.—* CONRAD, New F. W. Shells, 1834, p. 71.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Monog., II, 1836, p. 24, pl. X, fig. 2.—* SOWERBY, Rich. Faun. Boreali Am., III, 1836, p. 316.—* GOULD, Inv. of Mass., 1841, p. 110, fig. 73; 1870, p. 170, fig. 474.—* HANLEY, Test. Moll., 1842, p. 193; * Biv. Shells, 1843, p. 193.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* KUSTER, Conch. Cab. Unio., 1852, p. 29, pl. v, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* REEVE, Conch. Icon., XVI, 1865, p. 27, pl. xxvii, fig. 139.—* HARTMAN and MICHE-NER, Conch. Cest., 1874, p. 87, fig. 182.—* LATCHFORD, Tr. Ottawa F. Nat. Club, 1882, p. 50.—* B. H. WRIGHT, Check List, 1888.—* H. CARPENTER, Naut., IV, 1890, p. 22.—* PETEL, Conch. Sam., III, 1890, p. 165.

- * *Margarita (Unio) radiatus* LEA, Syn., 1836, p. 25; 1838, p. 19.

- * *Margaron (Unio) radiatus* LEA, Syn., 1852, p. 29; 1870, p. 44.

- * *Unio pictorum tenuis* Indiv, etc.—CHEMNITZ, Conch. Cab., 1788, p. 23, pl. II, fig. 7.

¹The type of De Kay's variety is a delicate shell with peculiarly pallid brown epidermis, slightly rayed, and having a rose-colored naere. This form is often destitute of the fine tinting of the naere, and sometimes becomes quite dark, even bronzy or brownish black. It is common in the lakes of the St. Lawrence drainage.

²This and *L. borealis* A. F. Gray are doubtful species which seem to stand between *L. luteolus* and *radiatus*. This form is nearer *luteolus*, while Gray's species approaches more nearly to *radiatus*.

³In Latchford's Notes on Ottawa *Unionida*.

- * *Unio virginiana* LAMARCK, An. sans. Vert., VI, 1819, p. 79.—* DELESSERT, Rec. Coq. Lam., 1841, pl. XII, fig.
- * *Unio lineata* VALENCIENNES, Enc. Meth., II, 1827, p. 151, pl. CCXLVIII, fig. 5.
- * *Unio elongata* GOODRICH, Ill. Nat. Hist., II, 1829, p. 523, fig.
- * *Unio tenebrosus* CONRAD, New F. W. Shells, 1834, p. 42, pl. VII, fig. 1; p. 72.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen. 1836, p. 207.—* CHENU, Bib. Conch., 1st ser., III, 1845, pl. II, fig. 5.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 169.
- * *Unio melinus* CONRAD, Monog. XI, 1838, p. 101, pl. LV, fig. 1.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVII, fig. 467.
- * *Unio mellinus* PÆTEL, Conch. Sam., III, 1890, p. 159.
- * *Unio boydianus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 286; * Tr. Am. Phil. Soc., VIII, 1843, p. 216, pl. XVI, fig. 32; * Obs., III, 1842, p. 54, pl. XVI, fig. 22.—* DE KAY, Zool. of New York, Pt. 5, 1843, p. 189.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Ill. Conch., 1858, pl. XXXII, figs. 2, 2a, 2b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 146.
- * *Margaron (Unio) boydianus* LEA, Syn., 1852, p. 38; 1870, p. 62.
- * *Unio crassus* KUSTER, Conch. Cab. Unio., 1854, p. 113, pl. XXXI, fig. 5.
- * *Mya oblongata*, WOOD, Index Test., 1856, p. 199, pl. I; Supplement, fig. 2.
- * *Unio obliquiradiatus* REEVE, Conch. Icon., XVI, 1865, pl. XXIX, fig. 151.—* PÆTEL, Conch. Sam., III, 1890, p. 161.

† LAMPSILIS RADIATUS var. CONSPICUUS LEA.

- * *Unio conspicuus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 156; * Jl. Ac. N. Sci. Phila., VIII, 1874, p. 34, pl. XI, fig. 31; * Obs., XIII, 1874, p. 38, pl. XI, fig. 31.—* B. H. WRIGHT, Check List, 1888.

St. Lawrence drainage; Manitoba; Atlantic region south to North Carolina (var. *conspicuus* in North Carolina and southern Virginia).

Gould¹ reports *L. radiatus* from the north shore of Lake Superior, and there is a shell in the U. S. National Museum from the northwest boundary of Wisconsin which is probably this species.

† LAMPSILIS HYDIANUS LEA.

- * *Unio hydianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 14, pl. VI, fig. 14; * Obs., II, 1838, p. 14, pl. VI, fig. 14.—* TROSCHEL, Arch. für Naturg., VII, 1839, p. 234.—* HANLEY, Test. Moll., 1842, p. 192; Biv. Shells, 1843, p. 192, pl. XXIII, fig. 6.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* KUSTER, Conch. Cab. Unio., 1861, p. 201, pl. LXVII, fig. 2.—* CHENU, Ill. Conch., 1858, pl. XVII, fig. 3, 3a, 3b; pl. XXIV, figs. 7, 7a, 7b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVII, fig. 203.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
- * *Margarita (Unio) hydianus* LEA, Syn., 1836, p. 25; 1838, p. 19.
- * *Margaron (Unio) hydianus* LEA, Syn., 1852, p. 28; 1870, p. 44.
- * *Unio placitus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 252; ² * Tr. Am. Phil. Soc., 1852, p. 279, pl. XXII, fig. 38; * Obs., V, 1852, p. 35, pl. XXII, fig. 38.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1838, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab. Unio., 1861, p. 262, pl. LXXXVIII, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., 1890, p. 163.
- * *Margaron (Unio) placitus* LEA, Syn., 1852, p. 29; 1870, p. 46.

Eastern half of Texas; Indian Territory; Arkansas; east to Alabama.

¹ Agassiz, Lake Superior, p. 245.

² Merely a young *hydianus*.

† LAMPSILIS APPROXIMUS Lea.¹

* *Unio approximus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; * Tr. Am. Phil. Soc., X, 1848, p. 74, pl. V, fig. 13; * Obs., IV, 1848, p. 48, pl. V, fig. 13.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Margaron (Unio) approximus* LEA, Syn., 1852, p. 28; 1870, p. 44.

Southern Louisiana; southern Alabama.

† LAMPSILIS AFFINIS Lea.²

* *Unio affinis* LEA, Pr. Am. Phil. Soc., V, 1852, p. 251; * Tr. Am. Phil. Soc., 1855, p. 271, pl. XIX, fig. 26; * Obs., V, 1852, p. 27, pl. XIX, fig. 26.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 244.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Margaron (Unio) affinis* LEA, Syn., 1852, p. 27; 1870, p. 42.

Louisiana.

LAMPSILIS CONTRARIUS Conrad.³

* *Unio contrarius* CONRAD, Jl. Ac. Nat. Sci. Phila. I, 1850, p. 276, pl. XXXVII, fig. 7. Ogeechee River, Georgia. (Locality doubtful.)

† LAMPSILIS CLAIBORNENSIS Lea.

Unio claibornensis LEA, Tr. Am. Phil. Soc., VI, 1838, p. 105, pl. XXIV, fig. 115; * Obs., II, 1838, p. 105, pl. XXIV, fig. 115.—* TROSCHEL, Arch. für. Naturg., V, 1839, pl. II, p. 237.—* HANLEY, Test. Moll., 1842, p. 192, Biv. Shells, 1843, p. 192, pl. XXI, fig. 26.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* CHENU, Ill. Conch., 1858, pl. XXIII, figs. 3, 3a, 3b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXX, fig. 357.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margarita (Unio) claibornensis* LEA, Syn., 1838, p. 19.

* *Margaron (Unio) claibornensis* LEA, Syn., 1852, p. 28; 1870, p. 44.

† * *Unio obtusus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 287; * Tr. Am. Phil. Soc., VIII, 1843, p. 201, pl. XI, fig. 13; * Obs., III, 1842, p. 39, pl. XI, fig. 13.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Ill. Conch. 1858, pl. XXXI, figs. 2, 2a, 2b.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVI, fig. 129.—* PÆTEL, Conch. Sam., III, 1890, p. 161.

* *Margaron (Unio) obtusus* LEA, Syn., 1852, p. 39; 1870, p. 62.

* *Unio pallescens* LEA.⁴ Pr. Am. Phil. Soc., IV, 1845, p. 164; * Tr. Am. Phil. Soc., X, 1848, p. 79, pl. VII, fig. 20; * Obs., IV, 1848, p. 79, pl. VII, fig. 20.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* H. and A. ADAMS, Gen. Rec. Moll.,

¹ Probably only a thin, slightly rayed or rayless variety of *L. hydiauus*.

² I doubt if this is distinct from *Approximus*.

³ Dr. Lea places this in the synonymy of *Unio lecontianus* Lea. I have never seen an authentic shell, but the figure given by Conrad in the Journal seems to me more like *Lampsilis obtusus*, and I am inclined to think it is a small male specimen of this species having reversed laterals.

⁴ There is only a single specimen in the Lea collection, the type, an old, rather thin, eroded, large shell, in bad condition, but which, I feel sure, is *claibornensis*.

II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

Margaron (Unio) pallescens LEA, Syn., 1852, p. 27; 1870, p. 43.

Gulf drainage of the United States, from the Flint to the Pearl River.

† LAMPASILIS PORPHYREUS Lea.¹

* *Unio porphyreus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 60; * JI. Ac. N. Sci. Phila., V, 1862, p. 80, pl. x, fig. 228; * Obs., VIII, 1862, p. 84, pl. x, fig. 228.—B. H. WRIGHT, Check List, 1888.

Margaron (Unio) porphyreus LEA, Syn., 1870, p. 41.

Cahawba and Coosa rivers, Alabama.

† LAMPASILIS STRAMINEUS Conrad.

* *Unio stramineus* CONRAD, Am. JI. Sci., XXV, 1834, p. 339, pl. 1, fig. 6; * New F. W. Shells, 1834, p. 71.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 198.—* CONRAD, Monog., X, 1838, p. 91, pl. L, fig. 1.—* HANLEY, Test. Moll., 1842, p. 209; * Biv. Shells, 1843, p. 209, pl. XXIII, fig. 45.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIX, fig. 217, 1868, pl. LXXX, fig. 422.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

* *Margaritu (Unio) stramineus* LEA, Syn., 1836, p. 39; 1838, p. 25.

* *Margaron (Unio) stramineus* LEA, Syn., 1852, p. 28; 1870, p. 35.

Southern Alabama, southern Mississippi.

† LAMPASILIS REEVIANUS Lea.

* *Unio reevianus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 272, pl. XX, fig. 28; * Obs., V, 1852, p. 28, pl. XX, fig. 28.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab. Unio., 1861, p. 247, pl. LXXXIII, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 165.

* *Margaron (Unio) reevianus* LEA, Syn., 1852, p. 28; 1870, p. 44.

Louisiana; Texas; Arkansas.

† LAMPASILIS POWELLII Lea.

* *Unio powellii* LEA, Pr. Am. Phil. Soc., V, 1852, p. 252; * Tr. Am. Phil. Soc., X, 1853, p. 270, pl. XIX, fig. 25; * Obs., V, 1852, p. 26, pl. XIX, fig. 25.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* MUSGRAVE, Phot. Conch., 1863, pl. II, fig. 8.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXX, fig. 359.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

* *Margaron (Unio) powellii* LEA, Syn., 1852, p. 28; 1870, p. 44.

Salina and Clinton, Arkansas; Guadalupe River, Texas; Spring River, Kansas (Cragin).

¹I am a little uncertain as to where this species should be placed, as I have only seen the two specimens in the Lea collection, which are very poor and distorted. The naere is purple.

(Group of *Lampsilis ligamentinus*.)

Shell solid, evenly elliptical, not greatly inflated, with a yellowish green epidermis, with broad, usually broken, dark-green rays; beaks not prominent, sculpture fine, restricted in area, pseudocardinals rather small, stumpy; nacre silvery or rarely pinkish. The female shell is not greatly swollen in the post basal region.

† LAMPSILIS LIGAMENTINUS Lamarck.¹

- Unio crassus* SAY, Nich. Encyc., II, 1816, pl. 1, fig. 8.—* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 293.—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 278, fig. 1.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* HANLEY, Test. Moll., 1842, p. 192; * Biv. Shells, 1843, p. 192.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XL, fig. 220.—* PÆTEL, Conch. Sam., III, 1890, p. 149.
- * *Margarita (Unio) crassus* LEA, Syn., 1836, p. 24; 1838, p. 19.
- * *Mya crassa* EATON, Zool. Text-Book, 1826, p. 217.
- * *Unio ligamentina* LAMARCK, An. sans Vert., VI, 1819, p. 72.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* DESHAYES, An. sans Vert., 2d. ed., VI, 1835, p. 533; 3d ed., II, 1839, p. 668.
- * *Unio ligamentinus* KUSTER, Conch. Cab. Unio, 1852, p. 23, pl. III, fig. 3.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CALKINS, Pr. Ottawa Ac. Sci., 1874, p. 43.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 157.—* CALL, Tr. Ac. Sci. St. Louis, VII, p. 22, pl. XXI.
- * *Margaron (Unio) ligamentinus* LEA, Syn., 1852, p. 28; 1870, p. 43.
- * *Lampsilis ligamentinus* BAKER, Moll. Chicago, Pt. 1, 1898, p. 108, pl. XVI.—* SMITH, Bull. U. S. Fish Com., 1899, p. 291, pl. LXXIX.
- * *Unio ellipticus* BARNES, Am. Jl. Sci., VI, 1823, p. 259, pl. XIII, fig. 19 (outline).—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 278.
- * *Mya elliptica* EATON, Zool. Text-Book, 1826, p. 219.
- * *Unio carinatus* BARNES, Am. Jl. Sci., VI, 1823, p. 259, pl. XI, fig. 10.
- * *Mya carinata* EATON, Zool. Text-Book, 1826, p. 220.
- * *Unio ellipsarius* SAY, Am. Conch., VI, 1834.
- * *Unio fasciatus* SAY, Am. Conch., VI, 1834.—* CONRAD, Monog., 1835, p. 3, pl. I.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* POTIEZ and MICHAUD, Gall. Moll., 1844, 153, pl. LVIII, fig. 5.—* KUSTER, Conch. Cab., 1852, p. 31, pl. v, fig. 3.
- * *Mya gravis* WOOD, Ind. Test. (Hanley) 1856, p. 199, pl. 1, fig. 6.
- * *Unio gravis* PÆTEL, Conch. Sam., III, 1890, p. 154.
- * *Unio luteolus* SOWERBY, Conch. Icon., XVI, 1867, pl. LVIII, fig. 293a.
- * *Unio delodontus* SOWERBY, Conch. Icon., XVI, 1867, pl. LVII, fig. 288.
- * *Unio crassidens* SOWERBY, Conch. Icon., XVI, 1868, pl. LXII, fig. 312.
- * *Unio pictus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXII, fig. 313.
- * *Unio venustus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIV, fig. 326.
- * *Unio upsoni* MARSH, Conch., Ex. 1, 1887, p. 51.²—B. H. WRIGHT, Check List, 1888.

¹ Say's name *crassus* applied to this before that of Lamarck was used by Retzius previously for a European *Unio*.

² The description was read before the Mercer County, Illinois, Scientific and Historical Society March 2, 1880. Mr. Marsh had copies of the description published and thinks that the species was described on the records. It was not figured.

† LAMPSILIS LIGAMENTINUS var. GIBBUS Simpson.¹

* *Unio crassus* SOWERBY, Conch. Icon., XVI, 1868, pl. xcv, fig. 520.

Mississippi River drainage generally; southern Michigan; western New York; Manitoba; Ontario; the variety from the Ohio River southward.

† LAMPSILIS ORBICULATUS Hildreth.

* *Unio orbiculatus* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 284.—* HANLEY, Test. Moll., 1842, p. 192; Biv. Shells, 1843, p. 192, pl. XXI, fig. 2.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 254.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab., 1861, p. 216, pl. LXXI, figs. 3, 4.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIV, fig. 239.—* CALKINS, Pr. Ottawa Ac. Sci., 1874, p. 44.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Margarita (Unio) orbiculatus* LEA, Syn., 1836, p. 25; 1838, p. 19.

* *Margaron (Unio) orbiculatus* LEA, Syn., 1852, p. 28; 1870, p. 43.

* *Unio abruptus* SAY, Am. Conch., No. II, 1831, pl. XVII.—* CONRAD, New F. W. Shells, 1834, p. 67.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 24, pl. VI, figs. 1, 1a, 1b.—* DESHAYES, An. sans Vert., 2d ed., VI, 1335, p. 555; * 3d ed., II, 1839, p. 674.

* *Unio cyclops* FERUSSAC, Guer. Mag., 1835, p. 28.

* *Unio crassus* CONRAD, Monog., IV, 1836, p. 34, pl. XVI.

Ohio and Cumberland rivers; west to the Mississippi River; north to Minnesota. Some specimens can hardly be separated from *L. higginsii*.

† LAMPSILIS HIGGINSII Lea.²

* *Unio higginsii* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 84; * Jl. Ac. N. Sci. Phila., V, 1862, p. 188, pl. XXIV, fig. 258; * Obs., IX, 1863, p. 10, pl. XXIV, fig. 258.—

* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXII, fig. 431.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.

* *Margaron (Unio) higginsii* LEA, Syn., 1870, p. 41.

Ohio River, west to Iowa, and southwest to Kansas.

† LAMPSILIS PINGUIS Lea.³

Unio pinguis LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 84; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 78, pl. XV, fig. 58; * Obs., VI, 1858, p. 78, pl. XV, fig. 58.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) pinguis* LEA, Syn., 1870, p. 44.

St. Peters River, Minnesota. Doubtful.

¹A peculiarly humped form of *ligamentinus*, common throughout the southern range of the species, may bear the above name.

²A somewhat puzzling species, of which male specimens often approach closely to *Oboraria ellipsis* in form, but the pseudo-cardinals are always stumpy and never longitudinal, as they generally are in that genus. It is probably an aberrant form, closely related to *L. orbiculatus*. The females are more inflated in the postbasal region than in any other member of the group.

³I have seen only one specimen of this, the type, which is an exceedingly puzzling form. The hinge line is injured and curves in strongly in front of the beaks, where there is a large, irregular lunule, and the pseudocardinals are compressed. It may be a young, diseased *orbiculatus*.

† LAMPSILIS TÆNIATUS Conrad.

- * *Unio tæniatus* CONRAD, New F. W. Shells, 1834, pp. 26, 72, pl. IV, fig. 2.¹—*FERUS-SAC, Guer. Mag., 1835, p. 29.—MÖLLER, Syn. Nov. Gen., 1836, p. 201.—*HANLEY, Test. Moll., 1842, p. 191; *Biv. Shells, 1843, p. 191.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 15.—*CATLOW and REEVE, Conch. Nom., 1845, p. 64.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—*KUSTER, Conch. Cab. Unio, 1862, p. 271, pl. XCI, fig. 4.—*B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) tæniatus* LEA, Syn., 1836, p. 24; 1838, p. 19.
- * *Unio tæniatus* PÆTEL, Conch. Sam., III, 1890, p. 169.
- * *Unio menkianus* LEA, Tr. Am. Phil. Soc., V, 1836, p. 76, pl. XIX, fig. 59; *Obs., II, 1838, p. 76, pl. XIX, fig. 59.—*TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 237.—*HANLEY, Test. Moll., 1842, p. 191; *Biv. Shells, 1843, p. 191, pl. XXIII, fig. 4.—*CATLOW and REEVE, Conch. Nom., 1845, p. 61.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—*CHENU, Ill. Conch., 1858, pl. XIX, figs. 4, 4a, 4b.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—*KUSTER, Conch. Cab. Unio, 1861, p. 245, pl. LXXXII, fig. 3.—*REEVE, Conch. Icon., XVI, pl. XXVIII, fig. 140.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 159.
- * *Margarita (Unio) menkianus* LEA, Syn., 1838, p. 19.
- * *Margaron (Unio) menkianus* LEA, Syn., 1852, p. 27; 1870, p. 43.
- * *Unio pulcher* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 6, pl. III, fig. 6; *Obs., II, 1838, p. 6, pl. III, fig. 6.—*TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—*HANLEY, Test. Moll., 1842, p. 193; *Biv. Shells, 1843, p. 193, pl. XXIII, fig. 7.—*CATLOW and REEVE, Conch. Nom., 1845, p. 63.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*CHENU, Ill. Conch., 1858, pl. XVII, figs. 2, 2a, 2b.—*KUSTER, Conch. Cab. Unio, 1861, p. 193, pl. LXI, fig. 5.—*E. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 164.
- * *Margarita (Unio) pulcher* LEA, Syn., 1836, p. 25; 1838, p. 19.
- * *Margaron (Unio) pulcher* LEA, Syn., 1852, p. 28; 1870, p. 44.
- * *Unio interruptus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 15, pl. VI, fig. 15; *Obs., II, 1838, p. 15, pl. VI, fig. 15.—*HANLEY, Test. Moll., 1842, p. 191; *Biv. Shells, 1843, p. 191, pl. XXI, fig. 28.—*CATLOW and REEVE, Conch. Nom., 1845, p. 60.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*CHENU, Ill. Conch., 1858, pl. XVII, figs. 4, 4a, 4b.—*B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) interruptus* LEA, Syn., 1836, p. 24; 1838, p. 19.
- * *Margaron (Unio) interruptus* LEA, Syn., 1852, p. 27; 1870, p. 43.
- * *Unio latiradiatus* CONRAD, Monog., XI, 1838, p. 96, pl. LIII; Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—*KUSTER, Conch. Cab. Unio, 1861, p. 208, pl. LXIX, fig. 3.—PÆTEL, Conch. Sam., III, 1890, p. 151.
- * *Unio tennesseensis* LEA,² Tr. Am. Phil. Soc., I, 1840, p. 288; *Tr. Am. Phil. Soc., VIII, 1843, p. 199, pl. x, fig. 11;³ *Obs., III, 1842, p. 37, pl. x, fig. 11.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CHENU, Ill. Conch., 1858, pl. XXVII, figs. 1, 1a, 1b.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 169.
- * *Margaron (Unio) tennesseensis* LEA, Syn., 1852, p. 27; 1870, p. 43.
- * *Unio perdic* REEVE, Conch. Icon., XVI, 1864, pl. XVIII, fig. 82.

Tennessee and Cumberland river systems.

¹ Lea places this species in the synonymy of his *Unio interruptus*, in the Synopsis. The latter was not published until 1838.

² The type is an old female *tæniatus*, very solid, and but slightly rayed.

³ Lea states in the above citation that this species has radial beak sculpture. The beaks of his type are slightly eroded, having the appearance of somewhat rayed ridges, and I have seen the same thing in the eroded beaks of *Unio rotundatus* Lamarck, but it is not true beak sculpture. Many Unios when decomposing exhibit throughout their shells a somewhat radial structure, and that is what is shown in this case.

† LAMPSILIS PICTUS Lea.

* *Unio pictus* LEA, Tr. Am. Phil. Soc., V., 1834, p. 73, pl. XI, fig. 36; * Obs., I, 1834, p. 185, pl. XI, fig. 52.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 191; * Biv. Shells, 1843, p. 191, pl. XXIII, fig. 35.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab. Unio, 1861, p. 249, pl. LXXXIII, fig. 5.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Margarita (Unio) pictus* LEA, Syn., 1836, p. 24; 1838, p. 19.

* *Margaron (Unio) pictus* LEA, Syn., 1852, p. 27; 1870, p. 43.

† * *Unio lindsleyi* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 306; * Jl. Ac. N. Sci. Phila., 1860, p. 351, pl. LVIII, fig. 176; * Obs., VIII, 1860, p. 33, pl. LVIII, fig. 176.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLII, fig. 233b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 157.

* *Margaron (Unio) lindsleyi* LEA, Syn., 1870, p. 43.

* *Unio camelopardalis* SOWERBY, Conch. Icon., XVI, 1866, pl. XLII, fig. 233a.

Harpeth River, Tennessee.

† * LAMPSILIS CAMELOPARDILIS Lea.¹

* *Unio camelopardilis* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 92; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 353, pl. LIX, fig. 180; * Obs., VIII, 1860, p. 37, pl. LIX, fig. 180.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.

* *Margaron (Unio) camelopardilis*, LEA, Syn., 1870, p. 53.

† * *Unio fucatus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 92; Jl. Ac. N. Sci. Phila., IV, 1860, p. 353, pl. LIX, fig. 178; * Obs., VIII, 1860, p. 35, pl. LIX, fig. 178.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) fucatus*, LEA, Syn., 1870, p. 43.

Tennessee and Cumberland river systems.

† LAMPSILIS PUNCTATUS Lea.

* *Unio punctatus* LEA, Pr. Ac. N. Sci. Phila., IX, 1865, p. 89; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 261, pl. XXXII, fig. 76; * Obs., XII, 1869, p. 21, pl. XXXII, fig. 76.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) punctatus* LEA, Syn., 1870, p. 43.

Tennessee River drainage.

† LAMPSILIS PERDIX Lea.

* *Unio perdix* LEA, Tr. Am. Phil. Soc., V, 1827, p. 72, pl. XI, fig. 31; * Obs., I, 1834, p. 184, pl. XI, fig. 31.—* FERUSSAC Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 189; * Biv. Shells, 1843, p. 188, pl. XX, fig. 20.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* H. and A. ADAMS, Gen. Rec. Moll. II, 1857, p. 494.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIX, fig. 82.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Margarita (Unio) perdix* LEA, Syn., 1836, p. 23; 1838, p. 18.

* *Margaron (Unio) perdix* LEA, Syn., 1852, p. 26; 1870, p. 41.

* *Unio pectorosus* CONRAD, New F. W. Shells, 1834, p. 37, pl. VI, fig. 1, p. 71.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* CONRAD, Monog. III, 1836, p. 25, pl. XI, fig. 1.—* MÖLLER, Syn. Nov. Gen., 1836, p. 205.—* HANLEY, Test. Moll., 1842, p. 189; * Biv. Shells, 1843, p. 189, pl. XXI, fig. 22.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 19, pl. II, fig. 8.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* KUSTER, Conch. Cab. Unio, 1852, p. 26, pl. IV, fig. 2.—* CONRAD,

¹ It is quite probable that this and the preceding species are merely varieties of the same thing.

Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* B. H. WRIGHT, Check List, 1888.—

* PÆTEL, Conch. Sam., III, 1890, p. 162.

**Margarita (Unio) pectorosus* LEA, Syn., 1836, p. 23, 1838, p. 18.

Tennessee and Cumberland river systems.

† LAMPSILIS BRACTEATUS Gould.

**Unio bracteatus* GOULD, Pr. Bost. Soc. N. Hist., V, 1855, p. 228; **Otia* Conch., 1862, p. 217.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) bracteatus* LEA, Syn., 1870, p. 43.

Llanos, Guadalupe, and Colorado rivers, Texas.

† LAMPSILIS VENUSTUS Lea.

**Unio venustus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 4, pl. II, fig. 4; **Obs.*, II 1838, p. 4, pl. II, fig. 4.—* TROSCHEL, Arch. für. Naturg., V, 1839, II, p. 233.—

* HANLEY, Test. Moll., 1842, p. 192; * *Biv. Shells*, 1843, p. 192, pl. XXIII, fig. 5.—

* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* CHENU, Ill. Conch., 1858, pl. XXII, figs. 1, 1a, 1b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 171.—* CALL, Tr. Acad. Sci. St. Louis, 1895, p. 57.

**Margarita (Unio) venustus* LEA, Syn., 1836, p. 24; 1838, p. 19.

**Margaron (Unio) venustus* LEA, Syn., 1852, p. 27; 1870, p. 43.

Potosi, Missouri.

(Group of *Lampsilis anodontoides*.)

Shell elongated, inflated, moderately solid, sharply pointed behind; that of the female much produced at the posterior base, behind which it is diagonally truncate; epidermis very bright, smooth and shining, but feebly rayed; beaks not prominent, marked with very delicate regular sculpture, the posterior loop often open behind; pseudocardinals smooth, generally compressed; nacre shining, white or purplish. Animal with the marsupium very distinct and well rounded below; inner edge of the mantle usually beautifully and evenly toothed behind.

† LAMPSILIS ANODONTOIDES Lea.

† **Unio anodontoides* LEA, Tr. Am. Phil. Soc., IV, 1834, p. 81, pl. VIII, fig. 11;

* *Obs.*, I, 1834, p. 91, pl. VIII, fig. 11.—* HANLEY, Test. Moll., 1842, p. 204.—

* CATLOW and REEVE, Conch. Nom., 1845, p. 55.—* CHENU, Ill. Conch., 1858, pl. XIV, figs. 3, 3a, 3b.—* REEVE, Conch. Icon., XVI, 1865, pl. XIX, fig. 87.—* B. H. WRIGHT, Check List, 1888.—* SIMPSON, Proc. U. S. Nat. Mus., XV, 1892, p. 430, pl. LXXI, fig. 7; LXXII, figs. 1, 2, 4.

**Margarita (Unio) anodontoides* LEA, Syn., 1836, p. 35; 1838, p. 24.

**Margaron (Unio) anodontoides* LEA, Syn., 1852, p. 36; 1870, p. 58.

**Lampsilis anodontoides* BAKER, Moll. Chicago, Pt. 1, 1898, p. 100, pl. x, figs. 1, 2.—* SMITH, Bull. U. S. Fish Com. 1899, p. 290, pl. LXXVIII.

*? *Unio teres* SAY, Am. Conch., VI, 1834.¹—* CONRAD, New F. W. Shells, 1834, p. 72; Monog. VI, 1836, p. 52, pl. XXVIII.—* FERUSSAC, Guer. Mag., 1835, p. 27.—

* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—* KUSTER, Conch. Cab. Unio, 1854, p. 68, pl. XVII, figs. 1, 4.

¹ Said to be of Rafinesque, 1820. I can not be positive whether Rafinesque's description is of a young shell of this species or the *fallaciosus*. He gives its length as 3 inches. I therefore use the name applied by Lea, his shell being properly described and figured.

† LAMPSILIS ANODONTOIDES var. FLORIDENSIS Lea.

* *Unio floridensis* LEA,¹ Tr. Am. Phil. Soc., X, 1852, p. 274, pl. XXI, fig. 31; * Obs., V, 1852, p. 30, pl. XXI, fig. 31.—* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

* *Margaron (Unio) floridensis* LEA, Syn., 1852, p. 39; 1870, p. 62.

Entire Mississippi River drainage except (probably) the upper Missouri. All the Gulf drainage from the Withlacoochee River, Florida, to the Rio Grande, and into Mexico.

† LAMPSILIS FALLACIOSUS (Smith) Simpson.²

* *Unio anodontoides* REEVE, Conch. Icon., XVI, 1865, pl. XXI, fig. 97.—* CALKINS, Pr. Ottawa Acad., 1874, p. 41.

* *Lampsilis anodontoides* BAKER, Moll. Chicago, Pt. 1, 1898, pl. X, fig. 3.³

* *Unio oriens* SOWERBY, Conch. Icon., 1868, pl. LXIII, fig. 314.

* *Lampsilis fallaciosus* SMITH, Bull. U. S. Fish Com., 1899, p. 291, pl. LXXIX.—* SIMPSON, Pr. Ac. N. Sci., Phila., 1900, p. 74, pl. II, fig. 5.

Upper Mississippi drainage; south to the Cumberland River, Tennessee, and to Arkansas; Red River of the North?

† LAMPSILIS VIRESCENS Lea.⁴

* *Unio virescens* LEA, Pr. Ac. N. Sci., Phila., II, 1858, p. 40; * Jl. Ac. N. Sci., Phila., IV, 1860, p. 341, pl. LV, fig. 166; * Obs., VIII, 1860, p. 23, pl. LV, fig. 166.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) virescens* LEA, Syn., 1870, p. 42.

Tennessee River in northern Alabama.

† LAMPSILIS AUSTRALIS Simpson.

* *Lampsilis australis* SIMPSON,⁵ Pr. Ac. N. Sci., Phila., 1900, p. 75, pl. II, fig. 2.

Little Patsaliga Creek, southeastern Alabama.

† LAMPSILIS RECTUS Lamarck.

* *Unio recta* LAMARCK, An. sans Vert., VI, 1819, p. 74.—* VALENCIENNES, Rec. Obs. Zool., II, 1833, p. 234, pl. LIV, fig. 1.—* DESHAYES, An. sans Vert., 2d ed., VII, 1835, p. 537; 3d ed., II, 1839, p. 669.

¹ *Lampsilis anodontoides* becomes thinner and more delicate in the waters of the eastern Gulf drainage, and in Florida assumes the form called by Lea *Unio floridensis*. The type of the latter is not in the Lea collection.

² Figured and the name (supplied by the writer) given by Smith in Bull. U. S. Fish Commission, but not described.

³ As this species has generally been confounded with the very closely allied *L. anodontoides* of Lea, it is a little difficult to be certain in all cases which form authors have referred to.

⁴ A species which seems to combine some of the characters of *L. anodontoides* and *cariosus*, but which probably should be placed here.

⁵ This species seems to stand partly between *L. rectus* and *L. anodontoides*. In the character of color both of nacre and epidermis the former is quite widely separated from the latter, though specimens of *rectus* from Michigan and other northern localities sometimes have a tawny epidermis. In *L. australis* the nacre is silvery, and the color of the epidermis approaches to some extent that of *anodontoides*.

* *Unio (Ligumia) recta* SWAINSON, Treat. on Mal., 1840, pp. 267, 274, fig. LV.

Unio rectus SHORT and EATON, Transylvania JI., 1831, p. 77.—* CONRAD, New F. W. Shells, 1834, p. 71.—* SAY, Am. Conch., VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Monog., III, 1836, p. 33, pl. XV.—* HANLEY, Test. Moll., 1842, p. 204.—* C. B. ADAMS, Thompson's Hist. of Vt., 1842, p. 167; * F. W. and L. Sh. of Vermont, 1842, p. 17.—* HANLEY, Biv. Shells, 1843, p. 204.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 195.—* POTIEZ and MICHAUD, Gall. Moll., 1844, II, p. 149, pl. LVII, figs. 3, 4.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* KUSTER, Conch. Cab. Unio, 1852, p. 35, pl. VI, fig. 1; VII, fig. 1.—* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 256.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, Man., 1859, II, p. 139, fig. 675.—REEVE, Conch. Icon., XVI, 1865, pl. XIX, fig. 86.—* CALKINS, Pr. Ottawa Ac., 1874, p. 44.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 50.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL, Conch. Sam., III, 1890, p. 165.—* CALL, Tr. Ac. Sci., St. Louis, VII, 1895, p. 43, pl. VII.

* *Margarita (Unio) rectus* LEA, Syn., 1836, p. 34; 1838, p. 23.

* *Margaron (Unio) rectus* LEA, Syn., 1852, p. 35; 1870, p. 57.

* *Lampsilis rectus* SMITH, Bull. U. S. Fish Com., 1899, p. 290, pl. LXXVIII.

†* *Unio latissima* RAFINESQUE, Ann. Gen. Sci. Phys. Brux., Pt. 13, V, 1820, p. 297, pl. LXXX, figs. 14, 15.

* ? *Unio prælongus* BARNES,¹ Am. JI. of Sci., VI, 1823, p. 261, pl. XIII, fig. 11.—

* HILDRETH, Am. JI. of Sci., XIV, 1828, p. 286, fig. 18.

* *Mya prælonga* EATON, Zool. Text-Book, 1826, p. 220.—WOOD, Ind. Test (Hanley), 1856, p. 200, pl. I, Supp., fig. 11.

* *Eurynea prælonga* STIMPSON, Shells of N. Eng., 1851, p. 13.

†* *Unio sageri* CONRAD, Monog., VI, 1836, p. 53, pl. XXXIX, fig. 1.

* ? *Unio arquatus*² CONRAD, JI. Ac. Nat. Sci. Phila., 1854, p. 297, pl. XXVI, fig. 8.—B. H. WRIGHT, Check List, 1888.

Entire Mississippi drainage; Alabama River drainage; Red River of the North; St. Lawrence system. DeCamp's *Unio anodontoides*, reported from Michigan, is a tawny colored variety of this species according to Walker.

(Group of *Lampsilis nasutus*.)

Shell elongated, thin, compressed, with a distinct posterior ridge, and drawn out to a long, pointed beak behind; epidermis rather dull, olive green, and feebly rayed; beaks low, sculptured with fine, close-set ridges, which are slightly looped in front and are parallel with the axis of the shell behind; hinge teeth delicate and compressed: nacre bluish; female shell not greatly produced in the post-basal region. Animal with the marsupium often occupying the greater part of the length of the outer gills posteriorly; inner gills free or united to the abdominal sac.

† LAMPSILIS NASUTUS Say.

Unio nasutus SAY, Nich. Encyc., 1st ed., 1816, pl. IV, fig. 1.—* SWAINSON, Zool. Ill., 1st ser., I, 1821, pl. LVII.—* CONRAD, New F. W. Shells, 1834, p. 70.—* FERUSSAC, Guerin Mag., 1835, p. 26.—* CONRAD, Monog., IV, 1836, p. 38, pl. XVIII, fig. 1,

¹Barnes only gives an outline of his shell, which appears to me more like his *U. gibbosus* than *rectus*. However in deference to the opinions of Hildreth, Lea, and others, I place it in the synonymy of *L. rectus*. Hildreth's description answers fairly well to *rectus*, and it was submitted to Barnes for his inspection.

²Lea believes this to be a distorted *rectus*. I am not quite certain of it.

- part.—* GOULD, Inv. of Mass., 1841, p. 109, fig. 71.—* BINNEY, Gould's Inv., 1870, p. 169, fig. 473.—* HANLEY, Test. Moll., 1842, p. 206.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 191, pl. xx, fig. 239.—* HANLEY, Biv. Shells, 1843, p. 206.—CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* KUSTER, Conch. Cab. Unio, 1861, p. 223, pl. lxxxv, fig. 4.—* REEVE, Conch. Icon., XVI, 1865, pl. xxi, fig. 94.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 70, fig. 186.—* B. H. WRIGHT, Check List, 1888.—* H. CARPENTER, Naut., III, 1889, p. 94.—* PETEL, Conch. Sam., III, 1890, p. 160.
- * *Margarita (Unio) nasutus* LEA, Syn., 1836, p. 37; 1838, p. 24.
- * *Margaron (Unio) nasutus* LEA, Syn., 1852, p. 37; 1870, p. 60.
- * *Unio nasuta* LAMARCK, An. sans Vert., VI, 1819, p. 75.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 538; 3d ed., II, 1839, p. 669.—* HANLEY, Test. Moll., 1842, p. 208; * Biv. Shells, 1843, p. 208.
- * *Mya nasuta* EATON, Zool. Text-Book, 1826, p. 218.—* WOOD, Index Test. (Hanley), 1856, p. 199, pl. 1, Supp., fig. 4.
- * *Eurynea nasuta* AGASSIZ, Shells of New Eng., 1851, p. 13; Arch. für Naturg., I, 1852, p. 45.
- * *Unio rostrata* VALENCIENNES, Rec. Obs. Zool., II, 1833, p. 233, pl. LIII, fig. 3.
- * *Unio vaughanianus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXI, fig. 308.

St. Lawrence drainage; streams flowing into the Atlantic south to North Carolina.

(Group of *Lampsilis subrostratus*.)

Shell elliptical to elongate, distinctly pointed behind, the point well above the middle of the height, that of the female conspicuously swollen at the posterior base and obliquely truncated behind; epidermis varying from olive to brown, generally more or less rayed and slightly roughened; beaks not prominent, sculptured with fine, delicate, parallel bars, which are somewhat looped in front and generally descend obliquely behind; pseudocardinals usually compressed; nacre bluish to purple. Animal with inner gills often more or less free from the abdominal sac; posterior base of mantle of female generally toothed.

† LAMPASILIS SUBROSTRATUS Say.

- Unio subrostratus* SAY, N. Harmony Diss., Jan. 15, 1831; * Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 72.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* L. W. SAY, Terr. and Fluv. Shells, 1840, p. 7.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—KUSTER, Conch. Cab., 1861, p. 203, pl. LXVIII.—* LEWIS, Pr. Ac. N. Sci. Phila., VIII, 1878, p. 273.—* CALL, Am. Nat., XIII, p. 392.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch., Sam., III, 1890, p. 168.
- * *Unio nashrillianus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 100, pl. XIV, fig. 43; * Obs., I, 1834, p. 212, pl. XIV, fig. 43.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 193; Biv. Shells, 1843, p. 193, pl. XXIII, fig. 31.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* KUSTER, Conch. Cab. Unio, 1861, p. 224, pl. LXXVI, figs. 1, 2.—SOWERBY, Conch. Icon., XVI, 1866, pl. xxx, fig. 158.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam., III, 1890, p. 160.

¹ Conrad gives three figures under fig. 1. The first and second are *U. fisherianus*; the third is a female *nasutus*.

- **Margarita (Unio) nashvillianus* LEA, Syn., 1836, p. 26; 1838, p. 20.
 **Margaron (Unio) nashvillianus* LEA, Syn., 1852, p. 29.
 **Margaron (Unio) nashvillensis* LEA, Syn., 1870, p. 45.
 †**Unio mississippiensis* CONRAD, Jl. Ac. N. Sci. Phila., I, 1850, p. 277, pl. XXXVIII, fig. 11.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*KUSTER, Conch. Cab. Unio, 1861, p. 245, pl. LXXXII, fig. 3.—*REEVE, Conch. Icon., XVI, 1865, pl. XIX, fig. 85.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 159.
 **Margaron (Unio) mississippiensis* LEA, Syn., 1852, p. 29; 1870, p. 60.
 **Unio rutersvillensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 155; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 355, pl. LX, fig. 181; *Obs., VIII, 1860, p. 38, pl. LX, fig. 181.—*B. H. WRIGHT, Check List, 1888.
 **Margaron (Unio) rutersvillensis* LEA, Syn., 1870, p. 43.
 †**Unio topekaensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 144; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 313, pl. XLIX, fig. 126; *Obs., XII, 1869, p. 73, pl. XLIX, fig. 126.—*B. H. WRIGHT, Check List, 1888.
 **Margaron (Unio) topckaensis* LEA, Syn., 1870, p. 43.
 **Unio cocodnensis* REEVE, Conch. Icon., XVI, 1865, pl. 24, fig. 117.

Entire Mississippi drainage north to about latitude 41°. Eastern half of Texas.

†***LAMPSILIS LIENOSUS** Conrad.

- **Unio lienosus* CONRAD, Am. Jl. Sci., XXV, 1834, p. 339, pl. I, fig. 4; *New F. W. Shells, 1834, p. 70.—*FERUSSAC, Guer. Mag., 1835, p. 25.—*CONRAD, Monog. VII, 1836, p. 60, pl. XXXIV, fig. 2.—*MÖLLER, Syn. Nov. Gen., 1836, p. 197.—*HANLEY, Test. Moll., 1842, p. 194; *Biv. Shells, 1843, p. 194, pl. XXI, fig. 32.—*CATLOW and REEVE, Conch. Nom., 1845, p. 60.—*KUSTER, Conch. Cab. Unio, 1852, p. 67, pl. XVI, fig. 3.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XXXII, fig. 166; 1868, pl. LXXV, fig. 388.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 157.
 **Margarita (Unio) lienosus* LEA, Syn., 1836, p. 26; 1838, p. 20.
 **Margaron (Unio) lienosus* LEA, Syn., 1852, p. 29; 1870, p. 45.
 **Unio saxeus* CONRAD, Monog., XII, 1840, p. 109, pl. LX, fig. 1; Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 166.
 **Margaron (Unio) saxeus* LEA, Syn., 1852, p. 27; 1870, p. 42.
 **Unio caliginosus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 165; *Tr. Am. Phil. Soc., X, 1848, p. 79, pl. VII, fig. 21; *Obs., IV, 1848, p. 53, pl. VII, fig. 21.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*KUSTER, Conch. Cab. Unio, 1861, p. 180, pl. LVI, fig. 7.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 147.
 **Margaron (Unio) caliginosus* LEA, Syn., 1852, p. 29; 1870, p. 45.
 **Unio fontanus* CONRAD,¹ Am. Jl. Sci., II, 1866, p. 279, pl. XV, fig. 13.—*B. H. WRIGHT, Check List, 1888.

LAMPSILIS LIENOSUS var. **UNICOSTATUS** B. H. Wright.

- **Unio unicostatus* B. H. WRIGHT, Naut., XIII, 1899, p. 69.

Lower Mississippi River drainage north to the lower Ohio; east to southwest Georgia.

¹The characters are poor in the indifferent type in the Academy of Natural Sciences in Philadelphia, but I believe that it is a *Lampsilis lienosus*.

† LAMPSILIS CONCESTATOR Lea.

- * *Unio concestator* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 31; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 66, pl. XII, fig. 48; *Obs., VI, 1858, p. 66, pl. XII, fig. 48.—
 *KUSTER, Conch. Cab. Unio, 1861, p. 178, pl. LVI, fig. 3.—*REEVE, Conch. Icon., XVI, 1865, pl. XXVI, fig. 128.—*B. H. WRIGHT, Check List, 1888.—
 *PÆTEL, Conch. Sam., III, 1890, p. 148.—*SIMPSON, Pr. U. S. Nat. Mus., XVI, 1892, p. 416, pl. LVIII, figs. 2-4.
- **Margaron (Unio) concestator* LEA, Syn., 1870, p. 45.
- †* *Unio intercedens* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 32; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 77, pl. XV, fig. 57; *Obs., VI, 1858, p. 77, pl. XV, fig. 57.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 155.
- **Margaron (Unio) intercedens* LEA, Syn., 1870, p. 45.
- †* *Unio fallax* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 32; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 79, pl. XV, fig. 59; *Obs., VI, 1858, p. 79, pl. XV, fig. 59.—*KUSTER, Conch. Cab. Unio, 1861, p. 206, pl. LXVIII, fig. 7.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXX, fig. 418.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 152.
- **Margaron (Unio) fallax* LEA Syn., 1870, p. 45.
- †* *Unio contiguus* LEA,¹ Proc. Ac. N. Sci. Phila., VI, 1861, p. 392; *Jl. Ac. N. Sci. Phila., V, 1862, p. 199, pl. XXVIII, fig. 268; Obs., IX, 1863, p. 21, pl. XXVIII, fig. 268.—B. H. WRIGHT, Check List, 1888.—PÆTEL, Conch. Sam., III, 1890, p. 148.
- **Margaron (Unio) contiguus* LEA, Syn., 1870, p. 45.
- **Unio bi-caelatus* REEVE, Conch. Icon., XVI, 1865, pl. XXVI, fig. 130.—*PÆTEL, Conch. Sam., III, 1890, p. 146.
- †* *Unio genuinus* LEA, Pr. Ac. N. Sci. Phila., XX, 1868, p. 161; *Jl. Ac. N. Sci. Phil., VI, 1868, p. 305, pl. XLVI, fig. 117; *Obs., XII, 1869, p. 64, pl. XLVI, fig. 117.—
 *B. H. WRIGHT, Check List, 1888.
- **Margaron (Unio) genuinus* LEA, Syn., 1870, p. 45.

North Carolina, in streams flowing into the sea, to Louisiana, and possibly to Texas. Some specimens are very close to *lienosus*.

LAMPSILIS PROPRIUS Lea.²

- * *Unio proprius* LEA, Pr. Ac. N. Sci. Phila., IX, 1865, p. 89; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 256, pl. XXXI, fig. 70; *Obs., XII, 1869, p. 16, pl. XXXI, fig. 70.—
 *B. H. WRIGHT, Check List, 1888.
- **Margaron (Unio) proprius* LEA, Syn., 1870, p. 45.
- * *Unio striatus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVIII, fig. 407.

Walker County, Georgia; Clinch River, Virginia.

LAMPSILIS PUNICEUS Haldeman.

- * *Unio puniceus* HALDEMAN,³ Jl. Ac. N. Sci. Phila., VIII, 1842, p. 201.—CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—B. H. WRIGHT, Check List, 1888.
- **Margaron (Unio) puniceus* LEA, Syn., 1870, p. 46.

Holston River, Tennessee.

¹ A large rather thin *L. concestator*, I think.

² Possibly distinct, but more likely a mere light-colored variety of *L. Vanuxemensis*.

³ I believe that this species has never been figured. From the description I should judge that it belonged in this group, and it may be synonymous with some one of its species.

† LAMPSILIS VANUXEMENSIS Lea.

* *Unio vanuxemensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 36, pl. XI, fig. 31; * Obs., II, 1838, p. 36, pl. XI, fig. 31.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 436.—* HANLEY, Test. Moll., 1842, p. 193; * Biv. Shells, 1843, p. 193, pl. XXII, fig. 56.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* CHENU, Ill. Conch., 1858, pl. XIX, figs. 3, 3a, 3b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* KUSTER, Conch. Cab. Unio, 1862, p. 272, pl. XCI, fig. 6.—* PÆTEL, Conch. Sam., III, 1890, p. 171.

* *Margarita (Unio) vanuxemensis* LEA, Syn., 1836, p. 26; 1838, p. 19.

* *Margaron (Unio) vanuxemensis* LEA, Syn., 1852, p. 29.

* *Unio vanuxemensis* CONRAD, Pr. Ac. N. Sci. Phila., 1853, p. 259.

* *Margaron (Unio) vanuxemii* LEA, Syn., 1870, p. 46.

* *Unio vanuxemii* B. H. WRIGHT, Check List, 1888.

† * *Unio nitens* LEA, Pr. Am. Phil. Soc., I, 1840, p. 288; * Tr. Am. Phil. Soc., VIII, 1843, p. 205, pl. XII, fig. 19; * Obs., III, 1842, p. 43, pl. XII, fig. 19.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.—* KUSTER, Conch. Cab., 1856, p. 163, pl. XLVII, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* CHENU, Ill. Conch., 1858, pl. XXVIII, figs. 5, 5a, 5b.—* REEVE, Conch. Icon. XVI, 1865, pl. XXVIII, fig. 144.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 161.

* *Margaron (Unio) nitens* LEA, Syn., 1852, p. 29; 1870, p. 45.

† * *Unio umbrans* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 104; * Jl. Ac. N. Sci. Phila., V, 1858, p. 72, pl. XIII, fig. 53; * Obs., VI, 1858, pl. XIII, fig. 53.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIV, fig. 179.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 171.

* *Margaron (Unio) umbrans* LEA, Syn., 1870, p. 45.

† *Unio tenebricus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 171; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 83, pl. XVII, fig. 63; * Obs., VI, 1858, p. 83, pl. XVI, fig. 63.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) tenebricus* LEA, Syn., 1870, p. 45.

† * *Unio pybasii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 40; * Jl. Ac. N. Sci. Phila., V, 1862, p. 67, pl. VI, fig. 216; * Obs., VIII, 1862, p. 71, pl. VI, fig. 216.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

* *Margaron (Unio) pybasii* LEA, Syn., 1870, p. 45.

† * *Unio fabaceus* LEA,¹ Proc. Ac. N. Sci. Phila., V, 1861, p. 38; * Jl. Ac. N. Sci. Phila., V, 1862, p. 90, pl. XIII, fig. 238; * Obs., VIII, 1862, p. 94, pl. XIII, fig. 238.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) fabaceus* LEA, Syn., 1870, p. 46.

† * *Unio copei* LEA,² Pr. Ac. N. Sci. Phila., XII, 1868, p. 144; * Jl. Ac. N. Sci. Phila., VI, 1869, p. 307, pl. XLVII, fig. 120; * Obs., XII, 1869, p. 67, pl. XLVII, fig. 120.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) copei* LEA, Syn., 1870, p. 45.

† * *Unio dispansus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 191; * Jl. Ac. N. Sci. Phila., VIII, 1874, p. 19, pl. VI, fig. 16; * Obs., XIII, 1874, p. 23, pl. VI, fig. 16.—* B. H. WRIGHT, Check List, 1888.

Cumberland and Tennessee river systems; headwaters of the Coosa.

† LAMPSILIS OBSCURUS Lea.

* *Unio obscurus* LEA, Tr. Am. Phil. Soc., VI, 1839, p. 7, pl. III, fig. 7, * Obs., II, 1838, p. 7, pl. III, fig. 7.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—* HANLEY, Test. Moll., 1842, p. 194; * Biv. Shells, 1843, p. 194, pl. XXII, fig. 58.—

¹ A small, rather short form of *vanuxemensis*.

² The type is rather thin and high, but is no doubt a mere variation of the above species.

* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* CHENU, III. Conch., 1858, pl. xvii, figs. 1, 1a, 1b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab. Unio, 1861, p. 220, pl. LXXIV, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 161.

* *Margarita (Unio) obscurus* LEA, Syn., 1836, p. 26; 1838, p. 20.

* *Margaron (Unio) obscurus* LEA, Syn., 1852, p. 29; 1870, p. 45.

* *Margarita (Unio) zeiglerianus* LEA, Syn., 1836, p. 26; 1838, p. 20.

* *Unio zeiglerianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 32, pl. x, fig. 27; * Obs., II, 1838, p. 32, pl. x, fig. 27.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 235.—* HANLEY, Test. Moll., 1842, p. 193, * Biv. Shells, 1843, p. 193, pl. xxii, fig. 57.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, III. Conch., 1858, pl. xxiv, figs. 2, 2a, 2b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. xxxvi, fig. 19.—* B. H. WRIGHT, Check List, 1888.—PÆTEL, Conch. Sam., III, 1890, p. 172.

* *Margaron (Unio) zeiglerianus* LEA, Syn., 1852, p. 29; 1870, p. 45.¹

Tennessee and Cumberland river systems; Lower Ohio and its tributaries.

† LAMPSILIS PRATTII Lea.

* *Unio prattii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 166; * JI. Ac. N. Sci. Phila., IV, 1859, p. 206, pl. xxiv, figs. 88, 88a; * Obs., VII, 1859, p. 24, pl. xxiv, fig. 88.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) prattii* LEA, Syn., 1870, p. 45.

Chattahoochee River, Georgia.

† LAMPSILIS VAUGHANIANUS Lea.

* *Margarita (Unio) vauhanianus* LEA, Syn., 1836, p. 39;² 1838, p. 25.

* *Unio vauhanianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 5, pl. iii, fig. 5; * Obs., II, 1838, p. 5, pl. iii, fig. 5.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—* HANLEY, Test. Moll., 1842, p. 208; * Biv. Shells, 1843, p. 208, pl. xxii, fig. 48.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—* CHENU, III. Conch., 1858, pl. xxi, figs. 11a, 11b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 171.

* *Margaron (Unio) vauhanianus* LEA, Syn., 1852, p. 38; 1870, p. 61.

Near Camden, South Carolina.

† LAMPSILIS OGEECHEENSIS Conrad.

* *Unio ogeecheensis* CONRAD, Ann. and Mag. N. Hist., IV, 1849, p. 300; JI. Ac. N. Sci. Phila., I, 1850, p. 275, pl. xxxvii, figs. 3, 4; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.

* *Unio prevostianus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 269, pl. xix, fig. 24; * Obs., V, 1852, p. 25, pl. xix, fig. 24.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* MUSGRAVE, Phot. Conch., 1863, pl. ii, fig. 10.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

* *Margaron (Unio) prevostianus* LEA, Syn., 1852, p. 29; 1870, p. 44.

* *Unio proximus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 252; * Tr. Am. Phil. Soc., X, 1852,

¹ I believe that the *L. obscurus* is only the fully adult form of *U. zeiglerianus*, which when quite young shows very delicate and beautiful rays.

² In this case, owing to delay in the publication of the transactions, the name appeared in the Synopsis first, and under the generic name *Margarita*.

p. 271, pl. XX, fig. 27; *Obs., V, 1852, p. 27, pl. XX, fig. 27.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 164.

**Margaron (Unio) proximus* LEA, Syn., 1852, p. 29; 1870, p. 45.

Unio tenerus SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 416, pl. LVIII, figs. 5 and 8.¹

Neuse River, North Carolina; south to north Florida; west to the Etowah River, Georgia; Duck River, Tennessee.

† LAMPSILIS CONSTRICTUS Conrad.

**Unio lienosus* var. *constrictus* CONRAD, Monog. X, 1838, p. 91, pl. XLIX, fig. 4.

**Unio constrictus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—*H. and A. ADAMS, Gen. Rec. Moll. II, 1857, p. 493.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVII, fig. 464.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 148.

**Margaron (Unio) constrictus* LEA, Syn., 1852, p. 29; 1870, p. 46.

**Unio genthii* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 85; *Jl. Ac. N. Sci. Phila., 1862, p. 57, pl. II, fig. 204; *Obs. VIII, 1862, p. 61, pl. II, fig. 204.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 153.

**Margaron (Unio) genthii* LEA, Syn., 1870, p. 41.

James River, Virginia; south to South Carolina; Floyd County, northwest Georgia; northern Alabama; Tennessee.

† LAMPSILIS APICINUS Lea.

**Unio apicinus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 32; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 76, pl. XIV, fig. 56; *Obs., VI, 1858, p. 76, pl. XIV, fig. 56.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) apicinus* LEA, Syn., 1870, p. 44.

Othcalooga Creek, Gordon County, Georgia.

† LAMPSILIS OCCIDENTALIS Conrad.

**Unio occidentalis* CONRAD, Monog., VII, 1836, p. 64, pl. XXXVI, fig. 1; *Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 161.

**Margaron (Unio) occidentalis* LEA, Syn., 1852, p. 33; 1870, p. 53.

Current and Little Red rivers, Arkansas.

† LAMPSILIS NIGERRIMUS Lea.

**Unio nigerrimus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 268, pl. XVIII, fig. 23; *Obs., V, 1852, p. 24, pl. XVIII, fig. 23.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 161.

**Margaron (Unio) nigerrimus* LEA, Syn., 1852, p. 31; 1870, p. 49.

**Unio fuligo* REEVE, Conch. Icon., XVI, 1856, pl. XXX, fig. 159.—*PÆTEL, Conch. Sam., III, 1890, p. 153.

Alexandria, Louisiana, to eastern Texas; Indiana?

(Group of *Lampsilis iris*.)

Shell rather small, elliptical, moderately solid in front, thinner behind; epidermis covered with dark green, broken rays, beak sculp-

¹ As of Ravenel, who, however, never described the species.

ture consisting of irregular ridges and corrugations that have a tendency to fall into two loops, which are sometimes slightly nodulous below; nacre bluish, becoming beautifully iridescent posteriorly. Animal having the inner branchiæ free or united to the abdominal sac; mantle border often maculated and generally, in the female, having papillæ below the marsupium; marsupium having a strong, deep sulcus parallel with and near to the base.

† LAMPSILIS IRIS Lea.

- * *Unio iris* LEA, Tr. Am. Phil. Soc., III, 1830, p. 439, pl. IX, fig. 18; *Obs., I, 1834, p. 53, pl. XI, fig. 18.—*CONRAD, New F. W. Shells, 1834, p. 69.—*FERUSSAC, Guer. Mag., 1835, p. 26.—*DESHAYES, An. sans Vert, 2d ed., VI, 1835, p. 550; 3d. ed., II, 1839, p. 673.—*HANLEY, Test. Moll. 1842, p. 206; *Biv. Shells, 1843, p. 206, pl. XXI, fig. 37.—*CATLOW and REEVE, Conch. Nom., 1845, p. 60.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—*CHENU, Ill. Conch., 1858, pl. VIII, figs. 7, 7a, 7b.—*REEVE, Conch. Icon., XVI, 1865, pl. XXXIX, fig. 148.—*CALKINS, Pr. Ottawa Ac. Sci., 1874, p. 42.—*B. H. WRIGHT, Check List, 1888.
- **Margarita (Unio) iris* LEA, Syn., 1836, p. 37; 1838, p. 25.
- **Margaron (Unio) iris* LEA, Syn., 1852, p. 38; 1870, p. 60.¹
- **Lampsilis iris* BAKER, Moll. Chicago, Pt. 1, 1898, p. 105, pl. XIII, fig. 1; XIV, fig. 2.
- **Unio creperus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 33, pl. X, fig. 28; *Obs., II, 1838, p. 33, pl. X, fig. 28.—*TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 235.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—*CHENU, Ill. Conch., 1858, pl. XXIII, figs. 5, 5a, 5b.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*B. H. WRIGHT, Check List, 1888.
- **Margarita (Unio) creperus* LEA, Syn. 1836, p. 28; 1838, p. 20.
- **Margaron (Unio) creperus* LEA, Syn. 1852, p. 31; 1870, p. 48.
- **Unio cresserus* HANLEY, Test. Moll., 1842, p. 196.—*CATLOW and REEVE, Conch. Icon., 1845, p. 58.
- † **Unio novi-eboraci* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 104, pl. XXIV, fig. 114; *Obs., II, 1838, p. 104, pl. XXIV, fig. 114.—*TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 237.—*HANLEY, Test. Moll., 1842, p. 190; *Biv. Shells, 1843, p. 190.—*DE KAY, Zool. of N. Y., Pt. 5, 1843, pl. XX, fig. 240.—*CATLOW and REEVE, Conch. Nom., 1845, p. 61.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—*CHENU, Ill. Conch., 1858, pl. XIX, figs. 5, 5a, 5b.—*KUSTER, Conch. Cab. Unio. 1861, p. 221, pl. LXXIV, fig. 4.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVIII, fig. 206.—*CALKINS, Pr. Ottawa Ac. Sci. 1874, p. 43.—*B. H. WRIGHT, Check List, 1888.—*PETEL, Conch. Sam. Ill. 1890, p. 161.
- **Margarita (Unio) novi-eboraci* LEA Syn., 1838, p. 19.
- **Margaron (Unio) novi-eboraci* LEA, Syn., 1852, p. 27; 1870, p. 60.
- **Unio radiatus* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 189, pl. XVII, fig. 236.
- **Unio subrostratus* KUSTER, Conch. Cab. Unio. 1861, p. 203, pl. LXVII, fig. 3.—*REEVE, Conch. Icon., XVI, 1864, pl. XVII, fig. 78.

St. Lawrence drainage; west to southern Michigan; Ohio River system; Illinois and Wisconsin.²

¹ Dr. Lea states in the Synopsis in the above reference that Say's *U. subrostratus* is identical with his *iris*. He is certainly mistaken.

² Lea places *Unio opalinus* Anthony (Am. Jl. Conch. II, 1866, p. 146, pl. VII, fig. 2) in the synonymy of the above species. It is an oval, compressed, greenish-yellow shell according to the figure and description, and seems to have been injured anteriorly. I can not tell what it is. It is credited by Anthony to Michigan.

† LAMPASILIS FATUUS Lea.¹

* *Unio fatuus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 287; *Tr. Am. Phil. Soc., VIII, 1842, p. 201, pl. XI, fig. 14; *Obs., III, 1842, p. 39, pl. XI, fig. 14.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—*CHENU, Ill. Conch., 1858, pl. XXXI, figs. 4, 4a, 4b.—*KUSTER, Conch. Cab. Unio, 1862, p. 287, pl. XCVI, fig. 5.—*B. H. WRIGHT, Check List, 1888.—*PETEL, Conch. Sam., III, 1890, p. 152.

* *Margaron (Unio) fatuus* LEA, Syn., 1852, p. 38; 1870, p. 61.

* *Unio dactylus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 287; *Tr. Am. Phil. Soc., VIII, 1842, p. 196, pl. IX, fig. 7; *Obs., III, 1842, p. 34, pl. IX, fig. 7.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—*CHENU, Ill. Conch., 1858, pl. XXX, figs. 5, 5a, 5b.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—*B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) dactylus* LEA, Syn., 1852, p. 36; 1870, p. 57.

Tennessee River system. One shell from Beaver River, Pennsylvania seems to be this.

LAMPASILIS PLANICOSTATUS Lea.

Unio planicostatus LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 92; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 354, pl. LIX, fig. 179; *Obs., VIII, 1860, p. 36, pl. LIX, fig. 179.—*B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) planicostatus* LEA, Syn., 1870, p. 43.

Warren County, Kentucky; Clinch River, Tennessee; Tuscumbia, Alabama.

† LAMPASILIS NEBULOSUS Conrad.²

* *Unionebulosus* CONRAD, New F. W. Shells, 1834, p. 28, pl. III, fig. 7; p. 70.—*FERUSAC, Guer. Mag., 1835, p. 29.—*MÖLLER, Syn. Nov. Gen., 1836, p. 202.—*CHENU, Bib. Conch., 1st. ser., III, 1845, p. 16, pl. I, fig. 4.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—*B. H. WRIGHT, Check List, 1888.—*PETEL, Conch. Sam., III, 1890, p. 160.

* *Margarita Unio) cumberlandianus* LEA, Syn., 1836, p. 27; 1838, p. 20.

* *Margaron (Unio) cumberlandianus* LEA, Syn., 1852, p. 30.

†* *Unio cumberlandicus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 25, pl. VII, fig. 19; *Obs., II, 1838, p. 25, pl. VII, fig. 19.—*TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 235.—*HANLEY, Test. Moll., 1842, p. 191; *Biv. Shells, 1843, p. 195, pl. XXII, fig. 59.—*CATLOW and REEVE, Conch. Nom., 1845, p. 58.—*CONRAD, Pr. Ac. N.

¹ It is doubtful whether this is more than a variety of the preceding. In general, it has a rather more cylindrical shell, less rayed, and more decidedly and suddenly thickened in front than *iris*, but there are intermediate forms.

² After carefully comparing again and again large series of specimens, I confess that I can not possibly separate the large number of so-called species I have united under this, the oldest name. It may seem a little strange that a species should be found in the Ohio River area and Gulf drainage, but recent research has proven that a large number of our common Upper Mississippi Valley and Ohio River forms are found in the Coosa, Alabama, Black Warrior, and adjoining streams. There is some variation in the brightness of the painting of a number of these so-called species, and in the form of different specimens, but no more than is found in many other abundant, widely-distributed forms, and the figure on pl. III of the New Fresh-water Shells fairly well represents the general manifestation of the males of this species.

- Sci. Phila., VI, 1853, p. 247.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* CHENU, Ill. Conch., 1858, pl. XXIV, figs. 1, 1a, 1b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 197.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 149.
- * *Margaron (Unio) cumberlandicus* LEA, Syn., 1870, p. 48.
- † * *Unio notatus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 28, pl. VIII, fig. 22; * Obs., II, 1838, p. 28, pl. VIII, fig. 22.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 235.—* HANLEY, Test. Moll., 1842, p. 193; * Biv. Shells, 1843, p. 193, pl. XXIII, fig. 9.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XXI, figs. 3, 3a, 3b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 161.
- * *Margarita (Unio) notatus* LEA, Syn., 1836, p. 26; 1838, p. 19.
- * *Margaron (Unio) notatus* LEA, Syn., 1852, p. 29; 1870, p. 45.
- † * *Unio glaber* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 34, pl. x, fig. 29; * Obs., II, 1838, p. 34, pl. x, fig. 29.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll., 1842, p. 196; * Biv. Moll., 1843, p. 196, pl. XXIII, fig. 2.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XXIV, figs. 3, 3a, 3b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LXXXV, fig. 452.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.
- * *Margarita (Unio) glaber* LEA, Syn., 1836, p. 28; 1838, p. 20.
- * *Margaron (Unio) glaber* LEA, Syn., 1852, p. 31; 1870, p. 48.
- * *Unio radians* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 32; * JI. Ac. N. Sci. Phila., IV, 1859, p. 201, pl. XXIII, fig. 84; * Obs., VII, 1859, p. 19, pl. XXIII, fig. 84.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) radians* LEA, Syn., 1870, p. 46.
- † * *Unio jonesii* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 171; * JI. Ac. N. Sci. Phila., IV, 1860, p. 339, pl. LIV, fig. 164; * Obs., VIII, 1860, p. 21, pl. LIV, fig. 164.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch., Sam., III, 1890, p. 156.
- * *Margaron (Unio) jonesii* LEA, Syn., 1870, p. 48.
- † * *Unio discrepans* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 92; * JI. Ac. N. Sci. Phila., IV, 1860, p. 340, pl. LV, fig. 165; * Obs., VIII, 1860, p. 22, pl. LV, fig. 165.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIV, fig. 176.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 151.
- * *Margaron (Unio) discrepans* LEA, Syn., 1870, p. 48.
- † * *Unio scitulus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 93; * JI. Ac. N. Sci. Phila., IV, 1860, p. 342, pl. LV, fig. 167; * Obs., VIII, 1860, p. 24, pl. LV, fig. 167.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) scitulus* LEA, Syn., 1870, p. 45.
- † * *Unio linguæformis* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 305; * JI. Ac. N. Sci. Phila., IV, 1860, p. 345, pl. LVI, fig. 170; * Obs., VIII, 1860, p. 27, pl. LVI, fig. 170.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) linguæformis* LEA, Syn., 1870, p. 48.
- † * *Unio perpictus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 306; * JI. Ac. N. Sci. Phila., IV, 1860, p. 350, pl. LVIII, fig. 175; * Obs., VIII, 1860, p. 32, pl. LVIII, fig. 175; * B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) perpictus* LEA, Syn., 1870, p. 44.
- † * *Unio difficilis* LEA,¹ Pr. Ac. N. Sci. Phila., XII, 1868, p. 144; * JI. Ac. N. Sci. Phila., VI, 1869, p. 311, pl. XLIX, fig. 124; * Obs., XII, 1869, p. 71, pl. XLIX, fig. 124.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) difficilis* LEA, Syn., 1870, p. 46.

¹Two shells are in the Lea collection; one adult and badly worn, the other young, I believe it to be only a form of *nebulosus*.

† * *Unio sparus* LEA, Pr. Ac. N. Sci. Phila., XX, 1868, p. 143; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 306, pl. XLVII, fig. 119; * Obs., XII, p. 66, pl. XLVII, fig. 119.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) sparus* LEA, Syn., 1870, p. 45.

Cumberland and Tennessee rivers systems, Green River, Kentucky; Tombigbee and Alabama rivers drainage; Columbus, Georgia; Wolfsville, North Carolina.

† LAMPSILIS MÜHLFELDIANUS Lea.¹

* *Unio mühlfeldianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 41, pl. XII, fig. 36; * Obs., II, 1838, p. 41, pl. XII, fig. 36.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll., 1842, p. 195; * Biv. Shells, 1843, p. 196, pl. XXII, fig. 60.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* CHENU, Ill. Conch., 1858, pl. XVII, figs. 5, 5a, 5b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVIII, fig. 211.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 160.

* *Margarita (Unio) mühlfeldianus* LEA, Syn., 1836, p. 27; 1838, p. 20.

* *Margaron (Unio) mühlfeldianus* LEA, Syn., 1852, p. 30; 1870, p. 48.

Cumberland River; Watauga River near Johnson City, Tennessee.

† LAMPSILIS AMÆNUS Lea.²

* *Unio amœnus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 286; * Tr. Am. Phil. Soc., VIII, 1842, p. 200, pl. x, fig. 12; * Obs., III, 1842, p. 200, pl. x, fig. 12.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 244.—* HANLEY, Biv. Shells, 1856, p. 386, pl. XXIV, fig. 9.—* CHENU, Ill. Conch., 1858, pl. XXXIII, figs. 5, 5a, 5b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIX, fig. 416.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Margaron (Unio) amœnus* LEA, Syn., 1852, p. 29; 1870, p. 45.

Holston River, Tennessee.

† LAMPSILIS TENER Lea.³

* *Unio tener* LEA, Pr. Am. Phil. Soc., I, 1840, p. 286; * Tr. Am. Phil. Soc., VIII, 1840, p. 198, pl. x, fig. 10; * Obs., III, 1842, p. 36, pl. x, fig. 10.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XXXI, figs. 1, 1a, 1b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

Margaron (Unio) tener LEA, Syn., 1852, p. 28; 1870, p. 44.

† * *Unio regularis* LEA, Pr. Am. Phil. Soc., II, 1841, p. 82; * Tr. Am. Phil. Soc., VIII, 1842, p. 243, pl. XXV, fig. 59; * Obs., III, 1842, p. 81, pl. XXV, fig. 59.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* CHENU, Ill. Conch., 1858, pl. XXXIII, fig. 3, 3a, 3b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* SOWERBY,

¹ Lea has only a single specimen in his collection. I consider it a species of doubtful validity.

² Doubtfully valid. More regularly elliptical than *nebulosus*, and the dorsal and basal lines are more nearly paral. el.

³ I have only seen the type, a miserably eroded, broken shell, part of which is missing, but I have no doubt that it is the same thing as *regularis*.

Conch. Icon., XVI, 1868, pl. LXVIII, fig. 351.—* B. H. WRIGHT, Check List, 1888.—PÆTEL, Conch. Sam., III, 1890, p. 161.

* *Margaron (Unio) regularis* LEA, Syn., 1852, p. 29; 1870, p. 45.

Big Pigeon and French Broad rivers, Tennessee; near Bowling Green, Kentucky.

† LAMPSILIS SIMUS Lea.

* *Margarita (Unio) simus* LEA, Syn., 1836, p. 29; 1838, p. 21.

* *Unio simus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 26, pl. VIII, fig. 20; * Obs., II, 1838, p. 26, pl. VIII, fig. 20.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 235.—* HANLEY, Test. Moll., 1842, p. 197; * Biv. Shells, 1843, p. 197.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494; * CHENU, III. Conch., 1858, pl. XXI, figs. 4, 4a, 4b.—* KUSTER, Conch., Cab. Unio, 1861, p. 248, pl. LXXXIII, fig. 4, p. 262, pl. LXXXVIII, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 167.¹

* *Margaron (Unio) simus* LEA, Syn., 1852, p. 31; 1870, p. 50.

* *Unio notatus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.

* *Unio spatulatus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXV, fig. 328.

* ? *Unio proximus* KUSTER, Conch. Cab. Unio, 1861, p. 248, pl. LXXXIII, fig. 4.

Cumberland and Tennessee river systems; Othcalooga Creek, north-west Georgia.

† LAMPSILIS PLANCUS Lea.²

* *Unio planicus* LEA, Pr. Ac. N. Sci., Phila., IV, 1860, p. 307; * JI. Ac. N. Sci. Phila., V, 1862, p. 81, pl. x, fig. 229; * Obs., VIII, 1862, p. 85, pl. x, fig. 229.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) planicus* LEA, Syn., 1870, p. 50.

Coosa River at Wetumpka, Alabama.

(Group of *Lampsilis subangulatus*.)

Shell elliptical, inflated, subsolid, drawn to a point behind; that of the female only slightly swollen just behind the central base; bars of the beak sculpture somewhat coarse, feebly double looped; epidermis very smooth, shining, brightly rayed; teeth rather smooth, subcompressed; nacre bluish or purplish. Animal having the marsupium very large; ovisacs numerous; gills large, nearly semicircular.

LAMPSILIS SUBANGULATUS Lea.

* *Unio subangulatus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 287; * Tr. Am. Phil. Soc., VIII, 1842, p. 29, pl. XIII, fig. 23; * Obs., III, 1842, p. 47, pl. XIII, fig. 23.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, III. Conch., 1858, pl. XXIX, figs. 2, 2a, 2b.—* KUSTER, Conch. Cab. Unio, 1862, p. 278, pl. XCIV, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.—* SIMPSON, Pr. U. S. Nat. Mus., XVI, 1892, p. 415, pl. LVIII, fig. 1.

* *Margaron (Unio) subangulatus* LEA, Syn., 1852, p. 29; 1870, p. 45.

* *Unio fasciolus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.

Appalachicola River system, Georgia and Florida.

¹ Spelled *sinus*, but no doubt intended for *simus*.

² Doubtfully distinct from *simus*. I have seen only the type.

† LAMPSILIS KIRKLANDIANUS S. H. Wright.¹

* *Unio kirklandianus* S. H. WRIGHT, Nautilus, X, 1897, p. 136.

† *Lampsilis kirklandianus* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 76, pl. 1, fig. 7.

Ocklocknee river, Leon County, Florida.

(Group of *Lampsilis ellipsiformis*.)

Shell elliptical, subinflated, pointed behind, that of the female but slightly swollen at the post base; behind this inflation there is a slight sinus; beak sculpture doubly looped, the hinder loop sometimes open behind; epidermis dull, rayed with wavy lines, generally arranged in bands; nacre white.

Animal with the marsupium colored below; gills large, inner wholly united to or only free from the abdominal sack a short distance.

† LAMPSILIS ELLIPSIFORMIS Conrad.

* *Unio ellipsiformis* CONRAD, Monog., VIII, 1836, p. 60, pl. XXXIV, fig. 1.—* B. H. WRIGHT, Check List, 1888.

* *Unio spatulatus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; * Tr. Am. Phil. Soc., X, 1848, p. 80, pl. VIII, fig. 22; * Obs., IV, 1848, p. 54, pl. VIII, fig. 22; Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* KUSTER, Conch. Cab. Unio, 1861, p. 261, pl. LXXXVII, fig. 7.—* CALKINS, Pr. Ottawa, Ac. Sci., 1874, p. 45.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL Conch. Sam., III, 1890, p. 168.

* *Margaron (Unio) spatulatus* LEA.

* *Lampsilis spatulatus* BAKER, Moll. Chicago, Pt. 1, 1898, p. 106, pl. x, fig. 5; XIII, fig. 2.

Upper Mississippi Valley generally; south to about latitude 38°; western New York; southern Michigan; southern Canada; Red River of the North.

† LAMPSILIS PLEASII Marsh.

* *Unio pleasii* MARSII, the Observer (a newspaper), II, May, 1891; Nautilus, V, 1891, p. 2.

Little Red River, Arkansas; Morrisville, Polk County, Missouri.

† LAMPSILIS ARKANSASENSIS Lea.

* *Unio arkansasensis* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 169; * Jl. Ac. N. Sci. Phila., V, 1862, p. 206, pl. XXX, fig. 275; * Obs., IX, 1863, p. 28, pl. XXX, fig. 275.—* B. H. WRIGHT, Check List, 1888.

Hot Springs, Arkansas; Saline River near Benton, Arkansas. (Call.)

† LAMPSILIS OZARKENSIS Call.

* *Unio ozarkensis* CALL, Pr. U. S. Nat. Mus., X, 1887, p. 498, pl. XXVII.—* B. H. WRIGHT, Check List, 1888.—* CALL, Tr. Ac. Sci., St. Louis, VII, 1895, p. 33, pl. XVIII.

Jack's Ford of Current River, Missouri; White River, Arkansas.

¹ A lovely, brilliant little species, nearly allied to *subangulatus*, but probably distinct.

(Group of *Lampsilis trabalis*.)

Shell solid, that of the male sinuate at post base, and sometimes produced posteriorly, female shell wider, only slightly sinuous; beak sculpture rather coarse, feebly doubly looped; epidermis dark, with wavy, capillary rays; hinge heavy; nacre bluish-white or purple; animal unknown.¹

† LAMPSILIS TRABALIS Conrad.

**Unio trabalis* CONRAD, New F. W. Shells, May 3, 1834, p. 27, pl. III, fig. 5; p. 72.—*FERUSSAC, Guer. Mag., 1835, p. 29.—*MOLLER, Syn. Nov. Gen., 1836, p. 201.—*CONRAD, Monog., XII, 1840, p. 110, pl. LX, fig. 2.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 15, pl. II, fig. 3.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—*B. H. WRIGHT, Check List, 1888.

†*Unio troostensis* LEA, Tr. Am. Phil. Soc., V, 1834 (August or September), p. 71, pl. X, fig. 30; *Obs., I, 1834, p. 183, pl. X, fig. 30.—*FERUSSAC, Guer. Mag., 1835, p. 29.—*HANLEY, Test. Moll., 1842, p. 186; Biv. Shells, 1843, p. 186, pl. XXIII, fig. 24.—CATLOW and REEVE, Conch. Nom., 1845, p. 64.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1858, p. 496.—*KUSTER Conch. Cab. Unio, 1861, p. 193, pl. LXI, fig. 4.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVIII, fig. 406.—*PETEL, Conch. Sam., III, 1890, p. 170.

**Margarita (Unio) troostensis* LEA, Syn., 1836, p. 21; 1838, p. 18.

**Margaron (Unio) troostensis* LEA, Syn., 1852, p. 25.

**Margaron (Unio) troostii* LEA, Syn., 1870, p. 39.

**Unio troostii* B. H. WRIGHT, Check List, 1888.

**Unio ranuxemensis* SOWERBY, Conch. Icon., 1866, pl. XXXIX, fig. 216.

Kentucky and streams of Tennessee; Clinch River, Virginia.

† LAMPSILIS PERPURPUREUS Lea.

**Unio perpurpureus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 41; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 46, pl. XVI, fig. 44; *Obs., XI, 1867, p. 50, pl. XVI, fig. 44.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) perpurpureus* LEA, Syn., 1870, p. 48.

**Unio troostensis* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIX, fig. 415.

Tennessee River, drainage, extending into Virginia in the Clinch.

(Group of *Lampsilis modioliformis*.)

Shell elliptical, thin, quite evenly rounded before and behind, somewhat inflated; beak sculpture consisting of a few parallel bars, looped in front, and generally open; epidermis with beautiful, rather broad, generally unbroken, sometimes slightly wavy rays; nacre brilliantly iridescent posteriorly; teeth compressed. The female shell is greatly

¹ Certain male shells of *L. trabalis* differ so remarkably from those of the females and from any other known *Naiades* that it might be supposed that they belonged to an isolated group. Other male shells, however, differ but little from the females, and in *L. perpurpureus*, a species so close to *L. trabalis* that it is often difficult to separate them, the male shells differ but slightly from those of the females. Through this former species the group seems very closely related to that of *ellipsiformis*, and so on to the assemblage typified by *L. iris*.

expanded posteriorly, the outline sometimes being almost arcuate on the middle base, and sweeping around in a regular curve to the ligament. Animal with mantle border often spotted, and in the female furnished with fine, well-developed papillæ on the post-ventral region; branchial opening large, with many strong papillæ; marsupium projecting greatly below the rest of the gills, rounded below; ovisacs large and distinct.

† LAMPSILIS MODIOLIFORMIS Lea.

* *Unio modioliformis* LEA, Tr. Am. Phil. Soc., V, 1834, p. 97, pl. XIII, fig. 40; * Obs., I, 1834, p. 209, pl. XIII, fig. 40.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 209; * Biv. Shells, 1843, p. 209, pl. XXIII, fig. 37.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Man., 1859, II, p. 139, fig. 678.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam., III, 1890, p. 159.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 414, pl. LVI, figs. 2, 3, 6.

* *Margarita (Unio) modioliformis* LEA, Syn., 1836, p. 39; 1838, p. 25.

* *Margaron (Unio) modioliformis* LEA, Syn., 1852, p. 39; 1870, p. 44.

* *Unio tenerus* RAVENEL, Cat., 1834, p. 58.¹—* HANLEY, Test. Moll., 1842, p. 209; * Biv. Shells, 1843, p. 209.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.

* *Margarita (Unio) tenerus* LEA, Syn., 1836, p. 39; 1838, p. 25.

* *Margaron (Unio) tenerus* LEA, Syn., 1852, p. 39; 1870, p. 44.

* *Unio delumbis* KUSTER, Conch. Cab., 1861, p. 207, pl. LXIX, fig. 1.

Santee Canal, South Carolina, south to north Florida; probably west to Mississippi.

† LAMPSILIS GRACILIOR Lea.

* *Unio gracilior* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 262; * JI. Ac. N. Sci. Phila., IV, p. 56, pl. VIII, fig. 38; * Obs., VI, p. 56, pl. VIII, fig. 38.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) gracilior* LEA, Syn., 1870, p. 45.

† * *Unio obfuscus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 172; * JI. Ac. N. Sci. Phila., IV, 1859, p. 197, pl. XXII, fig. 80; * Obs., VII, 1859, p. 15, pl. XXII, fig. 80.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) obfuscus* LEA, Syn., 1870, p. 45.

Near Macon, Georgia.

† LAMPSILIS VIBEX Conrad.

* *Unio viber* Conrad, New L. and F. W. Shells, 1834, p. 31, pl. IV, fig. 3, p. 72.²—FERUSSAC, Guerin Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 203.—* HANLEY, Test. Moll., 1842, p. 198; * Biv. Shells, 1843, p. 195.—* CHENU,

¹I am not aware that any description of Ravenel's species has ever been published. In his catalogue, he gives it this name, and refers to his manuscripts only. Specimens that he gave Dr. Lea, which are credited to him from the Santee canal in pencil on the shells, are undoubtedly *modioliformis*. Other specimens from another locality, which Lea has put with these, and has called *Unio tenerus* Ravenel, are undoubtedly *L. prevostianus* Lea. It was these latter specimens which caused me to be mistaken in the identity of *Unio tenerus* in my paper in Proceedings of the United States National Museum, XV, p. 416.

²One lot in the Academy of Sciences is the same as the *exiguus* of Lea, another is the same as Lea's *nashvillianus*. Conrad's figure, which is not very good, agrees fairly well with the former, but is certainly not the latter.

- Bib. Conch., 1st ser., III, 1845, p. 17, pl. III, fig. 6.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 171.
- * *Margarita (Unio) vibex* LEA, Syn., 1836, p. 27; 1838, p. 20.
- * *Margarita (Unio) viber* LEA, Syn., 1852, p. 30; 1870, p. 48.
- † * *Unio exiguus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 287.—* Tr. Am. Phil. Soc., VIII, 1842, p. 191, pl. VI, fig. 1; * Obs., III, 1842, p. 29, pl. VI, fig. 1.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill., Conch., 1858, pl. XXX, figs. 1, 1a, 1b.¹—* SOWERBY, Conch. Icon., XVI, 1866, p. 38, fig. 208.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 152.
- * *Margarita (Unio) exiguus* LEA, Syn., 1852, p. 27; 1870, p. 43.
- † * *Unio stagnalis* CONRAD, Ann. and Mag. N. Hist., IV, 1849, p. 300; * Pr. Ac. N. Sci. Phila., IV, 1849, p. 153;² Jl. Ac. N. Sci. Phila., I, 1850, p. 275, pl. XXXVII, fig. 2; Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.
- * *Margarita (Unio) stagnalis* LEA, Syn., 1852, p. 27; 1870, p. 42.
- † * *Unio rutilans* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 262; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 59, pl. IX, fig. 41; * Obs., VI, 1858, p. 59, pl. IX, fig. 41.—* KUSTER, Conch. Cab. Unio, 1861, p. 258, pl. LXXXVII, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.
- * *Margarita (Unio) rutilans* LEA, Syn., 1870, p. 45.
- † * *Unio subellipsis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 262; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 62, pl. X, fig. 44; * Obs., VI, 1858, p. 62, pl. X, fig. 44.—* B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) subellipsis* LEA, Syn., 1870, p. 45.
- * *Unio prerostianus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIII, fig. 315.
- * *Unio subangulatus* SOWERBY,³ Conch. Icon., XVI, 1868, pl. LXV, fig. 327.

† LAMP SILIS VIBEX var. NIGRINUS Lea.⁴

- * *Unio nigrinus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 284, pl. XXIV, fig. 44; * Obs., V, 1852, p. 40, pl. XXIV, fig. 44.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 161.
- * *Margarita (Unio) nigrinus* LEA, Syn., 1852, p. 39; 1870, p. 62.
- † * *Unio floridensis* S. H. WRIGHT, Conch. Exchange, II, 1888, p. 105.
- † * *Unio areillii* B. H. WRIGHT, Pr. Ac. N. Sci. Phila., XXIII, 1888, p. 115, pl. III, fig. 2.—B. H. WRIGHT, Check List, 1888.

Ogeechee River, Georgia, west to Jackson, Mississippi; the variety in Florida, south to the Hillsborough River.

¹ Poor figures, not all accurate.

² This seems to be equivalent to a male *subellipsis* of Lea, of a little more solid, evenly oval or elliptical form than the type. I do not think it worthy of a varietal name, as there is every possible gradation between these shells. I formerly placed *exiguus*, *rutilans*, and *subellipsis* in the synonymy of *modioliformis* (Proc. U. S. Nat. Mus., XV, 1892, p. 414), and in a young state they seem to be exactly alike, as a general thing; but the examination of a large amount of additional material since then has led me to believe that the latter may perhaps be distinct.

³ Probably a young specimen, rather wide at the posterior end.

⁴ A smaller, shorter, fragile form, generally having a rather dark epidermis, and purplish nacre. It is a southern variety, and gradually merges into the type in the Chattahoochee region.

† LAMPSILIS DISPAR Lea.

* *Unio dispar* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 305; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 327, pl. LI, fig. 153; *Obs., VIII, 1860, p. 9, pl. LI, fig. 153.—*B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) dispar* LEA, Syn., 1870, p. 45.

Southwest Georgia.

(Group of *Lampsilis amygdalum*.)

Shell rather small, obovate, inflated, epidermis varying from smooth and shining to somewhat cloth-like, ashy green to blackish, but always showing green tints when seen through transmitted light, indistinctly rayed; beaks rather high, sculptured with fine, parallel bars, arranged in a double loop, that in front being large and rounded, that behind small and rather pointed below; hinge teeth compressed; nacre iridescent behind. The greatest height of the shell is just behind the center; its greatest diameter is just in front of it, or at a point just behind the beaks; the posterior end is often pointed and somewhat raised. Animal with the marsupium large, reaching far below the inner gills, and having a black border; inner gills united to the abdominal sac throughout; anal opening smooth or only slightly crenulate.

† LAMPSILIS AMYGDALUM Lea.

Unio amygdalum LEA, Desc. of 12 sp. Uniones, Aug. 19, 1843; *Tr. Am. Phil. Soc., IX, 1846, p. 275, pl. XXXIX, fig. 1; *Obs., IV, 1848, p. 33, pl. XXXIX, fig. 1.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 244.—*H. and A. ADAMS, Gen., Rec. Moll., II, 1857, p. 492.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 144.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 426, pl. LXVII, fig. 3.—*CALL, Pr. Ind. Ac. Sci., 1896, p. 115.

* *Margaron (Unio) amygdalum* LEA, Syn., 1852, p. 39; 1870, p. 62.

†* *Unio lepidus* GOULD,¹ Pr. Bost. Soc. N. Hist., VI, 1856, p. 15; Otia Conch., 1862, p. 222.—B. H. WRIGHT, Check List, 1888.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 426, pl. LXVIII, fig. 1; LXIX, fig. 3.

* *Margaron (Unio) lepidus* LEA, Syn., 1870, p. 39.

Florida.

† LAMPSILIS SUDUS Lea.²

* *Unio concavus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 260, pl. xv, fig. 11; *Obs., V, 1852, p. 16, pl. xv, fig. 11.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*SOWERBY, Conch. Icon., XVI, 1868, pl. XCII, fig. 504.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margaron (Unio) concavus* LEA, Syn., 1852, p. 29; 1870, p. 46.

†* *Unio sudus* LEA, Pr. Ac. N. Sci. Phila., IX, p. 170; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 194, pl. XXI, fig. 77; *Obs., VII, 1895, p. 12, pl. XXI, fig. 77.—*B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) sudus* LEA, Syn., 1870, p. 46.

Abbeville, South Carolina.

¹ Having carefully compared the type of this, a large specimen, with *amygdalum*, I have no doubt that both are the same species.

² The name *concavus* applied by Lea was, I believe, used previously by Zeebor for what seems to be *U. tumidus*.

† LAMPSILIS VESICULARIS Lea.¹

**Unio vesicularis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 156; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 37, pl. XII, fig. 34; *Obs., XIII, 1874, p. 41, pl. XII, fig. 34.—*B. H. WRIGHT, Check List, 1888.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 425, pl. LXVII, fig. 4.

Florida: Flint River, Georgia?

† LAMPSILIS VILLOSUS B. H. Wright.

**Unio villosus* B. H. WRIGHT, Naut., XII, 1898, p. 32.

Lampsilis villosus SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 77, pl. I, fig. 1.

Suwanee and Escambia rivers, Florida.

† LAMPSILIS TROSSULUS Lea.²

Unio trossulus LEA, Desc. 12 sp. Uniones, 1843; *Tr. Am. Phil. Soc., IX, 1846, p. 278, pl. XL, fig. 6; *Obs., IV, 1848, p. 36, pl. XL, fig. 6.—*B. H. WRIGHT, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 170.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 427, pl. LXVIII, fig. 3.

**Margaron (Unio) trossulus* LEA, Syn., 1852, p. 25; 1870, p. 39.

Lake Monroe, Florida.

† LAMPSILIS PELLUCIDUS Lea.

**Unio pellucidus* LEA, Pr. Am. Phil. Sci., IV, 1845, p. 163.—*Tr. Am. Phil. Soc., X, 1845, p. 70, pl. II, fig. 6; Obs., IV, 1848, p. 44, pl. II, fig. 6.—CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—B. H. WRIGHT, Check List, 1888.—PÆTEL, Conch. Sam., III, 1890, p. 162.

**Margaron (Unio) pellucidus* LEA, Syn., 1852, p. 39; 1870, p. 62.

Flint and Chattahoochee rivers, Georgia.

† LAMPSILIS MINOR Lea.

Unio minor LEA, Desc. 12 sp. Uniones, 1843; *Tr. Am. Phil. Soc., IX, 1846, p. 276, pl. XXXIX, fig. 3; *Obs., IV, 1848, p. 34, pl. XXXIX, fig. 3.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*B. H. WRIGHT, Check List, 1888.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 425, pl. LXVII, fig. 2.

**Margaron (Unio) minor* LEA, Syn., 1852, p. 31; 1870, p. 49.

**Unio stearnsii* B. H. WRIGHT, Check List, 1888.

Florida and southwestern Georgia.

† LAMPSILIS PAPYRACEUS Gould.

**Unio papyraceus* GOULD, Pr. Bost. Soc. N. Hist., II, 1845, p. 53.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857,

¹Dr. Lea has only two specimens of this shell, both in very bad condition—dead and eroded. I have been much inclined to believe that it was a form of *L. amygdalum*, but recently a specimen in better condition submitted for my inspection by Mr. B. H. Wright would seem to show that the two are distinct.

²A doubtful species. The type is the only specimen I have ever seen which I can refer with any certainty to this species. It is a small, rather solid shell, and may be an unusually heavy *L. amygdalum*.

p. 492.—*GOULD, *Otia. Conch.*, 1862, p. 197.—B. H. WRIGHT, Check List, 1888.—*PÆTEL, *Conch. Sam.*, III, 1890, p. 162.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 427, pl. LXVIII, fig. 2.

Margaron (Unio) papyraceus LEA, *Syn.* 1852, p. 38; 1870, p. 62.

Everglades, Florida.

†LAMP SILIS SINGLEYANUS Marsh.¹

**Unio singleyanus* MARSH, *Joliet Weekly News* (a newspaper), May 1, 1891; **Nautilus*, V, 1891, p. 29.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 426, pl. LXVIII, figs. 4, 5.

Putnam and Sumpter counties, Florida.

Subgenus CARUNCULINA Simpson in Baker, 1898.²

(Type, *Unio texasensis* Lea.)

Shell small, inflated, obovate, rather solid, covered with a thick, dark, often cloth-like epidermis, which is rayless or only feebly rayed; beak sculpture consisting of rather strong, concentric ridges, which form, as a general thing, only a single, rounded loop in front, and are strongly curved upward behind.³ Pseudocardinals compressed, smooth on the inside, generally reflexed upward, somewhat torn on the edges. Shell quite commonly pointed posteriorly, that of the female truncated obliquely on post base. Animal with the marsupium consisting of a few large ovisacs (8 to 13); inner gills wholly or in part free from the abdominal sac; female often having a well-developed caruncle on the mantle below the branchial opening.

†LAMP SILIS TEXASENSIS Lea.

**Unio parrus* CONRAD, *Monog.*, II, 1836, p. 20, pl. IX, fig. 1.—*HANLEY, *Biv. Shells*, 1843, p. 196, pl. XXII, fig. 3.—*SOWERBY, *Conch. Icon.*, XVI, 1866, pl. XXXV, fig. 186.

**Unio texasensis* LEA, Pr. Ac. N. Sci. Phila., VI, 1857, p. 84; *Jl. Ac. N. Sci. Phila.*, IV, 1860, p. 359, pl. LXI, fig. 184; **Obs.*, VIII, 1860, p. 41, pl. LXI, fig. 184.—*SOWERBY, *Conch. Icon.*, XVI, 1866, pl. XL, fig. 218.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, *Conch. Sam.*, III, 1890, p. 161.—*CALL, Pr. Ind. Acad. Sci., 1896, p. III, pl. v, figs. 38-40.

**Margaron (Unio) texasensis* LEA, *Syn.*, 1870, p. 49.

†**Unio bairdianus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 102; **Jl. Ac. N. Sci. Phila.*, IV, 1860, p. 361, pl. LXI, fig. 186; **Obs.*, VIII, 1860, p. 43, pl. LXI, fig. 186.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) bairdianus* LEA, *Syn.*, 1870, p. 49.

¹This may belong to the *parrus* group. The beaks of specimens I have examined were badly eroded.

²Erroneously spelled *Corunculina*.

³Occasionally there is a vestige of a posterior loop, and I have seen it perfectly developed, especially in specimens of *L. haleianus*. The beak sculpture of this group is remarkably like that of the *Tetralasmus* group of *Unio*, though the two assemblages are not at all closely related.

⁴A rather delicate variety, but I hardly think worthy of a varietal name. The species varies from being quite slender to short, wide, and inflated.

† **Unio bealei* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 169; *Jl. Ac. N. Sci. Phila., V, 1862, p. 204, pl. xxx, fig. 273; *Obs., IX, 1863, p. 26, pl. xxx, fig. 273.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) bealei* LEA, Syn. 1870, p. 49.

† LAMPSILIS TEXASENSIS var. COMPRESSUS Simpson.¹

Texas, north to Kansas; Missouri; southern Illinois and Indiana; south through Tennessee, Alabama, Mississippi, and Louisiana; the variety in southwest Texas.

† LAMPSILIS MEARNSI Simpson.

**Lampsilis mearnsi* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 75, pl. i, fig. 4.

Vicinity of Fort Clarke, Kinney County, Texas.

† LAMPSILIS PARVUS Barnes.

**Unio parvus* BARNES, Am. Jl. Sci., VI, 1823, pl. XIII, fig. 18 (outline).²—SHORT and EATON, Transylvania Journal, 1831, p. 78.—*CONRAD, New F. W. Shells, 1834, p. 70.—*SAY, Am. Conch., VI, 1834.—FERUSSAC, Guer. Mag., 1835, p. 26.—*HANLEY, Test. Moll., 1842, p. 196.—*PHILIPPI, Abbild, I, 1845, p. 19, pl. I, fig. 4.—*CATLOW and REEVE, Conch. Nom., 1845, p. 62.—*KUSTER, Conch. Cab. Unio, 1852, p. 33, pl. v, fig. 5.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 25.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 162.

**Margarita (Unio) parvus* LEA, Syn., 1836, p. 28; 1838, p. 21.

**Margaron (Unio) parvus* LEA, Syn., 1852, p. 31; 1870, p. 49.

**Lampsilis parvus* BAKER, Moll. Chicago, Pt. 1, 1898, p. 109, pl. XIII, fig. 3.

**Mya parva* EATON, Zool. Text-Book, 1826, p. 222.

Mississippi River drainage generally; southwest to central Texas; western New York; southern Canada; and Michigan doubtfully.

† LAMPSILIS HALEIANUS Lea.³

**Unio haleianus* LEA, Pr. Am. Phil. Soc., II, 1842, p. 224; *Tr. Am. Phil. Soc., VIII, 1842, p. 247, pl. xxvii, fig. 63; *Obs., III, 1842, p. 85, pl. xxvii, fig. 63.—CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 250.—*H. and A. ADAMS, Gen., Rec. Moll., II, 1857, p. 494.—*CHENU, Ill. Conch., 1858, pl. xxvi, figs. 6, 6a, 6b.—*REEVE, Conch. Icon., XVI, 1865, pl. xxiv, fig. 116.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 154.

**Margaron (Unio) haleianus* LEA, Syn., 1852, p. 31; 1870, p. 49.

Alexandria, Louisiana; eastern Texas.

¹ A remarkably compressed elevated form from southwest Texas may bear this name.

² Barnes's outline shows a small shell, *evenly rounded posteriorly*. I believe that this character of being rounded behind is constant, and is the only one by which it always differs from its near ally, *L. texasensis*, which is more sharp behind and usually obliquely truncate at the post-base. The two species have been continually confounded, and even Dr. Lea has placed in his collection under the name *parvus* a number of specimens which I am sure are his *texasensis*. The former is generally the smaller of the two, though not always, as in northern Illinois it sometimes reaches a length of 2 inches. *L. texasensis* undoubtedly ranges north into northern Missouri, southern Illinois and Indiana, and the true *parvus* is occasionally found well down into Texas.

³ This is often confounded with *L. texasensis*. It is a larger, thinner-shelled form, and is not so decidedly truncate at the post-basal region.

† LAMPSILIS GLANS Lea.

- * *Unio glans* LEA, Tr. Am. Phil. Soc., 1834, p. 82, pl. VIII, fig. 12; * Obs., I, 1834, p. 92, pl. VIII, fig. 12.—* CONRAD, New F. W. Shells, 1834, p. 69.—* FERUSSAC, Guerin Mag., 1835, p. 26.—* CONRAD, Monog., II, 1836, p. 21, pl. IX, fig. 2.—* HANLEY, Test. Moll., 1842, p. 196; Biv. Shells, 1843, p. 196, pl. XXII, fig. 33.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* KUSTER, Conch. Cab. Unio, 1852, p. 37, pl. VI, fig. 3.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* CHENU, Ill. Conch., 1858, pl. VIII, figs. 9, 9a, 9b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 190.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.
- * *Margarita (Unio) glans* LEA, Syn., 1836, p. 28; 1838, p. 21.
- * *Margaron (Unio) glans* LEA, Syn., 1852, p. 31; 1870, p. 49.

Ohio River drainage; Warsaw, Indiana; (probably St. Lawrence drainage) southern Michigan; White River, Carroll County, Arkansas (Call).

† LAMPSILIS GERMANUS Lea.

- * *Unio germanus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 40; * JI. Ac. N. Sci. Phila., VI, 1865, p. 49, pl. XIX, fig. 54; * Obs., XI, 1867, p. 53, pl. XIX, fig. 54.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) germanus* LEA, Syn., 1870, p. 49.
- † * *Unio granulatus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 60; * JI. Ac. N. Sci. Phila., VI, 1866, p. 48, pl. XVI, fig. 46; * Obs., XI, 1867, p. 52, pl. XVI, fig. 46.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) granulatus* LEA, Syn., 1870, p. 49.

Coosa River, and Big Prairie Creek, Alabama.

† LAMPSILIS CYLINDRELLUS Lea.

- * *Unio cylindrellus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 144; * JI. Ac. N. Sci. Phila., VIII, 1869, p. 308, pl. XLVIII, fig. 121.—* Obs., XII, 1869, p. 68, pl. XLVIII, fig. 121.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) cylindrellus* LEA, Syn., 1870, p. 49.

Tennessee River drainage.

† LAMPSILIS MÆSTUS Lea.¹

- * *Unio mæstus* LEA, Pr. Am. Phil. Soc., II, 1841, p. 82; * Tr. Am. Phil. Soc., VIII, 1842, p. 244, pl. XXVI, fig. 60; * Obs., III, 1842, p. 82, pl. XXVI, fig. 60.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* CHENU, Ill. Conch., 1858, pl. XXVIII, figs. 3, 3a, 3b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab. Unio, 1861, p. 226, pl. LXXVI, fig. 5.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 159.
- * *Margaron (Unio) mæstus* LEA, Syn., 1852, p. 31; 1870, p. 49.

French Broad River, Tennessee.

† LAMPSILIS CROMWELLII Lea.

- * *Unio Cromwellii* LEA, Pr. Ac. N. Sci. Phila., IX, 1865, p. 89; JI. Ac. N. Sci. Phila., VI, 1869, p. 258, pl. XXXI, fig. 73; Obs., XII, 1869, p. 19, pl. XXXI, fig. 73.—* B. H. WRIGHT, Check List, 1888.

¹The only shells I have seen of this are two in the Lea collection, having quite solid, stumpy teeth. They are old, dead, and a little worn, and in such a condition that it is hard to tell much about them. The species may be a large *cylindrellus*, but I can not be sure that they are.

**Margarou (Unio) cromwellii* LEA, Syn., 1870, p. 49.

†*Unio marginis* LEA, Pr. Ac. N. Sci. Phila., 1865, p. 89; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 225, pl. XXXI, fig. 69; *Obs., XII, 1869, p. 15, pl. XXXI, fig. 69.—* B. H. WRIGHT, Check List, 1888.

**Margarou (Unio) marginis* LEA, Syn., 1870, p. 49.

Western Georgia and southeastern Alabama.

† LAMPSILIS CORVUNCULUS Lea.

**Unio corvunculus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 144; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 314, pl. L, fig. 127; *Obs., XII, 1869, p. 74, pl. L, fig. 127.—* B. H. WRIGHT, Check List, 1888.

**Margarou (Unio) corvunculus* LEA, Syn., 1870, p. 49.

Western Georgia; Village Creek, Jefferson County, Alabama; Lake Ashby, Florida.

† LAMPSILIS PAULUS Lea.

**Unio paulus* LEA, Pr. Am. Phil. Soc., 1840, p. 287; *Tr. Am. Phil. Soc., VIII, 1842, p. 213, pl. XV, fig. 29; *Obs., III, 1842, p. 51, pl. XV, fig. 29.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XXVII, figs. 5, 5a, 5b.—* KUSTER, Conch. Cab. Unio, 1861, p. 260, pl. LXXXVII, fig. 6.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam., III, 1890, p. 162.

**Margarou (Unio) paulus* LEA, Syn., 1852, p. 31; 1870, p. 49.

†**Unio corvinus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 144; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 310, pl. XLVIII, fig. 123; *Obs., XII, 1869, p. 70, pl. XLVIII, fig. 123.—* B. H. WRIGHT, Check List, 1888.

**Margarou (Unio) corvinus* LEA, Syn., 1870, p. 49.

Flint and Chattahoochee rivers, Georgia.

LAMPSILIS PULLUS Conrad.¹

**Unio pullus* CONRAD, Monog., XI, 1838, p. 100, pl. LIV, fig. 2; *Proc. Acad. Nat. Sci. Phila., VI, 1853, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab. Unio, 1862, p. 270, pl. XCI, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam., III, 1890, p. 164.

**Margarou (Unio) pullus* LEA, Syn., 1852, p. 31; 1870, p. 49.

Warm Springs, North Carolina.

Subgenus **PROPTERA** Rafinesque, 1819.

(Type, *Unio alatus* Say.)

Shell usually large, gaping at the anterior base and edge of dorsal slope, winged along the dorsal region when young and often when adult; beak sculpture feeble, consisting, when developed, of an anterior and posterior loop, the former often wanting; the latter sometimes becomes slightly nodulous; epidermis generally brown, often cloth-like when fresh, rayless or feebly rayed; teeth rather compressed, pseudocardinals

¹ Conrad's figure is a poor one, and I can not be positive just where the species should be placed, but incline to think it a member of the *Texasensis* group. Lea has a shell which he calls the *pullus* of Conrad, which came from Ravenel, labeled "S. Carolina." but which, I think, is not this, but some species of the *subrostratus* group. It is quite probable that *pullus* is the same as Lea's *corvunculus*.

frequently imperfect or nearly wanting; laterals remote; anterior muscle scars often complicated; dorsal scars consisting of a row of from four to thirty distinct, often deep impressions, running from the cavity of the beak obliquely downward anteriorly; nacre purplish. Animal with large branchiæ; marsupium consisting of numerous, generally fine ovisacs, which are often somewhat radial: mantle thickened and distinctly double on the border, often papillose behind where the outer fold develops into a thickened flap; branchial opening with irregular teeth; anal opening smooth or only slightly crenulate.

(Group of *Lampsilis alatus*.)

Shell obovate, strongly winged, subsolid, with a slight posterior and superposterior ridge; epidermis thick, dark, showing irregular growth lines; hinge teeth generally well developed; nacre dark purple, female shell greatly developed in post-basal region. Animal with very numerous and fine ovisacs; marsupium large; inner gills united to abdominal sac throughout.

† LAMPSILIS ALATUS Say.

Unio alatus SAY, Nich. Encyc., II, 1816, pl. IV, fig. 2.—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 285, fig. 17.—* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 67; Monog., VII, 1836, p. 57, pl. XXXI.—* SOWERBY, Conch. Man., 1839, fig. 147.—* ANTON, Verz. der Conch., 1839, p. 14.—* REEVE, Conch. Syst., I, 1841, p. 118, pl. LXXXIX, fig. 8.—* C. B. ADAMS, Thompson's History of Vermont, 1842, p. 166, fig.; * L. and F. W. Shells of Vermont, 1842, p. 16, fig.—* HANLEY, Test. Moll., 1842, p. 174; * Biv. Shells, 1843, p. 174.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 195.—* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 146, pl. LVI, fig. 2.—* CATLOW and REEVE, Conch. Nom., 1845, p. 55.—* KUSTER, Conch. Cab., 1852, p. 15, pl. I, fig. 1.—* DEWEY, Ninth Rep. N. Y. Cab. Nat. Hist., 1856, p. 32.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* CHENU, Man., 1859, II, p. 143, fig. 708.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIV, fig. 242.—* CALKINS, Pr. Ottawa Ac. N. Sci., 1874, p. 41.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 52.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Margarita (Unio) alatus* LEA, Syn., 1836, p. 11; 1835, p. 13.

* *Margaron (Unio) alatus* LEA, Syn., 1852, p. 19; 1870, p. 28.

* *Lampsilis alatus* BAKER, Moll. Chicago, Pt. 1, 1898, p. 97, pl. XVIII.

* *Unio alata* LAMARCK, An. sans Vert., VI, 1819, p. 76.—* DESHAYES, Encyc. Meth., II, 1830, p. 583; * An. sans Vert., 2d ed., VI, 1835, p. 539; 3d ed., II, 1839, p. 669.

* *Mya alata*, EATON, Zool. Text-Book, 1826, p. 219.—* WOOD, Index Test. (Rev.), 1856, p. 199, pl. I, supp. fig. 3.

* *Symphynota alata* LEA, Tr. Am. Phil. Soc., III, 1830, p. 448; * Obs., 1834, I, p. 62.—SHORT and EATON, Transylvania Jl., 1831, p. 80.—* FERUSSAC, Guer. Mag., 1835, p. 25.

* *Lymnadia alata* SWAINSON, Treat. on Mal., 1840, p. 265, fig. 48; * Exotic Conch., 2d ed., 1841, p. 38, pl. VII.

* *Myca alata* SWAINSON, Exotic Conch., 2d ed., 1841, p. 28, pl. VII.

* *Metaptera alata* STIMPSON, Shells of N. Eng., 1851, p. 14.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 260.

*? *Metaptera metaptera* RAFINESQUE, Ann. Gen. Sci., Brux., V, 1820, p. 300, pl. LXXX, figs. 20-22.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 15, pl. I, figs. 20-22.

† *LAMPASILIS ALATUS* var. *POULSONI* Conrad.

* *Unio poulsoni* CONRAD, New F. W. Shells, 1834, p. 25, pl. 1, p. 71.—* MÖLLER, Syn. Nov. Gen., 1836, p. 200.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 15, pl. 1, fig. 7.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

* *Symphynota poulsoni* FERUSSAC, Guer. Mag., 1835, p. 25.

* *Unio inflatus* CONRAD, Monog., VII, 1836, p. 57, pl. XXXII.¹

Entire Mississippi drainage as far south as Arkansas; St. Lawrence drainage; Red River of the North; the variety in the Alabama and Tombigbee systems.

† *LAMPASILIS COLORADOENSIS* Lea.

* *Unio coloradoensis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 103; *Jl. Ac. N. Sci. Phila., III, 1858, p. 314, pl. XXXI, fig. 29; *Obs., VI, 1857, p. 34, pl. XXXI, fig. 29.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) coloradoensis* LEA, Syn., 1870, p. 41.

Eastern Texas.

† *LAMPASILIS ROVIROSAL* Pilsbry.

* *Unio (Lampsilis) rovirosai* PILSBRY, Nautilus, XIII, 1900, p. 140.

Laguna de Atasta, near San Juan Bautista, Mexico.

† *LAMPASILIS PURPURATUS* Lamarck.

* *Unio purpurata* LAMARCK, An. sans Vert., VI, 1819, p. 71.—* STARK, Nat. Hist., II, 1828, p. 90.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 533; 3d ed., II, 1839, p. 667.

* *Unio purpuratus* LEA, Obs., I, 1834, p. 199.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* HANLEY, Test. Moll., 1842, p. 208; * Biv. Shells, 1843, p. 208, pl. XXII, fig. 5.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* KUSTER, Conch. Cab. Unio, 1861, p. 185, pl. LIX, fig. 1.—* REEVE, Conch. Icon., XVI, 1865, pl. XXIV, fig. 115.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.—* PILSBRY, Nautilus, V, 1891, p. 76.—* CALL, Tr. Ac. Sci. St. Louis, VII, No. 1, 1895, p. 38, pl. v.

* *Margarita (Unio) purpuratus* LEA, 1836, p. 39; 1838, p. 25.

* *Margaron (Unio) purpuratus* LEA, Syn., 1852, p. 38; 1870, p. 61.

† *Unio ater* LEA, Tr. Am. Phil. Soc., III, 1830, p. 426, pl. VII, fig. 9; *Obs., I, 1834, p. 40, pl. VII, fig. 9.—* CONRAD, New F. W. Shells, 1834, p. 67.—* CHENU, III, Conch., 1858, pl. x, figs. 1a, 1b.

Unio atra DESHAYES, Enc. Meth., II, 1830, p. 582.

* *Unio lugubris* SAY, Am. Conch., V, 1832, pl. XLIII; VI, 1834.

* *Unio poulsoni* SOWERBY, Conch. Icon., XVI, 1866, pl. LI, fig. 270.

* *Unio dolosus* LEA,² Pr. Ac. N. Sci. Phila., IV, 1860, p. 307; *Jl. Ac. N. Sci. Phila., V, 1862, p. 75, pl. IX, fig. 224; *Obs., VIII, 1862, p. 79, pl. IX, fig. 224.—* Sow-

¹ The variety *poulsoni* is narrower anteriorly and more drawn at the post-basal point than the type, and this form is common in the streams that drain into the Gulf east of the Mississippi, but it seems to connect with typical *alatus* in Tennessee.

² A miserable, worn, young specimen of what I am quite sure is *L. purpuratus*. Lea states that the embryos of this are pouch-shaped, while those of *purpuratus* are wedge-shaped, but the form of embryos in a given species is often not constant.

ERBY, Couch. Icon., XVI, 1866, pl. XLI, fig. 228.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Couch. Sam., III, 1890, p. 151.

* *Margaron (Unio) dolosus* LEA, Syn., 1870, p. 61.

Eastern Texas, north to Kansas, through southern Missouri, western Tennessee, to the Alabama River drainage.

† LAMPSILIS PERMISCENS Lea.¹

* *Unio permiscens* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 112; *Jl. Ac. N. Sci. Phila., V, 1862, p. 102, pl. xvii, fig. 251; *Obs., VIII, 1862, p. 106, pl. xvii, fig. 251.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) permiscens* LEA, Syn., 1870, p. 61.

Tombigbee River, Columbus, Mississippi.

† LAMPSILIS GOULDII Lea.²

* *Unio gouldii* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 165; *Tr. Am. Phil. Soc., X, 1848, p. 76, pl. vi, fig. 16; *Obs., IV, 1848, p. 50, pl. vi, fig. 16.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Couch. Sam., III, 1890, p. 153.

* *Margaron (Unio) gouldii* LEA, Syn., 1852, p. 29; 1870, p. 46.

Tuscaloosa, Alabama.

(Group of *Lampsilis saladoensis*.)

Shell smooth, obovate, inflated, inequilateral, rounded behind, thin, slightly thicker in front; beaks somewhat prominent, nearly smooth; epidermis yellowish olive, shining, rayed; there is a slight carina high up on the posterior slope; pseudocardinals small, lamellar, and oblique; laterals lamellar and curved; anterior cicatrices distinct and well impressed; posterior cicatrices confluent; dorsal cicatrices under the plate, between the pseudocardinals and laterals; nacre bluish white and iridescent.³ Animal unknown.

LAMPSILIS SALADOENSIS Lea.

* *Unio saladoensis* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 305; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 370, pl. lxxv, fig. 195; *Obs., VIII, 1860, p. 52, pl. lxxv, fig. 195.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 586.

* *Margaron (Unio) saladoensis* LEA, Syn., 1870, p. 62.

Rio Salado, New Leon, Mexico.

¹ There is only a single, young, poor specimen in the Lea collection, which may be a valid species, but is quite likely a *L. purpuratus*.

² Only a single, dead, badly worn shell is in Lea's collection. It is something like a young *umbrosus*, but if it really came from Tuscaloosa, Alabama, it probably belongs to the *Alatus* group. I can not decide certainly as to its affinities.

³ Mr. Lea states that a single specimen of *U. saladoensis* was collected by Dr. Berlandier and presented to the Smithsonian Institution by Lieutenant Couch (Obs. VIII, p. 53). I have never found this shell, and have not seen the species, and am somewhat at a loss as to where to place it, but the figure and description would indicate that it is a young shell of a form related to *purpuratus*; its rays, which Dr. Lea says are nearest to *U. amygdalum*, being different from those of any related forms.

(Group of *Lampsilis umbrosus*.)

Shell solid, inflated, short-elliptical, covered with a shining, rather smooth brownish epidermis which often has microscopic, radiating folds; beak sculpture excessively faint, being the merest hint at a double loop; anterior end of the shell suddenly thickened, that of the male scarcely differing from the female; hinge teeth well developed; pseudocardinals strong; laterals large, straight, and club-shaped, nacre whitish or purplish. Animal with the inner gills united to the abdominal sac; branchiæ large; marsupium occupying the whole outer gills posteriorly, not projecting much below; palpi large, considerably united behind.

† LAMPASILIS UMBROSUS Lea.

* *Unio umbrosus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 95; *Jl. Ac. N. Sci. Phila., III, 1857, p. 311, pl. XXX, fig. 26; *Obs., VI, 1857, p. 31, pl. XXX, fig. 26.—

* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIII, fig. 170.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam., III, 1890, p. 171.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 587, pl. LXVII, figs. 1, 1a, 1b.

* *Margaron (Unio) umbrosus* LEA, Syn., 1870, p. 41.

† *Unio veraacruzensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 150; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 320, pl. LII, fig. 133; *Obs., XII, 1869, p. 80, pl. LII, fig. 133.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 605.

* *Margaron (Unio) veraacruzensis* LEA, Syn., 1870, p. 45.¹

Vera Cruz, Mexico.

† LAMPASILIS BERLANDIERI Lea.²

* *Unio berlandieri* LEA, Pr. Ac. Phila., I, 1857, p. 101; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 369, pl. LXV, fig. 194; *Obs. VIII, 1860, p. 51, pl. LXV, fig. 194.—

* REEVE, Conch. Icon., XVI, 1865, pl. XXIII, fig. 108.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam. III, 1890, p. 116.—* PILSBRY, Naut. V, 1891, p. 76.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 584.

* *Margaron (Unio) berlandieri* LEA, Syn., 1870, p. 36.

Northeastern Mexico; southwestern Texas.

† LAMPASILIS TAMPECOENSIS Lea.

* *Unio tampecoensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 24, pl. VII, fig. 18; *Obs., II, 1838, p. 24, pl. VII, fig. 18.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 235.—* HANLEY, Test. Moll., 1842, p. 188; *Biv. Shells, 1843, p. 188.—* CATLOW

and REEVE, Conch. Nom., 1845, p. 64.—* CONRAD, Pr. Ac. N. Sci. Phila., VI,

¹ The type of *veraacruzensis* is in the Smithsonian collection, and is undoubtedly a very young *umbrosus*.

² This species is extremely close to *L. tampecoensis*, and at one time I believed the two to be mere forms of the same thing. The present species is typically heavier and more inflated, as well as lighter colored, and has higher beaks than the latter. According to Hon. J. D. Mitchell, of Victoria, Texas, who has carefully studied these forms when living, *berlandieri* is more active, and while spawning it only buries itself sufficiently to be steady and give the post-ventral portion an elevation, while *tampecoensis* is sedentary in its habits, and buries itself entirely, excepting the extreme posterior point. Letter of September 25, 1895.

1853, p. 258.—* CHENU, Ill. Conch., 1858, pl. XXI, figs. 5, 5a, 5b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* ? KUSTER, Conch. Cab. Unio., 1862, p. 275, pl. XCIII, fig. 1.—* ? SOWERBY, Conch. Icon., XVI, 1867, pl. LVII, fig. 291.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 169.—* FISCHER and CROSSE, Miss. Sci. Pt. 7, II, 1894, p. 586.¹

* *Margarita (Unio) tampecoensis* LEA, Syn., 1836, p. 22; 1838, p. 18.

* *Margaron (Unio) tampecoensis* LEA, Syn., 1852, p. 26; 1870, p. 41.

* *Unio heermannii* LEA, Pr. Ac. N. Sci. Phila., XIII, 1861, p. 392; * JI. Ac. N. Sci. Phila., V, 1862, p. 194, pl. XXVI, fig. 263; * Obs. IX, 1863, p. 16, pl. XXVI, fig. 263.—* ? SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIII, fig. 441.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

* *Margaron (Unio) heermannii* LEA, Syn., 1870, p. 28.²

Northeastern Mexico; southeastern Texas; Honduras.

† LAMPSILIS TECOMATENSIS Lea.

* *Unio tecomatensis* LEA, Pr. Am. Phil. Soc., II, 1841, p. 30; * Tr. Am. Phil. Soc., VIII, 1842, p. 234, pl. XXI, fig. 48; * Obs., III, 1842, p. 72, pl. XXI, fig. 48.—CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XXXI, figs. 6, 6a, 6b.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 589, pl. LXV, fig. 6; LXVI, figs. 4, 4a.

* *Margaron (Unio) tecomatensis* LEA, Syn., 1852, p. 27; 1870, p. 50.

Tecomata River, Mexico.

LAMPSILIS LIVIDUS Simpson.³

* *Unio testudineus* REEVE, Conch. Icon., XVI, 1865, pl. XXII, fig. 101.

* *Unio explicatus* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 594.

Rio Usumasinto, Portugal, according to Reeve, who no doubt intended this for Rio Usumasinta, Mexico, and Guatemala.

† LAMPSILIS EXPLICATUS Morelet.

* *Unio explicatus* MORELET, Test. Noviss, Pt. 1, 1849, p. 28.⁴—FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 594, pl. LXI, fig. 1.

* *Margaron (Unio) semigranosus* LEA, Syn., 1870, p. 34.

Central America.

¹Fischer and Crosse (see above citation) doubt whether Sowerby's figures in Conch. Icon. and Kuster's in Conch. Cab. are *tampecoensis*. Though not very accurate figures, I can not refer them equally well to any other species.

²Lea has two specimens of *heermannii* in his collection; the type, which is a young, slightly injured shell, and a very young one. I am certain it is only *tampecoensis*.

³Reeve described and figured this form in the Conchologia, supposing it to be the *testudineus* of Morelet, which is a very different thing. Fischer and Crosse in Mission Scientifique, believing it to be equal to Morelet's *explicatus*, placed it in the synonymy of that species. I have never seen an absolutely authentic specimen of *explicatus*, but if Fischer and Crosse have accurately figured and described it, I am sure it is different from Reeve's species, the latter being evidently more inflated, smoother, differently shaped, and having a great deal higher beaks. This being the case, it becomes necessary to give Reeve's shell a new name. Fischer and Crosse credit the species to Sowerby, but the Plate XXII, in the Conchologia, is credited to Reeve.

⁴A single valve of what is probably this species was received by the United States National Museum from Dr. H. von Ihering, under the name of *Unio explicatus* Morelet.

LAMPSILIS ALIENIGENUS Crosse and Fischer.

* *Unio alienigenus* CROSSE and FISCHER, JI. de Conch., XLI, 1893, p. 294.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 590, pl. I XV, figs. 5, 5a; LXVI, fig. 3.

Goatzalcoalcos, Vera Cruz, Mexico.¹

(Group of *Lampsilis aztecorum*.)

Shell elliptical, oblong, rounded in front and behind, the posterior part being slightly compressed, the whole rather thin; umbonal region inflated; beak sculpture unknown; epidermis brown and rather smooth; pseudocardinals small, laterals curved; nacre purple and shining; female shell (the specimen figured) somewhat swollen in post basal region, so that the basal line is slightly incurved.

Animal unknown.

LAMPSILIS AZTECORUM Philippi.

* *Unio aztecorum* PHILIPPI, Zeits. für Mal., IV, 1847, p. 95; * Abbild., III, 1849, p. 109, pl. VI, fig. 2.—* KUSTER, Conch. Cab. Unio, 1862, pp. 2, 84, pl. xcv, fig. 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 145.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 607.

* *Margaron (Unio) aztecorum* LEA, Syn., 1870, p. 44.

(Group of *Lampsilis metallicus*.)

Shell rather small, obovate-rhomboid, inflated, much narrowed and rounded in front, the form approaching that of a *Modiolus*; epidermis a rich coppery bronze, shining; beak sculpture consisting of two faint, rounded loops, the bars of which are inclined to be nodulous; pseudocardinals compressed, not well developed, and sometimes more or less broken into denticles; laterals distinct; pits in the beak cavity numerous and very irregular; nacre dark, coppery to purple, with metallic tints, iridescent behind. Animal unknown.

† LAMPSILIS METALLICUS Say.

Unio metallicus SAY, N. Harm., Disseminator (newspaper form), January 15, 1831; * Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 70.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* L. SAY, New Terr. and Fluv. Shells, 1840, p. 6.—* CONRAD, Pt. Ac. N. Sci. Phila., VI, 1853, p. 252.—* PÆTEL, Conch. Sam., III, 1890, p. 159.

†* *Unio cuprinus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 94, pl. XII, fig. 24; ² * Obs., I, 1834, pl. XII, fig. 24.—* HANLEY, Test. Moll., 1842, p. 208; * Biv. Shells, 1843, p. 208, pl. XXII, fig. 7.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CHENU, Ill. Conch., 1858, pl. XI, figs. 3, 3a, 3b.—* H. and A. ADAMS, Gen. Rec. Moll.,

¹I am considerably in doubt as to the relationship of the last two species. Fischer and Crosse are sure that *alienigenus* is close to *umbrosus*, and their figure and description seem to show that *explicatus* is near to *alienigenus*.

²The Transactions of the Philosophical Society, IV, in which Mr. Lea published his *Unio cuprinus*, which is identical with Mr. Say's species, was issued, according to Scudder, in the latter end of 1831.

II, 1857, p. 492.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXVI, fig. 336.—

* B. H. WRIGHT, Check List, 1888.—* P.ETEL, Conch. Sam., III, 1890, p. 149.—

* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 615.

* *Margarita (Unio) cuprinus* LEA, Syn., 1836, p. 39; 1838, p. 25.

* *Margaron (Unio) cuprinus* LEA, Syn., 1852, p. 38; 1870, p. 61.

* *Unio acreus* REEVE, Conch. Icon., XVI, 1856, pl. xxx, fig. 160.¹—* P.ETEL, Conch. Sam., III, 1890, p. 144.

Mexico.

(Group of *Lampsilis gracilis*.)

Shell large, thin, elliptical or slightly obovate, with a high posterior and an anterior wing, not greatly inflated; beaks low; epidermis rather smooth, often feebly rayed, dull colored, but usually glossy; hinge line slightly and rather regularly curved; teeth compressed, pseudocardinals but feebly and often imperfectly developed; nacre purplish tinted, rather dull. Shell of the male and female nearly alike, the latter scarcely swollen at post basal region. Animal with the mantle greatly thickened at posterior end, and double and thickened at post base, where it is often crenulate or toothed on its inner border, and has the outer developed into a flap; inner gill united to the abdominal sac throughout; marsupium enormous, composed of a great number of delicate semiradiating ovisacs, projecting far below the inner gills in a semicircle.

†LAMPASILIS GRACILIS Barnes.

* *Unio gracilis* BARNES, Am. Jl. Sci., VI, 1823, p. 274.—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 288.—* DESHAYES, An. sans Vert, 2d ed., VI, 1835, p. 559; 3d ed., II, 1839, p. 676; Tr. Element. Conch, 1839, p. 18, pl. xxx, figs. 2, 3.—

* HANLEY, Test. Moll., 1842., p. 174.—* C. B. ADAMS, Thompson's Hist. Vermont, 1842, p. 166; * F. W. and L. Shells of Vermont, 1842, p. 16.—* HANLEY, Biv. Shells, 1843, p. 174, pl. xx, fig. 37.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* DESHAYES, Tr. Elem., II, 1853, p. 217, pl. xxx, figs. 2, 3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* SOWERBY, Conch. Icon., XVI, 1866, pl. xxxix, fig. 215.—* CALKINS, Pr. Ottawa Ac. Sci., 1874, p. 42.—* LATCHFORD, Tr. Ottawa F. Nat. Club., 1882, p. 52.—* B. H. WRIGHT, Check List, 1888.

* *Mya gracilis* EATON, Zool. Text Book, 1826, p. 222.

* *Symphynota gracilis* LEA, Tr. Am. Phil. Soc., III, 1830, p. 452.—SHORT and EATON, Transylvania Jl., 1831, p. 80.—* LEA, Obs., I, 1834, p. 66.

* *Margarita (Unio) gracilis* LEA, Syn., 1836, p. 11; 1838, p. 13.

* *Metaptera gracilis* STIMPSON, Shells of N. Eng., 1851, p. 14.

* *Margaron (Unio) gracilis* LEA, Syn. 1852, p. 19; 1870, p. 28.

* ? *Anodon gracilis* SOWERBY, Genera, No. XVII, 1823, fig.

* *Lampsilis gracilis* BAKER, Moll. Chicago, Pt. 1, 1898, p. 99, pl. xix, fig. 1.

* *Unio fragilis* SWAINSON, Zool. Ill., 1st ser., III, pl. CLXXI, 1823.²—* DESHAYES, Encyc. Meth., II, 1830, p. 587.—* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 69; * Monog., VI, 1836, p. 55, pl. xxx.—* CHENU, Bib.

¹The description of the plate is dated 1856, and in the contents it is credited to Reeve, although the previous plates bear date of 1865, and those following 1866.

²Swainson's *Unio fragilis* was published about the same time as Barnes's *gracilis*, and as it is impossible for me to say which has priority, I agree with Lea that it is better to adopt Barnes's well-known name.

- Conch., 1st ser., III, 1845, p. 12.—* KUSTER, Conch. Cab. Unio, 1852, p. 19, pl. III, fig. 1.
- * *Symphynota fragilis* FERUSSAC, Guer. Mag., 1835, p. 25.
- * *Metaptera fragilis* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 260.
- * *Unio fragilis* var. *gracilis* PÆTEL, Conch. Sam., III, 1890, p. 153.
- * *Mya plana* EATON, Zool. Text-Book, 1826, p. 221.
- * *Unio planus* CONRAD, New F. W. Shells, 1834, p. 71.
- * *Unio (Niäa) atrata* SWAINSON, Zool. Ill., 1841, pl. CLXXI.
- * *Unio atratus* HANLEY, Test. Moll., 1842, p. 199; * Biv. Shells, 1843, p. 199, pl. XXI, fig. 29.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* PÆTEL, Conch. Sam., III, 1890, p. 145.

Entire Mississippi River drainage, St. Lawrence system; Red River of the North; Hudson River; eastern Texas.

† LAMPSILIS LÆVISSIMUS Lea.

- * *Symphynota lævissima*, LEA, Tr. Am. Phil. Soc., III, 1830, p. 444, pl. XIII, fig. 23; * Obs., I, 1834, p. 58, pl. XIII, fig. 23.—SHORT and EATON, Transylvania Jl., 1831, p. 80.
- * *Unio lævissima*, DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 558; 3d ed., II, 1839, p. 675.
- * *Unio lævissimus* CONRAD, New F. W. Shells, 1834, p. 70.—* HANLEY, Test. Moll., 1842, p. 174; * Biv. Shells, 1843, p. 174, pl. XXI, fig. 41.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVI, fig. 250.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 156.
- * *Margarita (Unio) lævissimus* LEA, Syn., 1836, p. 11; 1838, p. 13.
- * *Margaron (Unio) lævissimus* LEA, Syn., 1852, p. 19; 1870, p. 28.
- * *Unio ohioensis* SAY, Am. Conch., VI, 1834.—* KUSTER, Conch. Cab., 1852, p. 20, pl. LXIX, fig. 5.
- * *Symphynota ohioensis* FERUSSAC, Guer. Mag., 1835, p. 25.
- * *Metaptera ohioensis* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 260.
- * *Unio discoidens* SOWERBY, Conch. Icon., XVI, 1866, pl. LIII, fig. 275.

Mississippi drainage generally; eastern Texas; southern Michigan; western New York.

† LAMPSILIS ALABAMENSIS Conrad.

- * *Symphynota inflata* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 99, pl. XIV, fig. 28; Obs., I, 1834, p. 109, pl. XIV, fig. 28.—FERUSSAC, Guer. Mag., 1835, p. 25.
- * *Metaptera inflata* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 260.
- * *Margarita (Unio) inflatus* LEA, Syn., 1836, p. 11, 1838, p. 13.
- * *Unio inflatus* HANLEY, Test. Moll., 1842, p. 174; * Biv. Shells, 1843, p. 174, pl. XXI, fig. 45.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* KUSTER, Conch. Cab. Unio, 1852, p. 17, pl. II, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLV, fig. 246.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
- * *Margaron (Unio) inflatus* LEA, Syn., 1862, p. 28; 1870, p. 28.
- * *Unio alabamensis* CONRAD, New F. W. Shells, 1834, p. 67.¹

Alabama and Tombigbee River areas.

¹ New name given by Conrad for *Unio inflatus* Lea, preoccupied by Barnes.

(Group of *Lampsilis amphichænus*.)

Shell rather thin, elongate, elliptical, rounded before, pointed behind, compressed, with a smooth, shining, black, rayless epidermis; beaks not prominent, their sculpture unknown; there is a conspicuous gap at the anterior base, and another very distinctly outlined at the upper part of the posterior end like that of *Schizothærus*: hinge line slightly curved; pseudocardinals imperfect; laterals compressed; nacre purplish; female shell inflated at posterior base.

Animal with large, elliptical palpi; mantle slightly thickened at the edge; anal opening widely separated from the superanal, the latter large; foot large, hatchet-shaped. Several animals were examined, but all were so much decayed that most of the characters could not be made out.

† LAMPSILIS AMPHICHÆNUS Frierson.

* *Unio* (*Lampsilis*) *amphichænus* FRIERSON, *Nautilus*, XI, 1898, p. 10, pl. I.

(Group of *Lampsilis leptodon*.)

Shell rather thin, elongate, elliptical, compressed, decidedly pointed behind, the point raised above the center of the shell; beaks low, their sculpture very feeble; there is a conspicuous post-dorsal wing in young shells, and sometimes vestiges of an anterior wing; young shell rather dull and faintly rayed; there is a decided anterior basal and posterior gap; hinge teeth very imperfect; pseudocardinals often almost wanting, even in young shells; laterals faint, sometimes wanting in the adult shell; nacre coppery to purplish; female shell not inflated at post base.

Animal with large, very thin, light brown branchiæ, free nearly the whole length of the abdominal sac; palpi large, thin, nearly semi-circular; mantle thin, with a wide crenulate border; marsupium projecting slightly below the inner gills.

† LAMPSILIS LEPTODON Rafinesque.¹

* *Unio* (*Leptodea*) *leptodon* RAFINESQUE, *Ann. Gen. Sci. Phys. Brux.*, 1820, p. 295, pl. LXXX, figs. 5-7.

* *Unio leptodon* SAY, *Am. Conch.*, VI, 1834.—* CONRAD, *New F. W. Shells*, 1834, p. 70; *Monog.*, VII, 1836, p. 58, pl. XXXIII.—* CHENU, *Bib. Conch.*, 1st ser., III, 1845, p. 12, pl. I, figs. 5-7.—* KUSTER, *Conch. Cab. Unio*, 1861, p. 197, pl. LXIV, figs. 1, 2.—* SOWERBY, *Conch. Icon.*, XVI, 1866, pl. XLVIII, fig. 257.—* PATEL, *Conch. Sam.*, III, 1890, p. 157.

* *Symphynota leptodon* FERUSSAC, *Guer. Mag.*, 1835, p. 25.

* *Leptodea leptodon* CONRAD, *Pr. Ac. N. Sci. Phila.*, VI, 1853, p. 262.

* *Anodon purpurascens* SWAINSON, *Zool. Ill.*, 1st ser., III, pl. CLX, 1823.—* CATLOW and REEVE, *Conch. Nom.*, 1845, p. 67.

* *Unio velum* SAY, *New Harm. Disseminator*, II, September 23, 1829, p. 293; January 15, 1831 (newspaper form).—* FERUSSAC, *Guer. Mag.*, 1835, p. 28.—* L. W. SAY, *Terr. & Fluv. Shells*, 1840, p. 5.

¹This is one of the few species which its author has described so distinctly that I feel sure there can be no doubt about it. Besides, his figure, such as it is, is something like the *tenuissimus* of Lea.

* *Symphynota tenuissima* LEA, Tr. Am. Phil. Soc., III, 1829, p. 453, pl. XI, fig. 21; * Obs. 1, 1834, p. 67, pl. XI, fig. 21.

Symphynota tenuissima SHORT and EATON, Transylvania JI., 1831, p. 80.

* *Margarita (Unio) tenuissimus* LEA, Syn., 1836, p. 38; 1838, p. 25.

* *Unio tenuissimus* HANLEY, Test. Moll., 1842, p. 206; * Biv. Shells, 1843, p. 206, pl. XX, fig. 42.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIV, fig. 240.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) tenuissimus* LEA, Syn., 1852, p. 38; 1870, p. 61.

Upper Mississippi River drainage, south to the Tennessee River; Buffalo, New York; southern Michigan; Souris River, Manitoba.

(Group of *Lampsilis scutulatus*.)

Shell rhombic elliptical, compressed, rather thin, with a high posterior and a low anterior wing, with two posterior ridges; the valves often exhibiting fine radiating plications on the posterior part; beaks compressed, sometimes showing the nepionic shell, almost destitute of sculpture, which, when present, consists of faint indications of two rounded loops; epidermis rather dull, sometimes indistinctly rayed; left valve with two pseudocardinals, the anterior a sharp, straight ridge sloping obliquely downward and forward from a point just in front of the beaks, the hinder curiously compressed and showing a tendency to break into denticles; right valve with two sharp, ridge-like, sloping pseudocardinals; laterals slender, compressed, straight or wavy; naere bluish white to pale violet; dorsal scars few; female shell apparently slightly swollen at the posterior base; animal unknown.

LAMPASILIS SCUTULATUS Morelet.

* *Unio scutulatus* MORELET, Test. Noviss., I, 1849, p. 30.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 561, pl. LIX, fig. 5; LXVII, fig. 6.

Yucatan.

LAMPASILIS PALUDOSUS Morelet.

* *Unio paludosus* MORELET, Test. Noviss., I, 1849, p. 30 —* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1849, p. 559, pl. LIX, fig. 3.

Yucatan.

LAMPASILIS PLANIVALVIS Morelet.

* *Unio planivalvis* MORELET, Test. Noviss., II, 1851, p. 24.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 560, pl. LIX, fig. 2.¹

Usumasinta River, Guatemala.

+ LAMPASILIS DELPHINULUS Morelet.

* *Unio delphinulus* MORELET, Test. Noviss., I, 1849, p. 31.—* HANLEY, Biv. Shells, 1856, p. 381, pl. XXIII, fig. 60.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLII, fig. 237.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam., III, 1890, p. 150.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 557, pl. LXIII, figs. 2, 2a, 2b.

* *Margaron (Unio) delphinulus* LEA, Syn. 1870, p. 28.

Guatemala.

¹ These three may be mere variations of one thing.

LAMPASILIS LARGILLIERTI Philippi.

* *Unio largillierti* PHILIPPI, Zeits. für Mal., IV, 1847, p. 94.¹

Yucatan.

The following are unfigured and unknown to me:

* *Lampsilis fasciola* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 299.

* *Lampsilis fulgens* RAFINESQUE, Cont. Monog., 1831, p. 7.

* *Lampsilis argyratus* RAFINESQUE, Cont. Monog., 1831, p. 7.

Genus PSEUDOSPETHA Simpson, 1900.

(Type, *Spatha tanganyicensis* Smith.)²

Burtonia BOURGUIGNAT, Moll. Fluv. Nyanza, 1883, p. 20.³

Shell compressed, thin, oblique, inequilateral, with a straight dorsal line which ends in a small wing in front and behind, rounded and cut away at the anterior base, produced in the post-basal region, gaping in front and behind, slightly twisted on its axis and usually bent posteriorly to the right or left; a low, often double posterior ridge ends in a biangulate point behind; beaks compressed, the sculpture faint, irregular, concentric ridges which continue over the shell, and at the beaks sometimes become rather sharply pustulous, the glochidium often remaining; epidermis yellowish brown, sometimes delicately rayed; teeth rudimentary, one or more faint compressed pseudocardinals and a single lateral in each valve; muscle scars irregular; nacre coppery or purple, often rayed. Animal unknown.

* PSEUDOSPETHA TANGANYICENSIS Smith.

* *Spatha tanganyicensis* SMITH, Proc. Zool. Soc. Lond., 1880, p. 350, pl. XXXI, fig. 8.

* *Burtonia tanganyicensis* PÉTEL, Conch. Sam., III, 1890, p. 187.—VON MARTENS, Beschalte, 1897, p. 257.

* *Burtonia moinei* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 33; Icon. Mal. Tan., 1888, pl. XXV, fig. 1.

* *Burtonia lavigerina* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 36; Icon., Mal. Tan., 1888, pl. XXIV, figs. 1-4.

* *Burtonia magnifica* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 41; Icon. Mal. Tan., 1888, pl. XXVI, figs. 1-2.

Lakes Tanganyika and Nyauza, Africa.

PSEUDOSPETHA LEOPOLDVILLENSIS Putzeys.

Burtonia leopoldvillensis PUTZEYS, Proc. Verb. Soc. Mal. Belg., 1898, pl. XXVIII, fig. 16.

Leopoldville, Congo.

¹ Unfigured and unknown to me. From the description I should think likely it belonged here, but it may not.

² The shells of this group bear a striking likeness to that of *Unio tenuissimus* Lea, in form, texture, color, teeth, and in gaping in front and behind, and I am inclined to believe that they are related to it, and the *Unio myersianus* of Southeasteru Asia, to *Unio alatus*, and *U. delphinulus* of Central America.

³ Name preoccupied in birds, 1850.

† PSEUDOSPATHA LIVINGSTONENSIS Bourguignat.

- * *Spatha tanganyicensis* SMITH (part), Proc. Zool. Soc. Lond., 1880, pl. XXXI, fig. 8a; 1881, p. 296, pl. XXXIV, fig. 32.
 * *Burtonia livingstonensis* BOURGUIGNAT, Moll. Fluv. Nyanz., 1883, p. 20.
 * *Burtonia elongata* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 34; Icon. Mal. Tan., 1888, pl. XXV, fig. 3.
 * *Burtonia contorta* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 39; Icon. Mal. Tan., 1888, pl. XXVI, figs. 3-5.

Lake Tanganyika.

PSEUDOSPATHA SUBTRIANGULARIS Bourguignat.

- * *Burtonia subtriangularis* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 35; Icon. Mal. Tan., 1888, pl. XXV, fig. 2.
 * *Burtonia grandidieriana* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 42; Icon. Mal. Tan., 1888, pl. XXVII, figs. 1-3.

Lake Tanganyika.

PSEUDOSPATHA BOURGUIGNATI Bourguignat.¹

- * *Burtonia bourguignati* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 38; Icon. Mal. Tan., 1888, pl. XXVII, figs. 4-5.

Lake Tanganyika.

The following species are unfigured and unknown to me.

- * *Burtonia jouberti* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 40.
 * *Burtonia bridouxii*, BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 40.

All from Lake Tanganyika.

Genus HYRIOPSIS Conrad, 1853.

(Type, *Unio delphinus* Gruner.²)

Hyriopsis CONRAD, Pt. Ac. N. Sci. Phila., 1853, p. 269.

Shell large, compressed, rhomboid-elliptical, dorsally winged and generally biangulate behind, sometimes produced in the post-basal region; beaks low, mostly compressed, the sculpture consisting of numerous concentric ridges nearly parallel with the growth lines, generally extending well on to the disk of the shell, the earlier ones fine, often slightly nodulous or doubly looped; epidermis olive to brown, sometimes faintly rayed; pseudocardinals two or three in the left valve, one to three in the right, when young compressed, but often breaking into irregular denticles when old; laterals long, compressed, two in the left valve and one in the right, sometimes vertically striate, the left valve often having a sort of raised lamellar tooth at or just behind the beak.

¹Said to be of Joubert in the literature.

²The general make-up of the shells of this genus, *Cyclomya*, and *Cristaria* seems to indicate close relationship to each other, and a not distant one to the subgenus *Proptera* of *Lampsilis*, and I should not be surprised to learn that the marsupium occupies the posterior part of the outer gills in distinctly marked ovisacs.

Beak cavities shallow; dorsal scars numerous, extending from the cavity downward and forward. Anterior muscle scars three, distinct, posterior large, indistinct; front end of the shell usually thickened; a row of plications often occurring just below the laterals, as in *Cristaria*.

Animal unknown.

(Group of *Hyriopsis bialatus*.)

Shell somewhat trapezoidal, with a posterior ridge, biangulate behind, with a very high, pointed, triangular, posterior wing, and a smaller, pointed one in front, which projects forward; beaks low, sculpture not seen; epidermis brown; pseudocardinals broken up into denticles; hinge line slightly curved; the three anterior muscle scars separate and deep; dorsal scars not extending greatly downward in front; naere bluish white.

+HYRIOPSIS BIALATUS Simpson.¹

* *Unio delphinus* GRUNER Arch. für Naturg., I, 1841, p. 276, pl. IX, figs. 1, 1a-c.—

* DELESSERT, Rec. Coq. Lam., 1841, pl. XIX, fig. 3, 3a, 3b.—* LEA, Tr. Am. Phil. Soc., VIII, 1843, p. 218, pl. XVII, fig. 35; * Obs., III, 1842, p. 56, pl. XVII, fig. 35.²—* KUSTER, Conch. Cab. Unio, 1852, p. 18, pl. II, figs. 2-4.—* HANLEY, Biv. Shells, 1856, p. 381, pl. XX, fig. 44.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* CHENU, Man., 1859, II, p. 143, fig. 707.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIII, fig. 238.—* MORELET, Series Conch., IV, 1875, p. 345.—* PÆTEL, Conch. Sam., III, 1890, p. 150.

* *Margaron (Unio) delphinus* LEA, Syn. 1852, p. 19; 1870, p. 28.

* *Unio megapterus* MORELET, J. de Conch., XII, 1863, p. 159.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

Southeastern Asia, including Cambodia, Siam, and the Malay Peninsula.

(Group of *Hyriopsis cumingii*.)

Shell rather thin, with a high wing posteriorly, and a smaller one in front; beaks greatly compressed, their sculpture at first consisting of fine and later of coarse concentric ridges, extending well on to the disk; corrugations on the posterior slope distinct.

HYRIOPSIS CUMINGII Lea.

* *Unio cumingii* LEA, Pr. Ac., N. Sci. Phila., VII, 1852, p. 54.—* LEA, Jl. Ac. N. Sci. Phila., IV, 1860, p. 240, pl. XXXV, fig. 120; * Obs., VII, 1860, p. 58, pl. XXXV, fig. 120.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIX, fig. 264.—* HEUDE, Conch. Fluv. Nank., VIII, pl. LXIV.

* *Margaron (Unio) cumingii* LEA, Syn., 1852, p. 19; 1870, p. 28.

China.

¹I regret that Gruner's well-known name *delphinus* was previously used for a *Unio* by Spengler, and the term *megapterus* of Morelet was applied by Rafinesque to a *Metaptera (Unio)* and used by Chenu under the generic name *Unio* before 1863. It will therefore have to have a new name.

²Lea described this species under the above name, not knowing that it had been already applied to the same species by Gruner.

†HYRIOPSIS DELAPORTEI Crosse and Fischer.

* *Unio (Arconaia) delaportei* CROSSE and FISCHER, J. de Conch., XXVI, 1876, p. 327, pl. x, fig. 1; XI, fig. 5.¹

Cambodia; Siam.

(Group of *Hyriopsis myersianus*.)

Shell rather solid, thickened in front; posterior ridge rather low; beaks compressed, the sculpture consisting, apparently, of a few rather faint, irregular ridges, sometimes slightly nodulous.

†HYRIOPSIS MYERSIANUS Lea.

* *Unio myersianus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 92; *Jl. Ac. N. Sci. Phila., III, 1857, p. 290, pl. XXII, fig. 2; *Obs., VI, 1857, p. 10, pl. XXII, fig. 2.—*SOWERBY, Conch. Icon., XVI, 1866, pl. L, fig. 265.—*MORELET, Ser. Conch., IV, 1875, p. 344.—*PÆTEL, Conch. Sam., III, 1890, p. 160.

**Margaron (Unio) myersianus* LEA, Syn., 1870, p. 28.

*† *Unio housei* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 92; *Jl. Ac. N. Sci. Phila., III, 1858, p. 291, pl. XXIII, fig. 3; *Obs., VI, 1857, p. 11, pl. XXIII, fig. 3.—

*VON MARTENS, Pr. Zool. Soc. Lond., 1860, p. 14.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XLVIII, fig. 260.—*PÆTEL, Conch. Sam., III, 1890, p. 155.

**Margaron (Unio) housei* LEA, Syn., 1870, p. 28.

Siam; Cambodia.

HYRIOPSIS SUTRANGENSIS L. Morlet.

* *Unio sutrangensis* L. MORLET, Jl. de Conch., XXXVII, 1889, p. 195, pl. IX, fig. 3.

Sutrang River, Siam.

HYRIOPSIS PINCHONIANUS Heude.

* *Unio pinchonianus* HEUDE, Conch. Fluv. Nank, VIII, 1883, pl. LXIII, fig. 12.—PÆTEL, Conch. Sam., III, 1890, p. 163.

China.

(Group of *Hyriopsis vagulus*.)

Shell elliptical, with a rather high, posterior wing, moderately solid, with two slight posterior ridges and a sulcus above them at the juncture of the wing.

HYRIOPSIS VAGULUS Fischer.²

* *Unio subtrigonus* SOWERBY, Conch. Icon., XVI, 1867, pl. LVIII, fig. 292.—*PÆTEL, Conch. Sam., III, 1890, p. 169

**Margaron (Unio) subtrigonus* LEA, Syn., 1870, p. 28.

¹The ventral line of this shell is crooked, having a couple of curves in it, but it is not twisted. Its authors believed *Arconaia* to be only a section of *Unio*, and that the animal was essentially like that of that genus.

²Sowerby published this species as *Unio subtrigonus* in the Conchologia, the name being preoccupied by Deshayes. In the errata he changed it to *Unio (Monocondylæa) cambojensis*, believing it to be the same as Petit's *Pseudodon cambojensis*. It certainly is not that shell, and I agree with Fischer that it is near to the *Unio myersianus*, and accept his name for it.

* *Unio (Monocordylaea) cambojensis* SOWERBY, Conch. Icon., XVI, errata.

* *Pseudodon cambojensis* MORELET, Ser. Conch., IV, 1875, p. 336.

* *Unio lamellatus* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. IX, fig. 6.

* *Unio ragulus* FISCHER, Bull. Soc. Antun., IV, 1891, p. 223.

Siam.

(Group of *Hyriopsis velthuzeni*.)

Shell somewhat inflated, rather thin, rounded behind, winged; epidermis dark brown with numerous green rays; nacre iridescent, bluish white; anterior scars irregular, rather small; posterior scars rounded; pseudocardinals elongated, one in each valve, in the right valve there is a secondary rudimental one; laterals elongate, arcuate, one in the right valve and two in the left.

† HYRIOPSIS VELTHUZENI Schepman.

* *Unio velthuzeni* SCHEPMAN, Notes from Leyden Mus., XVII, 1895, p. 160, pl. IV, figs. 1, 1a—¹ DROUET, JI. de Conch., XLV, 1897, p. 124.

Mandai River, Borneo.

(Group of *Hyriopsis schlegeli*.)

Shell rather thin, slightly winged behind, narrowly rounded before and angled at umbonial slope; posterior ridge high and rounded, beaks rather low; epidermis rough, blackish; hinge line curved in front, straight behind; pseudocardinals generally entire; plications below the laterals faint; nacre dull, lurid purplish or lead color.

† HYRIOPSIS SCHLEGELI von Martens.

* *Unio schlegeli* VON MARTENS, Mal. Blatt., VII, 1861, p. 55.—* KOBELT, Abh. Senck, Nat. Ges., XI, 1879, p. 421, pl. XIV.—* VON MARTENS, Nov. Conch., V, 1879, p. 192, pl. CLVIII, figs. 4, 5.—* VON IHERING, Abh. Senck, Nat. Ges., XVIII, 1893, p. 156.

* *Barbala schlegeli* PETEL, Conch. Sam., III, 1890, p. 175.

Japan.

Subgenus CAUDICULATUS Simpson, 1900.

(Type, *Unio caudiculatus* von Martens.)

Shell oval, inflated, slightly posteriorly winged, with a well-developed posterior ridge, and above it a deep, wide furrow ending in a broad, well-defined notch on the posterior slope; one pseudocardinal in the right valve and two in the left; two laterals in the left valve and one in the right. Animal unknown.²

HYRIOPSIS CAUDICULATUS Von Martens.

* *Unio caudiculatus* VON MARTENS, Mal. Bl., XIV, 1866, p. 16.—* SCHEPMAN, Notes Leyd. Mus., XVIII, 1896, p. 140.—* DROUET, J. de Conch., XLV, 1897, p. 126.

* *Unio infrarostratus* SCHEPMAN, Notes Leyd. Mus., XVII, 1895, p. 161, pl. IV, fig. 2.

Borneo.

¹According to the photographic figure this shell very closely resembles *Unio alatus* Say.

²I am in doubt as to the relationship of this species.

Genus CHAMBERLAINIA Simpson, 1900.

(Type, *Unio hainesianus* Lea.)

Shell large, very solid in front, thinner behind, round or round obovate, without posterior ridge, alate on the post dorsal part when young; beaks full, sculpture not seen; surface without sculpture excepting a few slightly pustulous corrugations on the posterior slope; epidermis dull, not rayed; hinge curved; pseudocardinals rather small, stumpy, two in the left valve and one in the right; laterals short, remote, the intervening hinge plate rounded, one lateral in the right valve and two in the left, the upper the smaller, and all curved upward along their inner edges; beak cavities not deep; dorsal muscle scars numerous, deep, extending from the cavity downward and forward; area outside the palleal line very wide; uacre lurid bronzy. Animal unknown.

†CHAMBERLAINIA HAINESIANA Lea¹.* *Unio hainesianus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 92; * JI. Ac. N. Sci.

Phil., III, 1857, p. 289, pl. XXI, fig. 1; * Obs. VI, 1857, p. 9, pl. XXI, fig. 1.—

* VON MARTENS, Pr. Zool. Soc. Lond., 1860, Pt. 1, p. 15.—* SOWERBY, Conch.

Icon., XVI, 1866, pl. XLVII, fig. 254.²—* MORELET, Ser. Conch., IV, 1875, p.

342.—* PETEL, Conch. Sam., III, 1890, p. 154.

* *Margaron (Unio) hainesianus* LEA, Syn., 1870, p. 28.* *Unio imperialis* MORELET, Rev. et Mag. Zool., XIV, 1862, p. 480.

Siam.

CHAMBERLAINIA PAVIEI Morelet.

* *Unio paviei* MORELET, J. de Conch., XXXIX, 1891, p. 241, pl. VII, fig. 3.³

Siam.

†CHAMBERLAINIA DUCLERCI Rochebrune.⁴* *Unio duclerci* ROCHEBRUNE, Bull. Soc. Phil., VII, 1882, p. 27, pl. 1, fig. 2 (in extract).

Mekong River, Siam.

¹ The type consists of a single valve of a young individual. *U. imperialis* according to its author attains a size of 142 mm. in height, 192 mm. in length, and 77 mm. in diameter. I have seen a very fine specimen in the Frederick Stearns collection 6 inches high and 8 in length. It is one of the most magnificent Naiades in the world.

² Credited by Sowerby to the Little Arkansas River.

³ Very close to *C. housei*, but more rounded, and having a higher wing. I do not think this can be the same as Morelet's *Unio pairanus*, described in Latin in the Journal in 1865, p. 227, and unidentifiable.

⁴ It is quite probable that this should form the type of a separate group, but the only specimens I have seen, two badly eroded valves, hardly justify me in separating it.

Genus CRISTARIA Schumacher, 1817.

(Type, *Dipsas plicatus* Leach.)*Barbala* HUMPHREYS, Mus. Col., 1797.*Dipsas* LEACH, Zool. Miscellany I, 1814, p. 119.*Cristaria* SCHUMACHER, Essai Nouv. Syst., 1817, p. 107.*Appius* (LEACH), Menke, Syn., 2d ed., 1828, ? p. 106.*Symphynota* LEA (part), Tr. Am. Phil. Soc., 1830, p. 445.—SWAINSON, Mal., 1840, p. 288.*Dianisotis* RAFINESQUE, Cont. Monog., 1831, p. 7.*Dipsax* VOIGT, Cuvier, Thierreich, III, 1834, p. 493.*Barbata*, SOWERBY, Conch. Man., 1842, p. 81.*Clione* GISTEL, Nat. Sur. Hoh. Schule Bearb., 1848.

Shell generally thin, elliptical, more or less winged posteriorly; beaks rather low, sculptured with fine, somewhat doubly-looped ridges at first, and later with coarse, low, concentric bars, which are nearly parallel with the growth lines; epidermis smooth, often somewhat rayed; hinge teeth imperfect; pseudocardinals feeble or wanting—when present consisting of a single compressed tooth in each valve; laterals single, remote, compressed, sometimes wanting in adult shells.¹

Subgenus CRISTARIA, Schumacher, 1817.

(Type, *Dipsas plicatus* Leach.)

Shell large, thicker in front, strongly alate posteriorly, with two or more slightly developed radial ridges on the posterior slope and a row of plications above them; hinge line regularly curved; dorsal scars forming a row running obliquely downward and forward; anterior scars often blurred, posterior faint.

†CRISTARIA PLICATA Leach.

* *Dipsas plicatus* LEACH, Zool. Miscellany, I, 1815, p. 120, pl. LIII.²—* SOWERBY, Conch. Man., 1839, fig. 142.—* CHENU, Bib. Conch, 1st ser., III, 1845, p. 15, pl. VI, fig. 1.—* MORELET, Ser. Conch., IV, 1875, p. 332.—* HEUDE, Conch. Fluv. Nank., 1879, pls. XXXIII, XXXIV, LI, fig. 94.

Mytilus plicatus SOLANDER, in Gray, Ann. of Phil., IX, 1825, p. 27.*Appius plicatus* GRAY, in Menke, Syn. Meth. Moll., 1830, p. 106.* *Margarita* (*Dipsas*) *plicatus* LEA, Syn., 1836, p. 47; 1838, p. 28.* *Margaron* (*Dipsas*) *plicatus* LEA, Syn., 1852, p. 46; 1870, p. 74.* *Unio plicatus* SOWERBY, Conch. Icon., XVII, 1868, pl. LIV., fig. 280.* *Dipsas plicata* TROSCHEL, Arch. für Naturg., XIII, 1874, p. 272.—* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 429, pls. XV-XVII, XVIII, fig. 1.* *Barbala plicata* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501, pl. CXVII, figs. 4, 4a.* *Anodonta plicata* SCHRENCK, Reis. und F. Am. Lande, II, 1867, p. 704, pl. XXVII, fig. 4.

¹ The animal has been described in Japanese, but the paper containing the description is inaccessible to me.

² This seems to be the first authentic description of this species. It has been claimed that the *Mytilus dubius* of Gmelin is this, but he refers to figures 733, pl. 82, in the eighth volume of Chemnitz, which, I am quite certain, is not the species in question.

- * *Anodonta (Dipsas) plicata* CLESSIN, Conch. Cab. Anodonta, 1876, p. 240, pl. XXI, figs. 1, 2.
- * *Cristaria plicata* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 147.
- * *Cristaria tuberculata* SCHUMACHER, Ess. Nonv. Syst., 1817, p. 140, pl. XX, fig. 2.
- * *Anodonta dipsas* BLAINVILLE, Man. Mal., 1825, p. 538, pl. LXVI, fig. 2.
- * *Symphynota bialata* LEA, Tr. Am. Phil. Soc., 1830, p. 445, pl. XIV, fig. 24; * Obs., I, 1831, p. 59, pl. XIV, fig. 24.
- * *Unio bialata* HANLEY, Test. Moll. 1842, p. 219; * Biv. Shells, 1843, p. 214, pl. XXII, fig. 4.
- * *Barbala bialata* CHENU, Man. 1859, p. 145, fig. 717.—* PÆTEL, Conch. Sam., III, 1890, p. 175.
- * *Unio bialatus* DESHAYES, Tr. Elem. Conch., 1839, p. 19, pl. XXXI, fig. 3.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* DESHAYES, Tr. Elem., II, 1853, p. 218, pl. XXXI, fig. 3.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XLVI, fig. 247.
- * *Anodonta magnifica* CLESSIN, Conch. Cab. Anodonta, 1873, p. 123, pl. XXXV, fig. 1.
- * *Dipsas occidentalis* HEUDE, Conch. Fluv. Nank., IX, 1885, pl. XLVI.
- * *Barbala occidentalis* PÆTEL, Conch. Sam., III, 1890, p. 175.
- * *Barbala plicatula* PÆTEL, Conch. Sam., III, 1890, p. 175.

China; Japan; Amurland, south probably to Cambodia. The form from Cambodia, which is referred to *C. plicata*, is believed by Fischer to be different, and it may be *C. bellua*.

† CRISTARIA BELLUA Morelet.

- * *Anodonta bellua* MORELET, Rev. et Mag. Zool., XVIII, 1866, p. 167; Ser. Conch., IV, 1875, p. 331.

Cambodia.

† CRISTARIA HERCULEA Middendorff.

- Anodonta herculea* MIDDENDORFF, Bull. Phys. Math. Ac. St. Pet., VI, 1848, p. 303; Sib. Reise, II, 1851, p. 278, pl. XXI, fig. 5; XXII, figs. 1, 2; XXVI, figs. 1, 2.—* DESHAYES, Bull. Nouv. Arch. Mus., IX, 1873, p. 1, pl. I, fig. 1.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 294.
- * *Anodonta (Dipsas) herculea* CLESSIN, Conch. Cab. An., 1875, p. 175, pl. LIX, figs. 1, 2.
- * *Cristaria herculea* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 146.
- * *Barbala herculea* PÆTEL, Conch. Sam., III, 1890, p. 175.
- * *Dipsas plicata* var. *clessini* KOBELT, part. Abh. Senck. Nat. Ges., XI, 1879, p. 429, pl. xv.²

East Siberia; Amurland; North China.?

† CRISTARIA SPATIOSA Clessin.

- * *Anodon herculeus* SOWERBY, Conch. Icon., XVII, 1867, pl. III, fig. 7.
- * *Anodonta (Dipsas) spatiosa* CLESSIN, Conch. Cab. Anodonta, 1875, p. 173, pl. LVII, fig. 2.

¹ Plate XXVI, fig. 2, an interior view, is probably *Anodonta beringiana* Middendorff.

² *Craspedodonta smaragdina* ANTON, Verz. der Conch., 1839, p. 16, No. 592; Clessin, Conch. Cab. An., 1875, p. 93, pl. XXVII, fig. 2, a badly figured little shell, said to come from North America, may be a young *C. herculea*.

**Cristaria spatiosa* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 145.

**Barbala spatiosa* PÆTEL, Conch. Sam., III, 1890, p. 175.

**Dipsas plicata* var. *japonica* KOBETT, Abh. Senck. Nat. Ges., XI, 1879, p. 429, pl. XLVII.

Japan.

Subgenus **PLETHOLOPHUS** Simpson, 1900.

(Type, *Symphynota discoidea* Lea.)

Shell short-elliptical, lenticular, scarcely thickened in front, with compressed beaks which are sculptured with low, wide, concentric ridges, scarcely winged in front or behind, pointed posteriorly; epidermis smooth, somewhat rayed; hinge teeth very feeble, often nearly wanting; dorsal scars few; muscle scars faint. Animal unknown.

† CRISTARIA DISCOIDEA Lea.

**Symphynota discoidea* LEA, Tr. Am. Phil. Soc., V, 1834, p. 75, pl. XI, fig. 33; * Obs., I, 1834, p. 187, pl. XI, fig. 33.

**Barbala discoidea* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501.—* CHENU, Man., 1859, II, p. 145, fig. 716.—* PÆTEL, Conch. Sam., 1890, p. 175.

**Dipsas discoidea* KUSTER, Conch. Cab. Unio, 1862, p. 306, pl. C, fig. 1.

**Margarita (Unio) discoideus* LEA, Syn., 1836, p. 47; 1838, p. 28.

**Unio discoideus* HANLEY, Test. Moll., 1842, p. 214; * Biv. Shells, 1843, p. 214, pl. XXI, fig. 57.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.

**Margaron (Unio) discoideus* LEA, Syn., 1852, p. 46; 1870, p. 74.

**Unio tenuis* GRAY, Griffith's Cuv., XII, 1834, p. 601 (index), pl. XXIV, fig. 2.¹

**Anodonta chinensis* KUSTER, Conch. Cab. An., 1853, p. 51, pl. XII, fig. 3.

**Unio magnificus* SOWERBY, Conch. Icon., XVI, 1867, pl. LVII, fig. 289.

**Anodonta gruneriana* CLESSIN, Conch. Cab. An., 1875, p. 172, pl. LVI, figs. 3, 4.

China.

CRISTARIA PARVULA Heude.²

**Dipsas parvulus* HEUDE (part), Conch. Fluv. Nank., IV, 1878, pl. XXXII, fig. 65.

**Barbala parvula* PÆTEL, Conch. Sam., III, 1890, p. 175.

China.

CRISTARIA REINIANA von Martens.

**Cristaria reiniana* VON MARTENS, Jahrb. Mal. Ges., II, 1875, p. 136, pl. III, fig. 4.

* ? *Dipsas reiniana* KOBETT, Abh. Senck. Nat. Ges., XI, 1879, p. 432, pl. XII, fig. 4; XXI, fig. 2.

**Anodonta reiniana* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 147.³

**Barbala reiniana* PÆTEL, Conch. Sam., III, 1890, p. 175.

Japan.

¹ A brief description is given in the index only. Gray's and Lea's names seem to have been published the same year, and I do not know which appeared first. I use Lea's because it is the one generally known.

² I am doubtful whether this is more than a variety of *C. discoidea*. Heude's figure on plate LIII is a very different thing, which I have called *C. radiata*.

³ Martens says it has distinct cardinals and laterals.

CRISTARIA GENTILIANA Heude.

* *Cristaria gentilianus* HEUDE, Conch. Fluv. Nank., VII, 1881, pl. LIII, fig. 98.

* *Barbala gentiliana* PÆTEL, Conch. Sam., III, 1890, p. 175.

China.

† CRISTARIA SWINHOEI H. Adams.

* *Unio swinhoei* H. ADAMS, Proc. Zool. Soc. Lond., 1866, p. 319.¹—SOWERBY, Conch. Icon., XVI, 1868, pl. XLII, fig. 232.—PÆTEL, Conch. Sam., III, 1890, p. 169.

* *Anodonta swinhoei* H. ADAMS, Proc. Zool. Soc. Lond., 1866, p. 446.—CLESSIN, Conch. Cab. Anodonta, 1876, p. 125, pl. LXXV, fig. 6.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

* *Anodon swinhoei* SOWERBY, Conch. Icon., XVI, 1868, pl. XXVII, fig. 108.

* *Margaron (Unio) swinhoei* LEA, Syn., 1870, p. 45.

Formosa; Toukin; Cambodia.

Subgenus CRASSITESTA Simpson, 1900.

(Type, *Cristaria radiata* Simpson.)

Shell rather solid, elliptic-rhomboid, with a rounded posterior ridge, scarcely winged; beaks full, sculpture not seen; epidermis bright, strongly rayed, with two conspicuous light and three dark rays on the posterior slope; hinge line curved; pseudocardinals and laterals reduced to the merest vestiges; dorsal scars only one or two in the cavity of the beaks; adductor scars faint; naere lurid.

† CRISTARIA RADIATA Simpson.²

* *Dipsas parvulus* HEUDE (part), Conch. Fluv. Nank., VII, 1881, pl. LI, fig. 96.

China.

Genus LEPIDODESMA Simpson, 1896.

(Type, *Unio languilati* Heude.)

Lepidodesma SIMPSON, Proc. U. S. Nat. Mus., 1896, p. 311.

Shell large, thin, inflated, with a high, sharp, posterior ridge and a second fainter one above, making the hinder part widely biangulate; beaks very high and full, their sculpture, which extends over the whole shell, consisting of ridges that follow the growth lines; there are two rows of radiating nodules, one on the middle of the disk, and a stronger one on the post ridge; ligament very large, wide, covered with concentric scales; hinge line arched; two pseudocardinals in the left valve, the anterior elongated, running inwardly across the hinge plate, and ending abruptly, with a shorter, fainter one behind it; with two strong laterals, the inner the higher, its edge reflexed upward, and suddenly truncate behind; one low elongated pseudocardinal in the right valve,

¹ This seems to be a *Cristaria* of the *discoidea* section. The cardinals are somewhat better developed than is common among *Cristarias*, but are still quite faint.

² Heude has figured two different species under the name of *Dipsas parvulus*, on plate XXXII. I have therefore given the last-described form the name *radiata*.

and one lateral, which is reflexed upward; epidermis folded into the hinge, and scaly; a single dorsal scar on the inner side of each hinge plate; muscle scars united; palleal line distinct; beak cavities large and wide; nacre very dull. Animal unknown.

† *LEPIDODISMA LANGUILATI* Heude.

* *Unio languilati* HEUDE, J. de Conch., XXII, 1874, p. 116; * Conch. Fluv. Nank., I, 1875, pl. VII.—PÆTEL, Conch. Sam., III, 1890, p. 156.

* *Lepidodesma languilati* SIMPSON, Pr. U. S. Nat. Mus., XVIII, 1896, p. 311.

* *Cristaria megadesma* VON MARTENS, S. B. Nat. Fr., 1875, p. 3; * Mal. Bl., XXII, 1875, p. 187; * Nov. Conch., IV, 1876, p. 152, pl. CXXXV, fig. 1.

* *Barbula megadesma* PÆTEL, Conch. Sam., III, 1890, p. 175.

China.

LEPIDODESMA ALIGERA Heude.

* *Unio languilatus* var. *aligerus* HEUDE, Conch. Fluv. Nank., III, 1877, pl. XVII, fig. 37.—* PÆTEL, Conch. Sam., III, 1890, p. 156.

* *Lepidodesma aligera* SIMPSON, Pr. U. S. Nat. Mus., XVIII, 1896, p. 311.

China.

Genus *PILSBRYOCONCHA* Simpson, 1900.

(Type, *Anodonta exilis* Lea.)

Shell elongated, elliptical, compressed, thin, with a low, posterior wing, narrow and rounded in front, nearly straight below, expanded at the post-basal region, pointed behind. Beaks compressed, sculptured with several coarse, low, irregularly concentric undulations, often slightly doubly looped; surface nearly smooth, shining, yellowish to ashy brownish, sometimes showing very faint rays; hinge straight or slightly curved, reduced to a mere line, often showing a faint, compressed, smooth tooth in front of the beaks, otherwise edentulous; nacre brilliant, silvery and iridescent; muscle scars faint. Animal pure milky white; lobes of the mantle united behind into two short siphons.¹

† *PILSBRYOCONCHA LINGUÆFORMIS* Morelet.

* *Anodonta lingueformis* MORELET, Ser. Conch., IV, 1875, p. 329, pl. XIV, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 181.

* *Margarou* (*Unio*) *lingueformis* LEA, Syn., 1870, p. 48.

Siam; Cambodia.

† *PILSBRYOCONCHA EXILIS* Lea.

* *Anodonta exilis* LEA, Tr. Am. Phil. Soc., VI, 1839, p. 81, pl. XXII, fig. 68; * Obs., II, 1838, p. 81, pl. XXII, fig. 68.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 239.—* HANLEY, Test. Moll., 1842, p. 224; * Biv. Shells, 1843, p. 224.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* MORELET, Ser. Conch., IV, 1875, p. 327.—* CLESSIN, Conch. Cab. Auo., 1875, p. 171, pl. LVI, figs. 6-8.—* PÆTEL, Conch. Sam., III, 1890, p. 179.

¹According to Deshayes, Jl. de Conch., 1875, pp. 81-85. He does not give any other characters of the soft parts.

- * *Margarita (Anodonta) exilis* LEA, Syn., 1838, p. 32.
 * *Anodonta exilis* CATLOW and REEVE, Conch. Nom., 1845, p. 66.
 * *Margaron (Anodonta) exilis* LEA, Syn., 1852, p. 51; 1870, p. 82.
 * *Monocondylaea exilis* PÆTEL, Conch. Sam., III, 1890, p. 174.
 * *Anodonta siliqua* KUSTER? Conch. Cab. Ano., 1852, p. 57, pl. XIV, fig. 5.
 * *Anodonta polita* MOUSSON, L. and Suss. Moll. Java, 1849, p. 98, pl. XIX, figs. 2, 3.—
 * MOUSSON, Zeits. für Mal., VII, 1851, p. 46.—* H. and A. ADAMS, Gen. Rec.
 Moll., II, 1857, p. 504.—* PÆTEL, Conch. Sam., III, 1890, p. 183.
 * *Margaron (Anodonta) polita* LEA, Syn., 1852, p. 53.
 * *Anodon politus* SOWERBY, Conch. Icon., XVII, 1867, pl. XII, fig. 36.
 * † *Monocondylaea compressa* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 190; * JI. Ac.
 N. Sci. Phila., VI, 1866, p. 30, pl. XI, fig. 29; * Obs., XI, 1867, p. 34, pl. XI, fig.
 29.—* CLESSIN, Conch. Cab. Ano., 1876, p. 258, pl. LXXX, figs. 3, 4.
 * *Pseudodon compressa* CONRAD, Am. JI. Conch., I, 1865, p. 233.
 * *Margaron (Monocondylaea) compressa* LEA, Syn., 1870, p. 73.
 * *Spatha compressa* PÆTEL, Conch. Sam., III, 1890, p. 188.
 * *Anodon javana* SOWERBY, Conch. Icon., XVII, 1867, pl. XI, fig. 33.
 * *Anodon gracilis* SOWERBY? Conch. Icon., XVII, 1867, pl. XIV, fig. 45.
 * *Anodon kellesti* SOWERBY? Conch. Icon., XVII, 1867, pl. XIX, fig. 71.
 * † *Anodonta sempervivens* DESHAYES, Nouv. Arch. de Mus., X, 1874, p. 120, pl. v,
 figs. 4, 5.—* PÆTEL, Conch. Sam., III, 1890, p. 184.

Southeastern Asia, Sumatra, Java.

† PILSBRYOCONCHA CARINIFERA Conrad.

- * *Anodonta carinifera* CONRAD, Cover of Monography, No. 9, 1837.—TROSCHEL,
 Arch. für Naturg., IV, 1838, Pt. 2, p. 288.—B. H. WRIGHT, Check List, 1888.

Southeastern Asia, probably.

PILSBRYOCONCHA LEMSLEYI Morelet.

- * *Anodonta lemsleyi* MORELET,² Ser. Conch., IV, 1875, p. 328, pl. XIV, fig. 1.—PÆTEL,
 Conch. Sam., III, 1890, p. 181.

Cambodia, Siam.

PILSBRYOCONCHA SCHOMBURGKI von Martens.

- * *Anodonta schomburgki* VON MARTENS, Proc. Zool. Soc. Lond., 1860, p. 15.—
 * PÆTEL, Conch. Sam., III, 1890, p. 184.

Siam.

Genus MEDIONIDUS Simpson, 1900.

(Type, *Unio conradicus* Lea.)

Medionidus SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 77.

Shell elongated, rather inflated, often arcuate when adult, sometimes having a posterior ridge; dorsal slope and occasionally the posterior

¹There is a specimen of *Pilsbryoconcha* in the Philadelphia Academy which agrees perfectly with Conrad's description, and is probably the type. My attention was called to this by Mr. Pilsbry, who believes this to be the shell Conrad described. It is rather a small species.

²An old, elongated, rather peculiar shell. Conrad's species may be the young of it, and Morelet believes that Martens' *A. schomburgki* is very close to his shell. I have not seen a sufficient amount of material of this genus to determine with certainty whether all these are valid species.

portion of the shell plicately or nodulously wrinkled; epidermis smooth and bright, variegated with broken green rays and blotches; beak sculpture consisting of rather fine, subparallel, often broken ridges in two loops, the anterior rounded, the posterior somewhat angled, occasionally broken up into zigzags;¹ pseudocardinals small, stumpy and somewhat roughened; laterals rather short, slightly curved and club-shaped, remote; dorsal cicatrices few, placed under the hinge just behind the beaks; anterior cicatrices rather deep; posterior cicatrices rounded, large, and well impressed; anterior part of shell somewhat thickened; female shell slightly swollen just behind the middle of the base.

Animal with the inner gills wholly or in part free from the abdominal sac; marsupium occupying the central posterior part of the outer gills, sometimes extending nearly their whole length, consisting of few to many rather large, irregular ovisacs, which are not so distinctly marked out as in *Lampsilis*, but which have rounded bases; mantle much thickened on its lower edge, which is dark colored and sometimes papillous.

(Group of *Medionidus conradicus*.)

Shell small, usually with a well-defined posterior ridge; posterior end and sometimes the greater part of the shell slightly wrinkled or nodulous; epidermis rather smooth, painted with rays broken into irregular arrow-head markings or blotches; pseudocardinals rather small and imperfectly developed; laterals of left valve separated by a narrow, shallow furrow; nacre greenish, purplish, or bluish. The male shell is often decidedly arcuate; that of the female is swollen at or behind the center of the base. Animal having the characters of the genus.

† MEDIONIDUS CONRADICUS Lea.

* *Unio conradicus* LEA, Tr. Am. Phil. Soc., VI, 1834, p. 63, pl. IX, fig. 23; * Obs., I, 1834, p. 175, pl. IX, fig. 23.—* FERUSSAC, Guerin. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 176; * Biv. Shells, 1843, p. 176, pl. XXIII, fig. 22.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* KUSTER, Conch. Cab. Unio, 1861, p. 179, pl. LVI, fig. 5.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LIV, fig. 278.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margarita (Unio) conradicus* LEA, Syn., 1836, p. 13; 1838, p. 14.

* *Margaron (Unio) conradicus* LEA, Syn., 1852, p. 21.

* *Unio conradicus* CONRAD, Monog., X, 1838, p. 87, pl. XLVII, fig. 3.

* *Margaron (Unio) conradianus* LEA, Syn., 1870, p. 32.

* *Unio conradianus* B. H. WRIGHT, Check List, 1888.

Tennessee River drainage; Cahawba River, Alabama, and probably the entire Alabama River system.

¹The beaks in all the specimens of *Unio subtentus* that I have examined were too badly eroded to make out the character of the sculpture with certainty. In a general way they seemed to be much like those of the *Conradicus* group, only coarser.

† *MEDIONIDUS PARVULUS* Lea.

* *Unio parvulus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 307; * JI. Ac. N. Sci. Phila., VI, 1866, p. 45, pl. XVI, fig. 43; * Obs., XL, 1867, p. 49, pl. XVI, fig. 43.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) parvulus* LEA, Syn., 1870, p. 32.

Coosa River, Alabama; Chattanooga and Swamp creeks, northwest Georgia.

† *MEDIONIDUS PENICILLATUS* Lea.

* *Unio penicillatus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 171; * JI. Ac. N. Sci. Phila., IV, 1859, p. 203, pl. XXIII, fig. 85; * Obs., VII, 1859, p. 21, pl. XXIII, fig. 85.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) penicillatus* LEA, Syn., 1870, p. 32.

Chattahoochee and Flint rivers, Georgia.

† *MEDIONIDUS KINGI* B. H. Wright.

Unio kingi B. H. WRIGHT, Nautilus, XII, 1900, p. 138.

Branch of Flint River, Baker County, Georgia.

† *MEDIONIDUS ACUTISSIMUS* Lea.

* *Unio acutissimus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 89, pl. x, fig. 18; * Obs., I, 1834, p. 99, pl. x, fig. 18.—* CONRAD, New F.W. Shells, 1834, p. 67.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* CONRAD, Monog., X, 1838, p. 86, pl. XLVII, fig. 2.—* HANLEY, Test. Moll., 1842, p. 177; * Biv. Shells, 1843, p. 177, pl. XXII, fig. 35.—* CATLOW and REEVE, Conch. Nom., 1845, p. 55.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 244.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. VIII, figs. 3, 3a, 3b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 189.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 143.

* *Margarita (Unio) acutissimus* LEA, Syn., 1836, p. 14; 1838, p. 14.

* *Margaron (Unio) acutissimus* LEA, Syn., 1852, p. 21; 1870, p. 32.

* *Unio simplicatus* KUSTER, Conch. Cab. Unio, 1862, p. 279, pl. XCIV, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

* *Unio rubellinus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 32; * JI. Ac. N. Sci. Phila., IV, 1858, p. 70, pl. XIII, fig. 51; * Obs., VI, 1858, p. 70, pl. XIII, fig. 51.—

* SOWERBY, Conch. Icon., XVI, 1868, pl. XC, fig. 490.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.

* *Margaron (Unio) rubellinus* LEA, Syn., 1870, p. 32.

Alabama River system.

(Group of *Medionidus walkeri*.)

Shell rather short, inflated, with a high, posterior ridge; posterior slope strongly corrugated; epidermis dark, slightly clouded; nacre reddish or greenish.

¹There is a *Unio simplicatus* of Troschel in Wiegman's Archiv. for 1841, p. 180, but I do not know what is. Kuster credits his species to Australia, but it is evidently Lea's shell, no such species being found in Australia.

† MEDIONIDUS WALKERI B. H. Wright.

* *Unio walkeri* B. H. WRIGHT, Naut., XI, 1897, p. 91.

* *Lampsilis walkeri* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 77, pl. 1, fig. 5.

Suwanee River, Florida; Ocklockonee River, Georgia.

(Group of *Medionidus subtentus*.)

Shell elongate-elliptical, scarcely inflated, with an ill-defined posterior ridge, the posterior slope being strongly, corrugately wrinkled; beaks apparently sculptured with coarse, irregular, broken ridges, somewhat doubly looped; epidermis bright, with broken rays which sometimes form irregular patches, but are usually developed into square spots: pseudocardinals rather small, stumpy; laterals rather strong, club-shaped, generally showing traces of vertical striation; nacre dull, bluish-white. The female shell is very slightly inflated just behind the center of the base, the male often becomes arcuate when old.

Animal unknown.

† MEDIONIDUS SUBTENTUS Say.

* *Unio subtentus* SAY, Jl. Ac. N. Sci. Phila., V, 1825, p. 130; Am. Conch., I, No. 2, 1831, pl. xv.—* CONRAD, Am. Jl. Sci., XXVI, 1834, p. 343, pl. I, fig. 1; * New F.W. Shells, 1834, p. 71.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* MÖLLER, Syn. Nov. Gen., 1836, p. 209.—* CONRAD, Monog., X, 1838, p. 85, pl. XLVIII, fig. 1.—* HANLEY, Test. Moll., 1842, p. 176; * Biv. Shells, 1843, p. 176, pl. XX, fig. 34.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 25, pl. IV, figs. 2, 2a, 2b.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* KUSTER, Conch. Cab. Unio, 1856, p. 164, pl. XLVII, fig. 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXII, fig. 370.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

* *Margarita (Unio) subtentus* LEA, Syn., 1836, p. 13; 1838, p. 14.

* *Margaron (Unio) subtentus* LEA, Syn., 1852, p. 21; 1870, p. 32.

* *Unio subtenta* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 555; 3d ed., II, 1839, p. 675.

Tennessee and Cumberland River systems.

Genus NEPHRONAIAS Crosse and Fischer, 1893.

(Type, *Unio plicatulus* Charpentier.)

Nepronaias CROSSE and FISCHER, Miss. Sci., Pt. 7, II, 1893, p. 556.

Shell elliptical, biangulate behind, that of the male showing a tendency to become arcuate with age, the female usually having a post-basal inflation and never arcuate; surface concentrically sculptured; beaks low, with faint broken ridges which show a tendency to fall into two rounded loops; pseudocardinals generally rather compressed, ragged, laterals obliquely ridged; cavity of the beaks rather deep, dorsal muscle scars distinct, running in a line from the beak cavity downward and forward. Animal with the branchiae rounded below, outer the larger behind, inner the larger anteriorly, free from the abdominal sac

for all or part of their length; mantle thickened on the edge, which is often dark colored; anal and branchial openings large and well furnished with papillæ. Nothing is known of the marsupium of any members of this group, the animals examined probably being males; but it is most likely that when gravid the ovules will be found in distinctly marked ovisacs in the posterior part of the outer gills, something as in *Lampsilis*.

(Group of *Nephronaias medellinus*.)

Shell scarcely sulcate, shining, rather brightly rayed, distinctly biangulate behind, solid, swollen; beaks rather full, with delicate sculpture; pseudocardinals solid, stumpy, trigonal; laterals heavy, somewhat club-shaped; nacre rich and soft, silvery or purple; female shell considerably inflated at the post-basal region, and differing somewhat from that of the male.

† NEPHRONAIAS MEDELLINUS Lea.

? *Unio purpuratus* SAY, New Harmony, Diss. (newspaper form), January 15, 1831.¹

* *Unio medellinus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 39, pl. XII, fig. 34; * Obs., II, 1838, p. 39, pl. XII, fig. 34.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll, 1842, p. 193; * Biv. Shells, 1843, p. 193, pl. XXI, fig. 19; pl. XXIII, fig. 8.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* CHENU, Ill. Conch., 1858, pl. XVII, figs. 6, 6a, 6b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab., 1861, p. 162, pl. XLVI, fig. 5.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIII, fig. 171.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 158.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 603.

* *Margarita (Unio) medellinus*, LEA, Syn., 1836, p. 26; 1838, p. 19.

* *Margaron (Unio) medellinus*, LEA, Syn., 1852, p. 29; 1870, p. 45.

† * *Unio strebeli*, LEA,² Pr. Ac. N. Sci. Phila., X, 1866, p. 133; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 318, pl. LI, fig. 131; * Obs., XII, 1869, p. 78, pl. LI, fig. 131.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 595.

* *Margaron (Unio) Strebeli*, LEA, Syn., 1870, p. 53.

State of Vera Cruz, Mexico.

† NEPHRONAIAS SAPOTALENSIS Lea.

* *Unio sapotalenses* LEA, Pr. Am. Phil. Soc., II, 1841, p. 30; * Tr. Am. Phil. Soc., VIII, 1842, p. 233, pl. XXI, fig. 47; * Obs., III, 1842, p. 71, pl. XXI, fig. 47.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XXXIII, figs. 4, 4a, 4b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLI, fig. 495.—* B. H. WRIGHT, Check List,

¹ Believed by Conrad to be the same as Lea's *medellinus*. Fischer and Crosse in Mission Scientifique (see following reference) are doubtful about this, as Say's species was never figured, and his description does not just agree with Lea's species. As the type is not known to be in existence I think under the circumstances, since we can not be sure of what Say described, it is best to use Lea's name.

² The type which is in the collection of the U. S. National Museum is, without doubt, a young *medellinus*.

1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 601, pl. LXVII, figs. 2, 2a.

* *Margaron (Unio) sapotalensis* LEA, Syn., 1852, p. 29; 1870, p. 45.

Sapotal River, Vera Cruz, Mexico.

(Group of *Nephronaias averyi*.)¹

Shell triangular-ovate, bluntly pointed in front, and biangulate behind, considerably inflated, irregularly sulcate; umbonal region moderately developed; beaks sculptured with fine, irregular ridges which have a tendency to fall into two rounded loops; pseudocardinals slightly compressed, ragged; laterals having feeble, oblique striation; front part of the shell somewhat thickened; posterior part thinner; nacre dull, whitish.

Animal unknown.

† NEPHRONAIAS AVERYI Lea.

* *Unio averyi* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 281; * JI. Ac. N. Sci. Phila., IV, 1860, p. 269, pl. XLIV, fig. 149; * Obs., VII, 1860, p. 87, pl. XLIV, fig. 149.—

* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) averyi* LEA, Syn., 1870, p. 36.

Isthmus of Darien.

† NEPHRONAIAS CALDWELLII Lea.

* *Unio caldwellii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 118; * JI. Ac. N. Sci. Phila., IV, 1860, p. 265, pl. XLIII, fig. 145; * Obs., VII, 1860, p. 83, pl. XLIII, fig. 145.—

* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIX, fig. 477.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.

* *Margaron (Unio) caldwellii* LEA, Syn., 1870, p. 35.

Isthmus of Darien.

(Group of *Nephronaias macnielii*.)

Shell solid, slightly sulcate, biangulate behind, covered with a dull, olivaceous epidermis and having faint, bluish green rays; beaks rather full, sculpture feeble, consisting of slightly outlined ridges, somewhat doubly looped, the looped lines becoming swollen or nodulous at their bases; pseudocardinals compressed and ragged; laterals obliquely striated; nacre bluish white, very soft and brilliant, somewhat iridescent posteriorly; male and female shells differing but slightly. Animal unknown.

† NEPHRONAIAS MACNIELII Lea.

* *Unio macnielii* LEA, Pr. Ac. N. Sci. Phila., XIII, 1869, p. 124; * JI. Ac. Nat. Sci. Phila., 1874, p. 25, pl. VIII, fig. 22; * Obs., XIII, 1874, p. 29, pl. VIII, fig. 22.—

* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

Nicaragua.

¹ I have only seen two specimens of Lea's *Unio averyi* and one of his *U. caldwellii*, and I can not be certain as to their systematic position. In the latter the beak sculpture, which is slightly worn, is much of the character of the species of *Nephronaias* generally, and not like that of *Unio*, and though somewhat worn the shell shows traces on the posterior end of faint, bluish green rays. One of the former is slightly more inflated in the post-basal region than the other.

† *NAPHRONAIAS OREGONENSIS* Lea.¹

- * *Unio oregonensis* LEA, Pr. Am. Phil. Soc., V, 1852, p. 252; * Tr. Am. Phil. Soc., X, 1852, p. 275, pl. XXII, fig. 33; * Obs., V, 1852, p. 31, pl. XXII, fig. 33.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* MUSGRAVE, Phot. Conch., 1863, pl. II, fig. 5.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIV, fig. 383.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 162.
- * *Margaron (Unio) oregonensis*, LEA, Syn., 1852, p. 29; 1870, p. 45.

Nicaragua.

† *NEPHRONAIAS ROWELLII* Lea.

- * *Unio rowellii* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 153; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 256, pl. XL, fig. 136; * Obs., VII, p. 74, pl. XL, fig. 136.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVIII, fig. 471.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.
- * *Margaron (Unio) rowellii* LEA, Syn., 1870, p. 35.

Nicaragua; Guatemala; Chagres River, Colombia.

† *NEPHRONAIAS GOASCORANENSIS* Lea.

- * *Unio goascoranensis* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 118; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 258, pl. XLI, fig. 139; * Obs., VII, 1860, p. 76, pl. XLI, fig. 139.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) goascoranensis* LEA, Syn., 1870, p. 45.

Goascoran River, Honduras.

† *NEPHRONAIAS DYSONII* Lea.

- * *Unio dysonii* LEA, Pr. Ac. N. Sci. Phila., XI, 1859, p. 152; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 252, pl. XXXIX, fig. 132; * Obs., VII, 1860, p. 70, pl. XXXIX, fig. 132.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) dysonii* LEA, Syn., 1870, p. 35.

Honduras; Costa Rica.

† *NEPHRONAIAS TEHUANTEPECENSIS* Crosse and Fischer.

- * *Unio tehuantepecensis* CROSSE and FISCHER, J. de Conch., XLI, 1893, p. 296.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 618, pl. LXV, figs. 3, 3a, 4.

Isthmus of Tehuantepec, Oaxaca, Mexico; Honduras.

(Group of *Nephronaias reticulatus*.)

Shell evenly elliptical, slightly biangulate behind, solid and inflated; surface covered with fine, concentric ridges and having delicate, radiating furrows which cut the sulcations and form them into loops.

¹I formerly believed that this species, with the one preceding and following it, ran together. More recent study, with a large amount of additional material, inclines me to think that perhaps they may be valid species. Under the name of *Unio rowellii* Mr. Lea has in his collection two large *N. macneilii*, one large *rowellii*, three smaller ones and several valves, and two *goascoranensis*, a species which is very close to the rest, but probably as good as most of the Mexican forms. I find specimens which I can scarcely refer with certainty to *macneilii* or *oregonensis*, but which seem to have to some extent the characters of both. This, with a number of the Mexican and Central American forms, is exceedingly puzzling. This species occurs with *N. rowellii* and *macneilii*.

† NEPHRONAIAS RETICULATUS Simpson.

* *Nephronaias reticulatus* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 77, pl. II, fig. 3.

Patook River, Honduras.

(Group of *Nephronaias scamnatus*.)

Shell elliptical to elongate, compressed, strongly sulcate, rather solid, subbiangular behind; that of the female inflated at post-base; epidermis olive to brown, sometimes feebly rayed; beak sculpture delicate and but slightly marked, consisting of faint, parallel ridges, which show a tendency to fall into two rounded loops; hinge rather solid; pseudocardinals stumpy, ragged, laterals straight; front part of the shell solid and suddenly becoming thinner behind; nacre bluish, white, salmon, or purple.

Animal unknown.

† NEPHRONAIAS SCAMNATUS Morelet.

* *Unio scamnatus* MORELET, Test. Nov., No. 1, 1849, p. 30.—* POEY, Mem. Hist. Cuba, II, 1858, p. 417.—* ARANGO, Faun. Mal. Cuba, 1878, p. 144.—* B. H. WRIGHT, Check List, 1888.—* P.ETEL, Conch. Sam., III, 1890, p. 167.

* *Margaron (Unio) scamnatus* LEA, Syn., 1852, p. 40; 1870, p. 35.

* *Unio gundlachi* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVI, fig. 248.

Cuba; Honduras?

† NEPHRONAIAS GUNDLACHI Dunker.

* *Unio gundlachi* DUNKER,¹ Mal. Blatt., V, 1858, p. 228.—* ARANGO, Faun. Mal. Cuba, 1878, p. 144.—* P.ETEL, Conch. Sam., III, 1890, p. 154.

Cuba.

NEPHRONAIAS ÆRUGINOSUS Morelet.²

* *Unio æruginosus* MORELET, Test. Noviss., I, 1849, p. 29.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 596, pl. LXII, figs. 2, 2a, 2b.

River Michol, at Palenque, State of Chiapas, Mexico.

¹Lea and Poey regard this as the equivalent of *N. scamnatus* of Morelet, while Arango believes it to be distinct. Unfortunately both species were described in Latin and not figured, but Dunker states that his species is inflated posteriorly and has a bluish nacre, and it is probable that he had before him a female shell when he wrote the description, for one of the Cuban species, which I think is *gundlachi*, has a bluish nacre, and the female shell is decidedly swollen at the post-basal region. In another form, which I presume is *N. scamnatus* of Morelet, the nacre is rather dark, the shell somewhat elongated, and that of the female does not greatly differ from the male.

²I am not positive that this species belongs here, but its form is like that of most of the members of the genus, and Crosse and Fischer state that the beaks in their specimen are entire and smooth. In several of the species of this genus the beak sculpture is very faint, while in *Unio* it is almost always strong. These considerations lead me to place the species here.

NEPHRONAIAS YZABALENSIS Crosse and Fischer.

* *Unio yzabalensis* CROSSE and FISCHER, J. de Conch., XL, 1892, p. 294.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 597, pl. LXIV, figs. 4, 4a, 4b.¹

Lake Ysabal, Guatemala.

† NEPHRONAIAS RUGULOSUS Charpentier in Kuster.

* *Unio rugulosus* CHARPENTIER in KUSTER, Conch. Cab. Unio, 1856, p. 154, pl. XLIV, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 166.²

Habitat.—A shell in the Lea collection, which I take to be this, is marked "Mexico."

NEPHRONAIAS PERSULCATUS Lea.³

* *Unio persulcatus* LEA, Pr. Ac. N. Sci. Phila., XI, 1859, p. 153; * JI. Ac. N. Sci. Phila., IV, 1860, p. 255, pl. XL, fig. 135; * Obs., VII, 1860, p. 73, pl. XL, fig. 135.—* MUSGRAVE, Phot. Conch., 1863, pl. II, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 614.

* *Margaron (Unio) persulcatus* LEA, Syn., 1870, p. 36.

Mexico.

† NEPHRONAIAS CALIMATARUM Morelet.

* *Unio calimatarum* MORELET, Test. Noviss., I, 1849, p. 30.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIV, fig. 385.⁴—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 612.

* *Margaron (Unio) calimatarum* LEA, Syn., 1870, p. 63.

Mexico; Guatemala.

† NEPHRONAIAS TABASCOENSIS Charpentier in Kuster.

* *Unio tabascoensis* CHARPENTIER in KUSTER, Conch. Cab. Unio, 1856, p. 153, pl. XLIV, fig. 3⁵.—* B. H. WRIGHT, Check List, 1888.—* CROSSE and FISCHER, Miss. Sci., Pt. 7, II, 1894, p. 611.

* *Margaron (Unio) tabascoensis* LEA, Syn., 1870, p. 61.

Mexico; Honduras; Cuba?

¹ Probably a mere variety of *eruginosus*.

² Kuster credits this species to Australia and says that it has a purple naere. The naere of all the Australian species is whitish, and the shell is evidently a member of this group.

³ This and the related species are extremely puzzling. Although I have been able to examine a good deal of material, yet I find great variation in the specimens, and few of them accurately agree with the figures and descriptions.

⁴ Fischer and Crosse believe this to be Morelet's species. It looks like a short *cuprinus*, but Sowerby says it is solid, and has a dirty-white naere, while *cuprinus* is rather thin and is copper colored throughout.

⁵ The specimens which I have seen do not wholly agree with Kuster's figure and description, but are nearer to that than anything else. The material in the U. S. National Museum is mostly from Honduras though there are specimens credited to Cuba. Lea referred these to *N. scannatus* Morelet.

† NEPHRONAIAS PLICATULUS Charpentier in Kuster.

* *Unio plicatulus* CHARPENTIER in KUSTER, Conch. Cab. Unio, 1856, p. 154, pl. XLIV, fig. 4.—*FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 598.

Mexico.

† NEPHRONAIAS RAVISTELLUS Morelet.

* *Unio ravistellus* MORELET, Test. Noviss., No. 1, 1849, p. 29.—*KUSTER, Conch. Cab. Unio, 1856, pl. XLII, fig. 6.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 165.—*FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 609, pl. LXI, figs. 4, 5, and 5a.

**Margaron (Unio) ravistellus* LEA, Syn., 1870, p. 40.

Guatemala.

† NEPHRONAIAS VELLICATUS Reeve.

* *Unio vellicatus* REEVE, Conch. Icon., XVI, 1865, pl. XXII, fig. 103.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 171.—*FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 610.

Guatemala.

NEPHRONAIAS MELLEUS Lea.

* *Unio melleus* LEA, Pr. Ac. N. Sci. Phila., XI, 1859, p. 152; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 250, pl. XXXVIII, fig. 129; *Obs. VII, 1860, p. 68, pl. XXXVIII, fig. 129.—*REEVE, Conch. Icon., XVI, 1865, pl. XXI, fig. 92.—*PÆTEL, Conch. Sam., III, 1890, p. 158.

**Margaron (Unio) melleus* LEA, Syn., 1870, p. 35.¹

Mexico or Central America, no doubt.

GENUS GLEBULA Conrad 1853.

(Type, *Unio rotundata* Lamarek.)²

Glebula CONRAD, Pr. Ac. N. Sci. Phila., 1853, p. 268.

Shell solid, much inflated, short elliptical, bluntly pointed and slightly biangulate behind, with a low, posterior ridge; female shell swollen at post base; beaks compressed, the sculpture not seen; epidermis brownish, clothlike; pseudocardinals divided into irregularly radiating, granular lamina, sometimes to the number of a dozen or more in each valve; hinge plate reduced to a mere rounded line behind the pseudocardinals; laterals short, remote, anterior adductor scars deep, smooth; there is in each valve only a single, large, semicircular posterior scar

¹ I am not certain just where this and the preceding species should be placed. This remark can be applied to a number of other forms placed in this genus.

² I have examined a number of animals of the only species of this curious genus, but regret that they were badly decayed, and that none were gravid. In one specimen several ovisacs were distended with gas, and these were separated by a deep sulcus. This fact, the union of the inner gills with the abdominal sac, and the post-basal swelling seen on some shells incline me to believe that it is a highly organized species.

with a straight edge in front; dorsal scars numerous, distinct, placed back of the pseudocardinals; cavity of the beaks not deep or compressed; nacre dull lurid to purplish brown.

Animal with gills nearly equal in size, inner slightly the larger in front, united the whole length to the abdominal sac; ovisacs apparently separated from each other by a sulcus as in *Lampsilis*; palpi very large, wide, wrinkled; mantle having a wide, slightly thickened border, double edged, the inner being beautifully toothed; branchial opening papillose; anal crenulate; foot small; whole animal the color of the nacre.

† GLEBULA ROTUNDATA Lamarck.

**Unio rotundata* LAMARCK, An. sans Vert., VI, 1819, p. 75.—*LEA, Obs., I, 1834, p. 201.

**Glebulula rotundata* CONRAD, Pr. Ac. N. Sci. Phila., 1853, p. 268.

**Unio rotundatus* HANLEY, Test. Moll., 1842, p. 201; *Biv. Shells, 1843, p. 201, pl. XXIII, fig. 30.—*CATLOW and REEVE, Conch. Nom., 1845, p. 63.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—*KUSTER, Conch. Cab. Unio, 1861, p. 256, pl. LXXXVI, fig. 4.—*REEVE, Conch. Icon., XVI, 1865, pl. XXIII, fig. 106.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 166.—*CALL, Tr. Ac. Sci. St. Louis, VII, 1895, p. 47, pl. IX.

**Margarita (Unio) rotundatus* LEA, Syn., 1836, p. 33; 1838, p. 23.

**Margaron (Unio) rotundatus* LEA, Syn. 347, 1852, p. 34; 1870, p. 55.

**Unio suborbiculata* LAMARCK, An. sans Vert., VI, 1819, p. 81.—*LEA, Obs., I, 1834, p. 201.—*DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 546; 3d ed., II, 1839, p. 671.

**Unio suborbiculatus* FERUSSAC, Guer. Mag., 1835, p. 26.

Unio glebulus SAY, Transylvania JI., IV, 1831, p. 526.—SAY, Am. Conch., No. IV, 1832, pl. XXXIV; No. V, 1832, p. 4 (of cover).—CONRAD, New F. W. Shells, 1834, p. 69.—CHENU, Bib. Conch., 1st ser., III, 1845, p. 46, pl. XI, figs. 10-12.—SOWERBY, Conch. Icon., XVI, pl. LXXIV, fig. 384.

**Unio glebulus* PÆTEL, Conch. Sam., III, 1890, p. 154.

**Unio subglobosus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 30, pl. II, fig. 3; *Obs., I, 1834, p. 142, pl. II, fig. 3.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXIV, fig. 321.

**Unio granadensis* CONRAD,¹ Pr. Ac. N. Sci. Phila., VII, 1855, p. 256.—*B. H. WRIGHT, Check List, 1888.

Louisiana; eastern Texas; Rio Grande River; Escambia County, Florida.

¹ Conrad says it is suboval, with the disks somewhat flattened, with minute, radiating lines extending to the tips of the beaks. The *rotundata* sometimes shows radiating ridges at the beaks in eroded specimens. He also states that the nacre of his species is purple. The description therefore fits Lamarck's species perfectly, though I have never known the species to come from so far west as the Rio Grande—Conrad's locality.

Genus **OBOVARIA** Rafinesque, 1819.(Type, *Unio retusa* Lamarck.)*Obovaria* RAFINESQUE, J. de Phys. Chim. Hist. Nat., 1819, p. 426.¹

Shell short, oval, rounded or retuse, solid, inflated, thick in front, thinner behind, with high beaks which are sculptured with very faint, irregular, often broken and slightly nodulous ridges which show a tendency to fall into two loops, the posterior often open behind; epidermis dull, brownish, silky or clothlike, rarely rayed, rays indistinct; female shell but slightly inflated in the post-basal region, commonly having a shallow furrow or a flattened area at the posterior end; pseudocardinals solid, stumpy; laterals short, club-shaped; anterior and posterior cicatrices deep and distinct; nacre bluish white or purple.

Animal with very short gills, the inner united to the abdominal sac throughout; marsupium projecting far below the rest of the branchiæ and occupying the posterior portion of the outer gills, dolabriform or kidney-shaped; mantle with a wide, thickened double-edged border, the inner edge of which is often slightly toothed at its postbasal part.

Subgenus **OBOVARIA** Rafinesque, 1819.(Type, *Unio retusa* Lamarck.)

Shell retrose to short oval; beaks high, central; pseudocardinals rarely parallel with the laterals; cavity of the beaks deep, subcompressed; nacre bluish white or purple. Animal with the characters of the genus.

† **OBOVARIA RETUSA** Lamarck.

* *Unio retusa* Lamarck, An. sans Vert., VI, 1819, p. 72.—FERUSSAC, Cuv. Mag., 1835, p. 28.—DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 534; 3d ed., II, 1839, p. 668.

* *Unio retusus* CONRAD, Monog., II, 1836, p. 19, pl. VIII.—* REEVE, Conch. Syst., I, 1841, p. 118, pl. LXXXVIII, fig. 16.—* HANLEY, Test. Moll., 1842, p. 202; * Biv. Shells, 1843, p. 202, pl. XXI, fig. 11.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* KUSTER Conch. Icon. Cab. Unio, 1852, p. 58, pl. XIII, fig. 2.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXI, fig. 363.—* CALKINS, Pr. Ottawa Ac. Sci., 1874, p. 44.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 165.—* CALL, Tr. Acad. Sci. St. Louis, VII, 1895, p. 45, pl. VIII.

* *Margarita (Unio) retusus* LEA, Syn., 1836, p. 34; 1838, p. 23.

* *Margaron (Unio) retusus* LEA, Syn., 1852, p. 35; 1870, p. 56.

* *Unio torsus* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 149, pl. LVII, figs. 1, 2.

Ohio, Cumberland, and Tennessee river systems.

¹I am utterly unable to guess as to what Rafinesque's first species (*Obovaria obovalis*) is, and the second (*O. torsa*) is either the *Unio retusa* of Lamarck or a variety of Lea's *U. circulus* with purple nacre, I can not be certain which. Which of these two nearly related species it may be, I consider it sufficient to establish the genus, his description being applicable.

†OBOVARIA CIRCULUS Lea.

- * *Unio circulus* LEA, Tr. Am. Phil. Soc., III, 1829, p. 433, pl. IX, fig. 14;¹ * Obs., I, 1834, p. 47, pl. IX, fig. 14.—SHORT and EATON, Transylvania Jl., 1831, p. 77.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 549; 3d ed., II, 1839, p. 672.—* ANTON, Verz. der Conch., 1839, p. 14.—* HANLEY, Test. Moll., 1842, p. 201; * Biv. Shells, 1843, p. 201, pl. XX, fig. 23.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* KUSTER, Conch. Cab. Unio, 1852, p. 41, pl. VIII, fig. 2.—* CHENU, Ill. Conch., 1858, pl. XVI, figs. 1, 1a, 1b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVII, fig. 135.—* B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) circulus* LEA, Syn., 1836, p. 33; 1838, p. 22.
- * *Margaron (Unio) circulus* LEA, Syn., 1852, p. 34; 1870, p. 55.
- * *Unio subrotundus* FERUSSAC, part, Guer. Mag., 1835, p. 28.²—CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.
- * *Unio subrotundus* Raf. v. *circulus* PÆTEL, Conch. Sam., III, 1890, p. 168.
- * *Mya rotunda* WOOD, Index Test. (Rev.), 1856, p. 199, pl. I, Supp., fig. 1.

Ohio, Tennessee and Cumberland river systems; southeast Louisiana; Alabama and Tombigbee drainage? Reported from Michigan and the St. Lawrence drainage, but the forms in this area are probably *O. leibii*, which is perhaps only a variety of *O. circulus*.

†OBOVARIA TINKERI B. H. Wright.

- * *Unio tinkeri* B. H. WRIGHT, Nautilus, XIII, 1899, p. 7.
- * *Obovaria tinkeri* SIMPSON, Pr. Acad. Nat. Sci. Phila., 1900, p. 78, pl. IV, fig. 3.

Tombigbee River, Alabama; Columbus, Mississippi.

†OBOVARIA LENS Lea.³

- * *Unio lens* LEA, Tr. Am. Phil. Soc. Phila., IV, 1831, p. 80, pl. VIII, fig. 10; * Obs. I, 1834, p. 90, pl. VIII, fig. 10.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* HANLEY, Test. Moll., 1842, p. 201; * Biv. Shells, 1843, p. 201, pl. XXI, fig. 4.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* CHENU, Ill. Conch., 1856, pl. VIII, figs. 10, 10a, 10b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVII, fig. 134.—* SOWERBY, Conch., Icon., XVI, 1866, pl. XXXVII, fig. 200.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 157.
- * *Margarita (Unio) lens* LEA, Syn., 1836, p. 33; 1838, p. 22.
- * *Margaron (Unio) lens* LEA, Syn., 1852, p. 34; 1870, p. 55.
- * ? *Unio lavigatus* SAY, Am. Conch., VI, 1834.—CONRAD, New F. W. Shells, 1834, p. 70.—CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.

¹ The figured type has a purple naere.

² Ferrussac makes this = *U. orbiculatus* Hildreth also.

³ This is sometimes considered a synonym of *O. circulus*. The two species are excessively variable in form, and both often have a pink or purplish naere. While individuals may occasionally be found which can only be referred to either species with doubt, the majority of specimens can readily be determined, and Dr. V. Sterki informs me that he has found differences in the animals of the two. As I have only been able to examine the soft parts of young specimens I have not detected any differential characters in them.

† OBOVARIA LENS var. DEPYGIS Conrad.

* *Unio depygis* CONRAD, Am. Jl. Conch., II, 1866, p. 107, pl. x, fig. 1.—B. H. WRIGHT, Check List, 1888.

Ohio River drainage; southern Michigan.

† OBOVARIA UNICOLOR Lea.¹

* *Unio unicolor* LEA, Tr. Am. Phil. Soc., IV, 1845, p. 163; * Tr. Am. Phil. Soc., IX, 1848, p. 74, pl. IV, fig. 12; * Obs., IV, 1848, p. 48, pl. IV, fig. 12.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 171.

* *Margaron (Unio) unicolor* LEA, Syn., 1852, p. 34; 1870, p. 55.

Mississippi and Alabama, in streams flowing into the Gulf.

† OBOVARIA LEIBII Lea.²

* *Unio leibii* LEA, Proc. Acad. Nat. Sci. Phila., VI, 1862, p. 168; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 44, pl. xv, fig. 42; Obs., XI, 1867, p. 48, pl. xv, fig. 42.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) leibii* LEA, Syn., 1870, p. 36.

Lake Erie and streams falling into it; southern Michigan; ?Sequatchie River, Tennessee.

† OBOVARIA ROTULATA B. H. Wright.

* *Unio rotulatus* B. H. WRIGHT, Naut., XIII, 1899, p. 22.

* *Obovaria rotulata* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 78, pl. IV, fig. 2.

Escambia River, Escambia County, Florida.

Subgenus PSEUDOÖN Simpson, 1900.

(Type, *Unio ellipsis* Lea.)

Shell elliptical, inflated, solid, that of the males slightly pointed at the upper posterior part; epidermis brownish or blackish, rayless or very feebly rayed, beaks anterior; pseudocardinals solid, stumpy, or slightly elongate in age, and showing a tendency toward being parallel with the laterals; cicatrices deep; nacre silvery, iridescent posteriorly.

Animal with mantle having a wide, thickened, double border, the inner edge being toothed throughout below; gills small; marsupium not reaching to the posterior end of the outer branchiæ, though extending quite well forward; ovisacs rather numerous, large and distinct, tinted with purple below; anal and branchial openings finely toothed.

¹The type is a young female, somewhat broken, and besides this Lea has a shell which he has so named that I believe is *O. castaneus*. Under the name of *Unio lens* (Cat. No. 85743, U.S.N.M.) he has a young shell from Jackson, Mississippi, which is a young male *unicolor*. The species grows to the size of *O. lens*, but shows dull rays and is more inflated than that species.

²Dr. Lea states that the type is from Erie County, Michigan. There is no county of that name in the State, and his specimens may be from Erie County, Ohio. I am very doubtful whether it is more than a dwarf variety of *U. circulus*, as specimens have been seen from Tennessee which seem to stand between the two forms.

† OBOVARIA ELLIPSIS Lea.

- * ? *Unio brevialis* SOWERBY, Rec. and Foss. Shells, XVI, fig. (no date).
- * *Unio ellipsis* LEA, Tr. Am. Phil. Soc., III, 1828, p. 268, pl. IV, fig. 4; * Obs., I, 1834, p. 10, pl. IV, fig. 4.—SHORT and EATON, Transylvania Jl., 1831, p. 75.—* SAY, Am. Conch. I, No. II, 1831.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 547; 3d ed., II, 1839, p. 672.—* HANLEY, Test. Moll., 1842, p. 188; * Biv. Shells, 1843, p. 188, pl. XXI, fig. 7.—* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 150, pl. LVIII, figs. 1, 2.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 22, pl. IV, figs. 1, 1a, 1b.—* KUSTER, Conch. Cab. Unio, 1852, p. 43, pl. VIII, fig. 4.—* CHENU, Ill. Conch., 1858, pl. XVIII, figs. 1, 1a, 1b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXX, figs. 4, 24.—* CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 42.—* LATCHFORD, Tr. Ottawa Field Nat. Club, 1882, p. 50.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 151.
- * *Margarita (Unio) ellipsis* LEA, Syn., 1836, p. 22; 1838, p. 18.
- * *Margaron (Unio) ellipsis* LEA, Syn., 1852, p. 26; 1870, p. 41.
- * *Unio triangularis* SAY, Am. Conch., VI, 1834.
- * *Unio olivarius* CONRAD, New F. W. Shells, 1834, p. 70.—* FERUSSAC, Guer. Mag., 1835, p. 28.
- * *Unio taitianus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXVII, fig. 338.
- * *Unio pealei* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 191; * Jl. Ac. N. Sci. Phila., VIII, 1874, p. 26, pl. VIII, fig. 23; * Obs., XIII, 1874, p. 30, pl. VIII, fig. 23.—* B. H. WRIGHT, Check List, 1888.

Upper Mississippi system as far south as the Tennessee and Arkansas rivers; St. Lawrence drainage area.

† OBOVARIA CASTANEA Lea.

- * *Unio castaneus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 91, pl. XI, fig. 21;¹ * Obs., I, 1834, p. 101, pl. XI, fig. 21.—* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* HANLEY, Test. Moll., 1842, p. 188; Biv. Shells, 1843, p. 188, pl. XXII, fig. 30.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XI, figs. 5, 5a, 5b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.
- * *Margarita (Unio) castaneus* LEA, Syn., 1836, p. 22; 1838, p. 18.
- * *Margaron (Unio) castaneus* LEA, Syn., 1852, p. 26; 1870, p. 41.

Streams flowing into the Gulf of Mexico, from the Alabama River west to the Nechez.

The following species are unfigured and indeterminable.

- * *Obovaria cordata* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 312, pl. LXXXII, figs. 6, 7.
- * *Obovaria stegaria* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 312, pl. LXXXII, figs. 4, 5.

¹The name *castaneus* was applied to some *Unio* which I am unable to determine, by Rafinesque in a continuation of a monograph on the Bivalve Shells of the River Ohio, etc., in October, 1831. According to Scudder, Lea's name was published the latter part of the same year, but I have no means of knowing which appeared first. Under the circumstances I use Lea's name.

* *Obovaria striata* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 311.

* *Obovaria torsa* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 312, pl. LXXXII, figs. 1, 3.

* *Obliquaria retusa* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 306, pl. LXXXI, figs. 19, 20.

Genus **PLAGIOLA** (Rafinesque, 1819) Agassiz.

(Type, *Unio securis* Lea.)

Plagiola RAFINESQUE, J. de Phys. Chim. Hist. Nat., 1819, p. 426.—AGASSIZ, Arch. für Nat., 1852, p. 48, redefined.

Shell triangular ovate, somewhat inflated, solid, with a distinct and often sharp posterior ridge; surface concentrically sculptured; umbonal area somewhat flattened; beaks high, sculptured with delicate, parallel, doubly looped ridges, the anterior loop rounded, the posterior angular; pseudocardinals ragged; laterals club-shaped, straight or slightly curved; cavity of the beaks moderate, often somewhat compressed; nacre silvery; female shell more or less inflated at postbasal region.

Animal with the outer gills narrow in front, wide behind; inner gills wide in front, posteriorly free or united to abdominal sac; marsupium occupying the posterior part of the outer gills, but not extending quite to the hinder end, consisting of well-marked ovisacs which are rounded below; a distinct sulcus extends the whole length of the kidney-shaped marsupium at the inside and outside at some distance above its base; mantle edge thickened and somewhat doubled, in some cases toothed or fringed below.

Subgenus **PLAGIOLA** (Rafinesque, 1819) Agassiz.

Shell solid, surface irregularly concentrically ridged; epidermis smoothish, but here and there wrinkled; painted with larger and smaller scattered rays, which are generally broken into irregular lunate or squarish blotches; hinge heavy and strong; hinge plate wide and flat; female shell smaller than the male, more inflated, and swollen at postbasal region.

Animal with the branchiæ rounded below, inner the larger, wholly or partly free from the abdominal sac; marsupium large, projecting far below the inner gills; mantle very thin, dark on its thickened, fringed double edge; anal opening with very small papillæ.

† **PLAGIOLA SECURIS** Lea.

* ? *Obliquaria (Plagiola) depressa* RAFINESQUE, Ann. Gen. Sci. Phys. Brux., 1820, p. 302, pl. XXXI, figs. 5-7.¹

* *Unio securis* LEA, Tr. Am. Phil. Soc., III, 1829, p. 437, pl. XI, fig. 17; * Obs., I, 1834, p. 437, pl. XI, fig. 17.—* DESHAYES, Encyc. Meth., II, 1830, p. 578.—SHORT and EATON, Transylvania Jl., 1831, p. 77.—* DESHAYES, An. sans

¹ Rafinesque's name *depressa*, for what is probably a male of this species, has precedence over Lea's name, but it was used previously by Lamarck for an Australian *Unio*. Rafinesque placed this species in his genus *Obliquaria* and the subgenus *Plagiola*, but after giving the name *Obliquaria depressa* he calls it *U. depressa* in parenthesis.

Vert., 2d ed., VI, 1835, p. 550; 3d ed., II, 1839, p. 673.—* HANLEY, Test. Moll., 1842, p. 184; * Biv. Shells, 1843, p. 184, pl. XX, fig. 51.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* CHENU, Ill. Conch., 1858, pl. XVI, figs. 4, 4a, 4b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CHENU, Man., II, 1859, p. 138, fig. 671.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXI, fig. 304.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) securis* LEA, Syn., 1836, p. 19; 1838, p. 16.

* *Margaron (Unio) securis* LEA, Syn., 1852, p. 24; 1870, p. 37.

* *Plagiola securis* SMITH, Bull. U. S. Fish Com., 1899, p. 291, pl. LXXX.

* *Unio lineolata* SAY, Am. Conch., VI, 1834.

* *Plagiola lineolata* AGASSIZ, Arch. für Nat., I, 1852, p. 48.

* *Unio lineolatus* CONRAD, New F. W. Shells, 1834, p. 70.—* FERUSSAC, Guer. Mag. 1835, p. 28.—* CONRAD, Am. Conch. (continuation), VII, pl. LXVIII (no date).—

* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—* KUSTER, Conch. Cab. Unio, 1861, p. 171, pl. LIII, figs. 1, 2.

Mississippi drainage south into Arkansas; west into eastern Iowa and Kansas; Tombigbee and Alabama river systems.

Subgenus **AMYGDALONAIAS** Crosse and Fischer. 1893.

(Type, *Unio cognatus* Lea.)

Shell inflated, decidedly truncated at the posterior slope, surface slightly concentrically sculptured; posterior ridge sharp and well defined; epidermis shining, sometimes wrinkled looped, and painted with a beautiful pattern of broken or arrow-marked rays; area of the beaks flattened off in the direction of the axis of the shell, but not compressed; beak sculpture delicate, somewhat broken and doubly looped, the anterior loop rounded, the posterior sharp below, the ribs fading out where they cross the posterior ridge; hinge delicate, pseudo-cardinals rather compressed, high, and ragged; hinge plate narrow; female shell very slightly swollen at post base.

Animal with branchiæ more or less free from the abdominal sac; marsupium consisting of numerous distinct ovisacs, and having a well-marked sulcus extending around it at some distance above its base; mantle thickened and doubled on its edge, which has dark papillæ.

(Group of *Plagiola elegans*.)

Shell short, triangular oval, inflated, with a very sharp posterior ridge, extending from the beaks to the hinder point of the shell; male and female shells scarcely distinguishable, both being much expanded in the basal region.

† **PLAGIOLA ELEGANS** Lea.

* *Unio elegans* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 83, pl. IX, fig. 13; * Obs., I, 1834, p. 93, pl. IX, fig. 13.—* HANLEY, Test. Moll., 1842, p. 183; * Biv. Shells, 1843, p. 183, pl. XXI, fig. 33.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XV, figs. 3, 3a, 3b; * Manual, II, 1859, p. 138, fig. 672.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIV, p. 380.—* CALKINS, Pr. Ottawa Ac. N. Sci., 1874, p. 42.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) elegans* LEA, Syn., 1836, p. 18; 1838, p. 16.

* *Margaron (Unio) elegans* LEA, Syn., 1852, p. 23; 1870, p. 36.

* *Plagiola elegans* BAKER, Moll. Chicago, Pt. 1, 1898, p. 91, pl. XXI, fig. 1.

Unio truncatus SAY, Am. Conch., VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 27.—

* CONRAD, Am. Conch. (continuation), Pt. 7, pl. LXXVII (no date); * Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—* KUSTER, Conch. Cab., 1861, p. 174, pl. LV, figs. 2, 3.

* *Unio truncatus* RAFINESQUE var. *elegans*. * PÆTEL, Conch. Sam., III, 1890, p. 170.

Mississippi drainage generally; Michigan; Lake Michigan; southwest to Trinity River, Texas.

(Group of *Plagiola donaciformis*.)

Shell small, elongated, triangular oval; posterior ridge generally well defined but rarely sharp, having broken green rays which form chevrons or blotches on a lighter ground; female shell somewhat inflated in the post-basal region.

† PLAGIOLA DONACIFORMIS Lea.

* *Unio donaciformis* LEA, Tr. Am. Phil. Soc., III, 1828, p. 267, pl. IV, fig. 3; * Obs., I, 1834, p. 9, pl. IV, fig. 3.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* DESHAYES, An. sans Vert. 2d ed., VI, 1835, p. 547; 3d ed., II, 1839, p. 672.—* HANLEY, Test. Moll., 1842, p. 183; * Biv. Shells, 1843, p. 183, pl. XXII, fig. 41.—* CATLOW and REEVE, 1845, p. 58.—* CHENU, Ill. Conch., 1858, pl. XI, figs. 4, 4a, 4b.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) donaciformis* LEA, Syn., 1836, p. 18; 1838, p. 16.

* *Margaron (Unio) donaciformis* LEA, Syn., 1852, p. 24; 1870, p. 36.

* *Plagiola donaciformis* BAKER, Moll. Chicago, Pt. 1, 1898, p. 92, pl. XIII, fig. 4.

* *Unio zigzag* LEA, Tr. Am. Phil. Soc., III, 1829, p. 440, pl. XII, fig. 19; * Obs., I, 1834, p. 54, pl. XII, fig. 19.—SHORT and EATON, Transylvania JI., 1831, p. 79.—

* DESHAYES, An. sans Vert. 2d ed., VI, 1835, p. 551; 3d ed., II, 1839, p. 673.—

* HANLEY, Test. Moll., 1842, p. 183; * Biv. Shells, 1843, p. 183, pl. XXII, fig. 42.—

* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* KUSTER, Conch. Cab. Unio, 1852, p. 42, pl. VIII, fig. 3.—H. and A. ADAMS, Gen. Rec. Moll., 1857, p. 495.—

* CHENU, Ill. Conch., 1858, pl. VIII, figs. 8, 8a, 8b; Man., 1859, II, p. 138, fig.

670.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIX, fig. 213.—* CALKINS, Pr.

Ottawa Ac. Sci., 1874, p. 46.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL,

Conch. Sam., III, 1890, p. 172.

* *Margarita (Unio) zigzag* LEA, Syn., 1836, p. 18; 1838, p. 16.

* *Margaron (Unio) zigzag* LEA, Syn., 1852, p. 24; 1870, p. 36.

* *Unio nervosa* CONRAD, New F. W. Shells, 1834, p. 70.

* *Unio nervosus* SAY, Am. Conch., VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 27.—

* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.—* KUSTER, Conch. Cab.

Unio, 1861, p. 175, pl. LV, fig. 4.

Mississippi drainage generally; Alabama River area; southwest to the Trinity River, Texas; Michigan. Seems to be gradually replaced in the southwest by *P. macrodon*, and there are specimens which can scarcely be assigned with certainty to either species.

† PLAGIOLA MACRODON Lea.

* *Unio macrodon* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 154; * JI. Ac. N. Sci. Phila., VI, 1862, p. 193, pl. XXVI, fig. 262; * Obs., IX, 1863, p. 15, pl. XXVI, fig. 262.—

* ? SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVIII, fig. 437.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

* *Margaron (Unio) macrodon* LEA, Syn. 1870, p. 37.

Eastern Texas, northward probably into Kansas.

† *PLAGIOLA COGNATA* Lea.

- * *Unio cognatus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 306; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 368, pl. LXV, fig. 193; * Obs., VIII, 1860, p. 50, pl. LXV, fig. 193.—
* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIX, fig. 214.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 602.
* *Margaron (Unio) cognatus* LEA, Syn., 1870, p. 43.

Rio Salado, New Leon, Mexico.

Subgenus *PTYCHODERMA* Simpson, 1900.

(Type, *Unio cyrenoides* Philippi.)

Shell triangularly ovate or rounded, solid, bluntly angled before, more sharply angular behind, with a tolerably well-marked posterior ridge; surface strongly and irregularly concentrically sulcate; beaks small but rather prominent, sculptured with fine, irregular, broken ridges, which are somewhat doubly looped, the front loop being larger and more rounded; epidermis olive to tawny, wrinkled, sometimes having faint rays; pseudocardinals compressed, ragged; hinge plate narrow; laterals short, slightly curved, obliquely striated; muscle scars rather shallow, the posterior round; female shell produced in post-basal region.

Animal with small branchiæ, inner united the whole length to the abdominal sac, wider than the outer in front, narrower behind; marsupium occupying the posterior part of the outer gills in from eleven to twenty distinct ovisacs which are rounded and dark below, the whole having a decided, parallel sulcus inside and out near its base; mantle thin, papery, with a wide, thickened, double edge, which is sometimes crenate; branchial opening large fringed; anal opening smooth or with only the faintest crenulations.¹

(Group of *Plagiola cyrenoides*.)

Shell generally more or less covered with radiating grooves which cut up the concentric sculpture into looped wrinkles or nodules, sometimes having the appearance of dried, wrinkled paint, the sculpture extending into the substance of the shell; epidermis usually tawny or yellowish, rarely showing any vestiges of rays; female shell greatly produced in the post-basal region.

† *PLAGIOLA CYRENOIDES* Philippi.

- * *Unio cyrenoides* PHILIPPI, Zeits. für Mal., IV, 1847, p. 93; * Abbild., III, 1848, p. 49, pl. v, fig. 1.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* KUSTER, Conch. Cab. Unio., 1862, p. 285, pl. xcvi, fig. 1.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 150.
* *Margaron (Unio) cyrenoides* LEA, Syn., 1852, p. 25; 1870, p. 38.

¹ In a female *P. cyrenoides*, which was not gravid, the sulcus near the base of the inside of the marsupium was quite deep, in fact the part above it hung over it in a sort of flap, which would no doubt disappear if it was filled with ova.

*† *Unio newcombianus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 103; * Obs., VI, 1857, p. 32, pl. XXX, fig. 27; * JI. Ac. N. Sci. Phila., III, 1858, p. 312, pl. XXX, fig. 27.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) newcombianus* LEA, Syn., 1860, p. 36.

* *Unio sagrinatus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXVII, fig. 345.¹—PETEL, Conch. Sam., III, 1890, p. 166.

Nicaragua; Venezuela? A specimen in the U. S. National Museum from the Morelet collection is marked with the latter locality.

† **PLAGIOLA ENCARPA** Lea.

* *Unio encarpus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 95; * JI. Ac. N. Sci. Phila., VI, 1868, p. 294, pl. XLII, fig. 105; * Obs., XII, 1869, p. 54, pl. XLII, fig. 105.—* B. H. WRIGHT, Check List, 1888.

Margaron (Unio) encarpus LEA, Syn., 1870, p. 35.

Nicaragua.

(Group of *Plagiola nicaraguensis*.)

Shell much like that of *cyrenoides*, but simply covered with coarse, irregular, concentric ridges, and having no radiating grooves or wrinkles, faintly rayed in umbonal region. Animal as in *Cyrenoides* group.

† **PLAGIOLA NICARAGUENSIS** Lea.

* *Unio nicaraguensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 95; * JI. Ac. N. Sci. Phila., VI, 1868, p. 296, pl. XLIII, fig. 107; * Obs., XII, 1869, p. 56, pl. XLIII, fig. 107.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) nicaraguensis* LEA, Syn., 1870, p. 35.

* *Unio gabbianus* LEA, Pr. Ac., N. Sci. Phila., XII, 1868, p. 95; * JI. Ac., N. Sci. Phila., VI, 1868, p. 295, pl. XLIII, fig. 106; * Obs., XII, 1869, p. 55, pl. XLIII, fig. 106.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) gabbianus* LEA, Syn., 1870, p. 35.

Nicaragua.

The following species are unfigured and indeterminable.

* *Unio nuculinus* PHILIPPI, Zeits. für Mal., V, 1848, p. 176.

Nicaragua. Probably near *cyrenoides*.

* *Unio (Plagiola?) imbricatus* MÖRCH, Mal. Bl., VII, 1861, p. 205.

Nicaragua. This may equal *encarpus* Lea.

DIGENÆ.

Male shell inflated, truncated posteriorly; female shell compressed, expanded into a broad wing behind the post ridge, the wing being filled with a flap of the mantle.

Genus **TRITOGONIA** Agassiz, 1852.

Tritogonia AGASSIZ, Arch. für Nat., 1852, p. 48.

Shell solid, elongate rhomboid, having a strong, irregular posterior ridge, obliquely truncated behind in the male, in the female this region is somewhat compressed and rounded; base incurved; whole surface

¹ Changed in errata by the author to *U. newcombianus*.

except the rounded wing of the females covered with pustules; beaks rather low, incurved and turned forward over the well-developed lunule, which is elongated and filled with epidermal matter; beak sculpture strong, consisting of irregular, subparallel ridges which are curved upward behind, and fine radiating ridges in front of and behind this; epidermis dark olive; hinge plate rather narrow; pseudocardinals strong, ragged; laterals long and straight, near to the pseudocardinals; adductor scars shallow; cavity of the beaks rather deep and compressed, female shell more compressed than that of the male.

Animal with the inner gills much larger than the outer, generally free for the most part from the abdominal sac; palpi enormous, elongated, united to each other behind, and to the mantle a part of their length; mantle thin, with a thickened, dark, double border, the inner edge often toothed throughout, the base much thickened at the posterior end and folded at the branchial opening; branchial opening large, with numerous crowded papillæ; anal opening smooth or with only fine denticulations; superanal opening long, closed below; in the female there is a thickened flap of the mantle which fills the circular posterior expansion of the shell, and which has a smaller flap inside; foot and abdominal sac large, the latter winged in front.¹

† TRITOGONIA TUBERCULATA Barnes.

* *Unio tuberculatus* BARNES, Am. J. Sci., VI, 1823, p. 125, pl. VII, figs. 8a 8b.²—* HILDRETH, Am. J. Sci., XIV, 1828, p. 282.—SHORT and EATON, Transylvania J., 1831, p. 76.—* REEVE, Conch. Syst., I, 1841, p. 118, pl. LXXXVIII, fig. 5.—* HANLEY, Test. Moll., 1842, p. 182; *Biv. Shells, 1843, p. 182, pl. XX, fig. 27.—* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 158, pl. LX, fig. 1.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* REEVE, Elements of Conch., 1860, II, pl. XXXIII, fig. 183.—* CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 45.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 170.

* *Margarita (Unio) tuberculatus* LEA, Syn., 1836, p. 17; 1838, p. 16.

* *Margaron (Unio) tuberculatus* LEA, 1852, p. 23; 1870, p. 34.

* *Mya tuberculata* EATON, Zool. Text-Book, 1826, p. 217.

* *Unio pustulata* SWAINSON, Treat. on Mal., 1840, p. 271, fig. 54d.

* *Unio gigas* SOWERBY,³ Conch. Icon., XVI, 1867, pl. LVI, fig. 287.

¹ I have never seen a specimen among the hundreds examined that had young or ova in the gills. But I have seen spermatozoa in specimens with inflated shells and ova in those with the wing. Mr. H. M. Kelly, of Mount Vernon, Iowa, who has made a very careful study of the anatomy of many of our Unionidæ, assures me that the form with the compressed shell, having the expanded flap behind, is the female.

² It has been claimed that this species was previously described under the name of *Obliquaria verrucosa* by Rafinesque, but I am unable to make anything out of his figure or description; hence I use the name given by Barnes. Barnes's name was used by Rafinesque for the species which the former called *Unio verrucosus*, but as Rafinesque placed his species in *Obliquaria*, and as the generic names of both forms are changed in this work, I do not consider Barnes's name preoccupied.

³ I think that this is a large, rather high male of the species in question. I can not find any description of *Unio gigas* by Swainson, to whom Sowerby credits this species, and the *Megadomus gigas* of Swainson (which, so far as I know, is undescribed) can not be it, as the latter says that his genus, *Megadomus*, has the lateral teeth imperfect, one or none. Treatise on Mal., p. 266.

* *Unio verrucosus* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 72.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—* KUSTER, Conch. Cab., 1862, p. 273, pl. XCII, fig. 1.—* SOWERBY, Conch. Icon., XVI, 1868, pl. i, fig. 4.

* *Tritogonia verrucosa* AGASSIZ, Arch. für. Nat., I, 1852, p. 48.

* *Tritogonia verrucosa* SMITH, Bull. U. S. Fish Com., 1899, p. 291, pl. LXXXI.

† TRITOGONIA TUBERCULATA var. OBESA Simpson.¹

Mississippi drainage generally; streams falling into the Gulf of Mexico from the Alabama system west to central Texas.

† TRITOGONIA CONJUGANS B. H. Wright.

* *Unio conjugans* B. H. WRIGHT, Naut., XIII, 1899, p. 89.

* *Tritogonia conjugans* Simpson, Pr. Ac. N. Sci. Phila., 1900, p. 79, pl. IV, fig. 1.

Hiawasee River, Tennessee. A single male shell of this remarkable species, the type, is in the U. S. National Museum collection. I am not positive that it belongs here, though it probably does.

MESOGENÆ.

Male and female shells alike, short, solid, inflated; embryos occupying a few distinct ovisacs in the center of the outer gills.

Genus CYPROGENIA Agassiz, 1852.

(Type, *Unio irroratus* Lea.)

. *Cyprogenia* AGASSIZ, Arch. für Nat., 1852, p. 47.

Shell solid, inflated, rounded triangular, sometimes slightly retuse, generally a little biangular behind; posterior ridge unusually well developed, especially in the young shell; umbonal region flattened parallel with the axis of the shell, sometimes compressed; beaks curved inward and forward, their sculpture very faint, consisting of slightly doubly looped ridges; sculpture of the shell nodular, radiately wrinkled, or lachrymose; ligament black and conspicuous; lunule distinct and well developed; epidermis shining, painted with a delicate, dark mottling on a light ground; hinge plate wide and flat; pseudocardinals heavy, triangular, blunt and ragged; laterals short, obliquely striated; cavity of the beaks not deep; adductor scars small, well impressed, those at the posterior round; naere bright and silvery. Animal with inner gills partly free from the abdominal sac, rounded below; outer gills smaller; marsupium consisting of from seven to twenty-three very long, purple ovisacs pendent from near the central base of the outer gills, and formed into a close coil with the ends turned inwardly; branchial opening large with many small papillæ; anal opening smooth.

¹A short, inflated, peculiarly formed shell from Big Eddy, Nechez River, Texas, having very few faint tubercles is in the U. S. National Museum collection, and may be a distinct species. It is certainly worthy of the varietal name here applied.

†CYPROGENIA IRRORATA Lea.

- * *Unio irroratus* LEA, Tr. Am. Phil. Soc., III, 1830, p. 269, pl. v, fig. 5; * Obs., I, 1834, p. 11, pl. v, fig. 5.—SHORT and EATON, Transylvania Journ., 1831, p. 77.—* HANLEY, Test. Moll., 1842, p. 181; * Biv. Shells, 1843, p. 181, pl. xx, fig. 25.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* CHENU, Ill. Conch., 1858, pl. x, figs. 3, 3a, 3b.—* REEVE, Conch. Icon., XVI, 1864, pl. xii, fig. 44.—* B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) irroratus* LEA, Syn., 1836, p. 16; 1838, p. 15.
- * *Margaron (Unio) irroratus* LEA, Syn., 1852, p. 22; 1870, p. 34.
- * *Unio irrorata* DESHAYES, Encyc. Meth., II, 1830, p. 579.—* DESHAYES, An. sans. Vert., 2d ed., VI, 1835, p. 547; 3d ed., II, 1839, p. 672.
- * *Theliderma irrorata*, SWAINSON, Tr. on Mal., 1840, p. 271, fig. 54a.
- * *Unio verrucosus albus* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 281.
- * *Unio stegarius* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 71.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* CONRAD, Monog., X, 1838, p. 83, pl. XLVI, fig. 1; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* REEVE, Conch. Icon., XVI, 1864, pl. xi, fig. 45.
- * *Unio stegarius* var. *irroratus* PÆTEL, Conch. Sam., III, 1890, p. 168.

†CYPROGENIA IRRORATA var. PUSILLA Simpson.¹

Ohio, Cumberland, and Tennessee river systems; St. Francis and Saline rivers, Arkansas? Eastern Iowa? The specimens reported from the western localities may be *C. aberti*.

†CYPROGENIA ABERTI Conrad.

- * *Unio aberti* CONRAD, Pr. Ac. N. Sci. Phila., V, 1850, p. 10; * VI, 1853, p. 244; Jl. Ac. N. Sci. Phila., 1854, p. 295, pl. xxvi, fig. 1.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) aberti* LEA, Syn. 1870, p. 34.
- * *Unio lamarckianus* LEA, Tr. Am. Phil. Sci., X, 1852, p. 266, pl. xvii, fig. 20; * Obs., V, 1852, p. 22, pl. xvii, fig. 20.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* SOWERBY, Conch. Icon., XVI, 1868, pl. xcii, fig. 498.—* PÆTEL, Conch. Sam., III, 1890, p. 156.
- * *Margaron (Unio) lamarckianus* LEA, Syn., 1852, p. 23.
- * *Unio popenoi* CALL, Bull. Washb. Coll., I, 1885, p. 49, pl. ii.

Kansas; Missouri; Indian Territory; Arkansas.

Genus OBLIQUARIA (Rafinesque 1820) Simpson.

(Type, *Oblivaria reflexa* Rafinesque.)

Oblivaria RAFINESQUE, Ann. Gen. Sci. Phys. Brux., 1820, p. 301.

Shell inflated, solid, oval, ending in a tolerably sharp point behind, having a row of large, compressed, longitudinal knobs running from the beaks to the center of the base, those of one valve alternating in position with the knobs of the other, and a well-developed posterior ridge, the space between the ridge and knobs somewhat excavated; posterior slope and sometimes the entire shell more or less corrugately sculptured; beaks prominent, incurved and pointed slightly forward toward a tolerably well-developed lunule; beak sculpture strong, con-

¹A peculiar, dwarfed variety, about one-half the size of the ordinary form and much inflated, from the Green River, Kentucky.

sisting of four or five heavy, parallel ridges, which fall low in front but are curved upward behind; epidermis smooth, generally shining, painted with numerous delicate, wavy, darker, broken rays; pseudo-cardinals strong, direct, and ragged; laterals short, nearly straight; anterior muscle scars small, the sides of the pit smooth, the bottom ragged; front part of the shell very solid, suddenly becoming rather thin just behind the knobs; male and female shells essentially alike.

Animal with small branchiæ, rounded below, inner the larger, free from the abdominal sac in part; marsupium consisting of a few distinctly marked ovisacs (4 to 7), occupying a position just behind the center of the outer gills, projecting far below the rest of the branchiæ, their bases rounded; mantle cut away at the thinner portion of the shell; anal opening smooth or having only minute crenulations.

† OBLIQUARIA REFLEXA Rafinesque.

* *Obliquaria (Quadrula) reflexa* RAFINESQUE, Ann. Gen. Sci. Phys., 1820, p. 306.—

* CHENU, Bib. Conch., 1st Ser., III, 1845, p. 19.

* *Obliquaria reflexa* BAKER, Moll. Chicago, Pt. 1, 1898, p. 89, pl. XIV, fig. 5; XX, fig. 2.

* *Unio reflexus* SAY, Am. Conch., No. VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 71; * Monog., I, 1835, p. 7, pl. IV, fig. 1.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* KUSTER, Conch. Cab. Unio, 1852, p. 52, pl. XI, fig. 2.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* REEVE, Conch. Icon., XVI, 1864, pl. VI, fig. 23.

* *Unio cornutus* BARNES, Am. J. Sci., VI, 1823, p. 122, pl. IV, figs. 5, 5a, 5b, 5c.—* ? ANTON, Verz. der Conch., 1839, p. 14.—* HANLEY, Test. Moll., 1842, p. 179; Biv. Shells, 1843, p. 179, pl. XX, fig. 30.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CALKINS, Pr. Ottawa Ac. N. Sci., 1874, p. 41.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) cornutus* LEA, Syn., 1836, p. 15; 1838, p. 15.

* *Margaron (Unio) cornutus* LEA, Syn., 1852, p. 22; 1870, p. 33.

* *Mya cornuta* EATON, Zool. Text-book, 1826, p. 216.

* *Theliderma cornuta* SWAINSON, Treat. on Mal., 1840, p. 269.

Unio torulosus SHORT and EATON, Transylvania J., 1831, p. 75.

*†? *Unio philippii* CONRAD,² Monog., I, 1835, p. 9, pl. V, fig. 1; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Unio philippii* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* KUSTER, Conch. Cab. Unio, 1852, p. 50, pl. X, fig. 3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) philippii* LEA, Syn., 1836, p. 15; 1838, p. 15.

* *Margaron (Unio) philippii* LEA, Syn., 1852, p. 22; 1870, p. 33.

* *Unio philippii* HANLEY, Test. Moll., 1842, p. 178; Biv. Shells, 1843, p. 178.

Mississippi drainage; Michigan; Alabama River; southwestwardly to central Texas.

¹ I am sorry to have to place the very appropriate and well-known name of Barnes in the synonymy, but I believe that the description of Rafinesque for his *Obliquaria reflexa* defines this species and nothing else, and although it is not figured, I feel justified in using it.

² A singular shell having the general form of *reflexa*, but the knobs are much broken up. I have seen specimens which agree quite well with Conrad's fine figure, which I have no doubt represents an unusual form of Rafinesque's species, and they hardly seem to me to be a variety. I do not think the so-called type in the Philadelphia Academy of Natural Sciences is valid.

PTYCHOGENÆ.

Male and female shells essentially alike, embryos contained in distinct ovisacs with rounded bases, occupying the entire outer gills, which, when gravid, consist of a series of folds.

Genus *PTYCHOBANCHUS* Simpson, 1900.

(Type, *Unio phascolus* Hildreth.)

Ptychobranchus SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 79.

Shell triangular, solid, sometimes becoming arcuate in old specimens, umbonal region rather elevated; beak sculpture consisting of faint, somewhat broken ridges which have a tendency to be doubly looped; posterior ridge rounded but well developed; epidermis usually painted with wavy hair line rays or broken, radiating bars, which show a tendency to form square spots; hinge plate rather wide and flat; pseudo-cardinals small, low, triangular and roughened; laterals club-shaped, remote; cavity of the beaks shallow; muscle scars rather deep. Animal with inner gills free all or part of their length from the abdominal sac; marsupium occupying the basal half of the whole length of the outer gills and hanging in from six to twenty beautiful folds; ovisacs distinct, each ending below in an enlarged, rounded bulb which has a colored spot in its center; mantle thin, with a dark, thickened border; branchial opening large, with very minute papillæ or crenulations, sometimes smooth; anal opening crenulate or smooth.

† *PTYCHOBANCHUS PHASEOLUS* Hildreth.

* *Unio phascolus* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 283.¹—SAY, Am. Conch., No. III, 1830, pl. XXII.—SHORT and EATON, Transylvania Jl., 1831, p. 77.—* HANLEY, Test. Moll., 1842, p. 207; Biv. Shells, 1843, p. 207, pl. xx, fig. 50.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 31, pl. ix, figs. 1-6.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* SOWERBY, Conch. Leon., XVI, 1868, pl. LXXIII, fig. 378.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Margarita (Unio) phaseolus* LEA, Syn., 1836, p. 38; 1838, p. 25.

* *Margaron (Unio) phaseolus* LEA, Syn., 1852, p. 38; 1870, p. 61.

† * *Unio planulatus* LEA, Tr. Am. Phil. Soc., III, 1830, p. 431, pl. ix, fig. 13; * Obs., I, 1834, p. 45, pl. ix, fig. 13.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 549.—* CHENU, Ill. Conch., 1858, pl. XIII, figs. 1, 1a, 1b; * Manual, 1859, II, p. 137, fig. 659.

* *Unio planulata* DESHAYES, An. sans Vert., 3d ed., II, 1839, p. 672.

* *Unio fasciolaris* CONRAD, New F. W. Shells, 1834, p. 69.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* AGASSIZ, Arch. für Naturg., I, 1852, p. 50.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* KUSTER, Conch. Cab., 1861, p. 172, pl. LIV, figs. 1-4.

* *Unio camelus* LEA,² Tr. Am. Phil. Soc., V, 1834, p. 102, pl. xv, fig. 45; * Obs., I,

¹ Figure left out by the editor.

² Typically this form is quite distinct from the ordinary manifestation of the species, being very solid and much humped, but there seems to be every possible variation to the lighter, more compressed forms, and I do not think it is worthy of a varietal name.

1834, p. 214, pl. xv, fig. 45.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 184; * Biv. Shells, 1843, p. 184, pl. XXI, fig. 54.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* SOWERBY, Conch. Icon., XVI, 1867, pl. LV, fig. 283.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.

* *Margarita (Unio) camelus* LEA, Syn., 1836, p. 19; 1838, p. 17.

* *Margaron (Unio) camelus* LEA, Syn., 1852, p. 24; 1870, p. 37.

* *Unio compressissimus* LEA,¹ Pr. Am. Phil. Soc., IV, 1845, p. 163; * Tr. Am. Phil. Soc., X, 1848, p. 81, pl. VIII, fig. 23; * Obs., IV, 1848, p. 55, pl. VIII, fig. 23.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margaron (Unio) compressissimus* LEA, Syn., 1852, p. 24; 1870, p. 37.

Ohio, Tennessee, and Cumberland river systems; peninsula of Michigan; Kansas; Arkansas; Indian Territory; Louisiana. It is quite probable that some of the specimens reported from the southwestern part of the range belong to the next species.

† PTYCHOBANCHUS CLINTONENSIS Simpson.

* *Ptychobanchus clintonensis* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 79, pl. v, fig. 3.

Little Red River, Arkansas; Indian Territory(?); southwest Tennessee(?)

† PTYCHOBANCHUS FOREMANIANUS Lea.

* *Unio foremanianus* LEA, Pr. Am. Phil. Soc., II, 1842, p. 224; * Tr. Am. Phil. Soc., VIII, 1842, p. 247, pl. XXVII, fig. 64; * Obs., III, 1842, p. 85, pl. XXVII, fig. 64.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XXVI, figs. 1, 1a, 1b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVII, fig. 202.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.

* *Margaron (Unio) foremanianus* LEA, Syn., 1852, p. 23; 1870, p. 36.

* *Unio woodwardianus* LEA,² Pr. Ac. N. Sci. Phila., IX, 1857, p. 170.

* *Unio woodwardianus* LEA, Jl. Ac. N. Sci. Phila., IV, 1859, p. 199, pl. XXIII, fig. 82; * Obs., 1859, p. 17, pl. XXIII, fig. 82.—* ? REEVE, Conch. Icon., XVI, 1864, pl. XVI, fig. 73.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 172.

Margaron (Unio) woodwardianus LEA, Syn., 1870, p. 36.³

* *Unio velatus* CONRAD, Jl. Ac. N. Sci. Phila., 1853, p. 298, pl. XXVII, fig. 6; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.

Alabama River drainage.

¹ The type is simply an old, stunted *phaseolus*, with nearly every vestige of epidermis eroded away.

² This is the name originally given by Dr. Lea. He afterward changed it to *woodwardianus*.

³ I formerly thought *foremanianus* and *woodwardianus* distinct, but a large amount of material received from Mr. R. E. Call, from the Cahawba River, Alabama, shows that the two absolutely blend together, there being a great diversity of form, and some specimens show the capillary rays of *foremanianus* and the square spots of *woodwardianus*, while others are of a uniform tawny color.

† PTYCHOBANCHUS TRINACRUS Lea.

* *Unio trinacrus* LEA, Pr. Ac. N. Sci., Phila., V, 1861, p. 59; * JI. Ac. N. Sci., Phila., V, 1862, p. 86, pl. XII, fig. 235; * Obs., VIII, 1862, p. 90, pl. XII, fig. 235.—* SOWERBY, Conch. Icon., XVI, pl. LXXXI, fig. 428.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) trinacrus* LEA, Syn., 1870, p. 36.

Coosa River, Alabama.

† PTYCHOBANCHUS GREENI Conrad.

* *Unio greeni* CONRAD, New F.W. Shells, 1834, p. 32, pl. IV, fig. 1, p. 69.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 203.—* CONRAD, Monog., VIII, 1837, p. 69, pl. XXXVIII, fig. 2.—* HANLEY, Test. Moll., 1842, p. 191; * Biv. Shells, 1843, p. 191, pl. XXIV, fig. 6.—* CHENU, Bib. Conch., 1st ser., 1845, p. 17, pl. III, fig. 5.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVII, fig. 253.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

* *Margarita (Unio) greeni* LEA, Syn., 1836, p. 24; 1838, p. 19.

* *Margaron (Unio) greeni* LEA, Syn., 1852, p. 27; 1870, p. 42.

† * *Unio simplex* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 163; * Tr. Am. Phil. Soc., X, 1848, p. 76, pl. v, fig. 15; * Obs., IV, 1848, p. 50, pl. v, fig. 15.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

* *Margaron (Unio) simplex* LEA, Syn., 1852, p. 27; 1870, p. 42.

Black Warrior River, Alabama.

† PTYCHOBANCHUS FLAVESCENS Lea.

* *Unio flavescens* LEA, ¹ Pr. Am. Phil. Soc., IV, 1845, p. 163; Tr. Am. Phil. Soc., X, 1848, p. 72, pl. III, fig. 9; * Obs., IV, 1848, p. 46, pl. III, fig. 9.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) flavescens* LEA, Syn., 1852, p. 27; 1870, p. 43.

* *Unio flavescens* PÆTEL, Conch. Sam., III.

Black Warrior River, Alabama.

ESCHATIGENÆ.

Male and female shells alike; embryos in distinct, short ovisacs, forming a border to the entire outer gills.

Genus DROMUS Simpson, 1900.

(Type, *Unio dromus* Lea.)

Shell solid, rounded-triangular; beaks well forward, rather high; beak sculpture consisting of fine ridges running parallel with the growth lines, the furrows between the ridges interrupted at the posterior ridge; posterior ridge distinct; a series of humps runs from the beaks down to the central part of the base of the shell, which is otherwise sculptured by

¹ I have only seen a single shell of this, and it is not in the best condition. It may be only a form of *greeni*, but it is not so inflated or solid, and it has no rays.

irregular concentric ridges; epidermis beautifully painted by undulated, radiating, broken hair lines or fine maculations; hinge plate wide and flat; pseudocardinals triangular, small and low, ragged; laterals low, short, club-shaped; cavity of the beaks deep and compressed, dorsal muscle scars on the under side of the hinge shelf; adductor scars small; front part of the shell very thick, suddenly becoming thinner at the row of humps; male and female shells much alike.

Animal with the inner branchiæ much the larger, curved below, free from the abdominal sac; marsupium occupying the base of nearly the whole outer branchiæ in numerous rather indistinctly marked ovisacs, bases of the ovisacs slightly rounded; ova very minute; palpi small, curved; branchial opening very large, extending one-third of the way along the base, fringed with many brown papillæ; anal opening very large, finely crenulated.

† **DROMUS DROMUS** Lea.

* *Unio dromus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 70, pl. x, fig. 29; * Obs., I, 1834, p. 182, pl. x, fig. 29.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* CONRAD, Monog., X, 1838, p. 84, pl. XLVI, fig. 2.—* HANLEY, Test. Moll., 1842, p. 181; * Biv. Shells, 1843, p. 181, pl. XXIII, fig. 25.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* KUSTER, Conch. Cab. Unio, 1861, p. 172, pl. LIII, figs. 3, 4.—* REEVE, Conch. Icon., XVI, 1864, pl. VIII, fig. 29.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

* *Margarita (Unio) dromus* LEA, Syn., 1836, p. 16; 1838, p. 16.

* *Cyprogenia dromus* AGASSIZ, Arch. für Naturg., I, 1850, p. 48.

* *Margaron (Unio) dromus* LEA, Syn., 1852, p. 23; 1870, p. 34.

Tennessee and Cumberland River systems.

† **DROMUS CAPERATUS.** Lea.¹

* *Unio caperatus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; * Tr. Am. Phil. Soc., X, 1848, p. 75, pl. v, fig. 14; * Obs., IV, 1848, p. 75, pl. v, fig. 14.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* REEVE, Conch. Icon., XVI, 1864, pl. v, fig. 19.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.

* *Margaron (Unio) caperatus* LEA, Syn., 1852, p. 22; 1870, p. 34.

* *Unio abacoides* HALDEMAN,² Pr. Ac. N. Sci. Phila., III, 1846, p. 75; * Am. Jl. of Sci., II, 1846 (September), p. 274.

Tennessee River system.

DIAGENÆ.

Male and female shells alike; embryos contained in the outer gills in short ovisacs which run crosswise of the branchiæ, and are discharged entire into the water.

¹ Generally this form is more compressed and less humped than *D. dromus*, but I think it is probably only a variety of the latter.

² Haldeman only gave a brief description of his species, and it has never been figured. According to Lea it equals his *U. caperatus*, and I believe he is correct.

Genus STROPHITUS Rafinesque, 1820.

(Type, *Anodonta undulata* Say.)*Strophitus* RAFINESQUE, Ann. Gen. Sci. Phys. Brux., 1820, p. 316.*Uniopsis* AGASSIZ, Arch. für Naturg., 1852, p. 49.

Shell elliptical to rhomboid, inflated, subsolid, pointed or biangulate behind, with a low posterior ridge, which is sometimes double; beaks full, sculpture consisting of a few strong, concentric ridges, which curve sharply upward behind; epidermis rayed or rayless, shining; hinge line incurved in front of the beaks; teeth rudimentary, a vestigial, compressed tooth in each valve, and sometimes a secondary tooth; laterals rarely present; muscle scars shallow.

Animal with the marsupium occupying the whole of the outer gills, consisting of short, horizontal ovisacs which run directly across the gills, and are discharged through the outer wall with the ovules in them; ovules ten to twenty-five in each ovisac, in one or two rows; inner gills the larger, free in part from the abdominal sac, or wholly united; mantle generally bordered behind with square, black spots; branchial opening with numerous papillæ; anal opening papillose or crenulate.¹

† STROPHITUS EDENTULUS Say.

Alasmodonta edentula SAY, N. Harm. Diss., II, No. 22, 1829, p. 340.—* CONRAD, New F. W. Shells, 1834, p. 72.—* L. W. SAY, Terr. and Fluv. Shells, 1840, p. 10.

* *Anodonta edentula* FERUSSAC, Guer. Mag., 1835, p. 25.—* HANLEY, Test. Moll., 1842, p. 218.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CALKINS, Pr. Ottawa Ac., 1874, p. 50.—* CLESSIN, Conch. Cab. Ano., 1873, p. 107, pl. XXX, figs. 5, 6.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 55.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.

* *Margarita (Anodonta) edentula* LEA, Syn., 1836, p. 450; 1838, p. 30.

* *Anodon edentula* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* DE KAY, Zool. N. Y., Pt. 5, 1848, p. 201, pl. XVI, fig. 231.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 95, fig. 174.

* *Uniopsis edentula* AGASSIZ, Arch. für Naturg., I, 1852, p. 49.

* *Margaron (Anodonta) edentula* LEA, Syn., 1852, p. 49; 1870, p. 79.

* *Strophitus edentulus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.—* BAKER, Moll. Chicago, Pt. 1, 1898, p. 67, pl. XII, figs. 5, 6; XVII, fig. 3.

* *Anodon rugosus* SWAINSON, Zool. Ill., 1st ser., II, pl. xcvi, 1822.

* *Anodonta rugosus* HANLEY, Biv. Shells, 1843, p. 217.

* *Anodonta undulata* HILDRETH, Am. J. Sci., XIV, 1828, p. 290.—* CLESSIN, Conch. Cab. Ano., 1873, p. 79, pl. XXVII, figs. 3, 5.

* *Anodon undulata* GOULD, Inv. of Mass., 1841, p. 120, fig. 79; 1870, p. 182, fig. 482.

* *Unio undulata* DESHAYES, Tr. Elem., II, 1853, p. 217, pl. XXX, figs. 8, 9.

* *Anodon undulatus* SOWERBY, Rich. Faun. Bor. Am., III, 1836, p. 316.—* SOWERBY, Conch. Icon., XVII, 1867, pl. XI, fig. 30.

* *Anodon areolatus* SWAINSON, Zool. Ill., 2d ser., I, 1829, pl. XVIII.

* *Anodonta areolatus* FERUSSAC, Guer. Mag., 1835, p. 25.

¹In this remarkable group of mollusks the changes that take place in the gills when they are used as a marsupium only last as long as they are gravid. When the short ovisacs are discharged the gill becomes an ordinary gill again.

- * *Anodon marginata* FERUSSAC, Guer. Mag., 1835, p. 25.
 * *Anodonta ferussaciana* FERUSSAC, Guer. Mag., 1835, p. 25.
 * † *Margarita (Anodonta) wardiana* LEA, Syn., 1836, p. 50; 1838, p. 30.
 * *Anodonta wardiana* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 46, pl. XIV, fig. 42; * Obs., II, 1838, p. 46, pl. XIV, fig. 42.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 220; * Biv. Shells, 1843, p. 220.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* PÆTEL, Conch. Sam., III, 1890, p. 186.—* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* B. H. WRIGHT, Check List, 1888.
 * *Anodon wardiana* SOWERBY, Conch. Icon., XVII, 1867, pl. XXVIII, fig. 114.
 * *Margaron (Anodonta) wardiana* LEA, Syn., 1852, p. 49; 1870, p. 79.
 * *Anodonta virgata* CONRAD, Cover of Mon. No. 5, 1836.
 * *Strophitus virgatus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.
 * *Anodon unadilla* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 199, pl. XV, fig. 228.
 * *Strophitus unadilla* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.
 * *Anodon undulata* GOULD, Inv. Mass., 1841, p. 120, fig. 79; * 1870, p. 182, fig. 79.
 * † *Anodonta tetragona* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 165; * Tr. Am. Phil. Soc., X, 1848, p. 82, pl. VIII, fig. 25; * Obs., IV, 1848, p. 56, pl. VIII, fig. 25.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* B. H. WRIGHT, Check List, 1888.
 * *Margaron (Anodonta) tetragona* LEA, Syn., 1852, p. 51; 1870, p. 81.
 * *Strophitus tetragona* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.
 * † *Anodonta arkansasensis* LEA, Tr. Am. Phil. Soc., XI, 1852, p. 293, pl. XXIX, fig. 56; * Obs., V, 1852, p. 49, pl. XXIX, fig. 56.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 176.
 * *Margaron (Anodonta) arkansasensis* LEA, Syn., 1852, p. 50; 1870, p. 80.
 * *Strophitus arkansasensis* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 262.
 * † *Anodonta shefferiana* LEA, Tr. Am. Phil. Soc., X, 1852, p. 288, pl. XXVI, fig. 50; * Obs., V, 1852, p. 44, pl. XXVI, fig. 50.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* PÆTEL, Conch. Sam., III, 1890, p. 184.
 * *Margaron (Anodonta) shefferiana* LEA, Syn., 1852, p. 51; 1870, p. 81.
 * *Strophitus shefferiana* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.
 * *Anodonta shefferiana* CLESSIN, Conch. Cab. Ano., 1853, p. 243, pl. XVII, figs. 5-7.
 * *Anodon shefferiana* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXV, fig. 143.
 * *Anodonta shafferiana* B. H. WRIGHT, Check List, 1888.
 * † *Anodonta showalterii* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 307; * Jl. Ac. N. Sci. Phila., 1862, p. 215, pl. XXXIII, fig. 284; * Obs., IX, 1863, p. 37, pl. XXXIII, fig. 284.—* CLESSIN, Conch. Cab. Ano., 1874, p. 156, pl. LI, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 184.
 * *Anodon showalterii* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVII, fig. 104.
 * *Margaron (Anodonta) showalterii* LEA, Syn., 1870, p. 79.
 * *Alasmodon rhombica* ANTHONY, Am. Jl. Conch., I, 1865, p. 158, pl. XII, fig. 5.
 * *Margaritana rhombica* PÆTEL, Conch. Sam., III, 1890, p. 173.
 * *Anodonta salmonea* CLESSIN, Conch. Cab. Ano., 1873, p. 91, pl. XXIV, figs. 1, 2.

† STROPHITUS EDENTULUS var. PAVONIUS Lea.

- * *Anodonta pavonia* LEA, Tr. Am. Phil. Soc., VI, 1836, p. 78, pl. XXI, fig. 65; * Obs., II, 1838, p. 78, pl. XXI, fig. 65.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 239.—* HANLEY, Test. Moll., 1842, p. 218.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* MUSE-GROVE, Phot. Conch., 1863, pl. 1, fig. 9.—* CLESSIN, Conch. Cab. Ano., 1873, p. 156, pl. XXX, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 183.
 * *Margarita (Anodonta) pavonia* LEA, Syn., 1838, p. 30.
 * *Anodon pavonia* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 203, pl. XL, fig. 358.—

- * CATLOW and REEVE, *Conch. Nom.*, 1845, p. 67.—* SOWERBY, *Conch. Icon.*, XVII, 1870, pl. XXXII, fig. 128.
 * *Margaron (Anodonta) paronia* LEA, *Syn.*, 1852, p. 50; 1870, p. 79.
 * *Strophitus parvius* BAKER, *Moll. Chicago*, Pt. 1, 1898, p. 68, pl. III, fig. 5; v, fig. 3.
 * *Anodon annulatus* SOWERBY, *Conch. Icon.*, XVII, 1867, pl. XVIII, fig. 67.

Entire Mississippi drainage; St. Lawrence system and south in streams draining into the Atlantic to North Carolina; north in the British possessions to Lake Winnipeg; southwest to central Texas; Tyner, Alabama.

† STROPHITUS UNDULATUS Say.¹

- Anodonta undulata* SAY, *Nich. Enc.*, II, 1816, pl. III, fig. 5.—SHORT and EATON, *Transylvania Jl.*, 1831, p. 81.—* FERUSSAC, *Guer. Mag.*, 1835, p. 25.—* C. B. ADAMS, F. W. and L. S. of Vt., 1842, p. 15.—* HANLEY, *Test. Moll.*, 1842, p. 217; *Biv. Shells*, 1843, p. 217.—* H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 503.—* LATCHFORD, *Tr. Ot. F. N. Cl.*, 1882, p. 55.—* B. H. WRIGHT, *Check List*, 1888.—* H. CARPENTER, *Naut.*, IV., 1890, p. 57.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 186.
 * *Margarita (Anodonta) undulata* LEA, *Syn.*, 1836, p. 50; 1838, p. 30.
 * *Anodon undulata* CATLOW and REEVE, *Conch. Nom.*, 1845, p. 68.
 * *Alasmodonta undulata* C. B. ADAMS, *Thompson's Hist. Vt.*, 1842, p. 165.
 * *Margaron (Anodonta) undulata* LEA, *Syn.*, 1852, p. 49; 1870, p. 79.
 * *Strophitus undulatus* STIMPSON, *Shells of N. Eng.*, 1851, p. 15.—* CONRAD, *Pr. Ac. N. Sci. Phila.*, VI, 1853, p. 263.
 * *Anodonta pennsylvanica* LAMARCK, *An. sans Vert.*, VI, 1819, p. 86.—* STARK, *Elem. Nat. Hist.*, II, 1828, p. 89.—* DESHAYES, *An. sans Vert.*, 2d ed., VI, 1835, p. 567; 3d ed., II, 1839, p. 678.—* DELESSERT, *Rec. Coq. Lam.*, 1841, pl. XIII, figs. 4a, 4b.—* CHENU, *Ill. Conch.*, 1858, pl. III, figs. 5, 5a.—* H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 503.
 * *Anodon papyraceus* ANTHONY, *Am. Jl. Conch.*, I, 1865, p. 161, pl. XV, fig. 2.—* SOWERBY, *Conch. Icon.*, XVII, 1867, pl. XIV, fig. 46.
 * *Anodonta papyracea* B. H. WRIGHT, *Check List*, 1888.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 183.
 * *Margaron (Anodonta) papyracea* LEA, *Syn.*, 1870, p. 81.
 * *Anodon quadriplicatus* SOWERBY, *Conch. Icon.*, XVII, 1867, pl. XXVIII, fig. 110.

Northern New England to Virginia, in streams draining into the Atlantic. This species is reported from Manitoba, but it is probable that the specimens from that region are *S. edentulus*.

† STROPHITUS CONNESAUGAENSIS Lea.

- * *Margaritana connesaugaensis* LEA, *Pr. Ac. N. Sci. Phila.*, II, 1857, p. 135; * *Jl. Ac. N. Sci. Phila.*, IV, 1859, p. 229, pl. XXXII, fig. 113; * *Obs.*, VII, 1859, p. 47, pl. XXXII, fig. 113.—* B. H. WRIGHT, *Check List*, 1888.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 172.
 * *Margaron (Margaritana) connesaugaensis* LEA, *Syn.*, 1870, p. 69.
 * *Unio connesaughensis* SOWERBY, *Conch. Icon.*, XVI, 1868, pl. LXXXVIII, fig. 474.
 * *Margaritana connesaughensis* CLESSIN, *Conch. Cab. Ano.*, 1875, p. 269, pl. LXXXI, figs. 7, 8.

¹ Much confusion exists concerning this and the preceding species. The *edentulus* is much the larger and solidier shell; the *undulatus* being a small, thin form (Say's figure is only about half an inch long, from a young or very dwarf specimen), usually quite distinctly biangulate behind. The latter is confined to the Atlantic drainage, while the former is found in this area and in the Mississippi Valley.

- *†*Margaritana alabamensis* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 41; *Jl. Ac. N. Sci. Phila., V, 1862, p. 104, pl. XVI, fig. 249; *Obs., VIII, 1862, p. 108, pl. XVI, fig. 249.—*CLESSIN, Conch. Cab. Ano., 1876, p. 264, pl. LXXX, fig. 5.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 172.
- **Unio alabamensis* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXII, fig. 433.
- **Margaron (Margaritana) alabamensis* LEA, Syn., 1870, p. 68.

Alabama River system.

†STROPHITUS SPILLMANII Lea.

- **Margaritana spillmanii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 138; *Jl. Ac. N. Sci. Phila., V, 1862, p. 105, pl. XVII, fig. 252; *Obs., VIII, 1862, p. 109, pl. XVII, fig. 252.—*CLESSIN, Conch. Cab. Ano., 1876, p. 264, pl. LXXXII, figs. 5, 6.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 174.
- **Unio spillmanii* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXII, fig. 435.

Tombigbee River, Mississippi.

†STROPHITUS TOMBIGBEENSIS Lea.

- **Margaritana tombigbeensis* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 138; *Jl. Ac. N. Sci. Phila., V, 1862, p. 107, pl. XVIII, fig. 255; *Obs., VIII, 1862, p. 111, pl. XVIII, fig. 255.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 174.
- **Margaron (Margaritana) tombigbeensis* LEA, Syn., 1870, p. 68.
- **Margaritana (Alasmodonta) tombigbeensis* CLESSIN, Conch. Cab. Ano., 1876, p. 268, pl. LXXXI, figs. 3, 4.

Tombigbee River, Mississippi.

†STROPHITUS GESNERII Lea.

- **Margaritana gesnerii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 138; *Jl. Ac. N. Sci. Phila., V, 1862, p. 211, pl. XXXII, fig. 280; *Obs., IX, 1863, p. 33, pl. XXXII, fig. 280.—*B. H. WRIGHT, Check List, 1888.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIV, fig. 446.
- **Margaron (Margaritana) gesnerii* LEA, Syn., 1870, p. 67.
- **Margaritana gesneri* PÆTEL, Conch. Sam., III, 1890, p. 173.

Uphaupee and Swamp creeks, Alabama.

†STROPHITUS ELLIOTTII Lea.

- **Margaritana elliottii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 138; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 226, pl. XXXI, fig. 108; *Obs., VII, 1859, p. 44, pl. XXXI, fig. 108.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 173.
- **Margaron (Margaritana) elliottii* LEA, Syn., 1870, p. 68.
- **Margaritana (Alasmodonta) elliottii* CLESSIN, Conch. Cab. Ano., 1876, p. 267, pl. LXXXII, figs. 3, 4.
- *†*Margaritana elliptica* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 113; *Jl. Ac. N. Sci. Phila., V, 1862, p. 106, pl. XVIII, fig. 254; *Obs., VIII, 1862, p. 110, pl. XVIII, fig. 254.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 173.
- **Margaron (Margaritana) elliptica* LEA, Syn., 1870, p. 68.
- **Margaritana (Alasmodonta) elliptica* CLESSIN, Conch. Cab. Ano., 1876, p. 270, pl. LXXXI, figs. 5, 6.

Columbus, Georgia; Columbus, Mississippi.

?STROPHITUS RADIATUS Conrad.

**Alasmodonta radiata* CONRAD, Am. Jl. Sci., XXV, 1834, p. 341, pl. I, fig. 10.¹

Small streams of southern Alabama.

HOMOGENÆ.

Male and female shells alike, oval to elongate; beak sculpture coarse; embryos filling the entire outer gills in the form of thick, smooth pads; the ovisacs not separated by sulci.

Genus ANODONTA (Bruguiere em.) Lamarck, 1799.

(Type, *Mytilus cygneus* Linnæus.)

Mya LINNÆUS, part, Syst. Nat., 1758, p. 1158.

Limnaea POLI, Test. Utriusque Sic., I, 1791, p. 31; II, 1795, p. 253.

Anodontites BRUGUIERE, Jl. Hist. Nat., I, 1792, p. 131.

Anodonta LAMARCK, Prodrome Class. Coq., 1799, p. 87.

Anodon OKEN, Lehrb. Nat. Zool., I, 1815, p. 238.

Anodontes CUVIER, Regne An., II, 1817, p. 472.

Shell elliptical, thin, inflated, often slightly winged posteriorly; beak sculpture consisting of rather numerous more or less parallel ridges, usually somewhat doubly looped, and becoming slightly nodulous on the loops; surface generally smooth, shining; hinge edentulous, reduced to a mere line, regularly curved; muscle scars rather faint; nacre dull.

Animal with the marsupium occupying the whole outer gills, when filled forming a smooth, very thick, liver-colored pad; gills free from the abdominal sac from one-half to their entire length; palpi generally large; branchial opening papillose; anal opening without papillæ, though sometimes very slightly crenulate; superanal opening generally small, widely separated from the anal.

(Group of *Anodonta cygnea*.)

Shell very evenly rounded in front, pointed behind, the point elevated above the base, more or less winged on post dorsal part, the line from the posterior part of the wing to the hinder point usually incurved; beaks flattened, the sculpture consisting of numerous more or less concentric ridges, which are sometimes broken up into rather irregular corrugations.

Animal with the inner gills the larger, free from the abdominal sac nearly or quite their whole length; palpi large.

¹I can make nothing out of this, the figure being poor and the description meager. Conrad places it in *Strophitus* in his Synopsis, 1853.

† ANODONTA CYGNEA Linnæus.¹

- **Mytilus cygneus* LINNÆUS,² Syst. Nat., 10th ed., 1758, I, p. 706, No. 1158.—MÜLLER, Vermium, II, 1774, p. 208.—* DA COSTA, Hist. Nat. Test. Brit., 1778, p. 214, pl. xv, fig. 2.—* GMELIN, Syst. Nat., 13th ed., 1778, p. 3335.—* SCHRÖTER, Flussconch., 1779, p. 162, pl. III, fig. 1; * Ein. Conch., III, 1783, p. 440.—* OLIVI, Zool. Adr., 1792, p. 125.—* DONOVAN, Brit. Shells, II, 1800, pl. LV.—MONTAGU, Test. Brit., 1803, p. 170.—TURTON, Brit. Faun., 1807, p. 165.—* MATON and RACKETT, Tr. Linn. Soc. Lond., VIII, 1807, p. 109, pl. III, figs. 2, 3.—* SCHUMACHER, Ess. Norv. Syst., 1817, p. 106.—* DILLWYN, Cat., 1817, p. 315.—TURTON, Conch. Diet. 1819, p. 115.—* SHEPPARD, Tr. Linn. Soc. Lond., XIII, 1820, p. 84, pl. v, fig. 3.—* WOOD, Ind. Test., 1825, p. 58, pl. XII, fig. 32f.—* HANLEY, Ipsa Linn. Conch., 1855, p. 487.—* WOOD, Ind. Test. Rev., 1856, p. 69, pl. XII, fig. 32f.
- **Anodontes cygneus* CUVIER, Regne An., II, 1817, p. 472.
- **Anodon cygneus* TURTON, Conch. Ins. Brit., 1822, p. 239.—* FLEMING, Hist. Brit. Moll., 1828, p. 415.—* TURTON, Man. L. and F. W. Shells, 1831, p. 17, fig. 8.—* BROWN, Land and F. W. Conch., 1836, p. 99, pl. XI, figs. 1-3c.—* THOMPSON, Ann. and Mag. N. Hist., VI, 1840, p. 196.—* BROWN, Ill. Rec. Conch., 1844, p. 79, pl. XXVIII, etc.—* TURTON, Man. L. and F. W. Shells, 1857, p. 271, fig. 65, pl. I, fig. 8.—* TATE, L. and F. W. Moll. Brit., 1866, pl. I.—* SOWERBY, Conch. Icon., XVII, 1870, pl. I, fig. 2.
- **Anodonta cygnea* DRAPARNAUD, Hist. Moll. Fr., 1806, p. 134, pl. XII, fig. 1; pl. XI, fig. 6.—* MILLET, Moll. Maine et Loire, 1813, p. 76.—* GAERTNER, Vers. Syst., 1813, p. 38.—* BRARD, Hist. Coq. Paris, 1815, p. 234, pls. IX, X.—* KLEES, Desc. Test., 1818, p. 43.—* LAMARCK, An. sans Vert., VI, 1819, p. 84.—* C. PFEIFFER, L. and S. Moll., 1821, Pt. 1, p. 111, pl. v, fig. 4.—BOSC, Hist. Nat. Coq., 1824, III, p. 142.—* BLAINVILLE, Man., 1825, p. 358, pl. LXVI, fig. 1.—* WAARDENBERG, Com. Hist. Nat. An., 1827, p. 37.—* STARK, Nat. Hist., 1828, II, p. 89.—* GUERIN, Icon. Regne An., II, 1829, pl. xcviii, fig. 5.—* ROSSMASSLER, Icon., I, 1835, p. 111, pl. III, fig. 67, etc.—* GOUPIL, Hist. Moll. Sarthe, 1835, p. 81.—* WYATT, Man. Conch., 1838, p. 68, pl. XI, fig. 2.—* PORRO, Mal. Como, 1838, p. 110.—* GRAS, Moll. Isere, 1840, p. 70, pl. VI, fig. 7.—* HANLEY, Test. Moll., 1842, p. 216; * Biv. Shells, 1843, p. 216.—* SCHOLZ, Schleis. L. and W. Moll., 1843, p. 118.—* MORELET, Moll. Port., 1845, p. 100.—* PUTON, Moll. Vosges, 1847, p. 68.—* GASSEIZ, Moll. Ag., 1849, p. 189.—* STEIN, Die Leb. Schneck., 1850,

¹The number of specific names bestowed on the Anodontas of Europe must run up into the thousands. I have gone over the literature as carefully as possible, and large series of specimens from many localities, and I confess that I am absolutely unable to separate these forms specifically. The variations of form, size, color, solidity, and even texture are sufficient for a large number of species if they were not everywhere connected by intermediate examples. The new school of conchologists has named every conceivable variation, and in very many cases distorted individuals. Europe is a densely settled region, and it is possible that the waters of the streams and ponds in many places may be so affected by sewage and other offal as to produce many changes in the mollusks living in them. I shall attempt to recognize a few of the leading forms as varieties, referring them to the author originally describing them, but on account of the enormous amount of literature pertaining to these forms and its confused condition, I can not attempt to trace out these varieties among the descriptions of subsequent writers.

²According to Hanley (Shells of Linnæus, p. 144) the *A. cygnea* var. *cellensis* of Rossmassler (Icon., IV, 1830, pl. XIX, fig. 280) is marked for this in the Linnæan cabinet. It is a large, rather elongated shell, slightly biangulate behind, somewhat cut away on the upper posterior part, and having fairly full beaks.

- p. 100.—*DROUET, Nay. Fr., 1852, p. 5, pl. 1; *Rev. et Mag., IV, 1852, p. 55.—*DUPUY, Hist. Moll. Fr., 1852, p. 601, pl. xv, fig. 14.—*FORBES and HANLEY, Hist. Brit. Moll., II, 1853, p. 155, pl. xxxix, fig. 3; XL, figs. 2, 3; XLI.—*KUSTER, Conch. Cab. Ano., 1853, p. 58, pl. xv.—VON WAHL, Arch. für Natur K. Liv., 2d ser., I, 1855, p. 133.—*MOQUIN-TANDON, Moll. Fr., II, 1855, p. 557, pl. XLIV.—*VON WAHL, Suss. Biv. Liv., 1855, p. 133.—*NORDENSKIÖLD and NYLANDER, Fin. Moll., 1856, p. 90, pl. VII, fig. 78.—H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502; III, pl. cxviii, figs. 1, 1a, 1b.—*CHENU, Man., 1859, II, p. 145, fig. 718.—*SOWERBY, Ill. Index Brit. Shells, 1859, pl. VII, No. 4.—REEVE, Elements of Conch., II, 1860, pl. P, No. 4.—*JEFFREYS, Brit. Conch., I, 1862, p. 41.—*REEVE, L. and F. W. Moll. Br., 1863, p. 215, fig. 1.—*BIELZ, Faun. Sieben, 1863, p. 195.—*HOUGHTON, Int. Obs., 1864, p. 68, pl. [I], figs. 1, 2.—*BROT, Etudes Nayades, Lemane, 1867, p. 28, pl. I, fig. 1; pl. II, figs. 1, 2.—*KOBELT, Faun. Nass. Moll., 1871, p. 247.—*WESTERLUND, Faun. S. N. and D., 1873, p. 583.—DROUET, Mem. Acad. Dijon, VIII, 1882, p. 25 (reprint).—*L. ADAMS, Coll. Manual, 1884, p. 21, pl. II, fig. 1.—*PÆTEL, Conch. Sam., III, 1890, p. 178.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 199.—*LOCARD, Coq. de Fr., 1893, p. 234.—*WESTERLUND, Act. Soc. F. and F. F., XIII, No. 7, 1897, p. 168.
- Symphynota cygnea* LEA, Tr. Am. Phil. Soc. 1830, p. 456; Obs., I, 1834, p. 70.
- **Margarita (Anodonta) cygnea* LEA, Syn., 1836, p. 48; 1838, p. 29.
- **Anodon cygnea* CROUCH, Ill. Int. Lam., 1827, pl. IX, fig. 6. CATLOW and REEVE, Conch. Nom., 1845, p. 66.
- **Margaron (Anodonta) cygnea* LEA, Syn., 1852, p. 47; 1870, p. 76.
- **Anodonta cygnea* GASSEIS, Moll. Ag., 1849, p. 189.
- **Anodonta radiatus* MÜLLER, Vermium, 1774, p. 209.
- **Mytilus zellensis* GMELIN, Syst. Nat., 13th ed., I, 1788, p. 3262.
- **Anodonta zellensis* WAARDENBERG, Hist. Nat. Animalium, 1827, p. 37.
- **Anodonta cellensis* C. PFEIFFER, Deuts. L. and Suss. Moll., I, 1821, p. 110, pl. VI, fig. 1.—*BOSC, Hist. Nat. Coq., III, 1824, p. 144.—*ROSSMASSLER, Icon., IV, 1836, p. 22, pl. XIX, fig. 280.—*SCHOLZ, Schleis. L. and W. Moll., 1843, p. 119.—*STABILE, Faun. Lug., 1845, p. 58, pl. II, fig. 69.—*TROSCHEL, Arch. für Nat., XIII, Pt. 1, 1847, p. 272.—*DES MOULINS, Actes. Soc. L. Bord, XVIII, 1852, p. 495.—*DROUET, Rev. et Mag., IV, 1852, p. 60.—*DUPUY, Nay. Fr. No. 2, 1852, p. II, pl. II.—*KUSTER, Conch. Cab. Ano., 1853, p. 16, pl. IV, fig. 3; v, figs. 1-4; VI, fig. 1.—*BIELZ, Faun. Sieben., 1863, p. 197.—*BROT, Coq. Lemane, 1867, p. 33, pl. III, figs. 1-3; IV, figs. 1, 2; VI, fig. 4.—*SCHRENCK, Reis. und F. Am. L., II, 1867, p. 722.—*KOBELT, Faun. Nass. Moll., 1871, p. 251.—*LEHMAN, Die Schneck., 1873, p. 297.—*PÆTEL, Conch. Sam., III, 1890, p. 177.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 211.
- **Anodonta variabilis* DRAPARNAUD, Tab. Moll. Fr., 1801, p. 108.—FOURNEL, Faun. Moselle, I, 1836, p. 487.
- **Mytilus avonensis* MONTAGU, Test. Brit., 1803, p. 172.—*TURTON, Conch. Dict., 1819, p. 116.—*WOOD, Ind. Test. Rev., 1856, p. 69, pl. XII, fig. 34.
- **Anodon avonensis*, TURTON, Conch. Ins. Brit., 1822, p. 211.
- **Anodonta avonensis* MOQUIN-TANDON, Moll. France, II, 1855, p. 562, pl. XLVI, figs. 7, 8.
- **Mytilus avoensis* TURTON, Brit. Faun., 1807, p. 165.
- **Mytilus stagnalis* TURTON, Brit. Faun., 1807, p. 165.—*DILLWYN, Cat. I, 1817, p. 316.—TURTON, Conch. Dict., 1819, p. 115.
- **Anodonta stagnalis* BOSC, Hist. Nat. Coq., III, 1824, p. 143.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 199.—*LOCARD, Coq. Fr., 1893, p. 228.
- **Mytilus fucatus* DILLWYN, Cat. I, 1817, p. 317.
- **Anodonta sulcata* LAMARCK, An. sans Vert., VI, 1819, p. 85.—*NILSSON, Hist. Moll. Svec., 1822, p. 113.—*DESHAYES, Enc. Meth., II, 1827, p. 147, pl. CCII.—*KLEE-

- BERG, Moll. Bor., 1828, p. 36 —* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 566; 3d ed., II, 1839, p. 678.—* HANLEY, Biv. Shells, 1843, p. 216.
- * *Anodonta intermedia* LAMARCK, An. sans Vert., VI, 1819, p. 86.—* C. PFEIFFER, Deuts. L. and S. Moll., 1821, Pt. 1, p. 113, pl. VI, fig. 3.—* NILSSON, Hist. Moll. Svec., 1822, p. 117 —* WAARDENBERG, Hist. Nat. Animalium, 1827, p. 37.—* DESHAYES, Enc. Meth., II, 1827, p. 147, pl. CCI, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 74.—* LOCARD, Coq. de Fr., 1893, p. 263.
- * *Anodon intermedia* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
- * *Anodon intermedius* KENYON, Mag. Nat. Hist., I, 1829, p. 426, fig. 185.
- * *Mytilus incrassatus* SHEPPARD, Tr. Linn. Soc. Lond., XIII, 1820, p. 85, pl. v, fig. 4.
- * *Anodonta incrassata* LOCARD, Coq. de Fr., 1893, p. 260.
- * *Mytilus macula* SHEPPARD, Tr. Linn. Soc. Lond., XIII, 1820, p. 86, pl. v, fig. 6.
- * *Anodonta paludosus* TURTON, Conch. Ins. Brit., 1822, p. 240, pl. xv, fig. 6.
- * *Anodonta piscinalis* NILSSON, Hist. Moll. Svec., 1822, p. 116.—* ROSSMASSLER, Icon., IV, 1836, p. 23, pl. XIX, fig. 281, etc.—* HANLEY, Biv. Shells, 1843, p. 216.—* GAS-SIES, Moll. Agen., 1849, p. 191, pl. IV, fig. 1.—* DROUET, Rev. et Mag., IV, 1852, p. 285.—* DUPUY, Hist. Moll. Fr., 1852, p. 612, pl. XXI, figs. 17, 18.—* DROUET, Nay. France, No. 5, 1852, p. 11, pl. v, fig. 1.—* DES MOULINS, Actes Soc. L. Bord., XVIII, 1852, p. 496.—* KUSTER, Conch. Cab. Ano., 1853, p. 45, pl. III, figs. 4, 5.—* MOQUIN-TANDON, Moll. Fr., II, 1855, p. 561, pl. XLV, figs. 5, 6; XLVI, figs. 1, 1a.—* KOBELT, Faun. Nass. Moll., 1871, p. 249.—* LEHMAN, Die Schnecken, 1873, p. 300.—* PÆTEL, Conch. Sam., III, 1890, p. 183.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 284; * Kong. Svensk. Vet. 1876, XIV, No. 12, p. 66.
- * *Anodonta ventricosa* C. PFEIFFER, Deuts. L. and Suss. Moll., Pt. 2, 1825, p. 30, pl. III, figs. 1-6.—* DROUET, Rev. et Mag., IV, 1852, p. 58; Nay. France, No. 2, 1852, p. 6.—* KUSTER, Conch. Cab. Ano., 1853, p. 56, pl. XI, figs. 3-5.—* BROT, Coq. Fam. Nay. Lem., 1867, p. 32.—* DROUET, Mem. Ac. Dij., 3d ser., VII, 1882, p. 29 (reprint).—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 203.—* LOCARD, Coq. de Fr., 1893, p. 230.
- Anodonta minima* MILLET, Mem. Soc. Agr., Aug., 1833, p. 241, pl. XII, fig. 2.—* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* DUPUY, Hist. Moll. Fr., 1852, p. 611, pl. XX, fig. 20.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 277.—* LOCARD, Coq. de Fr., 1893, p. 307.
- Anodonta oblonga* MILLET, Mem. Soc. Agr., Aug., 1833, p. 242, pl. XII.—* DROUET, Rev. et Mag., IV, 1852, p. 63; Nay. Fr., No. 2, 1852, p. 14; His. Moll. Fr., 1852, p. 65, pl. XVIII, fig. 13.—* WESTERLUND, Faun. Pal., II, Pt. 7., 1890, p. 215.—* LOCARD, Coq. de Fr., 1893, p. 273.
- * *Anodon oblongus* SOWERBY, Conch. Icon., XVII, 1867, pl. xv, fig. 54.
- * *Anodonta attenuata* HELD, Isis, 1836, p. 280.
- * *Anodonta exulcerata* PORRO, Mal. Como., 1838, p. 111, pl. II, fig. 12.—* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXIII, fig. 131.—* CLESSIN, Conch. Cab. Ano., 1874, p. 127, pl. XL, figs. 3, 4.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 262.—* LOCARD, Coq. de Fr., 1893, p. 289.
- * *Anodonta coarctata* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 142, pl. LV, fig. 2.—* DUPUY, Hist. Moll. Fr., 1852, p. 616, pl. XX, fig. 51.
- * *Anodonta elongata* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 141, pl. LV, fig. 1.—* PUTON, Moll. Vosges, 1847, p. 69.—* DUPUY, Hist. Moll. Fr., 1852, p. 620, pl. XVI, fig. 16.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 307.
- * *Anodonta glabra* STABILE, Faun. Lug., 1845, p. 58, pl. II, fig. 68.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 257.
- * *Anodonta lusitana* MORELET, Moll. Port., 1845, p. 103, pl. XII, fig. 1.—* CLESSIN,

- Conch. Cab. Ano., 1873, p. 85, pl. XXIII, fig. 1.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 256.
- * *Anodonta regularis* MORELET, Moll. Port., 1845, p. 100, pl. x.—* CLESSIN, Conch. Cab. Ano., 1873, p. 85, pl. XXIII, fig. 2.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 208.
- * *Anodonta maeilenta* MORELET, Moll. Port., 1845, p. 102.—* CLESSIN, Conch. Cab. Ano., 1873, p. 87, pl. XXIV, fig. 2.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 227.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
- * *Anodonta ranarum* MORELET, Moll. Port., 1845, p. 104, pl. XII, fig. 2.—* CLESSIN, Conch. Cab. Ano., 1873, p. 86, pl. XXIII, fig. 3.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 217.
- * *Anodonta atrovirens* PHILIPPI, Menke's Zeits., 1848, p. 130.—* SOWERBY, Conch. Icon., XVII, 1867, pl. XIII, fig. 41.
- * *Anodonta milletii* RAY and DROUET, Rev. Zool., 1848, p. 3, pl. I, figs. 1-2.—* DUPUY, Hist. Moll. Fr., 1852, p. 617, pl. XXI, fig. 16.—* DROUET, Nay. France, 1852, p. 15.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 291.—* LOCARD, Coq. de Fr., 1893, p. 296.
- * *Anodonta grateloupiana* GASSIES, Moll. Agenais, 1849, p. 193, pl. II, figs. 13-15; pl. III, fig. 1, 1B; pl. IV, fig. 2.—* DES MOULINS, Actes Soc. L. Bord., XVIII, 1852, p. 496.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 303.
- * *Pseudonodonta grateloupiana* BOURGNIGNET, Mat. Moll. Aceph., I, 1881, p. 29.
- * *Anodonta dupuyi* RAY and DROUET, Rev. Zool., 1849, p. 32, pls. I, II.—* DROUET, Rev. et Mag., 1849, p. 11, pl. II, figs. 1-2; * Nay. Fr., 1852, pl. VII.—* DUPUY, Hist. Moll. Fr., 1852, p. 606, pl. XVII, fig. 13.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 234.—* LOCARD, Coq. de Fr., 1893, p. 254.
- Anodonta rayi* DROUET, Cat. Extram., 1849, No. 35.—* DUPUY, Hist. Moll. Fr., 1852, p. 614, pl. XX, fig. 22.—* SOWERBY, Conch. Icon., XVII, 1867, pl. XIX, fig. 72.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 251.—* LOCARD, Coq. de Fr., 1893, p. 276.
- * *Anodonta idrina* SPINELLI, Cat. Moll. Bresc., 1851, p. 19, pl. I, fig. 1.—* CLESSIN, Conch. Cab. Ano., 1875, p. 167, pl. LV, figs. 1, 2.—* KOBETT, Icon., IV, 1876, p. 67, pl. CXX, figs. 1156-1159.—* CLESSIN, Moll. Oest., 1887, p. 712, fig. 484.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 258.
- * *Anodonta arelatensis* DUPUY, Hist. Moll. Fr., 1852, p. 611, pl. XIX, fig. 14.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 264.
- * *Anodontites europæ* LEACH, Syn. Moll. Gt. Br., 1852, p. 326.
- * *Anodonta mouliinsiana* DUPUY, Hist. Moll. Fr., 1852, p. 614, pl. XX, fig. 19.—* DES MOULINS, Actes Soc. L. Bord., XVIII, 1852, p. 494.—* DROUET, Nay. Fr., 1854, p. 5.—* KOBETT, Icon., VI, 1879, p. 45, pl. CLXV, fig. 1055.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 217.
- * *Anodonta normandi* DUPUY, Hist. Moll. Fr., 1852, p. 620, pl. XVI, fig. 15.—* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVIII, fig. 109.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 303.
- * *Anodonta parvula* DROUET, Nay. Fr., No. 5, 1852, p. 9, pl. IV, fig. 2.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 265.—* LOCARD, Coq. de Fr., 1893, p. 283.
- * *Anodonta rossmassleriana* DUPUY, Hist. Moll. Fr., 1852, p. 608, pl. XVIII, fig. 14.—* DROUET, Nay. Fr., No. 5 and 6, 1854, p. 6.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 237.—* LOCARD, Coq. de Fr., 1893, p. 266.
- * *Anodonta subponderosa* DUPUY, Hist. Moll. Fr., 1852, p. 607, pl. XVII, fig. 14.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 234.—* LOCARD, Coq. de Fr., 1893, p. 252.
- * *Anodonta tenella* KUSTER, Conch. Cab. Ano., 1852, p. 63, pl. IX, fig. 5.
- * *Anodonta scaldiana* DUPUY, Hist. Moll. Fr., 1852, p. 613, pl. XIX, fig. 12.—* KOBETT, Icon., VII, 1880, p. 35, pl. CXCIV, fig. 1960.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 251.—* LOCARD, Coq. de Fr., 1893, p. 272.

- * *Anodonta luxata* KUSTER, Conch. Cab. Ano., 1853, p. 9, pl. III, fig. 1.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 238; LOCARD, Coq. de Fr., 1893, p. 267.
- * *Anodonta callosa* KUSTER, Conch. Cab. Ano., 1853, p. 36, pl. IX, fig. 1.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 270.
- * *Anodonta cariosa* KUSTER, Conch. Cab. Ano., 1853, p. 43, pl. IV, fig. 3; v, fig. 1; x, figs. 1, 2.—* DROUET, Mem. Ac. Dij., VII, 1882, p. 27 (reprint).—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 216.—* LOCARD, Coq. de Fr., 1893, p. 236.
- * *Anodonta arealis* KUSTER, Conch. Cab. Ano., 1853, p. 47, pl. IX, figs. 2-4.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 263.—* LOCARD, Coq. de Fr., 1893, p. 280.
- * *Anodonta charpentieri* KUSTER, Conch. Cab. Ano., 1853, p. 49, pl. XI, figs. 3, 4.—* SOWERBY, Conch. Icon., XVII, 1867, pl. XII, fig. 37.
- * *Anodonta anserirostris* KUSTER, Conch. Cab. Ano., 1853, p. 55, pl. X, fig. 3; XI, figs. 1, 2.—* DROUET, Mem. Ac. Dij., VII, 1882, p. 28.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 214.
- * *Anodonta inornata* KUSTER, Conch. Cab. Ano., 1853, p. 42, pl. III, fig. 6.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 238.—* LOCARD, Coq. de Fr., 1893, p. 267.
- * *Anodonta tumida* KUSTER, Conch. Cab. Ano., 1853, p. 48, pl. XII, figs. 1, 2.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 240.
- * *Anodonta subluxata* KUSTER, Conch. Cab. Ano., 1853, p. 52, pl. XIII, figs. 1, 2.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 258.—* LOCARD, Coq. de Fr., 1893, p. 287.
- * *Anodonta sondermannii* KUSTER, Conch. Cab. Ano., 1853, p. 54, pl. XIII, fig. 4.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 240.
- * *Anodonta opalina* KUSTER, part, Conch. Cab. Ano., 1853, p. 60, pl. XVI, figs. 1, 2.—* DROUET, Mem. Ac. Dij., VII, 1882, p. 30 (reprint).—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 284.
- * *Anodonta nilssonii* KUSTER, part, Conch. Cab. Ano., 1853, p. 61, pl. XVIII, fig. 2.¹
- * *Anodonta helvetica* BOURGUIGNAT, Rev. et Mag., XV, 1863, p. 22 (pl. XX in vol. XIV, figs. 1, 2).—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 249.
- * *Anodonta melinia* BOURGUIGNAT, Moll. peu. Con., 1863, p. 50, pl. XXVIII.—* BOURGUIGNAT, Rev. et Mag., 1865, pl. XXIV, figs. 1-5.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 229.
- * *Anodonta elachista* BOURGUIGNAT, Moll. peu. Con., 1863, p. 60, pl. XXXI, figs. 12-14.
- * *Anodonta psammita* BOURGUIGNAT, Rev. et Mag., XV, 1863, p. 21 (pl. XXI in vol. XIV, figs. 1-4).—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 269.
- * *Anodonta pictetiana* BROU, Etude Coq. Lem., 1867, p. 45, pl. VIII, figs. 1-3.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 288.
- * *Anodon simplicidus* SOWERBY, Conch. Icon., XVII, 1867, pl. XII, fig. 40.

† ANODONTA CYGNEA var. ANATINA Linnæus.²

- * *Mytilus anatinus* LINNÆUS, Syst. Nat., 10th ed., I, 1758, No. 1168.—* MÜLLER, Vermium, 1774, p. 207.—* DA COSTA, Hist. Nat. Test. Brit., 1778, p. 2151, pl. XV, fig. 2.—* SCHRÖTER, Flusse., 1779, p. 160, pl. I, figs. 2, 3; * Ein. Conch., III, 1783, p. 442.—* CHEMNITZ, Conch. Cab., VIII, 1785, p. 189, pl. LXXXVI, fig. 763.—* GMELIN, Syst. Nat., 13th ed., 1788, p. 3355.—* OLIVI, Zool. Adr., 1792, p. 125.—* DONOVAN, Brit. Shells, IV, 1802, pl. CXIII.—* MONTAGU, Test. Brit., 1803, p. 171.—* TURTON, Brit. Faun., 1807, p. 165.—* MATON and RACKETT, Tr. Linn. Soc. Lond., VIII, 1807, p. 110, pl. IIIa, figs. 1, 4.—* SCHUMACHER, Ess.

¹ Kuster's two figures on Plate XVII, which he gives for this species, are the *A. footiosa* Lea. This figure is *A. cygnea*.

² According to Hanley (Shells of Linnæus, p. 144), the *Anodonta complanata* in Rossmassler, Icon., Pt. 4, Plate XX, fig. 283, is contained in the box in the Linnæan collection marked *anatina*. This is a rather small, compressed form, slightly angular in front and behind.

- Nouv. Syst., 1817, p. 107, pl. I, fig. 5.—* DILLWYN, Cat., I, 1817, p. 317.—TURTON, Conch. Dict., 1819, p. 116.—* SHEPPARD, Tr. Linn. Soc. Lond., XIII, 1820, p. 85, pl. v, fig. 5.—* WOOD, Ind. Test., 1825, p. 58, pl. XII, fig. 33e.—* HANLEY, Ipsa. Linn. Conch., 1855, pl. 487, pl. II, fig. 1.—* WOOD, Ind. Test. Rev., 1856, p. 69, pl. XII, fig. 33.
- * *Anodon anatinus* TURTON, Conch. Ins. Brit., 1822, p. 240.—* SOWERBY, Rec. and Fos. Sh., XVII, 1823, fig.—* FLEMING, Hist. Brit. Moll., 1828, p. 415.—* REEVE, Conch. Syst., I, 1841, p. 121, pl. XCI, figs. 1, 2.
- * *Anodonta anatina* DRAPARNAUD, Hist. Moll. Fr., 1806, p. 135, pl. XII, fig. 2.—* GAERTNER, Vers. Syst., 1813, p. 37.—* MILLET, Moll. Maine et Loire, 1813, p. 75.—KLEES, Desc. Test., 1818, p. 42.—* LAMARCK, An. sans Vert., VI, 1819, p. 85.—* C. PFEIFFER, Deuts. L. und S. Moll., 1821, Pt. 1, p. 112, pl. VI, fig. 2.—* NILSSON, Hist. Moll. Svec., 1822, p. 114.—* BOSCH, Hist. Nat. Coq., III, 1824, p. 143, pl. XXIII, fig. 1.—* WAARDENBERG, Com. Hist. N. An., 1827, p. 37.—* STARK, Nat. Hist., II, 1828, p. 89.—* KLEEGER, Moll. Bor., 1828, p. 37.—* ROSSMASSLER, Icon., V and VI, 1837, p. 57, pl. XXIX, figs. 417-420.—* PORRO, Mal. Como., 1838, p. 109.—* HANLEY, Test. Moll., 1842, p. 216; Biv. Shells, 1843, p. 216.—* STABILE, Faun. Lug., 1845, p. 57, pl. II, fig. 67.—* PUTON, Moll. Vosg., 1847, p. 68.—* GASSIES, Moll. Ag., 1849, p. 190.—* MIDDENDORFF, Sib. Reise, II, 1851, p. 283, pl. XXI, fig. 4; XXIX, figs. 5, 6.—* DROUET, Rev. et Mag., IV, 1852, p. 244; Nay. Fr., 1852, p. 4, pl. IV, fig. 1.—* DUPUY, Hist. Moll. Fr., 1852, p. 610, pl. XIX, fig. 13.—* FRIELE, Norsk. L. Fersk. Moll., 1853, p. 54.—* VON WAHL, Suss. Biv. Liv., 1855, p. 122.—* MOQUIN-TANDON, Moll. Terr. et Fl. Fr., II, 1855, p. 558, pl. XLV, figs. 1, 2.—* JEFFREYS, Brit. Conch., I, 1862, p. 43.—* SCHRENCK, Reis. und Forsch. Am. L., II, 1867, p. 721.—* BROT, Etude Nay. Lem., 1867, p. 38, pl. III, fig. 4; V, fig. 2; VI, figs. 1-3; VII, figs. 1-3.—* LEHMAN, Die Schneek., 1873, p. 303.—* WESTERLUND, Faun. S. N. and D., 1873, p. 587.—* CLESSIN, Conch. Cab. Ano., 1876, p. 83, pl. XIV, figs. 3, 4; XXVI, figs. 1, 2.—* L. ADAMS, Coll. Man., 1884, p. 21, pl. II, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 176.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 225.—* LOCARD, Coq. de Fr., 1893, p. 275.
- * *Anodon anatina* CATLOW and REEVE, Conch. Nom., 1845, p. 66.
- * *Anodonta complanata* ROSSMASSLER,¹ Icon., I, 1835, p. 112, pl. III, fig. 68, IV, p. 24, pl. XX, fig. 283.—SCHOLZ, Schleis. L. und W. Moll., 1843, p. 123.—* KUSTER, Conch. Cab. Ano., 1853, p. 12, pl. III, figs. 2, 3.—* DROUET, Nay. Fr., 1854, p. 8, pl. VII, fig. 1.—* MOQUIN-TANDON, Moll. Terr. et Fluv. Fr., II, 1855, p. 560, pl. XLV, figs. 3, 4.—* VON WAHL, Arch. für Nat. Kund. Liv., 2d ser., I, p. 115.—* WESTERLUND, Faun. S. N. & D., 1873, p. 586.—* CLESSIN, Nach. Mal. Ges., 1874, p. 85; ² Deuts. Ex. Moll., 1876, p. 446, fig. 292.—* KOBELT, Icon., VI, 1879, p. 44, pl. CLXV, fig. 1650-1654.—* DROUET, Mem. Ac. Dij., VII, 1882, p. 24 (reprint).—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 301.—* PÆTEL, Conch. Sam., III, 1890, p. 178.
- * *Anodon complanatus* SOWERBY, Conch. Icon., XVII, 1867, pl. IX, fig. 21

† ANODONTA CYGNEA var. PONDEROSA C. Pfeiffer.

- * *Anodonta ponderosa* C. PFEIFFER, Deuts. L. und S. Moll., 1825, Pt. 2, p. 31, pl. IV, figs. 1-6.—* WAARDENBERG, Com. Hist. Nat. An., 1827, p. 37.—* KLEEGER, Moll. Bor., 1828, p. 37.—* ROSSMASSLER, Icon., IV, 1836, p. 24, pl. XX, fig. 282.—* PORRO, Mal. Como., 1838, p. 112.—* HANLEY, Biv. Shells, 1843, p. 216.—SCHOLZ,

¹Credited to Ziegler Museum by Rossmassler. It was published under the name *Anodonta compressa* in Menke's Synopsis, 1831, but not described.

²According to Clessin in this paper this is the only European species distinct from *A. cygnea*.

Schl. L. & W. Moll., 1843, p. 122.—* DUPUY, Hist. Moll. Fr., 1852, p. 604, pl. XVIII, fig. 12.—* KUSTER, Conch. Cab. Ano., 1853, p. 13, pl. IV, fig. 1.—* DROUET, Nay. Fr., 1854, p. 2, pl. VI.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 233.

† ANODONTA CYGNEA var. ROSTRATA Rossmassler.¹

* *Anodonta rostrata* ROSSMASSLER, Icon., IV, 1836, p. 25, pl. XX, fig. 284.²—* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* STABILLE, Faun. Lug., 1845, p. 59, pl. II, fig. 70.—* DROUET, Rev. et Mag., IV, 1852, p. 288; Nay. Fr., 1852, p. 14, pl. V, fig. 2.—* KUSTER, Conch. Cab. Ano., 1853, p. 14, pl. IV, fig. 2.—* BOURGUIGNAT, Rev. et Mag., XV, 1863, p. 23, (also XIV, pl. XXI, fig. 5.)—* DROUET, Mem. Ac. Dij., VII, 1882, p. 37 (reprint).—* PÆTEL, Conch. Sam., III, 1890, p. 184.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 246.

* *Anodonta rostratus* SOWERBY, Conch. Icon., XVII, 1867, pl. II, fig. 4.

Europe generally; Siberia; southward, perhaps, into Asia Minor. It has been reported from the Amoor River drainage, but I presume that the specimens from that region belong to the group of *A. woodiana*.

ANODONTA RETTERI Drouet.

* *Anodonta retteri* DROUET, Jl. de Conch., 1899, p. 402, fig.

Pond in the palace of the governor of Samarcand, Turkestan; very much like varieties of *A. cygnea*.

† ANODONTA LUCASI Deshayes.³

* *Anodonta lucasi* DESHAYES, Hist. Nat. Moll. Alg., 1848, pl. CVIII, figs. 1, 2.—

* MORELET, J. de Conch., II, 1851, p. 359.—* BOURGUIGNAT, Mal. Alg., 1864, II, p. 296, pls. XXIII, XXIV, fig. 1.—* SOWERBY, Conch. Icon., XVII, 1867, pl. XVII, fig. 64.—* PÆTEL, Conch. Sam., III, 1890, p. 181.

* *Margaron (Anodonta) lucasii* LEA, Syn., 1870, p. 78.

* *Anodonta embia* BOURGUIGNAT, Mal. Alg., 1864, II, p. 297, pl. XXV.—* PÆTEL, Conch. Sam., III, 1890, p. 179.

Algiers.

ANODONTA CILICIA Kobelt.

† *Anodonta cilicia* KOBELT, Icon. 1st Supp., 1895, p. 24, pl. VIIA, fig. 1.

Cilicia, north of Tarsus.

ANODONTA NUMIDICA Bourguignat.

* *Anodonta numidica* BOURGUIGNAT, Mal. Alg., 1864, II, p. 298, pl. XXIV, figs. 2-6.—

* PÆTEL, Conch. Sam., III, 1890, p. 182.

* *Anodonta letourneauxi* BOURGUIGNAT, Mal. Alg., 1864, II, p. 299, pl. XXVI, figs. 2-6.—* PÆTEL, Conch. Sam., III, 1890, p. 181.

Algiers.

¹ Credited by Rossmassler to Kokeil Museum.

² There is an *Anodonta rostrata* Held in Isis, 1836, page 280. I do not know whether it or that of Rossmassler was published first, or whether the two are the same or not.

³ Probably a valid species, yet some specimens apparently belonging to it are certainly very much like forms of *cygnea*.

ANODONTA SUBCIRCULARIS Clessin.¹

* *Anodonta subcircularis* CLESSIN, Conch. Cab. Ano., 1873, p. 87, pl. XXII, figs. 3, 4.
Scutari Lake, European Turkey.

ANODONTA VESCOIANA Bourguignat.

* *Anodonta vescoiana* BOURGUIGNAT, Ann. Mal., II, 1857, p. 34, pl. i, figs. 1, 2.—
* CLESSIN, Conch. Cab. Ano., 1873, p. 100, pl. XXIX, figs. 1, 2.—* KOBELT, Icon.,
VII, 1880, p. 83, pl. CCVII, fig. 2102.—* PÆTEL, Conch. Sam., III, 1890, p. 186.—
* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 201.
* *Margaron (Anodonta) vescoiana* LEA, Syn., 1870, p. 81.

Asia Minor.

† ANODONTA BERINGIANA Middendorff.

* *Anodonta cellensis* SCHRÖTER var. *beringiana* MIDDENDORFF, Sib. Reise, II, 1851,
p. 284, pl. XXVIII, figs. 4-7; XXIX, figs. 1-4.—* CLESSIN, Conch. Cab. Ano., 1875,
p. 211, pl. LXV, figs. 1, 2.
* *Anodonta youconensis* LEA, Pr. Ac. Nat. Sci. Phila., XI, 1867, p. 81.
* *Anodonta youkanensis* LEA, Jl. Ac. Nat. Sci. Phila., VI, 1868, p. 287, pl. XL, fig.
99; Obs., XII, 1869, p. 47, pl. XL, fig. 99.—* CLESSIN, Conch. Cab. Ano., 1874,
p. 133, pl. XLIII, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.
* *Margaron (Anodonta) youkanensis* LEA, Syn., 1870, p. 80.
* *Anodonta youkanensis* PÆTEL, Conch. Sam., III, 1890, p. 186.

Kamtschatka; Alaska.²

† ANODONTA KENNERLYI Lea.

* *Anodonta kennerlyi* LEA, Pr. Ac. Nat. Sci. Phila., IV, 1860, p. 306; * Jl. Ac. Nat.
Sci. Phila., V, 1862, p. 108, pl. XVIII, fig. 256; * Obs., VIII, 1862, p. 112, pl. XVIII,
fig. 256.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890,
p. 181.
* *Anodon kennerlyi* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXIV, fig. 139.
* *Margaron (Anodonta) kennerlyi* LEA, Syn., 1870, p. 79.

Puget Sound; British Columbia.

† ANODONTA OREGONENSIS Lea.

* *Anodonta oregonensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 80, pl. XXI, fig. 67;
* Obs., II, 1838, p. 80, pl. XXI, fig. 67.—* TROSCHEL, Arch. für Nat., VI, 1839;
II, p. 239.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A.
ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874,
p. 170, pl. LVI, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch.
Sam., III, 1890, p. 182.
* *Margarita (Anodonta) oregonensis* LEA, Syn., 1837, p. 30.
* *Anodon oregonensis* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* GOULD and
CARPENTER, Pr. Zool. Soc. Lond., 1856, p. 218.—* SOWERBY, Conch. Icon.,
XVII, 1867, pl. XVII, fig. 63.
* *Margaron (Anodonta) oregonensis* LEA, Syn., 1852, p. 49; 1870, p. 78.
* *Anodon cognata* GOULD, Proc. Bost. Soc. Nat. Hist., III, 1850, p. 294.

¹ It is very hard to say what this is, as it is evidently a diseased shell. Probably a member of the *Cyanea* group.

² There can be no doubt but what this species occurs in Alaska and the northeastern part of Asia, from an examination of specimens in the U. S. National Museum collection from both regions.

- * *Anodonta cognata* GOULD, U. S. Expl. Exp., XII, 1852, p. 435, figs. 546, 546a, 546b; *Otia* Conch., 1862, p. 187.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 263.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* PÆTEL, Conch. Sam., III, 1890, p. 178.

Washington; Oregon; North California; East to Great Salt Lake.

ANODONTA CALIFORNIENSIS Lea.

- * *Anodonta californiensis* LEA, Tr. Am. Phil. Soc., X, 1852, p. 286, pl. XXV, fig. 47; * Obs., V, 1852, p. 42, pl. XXV, fig. 47.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 263.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* MUSGRAVE, Phot. Conch., 1863, pl. I, fig. 4.—* CLESSIN, Conch. Cab. Ano., 1874, p. 120, pl. XXXIX, figs. 4, 5.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 177.
- * *Margaron (Anodonta) californiensis* LEA, Syn., 1852, p. 47; 1870, p. 75.
- * *Anodon californiensis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVIII, fig. 113.

Washington, south to California; east to Idaho and Arizona. Probably a variety of the next.

† ANODONTA NUTTALLIANA Lea.

- * *Anodonta nuttalliana* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 77, pl. XX, fig. 62; * Obs., II, 1838, p. 77, pl. XX, fig. 62.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 216; * Biv. Shells, 1843, p. 216.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874, p. 147, pl. L, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 190, p. 182.
- * *Margarita (Anodonta) nuttalliana* LEA, Syn., 1838, p. 29.
- * *Margaron (Anodonta) nuttalliana* LEA, Syn., 1852, p. 47; 1870, p. 75.
- * *Anodonta nuttalliana* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* GOULD and CARPENTER, Pr. Zool. Soc. Lond., 1856, p. 218.
- * *Anodonta triangularis* TRASK, Pr. Ac. Nat. Sci. Phila., I, 1855, p. 29.
- * *Anodon triangularis*, SOWERBY, Conch. Icon., XVII, 1870, pl. XXIX, fig. 56b.

Washington to California.

† ANODONTA WAHLAMETENSIS Lea.

- * *Anodonta wahlametensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 78, pl. XX, fig. 64; * Obs., II, 1838, p. 78, pl. XX, fig. 64.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 215; Biv. Shells, 1843, p. 215, pl. XXIV, fig. 13.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874, p. 161, pl. LIII, figs. 7, 8.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 186.
- * *Margarita (Anodonta) wahlametensis* LEA, Syn., 1838, p. 29.
- * *Anodon wahlametensis* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* GOULD and CARPENTER, Pr. Zool. Soc. Lond., 1856, p. 218.—* SOWERBY, Conch. Icon., XVII, 1867, pl. IX, fig. 22.
- * *Margaron (Anodonta) wahlametensis* LEA, Syn., 1852, p. 47; 1870, p. 75.
- * *Anodonta rotundata* TRASK, Pr. Cal. Ac. Sci., I, 1855, p. 29.
- * *Anodon rostratus* SOWERBY, Conch. Icon., XVII, 1867, pl. II, fig. 4.
- * *Anodonta laosensis* FISCHER,¹ Bull. Soc. H. N. Autun., 1891, p. 219.

Washington; south to southern California; east to Utah.

¹ Sowerby states that his species is from Lao, (Laos?) an error without doubt, as it is certainly *A. wahlametensis*. As the name *rostrata* had been used for an *Anodonta* by Kokeil (or Rossmassler) Fischer changed Sowerby's name to *laosensis*.

ANODONTA COARCTATA Anton.

**Anodonta coarctata* ANTON, Verz. der Conch., 1839, p. 16.—*TROSCHER, Arch. für Nat., XI, 1845, Pt. 2, p. 323.—*KUSTER, Conch. Cab. Ano., 1853, p. 34, pl. VIII, fig. 2.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 177.—*FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 519.

**Anodonta chapalensis* CROSSE and FISCHER, J. de Conch., XL, 1892, p. 295.—*FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 518, pl. LXIV, figs. 8-11.

Lake Chapala, State of Jalisco, Mexico.

† ANODONTA EXILIOR Lea.

**Anodonta exilior* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 188; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 24, pl. VII, fig. 21; *Obs., XIII, p. 28, pl. VII, fig. 21.—*B. H. WRIGHT, Check List, 1888.—*FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 520.

**Anodonta chalconensis* CROSSE and FISCHER, Jl. de Conch., XLI, 1893, p. 110.—*FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 522, pl. LXIV, figs. 7, 7a.

Mexico, mostly in the Pacific drainage.

(Group of *Anodonta dejecta*.)

Shell rather solid, subtrapezoidal, narrower and rounded in front, where it is often considerably thickened, with a slight post-dorsal wing; beaks rather compressed, the sculpture consisting of numerous irregular ridges which have a tendency to become doubly looped and nodulous; epidermis rather smooth and shining, greenish or ashy brown; naere lurid, darker in the cavity of the beaks; muscle scars irregular, not well defined; dorsal scars few and rather deep.

Animal with dark colored branchiæ, the inner wider in front, nearly or quite free from the abdominal sac, the outer wrinkled on the outside into longitudinal and vertical folds, all four united to the mantle to the extreme posterior end; palpi very large; mantle with a wide, thickened double edge; branchial opening with numerous papillæ; anal opening smooth; superanal opening long, deep, united a long way below.

† ANODONTA DEJECTA Lewis.

**Anodonta dejecta* LEWIS, Field and Forest, I (August and September), 1875, p. 26; ¹* Yarrow's Report, 1875, p. 952.—*B. H. WRIGHT, Check List, 1888.—SIMPSON, Pr. U. S. Nat. Mus., XIX, 1896, p. 372, pl. XXXII, figs. 4, 5.

*† *Anodonta mearnsiana* SIMPSON, Nautilus, VI, 1893, p. 134.

Arizona; southeastern California; northwest Mexico.

(Group of *Anodonta cataracta*.)

Shell thin or solid, inflated, rather evenly rounded in front, generally somewhat biangulate behind, and very slightly winged in the post-

¹Said to be from Arkansas River or its tributaries west of the one hundredth meridian and collected by Dr. H. C. Yarrow, surgeon and naturalist of Wheeler's expedition. This locality is erroneous, as it belongs, no doubt, exclusively to the Pacific drainage.

dorsal region; beaks rather full, the sculpture consisting of a moderate number of concentric ridges or corrugations, which are generally somewhat doubly looped, and often slightly nodulous; epidermis bright and shining, sometimes faintly rayed.

Animal with large branchiæ, the inner larger in front, free in part from the abdominal sac; marsupium occupying the entire outer gills, forming an enormously thick, liver-colored pad when filled; mantle thin, thickened on its edge; branchial papillæ small; anal opening smooth.

† ANODONTA CATARACTA Say.¹

Anodonta cataracta SAY, Nich. Enc., 1st ed., II, 1816, pl. III, fig. 4.—* CONRAD, New L. and F. W. Shells, 1834, p. 73.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 566; 3d ed., II, 1839, p. 678; Tr. Elem., I, 1853, Pt. 2, p. 218, pl. XXX, fig. 4.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.—* KUSTER, Conch. Cab. Ano., 1853, p. 33, pl. VII, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 177.—* H. CARPENTER, Nautilus, IV, 1890, p. 56.

* *Unio cataracta* DESHAYES, Tr. Elem. Conch., 1839, p. 18, pl. XXX, fig. 1.

* *Anodon cataracta* CATLOW and REEVE, Conch. Nom., 1845, p. 66.

* *Mytilus cataractus* EATON, Zool. Text-Book, 1826, p. 221.

* *Anodon cataractus* SOWERBY, Conch. Man., 1839, fig. 152; Conch. Icon., XVII, 1867, pl. IX, fig. 25.

* ? *Mytilus fluviatilis* DILLWYN, Cat., I, 1817, p. 316.—* HANLEY, Ind. Test. Rev., 1856, p. 69.

* *Anodonta fluviatilis* BOSCH, Hist. Nat. Coq., 1824, III, p. 143.—* HANLEY, Test. Moll., 1842, p. 217.—* C. B. ADAMS, Thompson's Hist. of Vt., 1842, p. 164; * F. W. and L. S. of Vt., 1842, p. 14.—* HANLEY, Biv. Shells, 1843, p. 217.—* STIMPSON, Shells of N. Eng., 1851, p. 15.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* LATCHFORD, Tr. Ot. F. N. Club, 1882, p. 56.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Anodonta) fluviatilis* LEA, Syn., 1836, p. 51; 1838, p. 30.

* *Anodon fluviatilis* GOULD, Inv. Mass., 1841, p. 117, fig. 80.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 203, pl. XVIII, fig. 234.—* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 94, fig. 192.—SOWERBY, Conch. Icon., XVII, 1869, pl. XXII, fig. 86.—* BINNEY, Inv. of Mass., 2d ed., 1870, p. 178, fig. 480.

* *Margaron (Anodonta) fluviatilis* LEA, Syn., 1852, p. 50; 1870, p. 80.

* *Mytilus marginatus* EATON, Zool. Text-Book, 1826, p. 224.

* *Anodonta dignota* FERUSSAC, Guer. Mag., 1835, p. 25.

* † *Anodonta virgulata* LEA,² Pr. Ac. N. Sci. Phila., I, 1857, p. 86; Jl. Ac. N. Sci. Phila., V, 1862, p. 213, pl. XXXII, fig. 282; * Obs., IX, 1863, p. 35, pl. XXXIII, fig. 282.—* CLESSIN, Conch. Cab. Ano., 1874, p. 152, pl. XLIX, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 186.

* *Margaron (Anodonta) virgulata* LEA, Syn., 1870, p. 80.

¹This species is probably better known by Dillwyn's name, *fluviatilis*. According to Lea and Binney, the first edition of Nicholson's Encyclopedia appeared in 1816, which would give Say's name priority by one year. This edition is extremely rare, and I have never seen it. It is claimed by some authors to have been issued in 1817. Dillwyn refers his species to Gmelin, who states that his shell came from the fresh waters of Europe, and is allied to *anatina*, and it is quite likely it is *A. cygnea*. As there can be no doubt about Say's species, I think it best to use his name.

²I think this is merely a southern form of *cataracta* and scarcely worthy of a varietal name.

- *† *Anodonta williamsii* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 169; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 27, pl. x, fig. 26; * Obs., XI, 1867, p. 31, pl. x, fig. 26.—* CLESSIN, Conch. Cab. Ano., 1874, p. 154, pl. LI, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVIII, fig. 112.
- * *Margaron (Anodonta) williamsii* LEA, Syn., 1870, p. 81.
- *† *Anodonta tryonii* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 169; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 28, pl. x, fig. 27; * Obs., XI, 1867, p. 32, pl. x, fig. 27.—* CLESSIN, Conch. Cab. Ano., 1874, p. 155, pl. LI, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 186.
- * *Margaron (Anodonta) tryonii* LEA, Syn., 1870, p. 80.
- * *Anodon tryonii* HARTMAN and MICHENER, Conch. Cest., 1874, p. 95, fig. 195.

Lower St. Lawrence drainage; streams draining into the Atlantic south to North Carolina. This species has been cited from Grand River, Michigan, and from north of Lake Superior. Mr. Bryant Walker states that the former locality is erroneous, and I presume that the latter is.

† ANODONTA MARGINATA Say.¹

- Anodonta marginata* SAY, Nich. Encyc., II, 1816, pl. III, fig. 5.—* C. B. ADAMS, Thompson's Hist. Vt., 1842, p. 14.—* STIMPSON, Shells of N. Eng., 1851, p. 15.
- * *Anodonta marginatus* HANLEY, Biv. Shells, 1843, p. 217.
- * *Anodonta fragilis* LAMARCK, An. sans. Vert., VI, 1819, p. 85.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* DESHAYES, An. sans. Vert., 2d ed., VI, 1835, p. 566; 3d ed., II, 1839, p. 678.—* DELESSERT, Rec. Coq. Lam., 1841, pl. XIII, fig. 2, 1e, 2a, 2b.—* HANLEY, Test. Moll., 1842, p. 217; * Biv. Shells, 1843, p. 217.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* CLESSIN, Conch. Cab. Ano., 1854, p. 73, pl. XVII, figs. 3, 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CHENU, Ill. Conch., 1858, pl. III, figs. 4, 4a.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 56.—B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.
- * *Margarita (Anodonta) fragilis* LEA, Syn., 1836, p. 50; 1838, p. 30.
- * *Anodonta fragilis* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* SOWERBY, Conch. Icon., XVII, 1867, pl. XVII, fig. 61.
- * *Margaron (Anodonta) fragilis* LEA, Syn., 1852, p. 49; 1870, p. 78.
- *† *Anodonta lacustris* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 84; * Jl. Ac. N. Sci. Phila., 1860, p. 363, pl. LXII, fig. 188; * Obs., VIII, 1860, p. 45, pl. LXII, fig. 188.—* CLESSIN, Conch. Cab. Ano., 1873, p. 110, pl. XXXIII, figs. 5, 6.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 56.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
- * *Anodon lacustris* SOWERBY, Conch. Icon., XVII, 1867, pl. XIX, fig. 73.
- * *Margaron (Anodonta) lacustris*, LEA, Syn., 1870, p. 80.
- * *Anodon flava* ANTHONY, Am. Jl. Conch., I, 1865, p. 160, pl. XIV, fig. 3.
- * *Anodon flava* B. H. WRIGHT, Check List, 1888.
- * *Anodon pallida* ANTHONY, Am. Jl. Conch., I, 1865, p. 162, pl. XV, fig. 3.
- * *Anodonta pallida*, B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.
- * *Anodon pallidus* SOWERBY, Conch. Icon., XVII, 1867, pl. XI, fig. 29.
- * *Anodonta glandulosa* ANTHONY, Am. Jl. Conch., I, 1865, p. 163, pl. XVI, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.

¹ I am very sure that this = the *A. fragilis* Lamarck, and not the *stuvialis* Dillwyn, as Dr. Lea believes. Say describes it as very thin and fragile; epidermis green olive, paler on the disk, and greener before (behind), within bluish white, edged with whitish, and from his dimensions and figure it is a smaller shell than Dillwyn's, the whole agreeing better with the *fragilis* of Lamarck.

- * *Anodon irisans* ANTHONY, Am. Jl. Conch., I, 1865, p. 163, pl. XVI, fig. 2.
 * *Anodonta irisans* B. H. WRIGHT, Check List, 1888.
 * *Anodonta irisans* PÆTEL, Conch. Sam., III, 1890, p. 180.
 * ? *Anodon hordeum* SOWERBY, Conch. Icon., XVII, 1867, pl. XVIII, fig. 66.
 * † *Anodonta subcarinata* CURRIER, Am. Jl. Conch., III, 1867, p. 113, pl. VI, fig. 5.—
 * B. H. WRIGHT, Check List, 1888.¹
 * ? *Anodon subcylindracea* SOWERBY, Conch. Icon., XVII, 1867, pl. XV, fig. 47a.
 * *Anodon exilis* SOWERBY, Conch. Icon., XVII, 1869, pl. XXII, fig. 84.
 * ? *Anodon pholadiformis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVII, fig. 106.

St. Lawrence River drainage.

ANODONTA TERES Conrad.

- * *Anodonta teres* CONRAD, New F. W. Shells, 1834, p. 47, pl. VII, fig. 2.²—* FERUSSAC Guerin. Mag., 1835, p. 25.—* MÖLLER, Syn. Nov. Gen., 1836, p. 194.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 25, pl. II, fig. 9.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.

Santee Canal, South Carolina.

† ANODONTA IMPLICATA Say.

- Anodonta implicata* SAY, New Harm. Diss., II, No. 22, 1829, p. 340.—* CONRAD, New F. W. Shells, 1834, p. 73.—* FERUSSAC, Guerin. Mag., 1835, p. 250.—* SAY, New L. and F. W. Shells, 1840, p. 10.—* L. W. SAY, Terr. and Fluv. Shells, 1840, p. 11.—* STIMPSON, Shells of N. Eng., 1851, p. 15.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. An., 1873, p. 78, pl. XIX, fig. 3.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 56.—* B. H. WRIGHT, Check List, 1888.—* H. CARPENTER, Nautilus, IV, 1890, p. 57.
 * *Anodon implicata* GOULD, Inv. Mass., 1841, p. 118, fig. 78; 2d ed., 1870, p. 180, fig. 481.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 202.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 94, fig. 193.
 * *Margaron* (*Anodonta*) *implicata* LEA, Syn., 1852, p. 50; 1870, p. 80.
 * ? *Anodon implicatus* SOWERBY, Conch. Icon., XVII, 1867, pl. XIII, fig. 44.³
 * † *Anodonta newtonensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 79, pl. XXI, fig. 66; * Obs., II, 1838, p. 79, pl. XXI, fig. 66.—* HANLEY, Test. Moll., 1842, p. 219.
 * *Margarita* (*Anodonta*) *newtonensis* LEA, Syn., 1838, p. 30.
 * *Anodon newtonensis* SOWERBY, Conch. Icon., XVII, 1867, pl. XVII, fig. 62.
 * *Anodonta newtoniensis* TROSCHEL, Arch. für. Naturg., V, 1839, p. 239.—* PÆTEL, Conch. Sam., III, 1890, p. 182.
 * *Anodon newtoniana* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
 * ? *Anodon excarvata* DE KAY,⁴ Zool. of N. Y., Moll., Pt. 5, 1843, p. 202, pl. XVII, fig. 233.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.

¹ The type of this is in Mr. Bryant Walker's collection, and seems to be a variety of *marginata*.

² It is hard to say where this belongs, or what it is. The figure shows it a dirty yellowish, without rays, and shaped something like *A. fragilis*, while the description is too brief to properly characterize it.

³ This may be *A. grandis* Say.

⁴ I am not certain whether this is the *implicata* of Say or his *cataracta*. De Kay states that the shell is thin and fragile, and the figure shows it to be brown, green, and yellowish, in irregular bands, and apparently shining and smooth like *cataracta*. He says that it is nearest to *implicata*.

- * *Anodonta housatonica* LINSLEY, Am. Jl. Sci., 1845, p. 277.—* STIMPSON, Shells of N. Eng., 1851, p. 15.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* PÆTEL, Conch. Sam., III, 1890, p. 180.

St. Lawrence drainage; north to Lake Winnipeg; south in streams flowing into the Atlantic to Virginia; not reported from Michigan.

† ANODONTA HALLENBECKII Lea.

- * *Anodonta hallenbeckii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 139; * Jl. Ac. N. Sci. Phila., IV, 1859, p. 232, pl. XXXII, fig. 112; * Obs., VII, 1859, p. 50, pl. XXXII, fig. 112.—* CLESSIN, Conch. Cab. Ano., 1873, p. 95, pl. XXVIII, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* SOWERBY, Conch. Icon., XVII, 1869, pl. XXIII, fig. 89, 483.
- * *Margaron (Anodonta) hallenbeckii* LEA, Syn., 1870, p. 78.
- * † *Anodonta gesnerii* LEA, Pr. Ac. N. Sci. Phila., X, 1858, p. 139; * Jl. Ac. N. Sci. Phila., IV, 1859, p. 231, pl. XXXI, fig. 109.—* Obs., VII, 1859, p. 49, pl. XXXI, fig. 109.—* CLESSIN, Conch. Cab. Ano., 1873, p. 95, pl. XXVIII, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.
- * *Anodon gesnerii* SOWERBY, Conch. Icon., XVII, 1867, pl. VII, fig. 15.
- * *Margaron (Anodonta) gesnerii* LEA, Syn., 1870, p. 78.
- * *Anodonta gessneri* PÆTEL, Conch. Sam., III, 1890, p. 179.¹

Georgia.

† ANODONTA DOLIARIS Lea.²

- * *Anodonta dolearis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 193.
- * *Anodonta doliaris* LEA, Jl. Ac. N. Sci. Phila., VI, 1866, p. 24, pl. VIII, fig. 23; * Obs., XI, 1867, p. 28, pl. VIII, fig. 23.—* CLESSIN, Conch. Cab. Ano., 1874, p. 130, pl. XLII, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Anodonta) doliaris* LEA, Syn., 1870, p. 81.

North Carolina.

† ANODONTA DARIENSIS Lea.

- * *Anodonta dariensis* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 139; * Jl. Ac. N. Sci. Phila., IV, 1859, p. 230, pl. XXVIII, fig. 99; * Obs., VII, 1859, p. 48, pl. XXVIII, fig. 99.—* CLESSIN, Conch. Cab. Ano., 1874, p. 118, pl. XXXVII, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 178.
- * *Anodon dariensis* SOWERBY, Conch. Icon., XVII, 1867, pl. XVIII, fig. 70.
- * *Margaron (Anodonta) dariensis* LEA, Syn., 1870, p. 80.

Georgia; north Florida.

Group of *Anodonta imbecillis*.

Shell thin, elliptical, sometimes slightly produced near the center of the base, pointed behind, with a slight posterior dorsal wing; area of the beaks generally flattened though often full; beak sculpture consisting of several rather delicate, irregular ridges which show a tendency to break into nodules; epidermis bright and smooth, usually marked

¹ The type of *A. hallenbeckii* is a sulcate shell, somewhat constricted at the central base, while that of *A. gesnerii* is not constricted and is smoother. The former may be slightly diseased, and the museum series of shells appears to absolutely connect the two.

² First spelled *dolearis* by Lea, and afterwards changed by him to *doliaris*.

with beautiful, delicate, capillary rays; nacre bluish. Animal sometimes highly colored; gills nearly alike in size, often having a distinct border of different texture; eye-spots on branchial opening generally perceptible.

† ANODONTA IMBECILLIS Say.

Anodonta imbecillis SAY, N. Harm. Diss., II, No. 23, 1829, p. 355.—* CONRAD, New F. W. Shells, 1834, p. 73.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* L. SAY, Terr. and Fluv. Shells, 1840, p. 13.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CALKINS, Pr. Dav. Ac. Sci., 1874, p. 47.—* CLESSIN, Conch. Cab. Ano., 1874, p. 70, pl. XLIX, figs. 4, 5; XXV, fig. 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* STEARNS, Pr. U. S. Nat. Mus., XIV, 1891, p. 106.—* BAKER, Moll. Chicago, Pt. 1, 1898, p. 55, pl. V, fig. 1.

* *Margaron (Anodonta) imbecillis* LEA, Syn., 1852, p. 50; 1870, p. 80.

* *Anodon imbecillis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVII, fig. 102.

* † *Anodonta incerta* LEA, Tr. Am. Phil. Soc., V, 1834, p. 46, pl. VI, fig. 16; * Obs., I, 1834, p. 158, pl. VI, fig. 16.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* HANLEY, Test. Moll., 1842, p. 218.—* PÆTEL, Conch. Sam., III, 1890, p. 180.

* *Margarita (Anodonta) incerta* LEA, Syn., 1836, p. 51; 1838, p. 30.

* *Anodon incerta* CATLOW and REEVE, Conch. Nom., 1845, p. 67.

* *Anodon incertus* SOWERBY, Conch. Icon., XVII, 1867, pl. XVII, fig. 59.

* *Anodon horda* GOULD, Pr. Bost. Soc. N. H., V, 1855, p. 229; * *Otia* Conch., 1862, p. 218.

* *Anodonta hordeum* PÆTEL, Conch. Sam., III, 1890, p. 180.

Entire Mississippi drainage area; south Michigan; North Carolina to Georgia; southwest to Matamoras, Mexico.

† ANODONTA HENRYANA Lea.¹

* *Anodonta henryana* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 102; * JI. Ac. N. Sci. Phila., IV, 1860, p. 373, pl. LXVI, fig. 198; * Obs., VIII, 1860, p. 55, pl. LXVI, fig. 198.—* CLESSIN, Conch. Cab. Ano., 1874, p. 141, pl. XLV, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 525.

* *Margaron (Anodonta) henryana* LEA, Syn., 1870, p. 81.

* *Anodon henryana* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXIV, fig. 140.²

Northeast Mexico; southern Texas.

† ANODONTA GIBBOSA Say.³

Anodonta gibbosa SAY, Exp. to St. Peters R., 1824, p. 265, pl. XIV, figs. 3, 4.—* FERUSSAC, Guer. Mag., 1835, p. 25; * CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1873, p. 74, pl. XVIII, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.

¹Typically very distinct from *imbecillis*, having the dorsal and basal lines quite straight. But there are many intermediate forms which are very hard to place, and it is probably only a variety of the latter.

²*Anodonta impura* Say, (Disseminator, 1829, p. 355) from Mexico has never been figured and was only briefly described. It is quite likely that it is the same as *A. henryana*.

³An exceedingly variable species in form, size, and solidity. *A. dunlapiana* seems to me to be only a slightly elongated, rather solid form.

- **Margarita (Anodonta) gibbosa* LEA, Syn., 1838, p. 31.
 **Anodon gibbosa* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
 **Margaron (Anodonta) gibbosa* LEA, Syn., 1852, p. 51; 1870, p. 81.
 **Anodon gibbosus* SOWERBY, Conch. Icon., XVII, 1867, pl. IX, fig. 23.
 *†*Anodonta couperiana* LEA, Pr. Am. Phil. Soc., I, 1840, p. 289.
 **Anodonta couperiana* LEA, Tr. Am. Phil. Soc., VIII, 1842, p. 227, pl. XX, fig. 146;
 * Obs., III, 1842, p. 65, pl. XX, fig. 46.—* CONRAD, Pr. Ac. N. Sci. Phila., VI,
 1853, p. 263.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN,
 Conch. Cab. Ano., 1874, p. 148, pl. L, figs. 3, 4.—* B. H. WRIGHT, Check List,
 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 433, pl. LXXIV, fig. 1.
 **Margaron (Anodonta) couperiana* LEA, Syn., 1852, p. 51; 1870, p. 81.
 **Anodonta couperiana* PÆTEL, Conch. Sam., III, 1890, p. 178.

† ANODONTA GIBBOSA var. DUNLAPIANA Lea.

- *†*Anodonta dunlapiana* LEA, Pr. Am. Phil. Soc., II, 1842, p. 225; * Tr. Am. Phil. Soc.,
 VIII, 1842, p. 248, pl. XXVII, fig. 65; * Obs., III, 1842, p. 86, pl. XXVII, fig. 65.—
 * SOWERBY, Conch. Icon., XVII, 1869, pl. XXIII, fig. 87.—* CLESSIN, Conch.
 Cab. Ano., 1876, p. 220, pl. LXXIV, figs. 1, 2.—* B. H. WRIGHT, Check List,
 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.

South Carolina to Florida.

(Group of *Anodonta suborbiculata*.)

Shell large, compressed, suborbicular, somewhat produced near the center of the base, rounded in front and bluntly pointed behind, with a slight posterior dorsal wing; beaks flattened, the sculpture consisting of a few irregular ridges, which are generally broken into nodules, sometimes only corrugated; a well-defined but low posterior ridge separates the smooth, shining area in front from a darker and rougher one behind; epidermis with numerous delicate, capillary rays near the beaks; muscle scars very large; nacre rather coppery and iridescent; pallial line broken, often marked with radiating ridges. Animal unknown.¹

† ANODONTA SUBORBICULATA Say.

- Anodonta suborbiculata* SAY, New Harm. Disseminator (newspaper form), January
 29, 1831; Am. Conch. I, No. II, 1831, pl. XI.—* CONRAD, New F. W. Shells,
 1834, p. 73.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* HANLEY, Test. Moll.,
 1842, p. 222; Biv. Shells, 1843, p. 222.—* CHENU, Bib. Conch., 1st ser., III,
 1845, p. 18, pl. III, figs. 1, 1a.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853,
 p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch.
 Cab. Ano., 1874, p. 160, pl. LII, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—
 * PÆTEL, Conch. Sam., III, 1890, p. 185.
 **Margarita (Anodonta) suborbiculata* SAY, Syn., 1836, p. 52; 1838, p. 31.
 **Anodon suborbiculata* CATLOW and REEVE, Conch. Nom., 1845, p. 68.
 **Margaron (Anodonta) suborbiculata* SAY, Syn., 1852, p. 51; 1870, p. 81.
 **Anodon suborbiculatus* SOWERBY, Conch. Icon., XVII, 1867, pl. v, fig. 11.

Nebraska, Iowa; Illinois; south to Louisiana. Abundant locally.

¹ Closely related to the *imbecillis* group, but differing in form, beak sculpture, the large muscle scars, and the pallial line.

(Group of *Anodonta woodiana*.)¹

Shell oval, inflated, sometimes narrowed in front, pointed behind, and often a little produced at the posterior base, slightly winged in the post-dorsal region; beaks full, sculptured with numerous strong concentric ridges, which are either straight in the center of the disk or slightly doubly looped. There is often a faint posterior ridge, which may be double, making the shell feebly biangulate behind; dorsal scars one or two under the beaks; muscle scars irregular.

Animal with the gills large, equal in size, rounded below, free the greater part of their length from the abdominal sac, somewhat wrinkled; marsupium occupying the entire outer gills, forming thick brown pads when filled; palpi large, subelliptical, free from the mantle a long way; mantle having a wide, thickened edge; branchial opening crowded with dark papillæ; anal opening with no papillæ, but having purple ridges inside; superanal opening closed nearly its whole length.²

† ANODONTA WOODIANA Lea.

**Symphynota woodiana* LEA, Tr. Am. Phil. Soc., V, 1834, p. 42, pl. v, fig. 13; *Obs., I, 1834, p. 154, pl. v, fig. 13.

**Margarita (Anodonta) woodiana* LEA, Syn., 1836, p. 48; 1838, p. 29.

**Anodon woodiana* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—*SOWERBY, Conch. Icon., XVII, 1870, pl. XXXVI, fig. 149.

**Anodonta woodiana* HANLEY, Test. Moll., 1842, p. 215; *Biv. Shells, 1843, p. 215.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—*CLESSIN, Conch. Cab. Ano., 1875, p. 146, pl. XLVIII, figs. 1, 2.

**Margaron (Anodonta) woodiana* LEA, Syn., 1852, p. 47; 1870, p. 75.

†*Symphynota magnifica* LEA,³ Tr. Am. Phil. Soc., V, 1834, p. 42, pl. v, fig. 14; Obs., I, 1834, p. 155, pl. v, fig. 14.

**Margarita (Anodonta) magnifica* LEA, Syn., 1836, p. 48; 1838, p. 29.

**Anodonta magnifica* HANLEY, Test. Moll., 1842, p. 215; Biv. Shells, 1843, p. 215.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—*CHENU, Man., 1859, II, p. 146, fig. 719.—*SCHRENCK, Reis and F. Am. Lande., II, 1867, p. 718, pl. XXVIII, figs. 1, 2.—*PÆTEL, Conch. Sam., III, 1890, p. 181.

**Anodon magnifica* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—SOWERBY, Conch. Icon., XVII, 1870, pl. XXV, fig. 96.

**Margaron (Anodonta) magnifica* LEA, Syn., 1852, p. 47; 1870, p. 75.

*?*Anodonta aurata* KUSTER, Conch. Cab. Ano., 1853, p. 30, pl. VI, fig. 2.

¹ Fischer has made a subgenus *Pteranodon* (Man. Conch., p. 1003) for *A. magnifica*, but I do not see any need of giving it and the related species any higher rank than that of a group. The shell and animal differ but little from those of other *Anodontas*.

²A group closely agreeing in general characters, but having enormous individual variation. Père Heude has bestowed specific names on a great number of forms, most of which are, I think, merely mutations of Lea's *woodiana*. Fortunately the U. S. National Museum possesses in the Morelet collection a large series of author's specimens, and the excellent figures in the *Conchyliologie Fluviale Nanking* enable me to straighten out this difficult group to some extent.

³Larger and rather more finely developed than *A. woodiana*, but the large series of material I have examined absolutely connects the two.

- * *Anodon rotundatus* SWAINSON, Ex. Conch., 2d ed., 1841, pl. xxxvii.
- * *Anodon gibbum* BENSON, J. Asiat. Soc., XXIV, 1855, p. 135.
- * *Anodon gibba* SOWERBY, Conch. Icon., XVII, 1867, pl. vi, fig. 13.—HEUDE, Conch. Fl. Nank., VII, 1881, pl. LI, fig. 95.
- * *Margaron (Anodonta) gibba* LEA, Syn., 1870, p. 81.—* VON MARTENS, Nov. Conch., IV, 1876, p. 159, pl. cxxxvi, figs. 6, 7.
- * *Anodonta gibba* CLESSIN, Conch. Cab. Ano., 1875, p. 181, pl. LX, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 179.
- * *Anodon tricostatus* SOWERBY, Conch. Icon., XVII, 1870, pl. xxv, fig. 98.—* PÆTEL, Conch. Sam., III, 1890, p. 186.
- * *Anodonta edulis* HEUDE, J. de Conch., XXII, 1874, p. 117.
- * *Anodon edulis* HEUDE, Conch. F. Nank., I, 1875, pl. viii, fig. 18.
- * *Anodonta edulis* PÆTEL, Conch. Sam., III, 1890, p. 179.
- * † *Anodon securiformis* HEUDE, Conch. F. Nank., III, 1877, pl. xviii, fig. 39.
- * *Anodonta securiformis* PÆTEL, Conch. Sam., III, 1890, p. 167.
- * † *Anodon nigricans* HEUDE, Conch. F. Nank., III, 1877, pl. xix, fig. 41.
- * *Anodonta nigricans* PÆTEL, Conch. Sam., III, 1890, p. 182.
- * † *Anodon piscatorum* HEUDE, Conch. F. Nank., IV, 1878, pl. xxvi, fig. 56.
- * *Anodon elliptica* HEUDE, C. F. Nank., IV, 1878, pl. xxvii, fig. 58.
- * † *Anodon fusca* HEUDE, C. F. Nank., IV, 1878, pl. xxviii, fig. 59.
- * *Anodon friniana* HEUDE, C. F. Nank., IV, 1878, pl. xxviii, fig. 60.
- * *Anodon joreti* HEUDE, C. F. Nank., IV, 1878, pl. xxxi, fig. 62.
- * † *Anodon striata* HEUDE, C. F. Nank., IV, 1878, pl. xxx, fig. 63.
- * *Anodonta striata* PÆTEL, Conch. Sam., III, 1890, p. 185.
- * † *Anodon pacifica* HEUDE, C. F. Nank., IV, 1878, pl. xxxii, fig. 66.
- * † *Anodon tumida* HEUDE, C. F. Nank., V, 1879, pl. xxxv, fig. 69.
- * *Anodonta tumida* PÆTEL, Conch. Sam., III, 1890, p. 186.
- * *Anodon subtetragona* HEUDE, C. F. Nank., V, 1879, pl. xxxvi, fig. 70.
- * *Anodon lineata* HEUDE, C. F. Nank., V, 1879, pl. xxxvi, fig. 71.
- * *Anodonta lineata* PÆTEL, Conch. Sam., III, 1890, p. 181.
- * *Anodon irregularis* HEUDE, C. F. Nank., V, 1879, pl. xxxvii, fig. 73.
- * *Anodonta irregularis* PÆTEL, Conch. Sam., III, 1890, p. 180.
- * *Anodon melanochlorea* HEUDE, C. F. Nank., V, 1879, pl. xxxviii, fig. 74.
- * *Anodonta melanochlorea* PÆTEL, Conch. Sam., III, 1890, p. 182.
- * † *Anodon agricolarum* HEUDE, C. F. Nank., V, 1879, pl. xxxix, fig. 75.
- * *Anodonta agricolarum* PÆTEL, Conch. Sam., III, 1890, p. 176.
- * † *Anodon mingorum* HEUDE, C. F. Nank., V, 1879, pl. xl, fig. 77.
- * *Anodonta mingorum* PÆTEL, C. Sam., III, 1890, p. 182.
- * *Anodon bigibba* HEUDE, C. F. Nank., VI, 1880, pl. xli, fig. 78.
- * *Anodonta bigibba* PÆTEL, C. Sam., III, 1890, p. 177.
- * *Anodon despecta* HEUDE, C. F. Nank., V, 1880, pl. xli, fig. 79.
- * *Anodon obtusa* HEUDE, C. F. Nank., VI, 1880, pl. xlii, fig. 80.
- * *Anodon navicella* HEUDE, C. F. Nank., VI, 1880, pl. xlii, fig. 81.
- * *Anodonta navicula* PÆTEL, C. Sam., III, 1890, p. 182.
- * *Anodon orbicularis* HEUDE, C. F. Nank., VI, 1880, pl. xlii, fig. 82.
- * *Anodonta orbicularis* PÆTEL, C. Sam., III, 1890, p. 182.
- * *Anodon limosa* HEUDE, C. F. Nank., VI, 1880, pl. xliii, fig. 83.
- * *Anodonta limosa* PÆTEL, C. Sam., III, 1890, p. 181.
- * *Anodon livida* HEUDE, C. F. Nank., VI, 1880, pl. xliii, fig. 84.
- * *Anodonta livida* PÆTEL, C. Sam., III, 1890, p. 181.
- * *Anodon castanea* HEUDE, C. F. Nank., VI, 1880, pl. xliii, fig. 85.
- * *Anodonta castanea* PÆTEL, C. Sam., III, 1890, p. 177.
- * *Anodon minuta* HEUDE, C. F. Nank., VI, 1880, pl. xliv, fig. 86.
- * *Anodonta minuta* PÆTEL, C. Sam., III, 1890, p. 182.
- * † *Anodon succinea* HEUDE, C. F. Nank., VI, 1880, pl. xliv, fig. 87.
- * *Anodonta succinea* PÆTEL, C. Sam., III, 1890, p. 185.

- * † *Anodon chiniana* HEUDE, C. F. Nank., VI, 1880, pl. XLV, fig. 88.
 * *Anodonta chiniana* PÆTEL, C. Sam., III, 1890, p. 177.
 * *Anodonta scaphidium* HEUDE, C. F. Nank., VI, 1880, pl. XLVI, fig. 89.
 * *Anodonta scaphidium* PÆTEL, C. Sam., III, 1890, p. 184.
 * † *Anodon puerorum* HEUDE, C. F. Nank., VII, 1880, pl. XLVII, fig. 90.
 * *Anodonta puerorum* PÆTEL, C. Sam., III, 1890, p. 183.
 * *Anodon indecora* HEUDE, C. F. Nank., VI, 1880, pl. XLVIII, fig. 91.
 * *Anodonta indecora* PÆTEL, C. Sam., III, 1890, p. 180.
 * *Anodon sorini* HEUDE, C. F. Nank., VII, 1881, pl. XLIX, fig. 92.
 * *Anodonta sorini* PÆTEL, C. Sam., III, 1890, p. 185.
 * *Anodon rosea* HEUDE, C. F. Nank., VII, 1881, pl. I, fig. 93.
 * *Anodonta rosea* PÆTEL, C. Sam., III, 1890, p. 184.
 * *Anodon aubreyi* HEUDE, C. F. Nank., VII, 1881, pl. LII, fig. 97.
 * *Anodonta aubreyi* PÆTEL, C. Sam., III, 1890, p. 176.
 * *Anodon confusa* HEUDE, C. F. Nank., VII, 1881, pl. LIII, fig. 99.
 * *Anodonta confusa* PÆTEL, C. Sam., III, 1890, p. 178.
 * *Anodon obtusata* HEUDE, C. F. Nank., VII, 1881, pl. LIV, fig. 100.
 * *Anodon rubella* HEUDE, C. F. Nank., VII, 1881, pl. LIV, fig. 100 bis.
 * *Anodonta rubella* PÆTEL, C. Sam., III, 1890, p. 184.
 * *Anodon pulchella* HEUDE, C. F. Nank., VII, 1881, pl. LV, fig. 101.
 * *Anodonta pulchella* PÆTEL, C. Sam., III, 1890, p. 183.
 * † *Anodon florida* HEUDE, C. F. Nank., VII, 1881, pl. LV, fig. 102.
 * *Anodonta florida* PÆTEL, C. Sam., III, 1890, p. 179.
 * *Anodonta retusa* HEUDE,¹ J. de Conch., XXXII, 1884, p. 20.—PÆTEL, Conch. Sam., III, 1890, p. 184.
 * *Anodon intermerata* HEUDE, C. F. Nank., IX, 1885, pl. LXVII, fig. 130.
 * *Anodonta intermerata* PÆTEL, C. Sam., III, 1890, p. 180.
 * *Anodon filippiana* HEUDE, C. F. Nank., IX, 1885, pl. LXVIII, fig. 131.
 * *Anodonta filippiana* PÆTEL, C. Sam., III, 1890, p. 183.
 * *Anodon fantozatiana* HEUDE, C. F. Nank., IX, pl. LXIX, fig. 132.
 * *Anodonta fantozatiana* PÆTEL, C. Sam., III, 1890, p. 179.

China; Cambodia; Siam; Amoor River?

† ANODONTA FENOUILII Heude.

- * *Anodon fenouilii* HEUDE, C. F. Nank., IV, 1878, pl. XXXI, fig. 64.

China.

ANODONTA JOURDYI Morlet.

- * *Anodonta jourdyi* MORLET, Jl. de Conch., XXXIV, 1886, pp. 76, 288, pl. xv, figs. 1, 1a.—* PÆTEL, C. Sam., III, 1890, p. 180.

Tonkin.

† ANODONTA LAUTA von Martens.

- * *Anodonta lanta* VON MARTENS, S. B. Nat. Fr., 1877, p. 117; Abh. Senck. Nat. Ges., X, 1877, p. 152, fig. 1.—* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 434, pl. XXI, fig. 1; XXII, fig. 1 (var. *rostrata*).—* PÆTEL, C. Sam., III, 1890, p. 191.—* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 150.
 * *Anodonta woodiana* KOBELT,² Abh. Senck. Nat. Ges., XI, 1879, p. 433, pl. xx, fig. 1.—VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 151.

Japan.

¹ New name for *A. obtusa* preoccupied.

² This differs from *A. woodiana* of Lea, which I think has not been found in Japan. I think this is a form of *lauta*.

† ANODONTA JAPONICA von Martens.

* *Anodonta japonica* VON MARTENS in Clessin, Conch. Cab. An., 1874, p. 144, pl. XLVII, figs. 3, 4.—* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 436, pl. XXII, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 150, fig. 2.

* *Anodonta cellensis* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 437, pl. XXII, fig. 4.

* *Anodonta kobelti* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 152, fig. 1.

* *Anodonta haconensis* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 161, fig. 3.

Japan.

ANODONTA LUCIDA Heude.

* *Anodon lucida* HEUDE, C. F. Nank., III, 1877, pl. xx, fig. 43.

China.

† ANODONTA RIVULARIS Heude.

* *Anodon rivularis* HEUDE, C. F. Nank., III, 1877, pl. xx, fig. 44.

* *Anodonta rivularis* PÆTEL, C. Sam., III, 1890, p. 184.

China.

† ANODONTA HARLANDI Baird and Adams.

* *Anodonta harlandi* BAIRD and ADAMS, Pr. Zool. Soc. Lond., 1867, p. 492, pl. XXVI, figs. 3, 3a.—* PÆTEL, C. Sam., III, 1890, p. 180.

* *Anodon harlandi* HEUDE, C. F. Nank., IV, 1878, pl. xxv, fig. 55.

China.

ANODONTA GLOBOSULA Heude.

* *Anodon globosula* HEUDE, C. F. Nank., IV, 1878, pl. xxv, fig. 54.

China.

† ANODONTA EUSCAPHYS Heude.

* *Anodon euscaphys* HEUDE, C. F. Nank., V, 1879, pl. xxxv, fig. 68.

* *Anodonta euscaphys* HEUDE, C. Sam., III, 1890, p. 179.

China.

ANODONTA FLUMINEA Heude.

* *Anodon fluminea* HEUDE, C. F. Nank., III, 1877, pl. xx, fig. 42.

* *Anodon torrentis* HEUDE, C. F. Nank., IV, 1878, pl. xxix, fig. 61.

* *Anodonta fluminca* PÆTEL, C. Sam., III, 1890, p. 179.

China.

ANODONTA PUMILA Heude.

* *Anodon pumila* HEUDE, C. F. Nank., V, 1879, pl. xxxvii, fig. 72.

* *Anodonta pumila* PÆTEL, C. Sam., III, 1890, p. 183.

China.

ANODONTA DOLIOLUM Heude.

* *Anodon doliolum* HEUDE, C. F. Nank. IV, 1878., pl. xxvii, fig. 57.

China.

ANODONTA CALIPYGOS Kobelt.

**Anodonta calipygos* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 435, pl. XIX, fig. 1.—* PÆTEL, C. Sam., III, 1890, p. 177.—* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 150.

Japan.

ANODONTA UNDULIFERA Clessin.

**Anodonta undulifera* CLESSIN, Conch. Cab. Ano., 1876, p. 233, pl. LXXVI, figs. 1, 2.

China.

(Group of *Anodonta arcæformis*.)

Shell elliptical, with the dorsal and ventral lines parallel, greatly inflated, rounded in front, pointed and having a slight dorsal wing behind; umbonal region full, but the beaks flattened; the sculpture, consisting of numerous ridges, curved in front and nearly following the growth lines, then running backward in an almost straight line and ending at the low posterior ridge.

Animal unknown.

†ANODONTA ARCÆFORMIS Heude.

**Anodon arcæformis* HEUDE, C. F. Nank., III, 1877, pl. XIX, fig. 40.

**Anodonta arcæformis* PÆTEL, C. Sam., III, 1890, p. 176.

China.

(Group of *Anodonta grandis*.)

Shell oval, inflated, with a slight post-dorsal wing; umbonal region inflated; beak sculpture consisting of several coarse, irregular, often broken ridges, which are more or less doubly looped and generally nodulous, especially at the bases of the loops; epidermis usually rather smooth.

Animal with large gills, inner the larger, especially in front, free nearly or quite the entire length of the abdominal sac; palpi large and long; mantle much thickened at the border.

†ANODONTA GRANDIS Say.¹

Anodonta grandis SAY, N. Harm. Diss., II, 1829, p. 341.—* CONRAD, New F. W. Shells, 1834, p. 73.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* L. W. SAY, Terr. and Fluv. Shells, 1840, p. 12.—* HANLEY, Test. Moll., 1842, p. 220; * Biv. Shells, 1843, p. 220.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1873, p. 96, pl. XXX, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* BAKER, Moll. Chicago, Pt. 1, 1898, p. 51, pls. II, III, fig. 1; IV, fig. 1.

¹A species having a very wide distribution and abundant in individuals. It is an exceedingly variable form, and a large number of names have been bestowed on its mutations, all of which seem to be closely connected. I have retained some of these in a varietal sense.

- **Margarita (Anodonta) grandis* LEA, Syn., 1836, p. 52; 1838, p. 31.
 **Anodon grandis* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* SOWERBY, Conch. Icon., XVII, 1870, pl. i, fig. 1.
 **Margaron (Anodonta) grandis* LEA, Syn., 1852, p. 51; 1870, p. 81.
 *†*Anodonta ovata* LEA,¹ Tr. Am. Phil. Soc., VI, 1838, p. 2, pl. II, fig. 2; Obs., II, 1838, p. 2, pl. II, fig. 2.—* TROSCHER, Arch. für Nat., V, 1839; Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 219.—* CONRAD, Pr. Ac. N. Sci. Phila., 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CALKINS, Pr. Ottawa Ac., 1874, p. 47.—* CLESSIN, Conch. Cab. Ano., 1874, p. 121, pl. XXXIX, figs. 2, 3.—* PÆTEL, Conch. Sam., III, 1890, p. 182.
 **Margarita (Anodonta) ovata* LEA, Syn., 1836, p. 52; 1838, p. 30.
 **Anodon ovata* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
 **Margaron (Anodonta) ovata* LEA, Syn., 1852, p. 50; 1870, p. 80.
 *†*Margarita (anodonta) salmonia* LEA, Syn., 1836, p. 51; 1838, p. 30.²
 *†*Anodonta salmonia* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 45, pl. XIV, fig. 41; * Obs., II, 1838, p. 45, pl. XIV, fig. 41.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 218.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 184.
 **Anodon salmonia* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* SOWERBY, Conch. Icon., XVI, 1867, pl. XIX, fig. 44.
 **Margaron (Anodonta) salmonia* LEA, Syn., 1852, p. 50; 1870, p. 80.
 *†*Anodonta lewisii* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 84; * JI. Ac. N. Sci. Phila., IV, 1860, p. 362, pl. LXII, fig. 187.—* Obs., VIII, p. 44, pl. LXII, fig. 187.—* CLESSIN, Conch. Cab. Ano., 1874, p. 143, pl. XLIX, figs. 5, 6.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 56.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
 **Anodon lewisii* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXV, fig. 142.
 **Margaron (Anodonta) lewisii* LEA, Syn., 1870, p. 80.

† ANODONTA GRANDIS var. FOOTIANA Lea.

- **Anodonta footiana* LEA, Pr. Am. Phil. Soc., I, 1840, p. 289; * Tr. Am. Phil. Soc., VIII, 1842, p. 225, pl. XX, fig. 44; * Obs., III, 1842, p. 63, pl. XX, fig. 44.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1876, p. 227, pl. LNV fig. 5; LXXIV, fig. 3.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 56.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.—* BAKER, Moll. Chicago, Pt. 1, 1898, p. 54, pl. III, figs. 2-4; v, fig. 2; VIII, fig. 5.
 **Margaron (Anodonta) footiana* LEA, Syn., 1852, p. 49; 1870, p. 78.
 **Anodon footiana* SOWERBY, Conch. Icon., XVII, 1867, pl. XIV, fig. 48.
 *†*Anodonta marryattana* LEA, Pr. Am. Phil. Soc., I, 1840, p. 289; * Tr. Am. Phil. Soc., VIII, 1842, p. 226, pl. XX, fig. 45; * Obs., III, 1842, p. 64, pl. XX, fig. 45.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1873, p. 72, pl. XXVI, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
 **Margaron (Anodonta) marryattana* LEA, Syn., 1852, p. 51; 1870, p. 82.
 **Anodon marryattanus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVIII, fig. 111.
 **Anodonta sulcata* KUSTER, Conch. Cab. Ano., 1873, p. 62, pl. XVIII, fig. 1.

¹I have seen Say's type of *A. grandis*, and it appears to be identical with Lea's *ovata*.

²This is an *ovata* which had become diseased internally, probably from the work of a *Trematod*, so that the naere became roughened or blistered, and generally salmon colored.

- * *Anodonta nilssonii* KUSTER, part, Conch. Cab. Ano., 1853, p. 61, pl. xvii, figs. 3, 4.
 * *Anodonta imbricata* ANTHONY, Am. J. Conch., I, 1865, p. 159, pl. xiv, fig. 1.
 * *Anodonta imbricata* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.
 * *Anodon subinflata* ANTHONY, Am. J. Conch., I, 1865, p. 160, pl. xv, fig. 1.
 * *Anodonta subinflata* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 185.
 * ? *Anodon edentulus* SOWERBY, Conch. Icon., XVII, 1867, pl. xvii, fig. 60.
 * *Anodonta houghtonensis* CURRIER, Shell-bearing Moll. Mich., 1881, p. 14, pl. 1, fig. 2.—* B. H. WRIGHT, Check List, 1888.

† ANODONTA GRANDIS var. LEONENSIS Lea.

- * *Anodonta leonensis* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 169; * JI. Ac. N. Sci. Phila., VI, 1866, p. 25, pl. ix, fig. 24; * Obs., XI, 1867, p. 29, pl. ix, fig. 24.—* CLESSIN, Conch. Cab. Ano., 1874, p. 131, pl. xlii, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
 * *Margarou (Anodonta) leonensis* LEA, Syn., 1870, p. 78.

† ANODONTA GRANDIS var. GIGANTEA Lea.¹

- * *Anodonta gigantea* LEA, Tr. Am. Phil. Soc., 1834, p. 1, pl. i, fig. 1; * Obs., II, 1838, p. 1, pl. i, fig. 1.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 219.—* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* KUSTER, Conch. Cab. Ano., 1853, p. 6, pl. i, figs. 1, 2.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.
 * *Margarita (Anodonta) gigantea* LEA, Syn., 1836, p. 52; 1838, p. 31.
 * *Margarou (Anodonta) gigantea* LEA, Syn., 1852, p. 50; 1870, p. 81.
 * *Anodon gigantea* SOWERBY, Conch. Icon., XVII, 1867, pl. viii, fig. 18.
 * *Anodon giganteus* SOWERBY, Conch. Icon., XVII, 1870, pl. xxxvii, fig. 152.
 * † *Anodonta plana*² LEA, Tr. Am. Phil. Soc., V, 1834, p. 48, pl. vii, fig. 18; Obs., I, p. 160, pl. vii, fig. 18.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* HANLEY, Test. Moll., 1842, p. 219.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874, p. 142, pl. xlvi, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 183.
 * *Margarita (Anodonta) plana* LEA, Syn., 1836, p. 52; 1838, p. 30.
 * *Anodon plana* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 201, pl. xvii, fig. 232.—* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* SOWERBY, Conch. Icon., XVII, 1869, pl. xxiv, fig. 94.
 * *Margarou (Anodonta) plana* LEA, Syn., 1852, p. 50; 1870, p. 80.
 * *Anodonta declivis* CONRAD, Am. J. Sci., XXV, 1834, p. 341, pl. i, fig. 11; New F. W. Shells, 1834, p. 73.—* FERUSSAC, Guer. Mag., 1835, p. 25.—MÖLLER, Syn., Nov. Gen., 1836, p. 194.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.
 * † *Margarita (Anodonta) decora* LEA, SYN., 1836, p. 52; 1838, p. 30.
 * *Anodonta decora* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 64, pl. xx, fig. 63; * Obs., II, 1838, p. 64, pl. xx, fig. 63.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 219.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1873, p. 71, pl. xvii, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 178.

¹A variety of *grandis*. The type is a large, heavy form, with a considerably developed posterior ridge, the shell somewhat truncated above and behind the ridge. I have frequently seen such shells which are evidently pathologic.

²This name is written *palna* in above citation; a typographical error, no doubt.

- * *Anodon decora* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* SOWERBY, Conch. Icon., XVII, 1869, pl. XXI, fig. 83.
- * *Margaron (Anodonta) decora* LEA, Syn., 1852, p. 50; 1870, p. 81.
- * † *Anodonta harpethensis* LEA, Pr. Am. Phil. Soc., I, 1840, p. 289; Tr. Am. Phil. Soc., VIII, 1842, p. 224, pl. XIX, fig. 42; * Obs., III, 1842, p. 62, pl. XIX, fig. 42.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1876, p. 217, pl. LXXII, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.
- * *Margaron (Anadonta) harpethensis* LEA, Syn., 1852, p. 50; 1870, p. 81.
- * *Anodon harpethensis* SOWERBY, Conch. Icon., XVII, 1869, pl. XXI, fig. 82.
- * *Anodon subangulata* ANTHONY, Am. Jl. Conch., I, 1865, p. 158, pl. XIII, fig. 1.
- * *Anodonta subangulata*, B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 185.
- * *Anodonta opalina* KUSTER, Conch. Cab. Ano., 1853, p. 60, pl. XVI, figs. 1, 2.
- * *Anodon opalina* ANTHONY, Am. Jl. Conch., I, 1865, p. 159, pl. XIV, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 182.¹
- * *Anodon mcneili* ANTHONY, Am. Jl. Conch., II, 1866, p. 144, pl. VI, fig. 1.
- * *Anodon subgibbosa* ANTHONY, Am. Jl. Conch., II, 1866, p. 144, pl. VI, fig. 2.
- * *Anodonta subgibbosa* B. H. WRIGHT, Check List, 1888.—PÆTEL, Conch. Sam., III, 1890, p. 185.
- * *Anodon subgibbosus* SOWERBY, Conch. Icon., XVIII, 1870, pl. XXVII, fig. 107.
- * *Margaron (Anodonta) subglobosa* LEA, Syn., 1870, p. 81.²
- * *Anodon inornata* ANTHONY, Am. Jl. Conch., II, 1866, p. 145, pl. VII, fig. 1.
- * *Anodonta orata* SOWERBY, Conch. Icon., XVII, 1868, pl. XXII, fig. 85.

† ANODONTA GRANDIS var. BENEDICTENSIS Lea.

- * *Symphynota benedictensis* LEA, Tr. Am. Phil. Soc., V., 1834, p. 104, pl. XVI, fig. 48; * Obs., I, 1834, p. 216, pl. XVI, fig. 48.
- * *Anodonta benedictensis* FERUSSAC, Guer. Mag., 1835, p. 25.—* HANLEY, Test. Moll., I, 1842, p. 216.—* C. B. ADAMS, Thompson's Hist. Vt., 1842, p. 164; F. W. and L. S. of Vt., p. 14.—* DE KAY, Zool. N. Y., Pt. 5, 1843, p. 204, pl. XVIII, fig. 235.—* HANLEY, Biv. Shells, 1843, p. 216.—* STIMPSON, Shells of N. Eng., 1851, p. 15.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1875, p. 163, pl. LIV, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 177.
- * *Margarita (Anodonta) benedictensis* LEA, Syn., 1836, p. 28; 1838, p. 29.
- * *Anodon benedictensis* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVI, fig. 99.
- * *Margaron (Anodonta) benedictensis* LEA, Syn., 1852, p. 47.
- * *Margaron (Anodonta) benedictii* LEA, Syn., 1870, p. 75.
- * *Anodonta benedictii* LATCHFORD, Tr. Ottawa F. N. Cl., 1882, p. 55.—* B. H. WRIGHT, Check List, 1888.
- Anodonta cultrata* GOULD, in letter.

Entire Mississippi system; Upper St. Lawrence drainage; Red River of the North; Lake Winnipeg; Manitoba; southwest to Texas; south-east Pennsylvania??

† ANODONTA BEALEI Lea.

- * *Anodonta bealei* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 194; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 26, pl. IX, fig. 25; * Obs., XI, 1867, p. 30, pl. IX, fig. 25.—

¹ Kuster and Anthony appear to have applied the same name independently to this species.

² As of Anthony.

* CLESSIN, Conch. Cab. Ano., 1874, p. 132, pl. XLIV, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 176.

* *Margaron (Anodonta) bealei* LEA, Syn., 1870, p. 81.

Texas to Kansas.

† ANODONTA TEXASENSIS Lea.¹

* *Anodonta texasensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 113; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 366, pl. LXII, fig. 191; * Obs., VIII, 1860, p. 48, pl. LXIII, fig. 191.—* CLESSIN, Conch. Cab. Ano., 1873, p. 109, pl. XXXIII, figs. 7, 8.—

* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

* *Anodonta texasensis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXVI, fig. 146.

* *Margaron (Anodonta) texasensis* LEA, Syn., 1870, p. 81.

Texas.

† ANODONTA DANIELSII Lea.

* *Anodonta danielsii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 139; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 365, pl. LXIII, fig. 190; * Obs., VIII, 1860, p. 47, pl. LXIII, fig. 190.—* CLESSIN, Conch. Cab. Ano., 1873, p. 108, pl. XXXIII, figs. 1, 2.—

* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 178.

* *Margaron (Anodonta) danielsii* LEA, Syn., 1870, p. 78.

* *Anodonta danielsii* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXVI, fig. 148.

* *Margaritana danielsii* PÆTEL, Conch. Sam., III, 1890, p. 173.

Kansas; Indian Territory.

† ANODONTA OPACA Lea.

* *Anodonta opaca* LEA, Tr. Am. Phil. Soc., X, 1852, p. 285, pl. XXV, fig. 46; * Obs., V, 1852, p. 41, pl. XXV, fig. 46.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1875, p. 209, pl. LXIV, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Anodonta) opaca* LEA, Syn., 1852, p. 50; 1870, p. 80.

Louisiana; Mississippi; north to Kansas.

† ANODONTA STEWARTIANA Lea.

* *Anodonta stewartiana* LEA, Tr. Am. Phil. Soc., V, 1834, p. 47, pl. VI, fig. 17; Obs., I, 1834, p. 159, pl. VI, fig. 17.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* HANLEY, Test. Moll., 1842, p. 220; * Biv. Shells, 1843, p. 220.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874, pl. XLVIII, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

* *Margarita (Anodonta) stewartiana* LEA, Syn., 1836, p. 52; 1838, p. 31.

* *Anodon stewartiana* CATLOW and REEVE, Conch. Nom., 1845, p. 68.

* *Anodon stewartianus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXII, fig. 133.

* *Margaron (Anodonta) stewartiana* LEA, Syn., 1852, p. 51; 1870, p. 81.

*† *Anodonta virens* LEA, Tr. Am. Phil. Soc., X, 1852, p. 290, pl. XVIII, fig. 53; * Obs., V, 1852, p. 46, pl. XXVIII, fig. 53.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 267.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Anodonta) virens* LEA, Syn., 1852, p. 51; 1870, p. 81.

* *Anodon virens* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXIV, fig. 138.

Arkansas; Louisiana; Texas.

¹ A very young, broken shell, greatly inflated in the post basal region, is all that Lea has in his collection. It may be a distinct species, or a mere variety of *grandis*.

† ANODONTA CORPULENTA Cooper.

* *Anodonta corpulenta* COOPER, App. to Narrative, Exp. Miss. to It. L., 1834, p. 154.—* MÖLLER, Syn. Nov. Gen., 1836, p. 193.—* COOPER, Second App. School. Expl. Exp., 1855, p. 516.—* CALKINS, Pr. Ottawa Ac. Sci., 1874, p. 47.—* B. H. WRIGHT, Check List, 1888.

* *Anodon corpulenta* SOWERBY, Conch. Icon., XVII, 1870, pl. xxxii, fig. 129.

* *Margaron (Anodonta) corpulenta* LEA, Syn., 1870, p. 81.

Missouri River; Upper Mississippi River drainage; east to Indiana; Tyler, Texas.? Appears to be replaced in the South by *A. stewartiana*.

† ANODONTA LINNEANA Lea.

* *Anodonta linneana* LEA, Tr. Am. Phil. Soc., 1852, p. 289, pl. xxvii, fig. 51;

* Obs., V, 1852, p. 45, pl. lxxvii, fig. 51.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1874, p. 117, pl. xxxvi, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 181.

* *Margaron (Anodonta) linneana* LEA, Syn., 1852, p. 51; 1870, p. 81.

* *Anodon linneanus* SOWERBY, Conch. Icon., XVII, 1870, pl. xxxv, fig. 144.

Louisiana; Texas.

† ANODONTA GLOBOSA Lea.

* *Margarita (Anodonta) globosa* LEA, Syn., 1836, p. 52.

* *Anodonta globosa* LEA, Pr. Am. Phil. Soc., II, 1841, p. 31; * Tr. Am. Phil. Soc., VIII, 1842, p. 241, pl. xxiv, fig. 56; * Obs., III, 1842, p. 79, pl. xxiv, fig. 56.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1875, p. 213, pl. lxxv, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 529, pl. lxxviii, figs. 1, 1a.

* *Anodon globosa* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* SOWERBY, Conch. Icon., XVII, 1870, pl. xxxv, fig. 141.

* *Margaron (Anodonta) globosa* LEA, Syn., 1852, p. 51; 1870, p. 81.

* † *Anodon nopalatensis* SOWERBY,¹ Conch. Icon., XVII, 1867, pl. xvi, fig. 58.—* CLESSIN, Conch. Cab. Ano., 1876, p. 223, pl. lxxiii, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 182.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 531.

* *Margaron (Anodonta) nopalatensis* LEA, Syn., 1870, p. 81.

Mexico.

ANODONTA TABASCOENSIS Morelet.

* *Anodonta tabascoensis* MORELET, Jl. de Conch., XXXII, 1884, p. 124.—* PÆTEL, Conch. Sam., III, 1890, p. 185.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 530, pl. lxxii, fig. 1.

Tabasco, Mexico.

¹ Lea's *globosa* is a young shell. Sowerby's *nopalatensis* is the adult. There is a magnificent specimen in the collection of the Philadelphia Academy of Natural Sciences, 7½ inches long and 5½ inches high.

ANODONTA MICANS Anthony.

**Anodonta micans* ANTHONY, Am. Jl. Conch., I, 1865, p. 162, pl. xvi, fig. 1.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Anodonta) micans* LEA, Syn., 1870, p. 78.

Said to come from Texas. I do not know it, nor where it groups, though it seems something like *A. kennicottii*.

ANODONTA LURULENTA Morelet.

**Anodonta lurulenta* MORELET, Test. Nov. Pt. 1, 1829, p. 28.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 523, pl. LXIV, figs. 6, 6a.

Guatemala; Yucatan.

†ANODONTA KENNICOTTII Lea.

**Anodonta kennicottii* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 56; *Jl. Ac. N. Sci. Phila., V, 1862, p. 214, pl. xxxiii, fig. 283; *Obs., IX, 1863, p. 46, pl. xxxiii, fig. 283.—* CLESSIN, Conch. Cab. Ano., 1874, p. 153, pl. XLIX, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Anodonta) kennicottii* LEA, Syn., 1870, p. 78.

*†*Anodonta simpsoniana* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 56; *Jl. Ac. N. Sci. Phila., V, 1862, p. 212, pl. xxxii, fig. 281; *Obs., IX, 1863, p. 34, pl. xxxii, fig. 281.—* CLESSIN, Conch. Cab. Ano., 1874, p. 119, pl. xxxvii, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 184.

**Margaron (Anodonta) simpsoniana* LEA, Syn., 1870, p. 78.

**Anodon simpsonianus* SOWERBY, Conch. Icon., XVII, 1870, pl. xxxvii, fig. 153.

*†*Anodonta dallasiana* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 190; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 29, pl. xi, fig. 28; *Obs., XI, 1863, p. 33, pl. xi, fig. 28.—* CLESSIN, Conch. Cab. Ano., 1873, p. 107, pl. xxxiii, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 178.

**Margaron (Anodonta) dallasiana* LEA, Syn., 1870, p. 78.

Upper and middle St. Lawrence River system; northwest into the Mackenzie drainage.

†ANODONTA PEPINIANA Lea.

**Anodonta pepinianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 96, pl. xvi, fig. 51.—* TROSCHEL, Arch. für Nat., V, 1839, II, p. 239.

**Anodonta pepinianus* SOWERBY, Conch. Icon., XVII, 1870, pl. xxxvi, fig. 150.

**Anodonta pepiniana* LEA, Obs., II, 1838, p. 96, pl. xvi, fig. 51.—HANLEY, Test. Moll., 1842, p. 220; Biv. Shells, 1843, p. 220.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874, p. 158, pl. LIII, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 183.

**Margarita (Anodonta) pepiniana* LEA, Syn., 1838, p. 30.

**Margaron (Anodonta) pepiniana* LEA, Syn., 1872, p. 49; 1850, p. 78.¹

Upper and middle St. Lawrence drainage; Lake Winnipeg.

¹Although this resembles to some extent the so-called *Anodonta modesta*, and is sometimes slightly incurved in front of the beaks, the beak sculpture is that of the *A. grandis* group, and quite different from that of *A. modesta*.

ANODONTA LUGUBRIS Say.

Anodonta lugubris SAY, N. Harm. Diss. II, 1829, p. 340.¹

The following are indeterminate and spurious *Anodontas*:

**Anodon anatinus* SOWERBY, Rich. Faun. Boreal Am., III, 1836, p. 316.

Saskatchewan River; probably *A. implicata*.

**Anodonta apollonica* BOURGUIGNAT, Moll. Aceph. Eur., 1881, p. 91.

Asia Minor.

**Anodonta aureus* PÆTEL, C. Sam., III, 1890, p. 176.

China.

**Anodonta brandti* DROUET, Jl. de Conch., 1888, p. 108.

**Anodonta callifera* VON MARTENS, Proc. Zool. Soc., 1860, p. 15.

**Anodonta chantrei* BOURGUIGNAT, J. de Conch., 1883, p. 187.

**Anodonta chinensis* PÆTEL, C. Sam., III, 1890, p. 177.

**Anodon cochlearis* SOWERBY, C. Icon., XVII, 1870, pl. xxxiii, fig. 135. Probably a *glabaris*.

**Anodonta cornea* PHILIPPI, Menke's Zeits., 1848, p. 130.

**Anodonta curvatus* JAY, Cat., 1850, p. 27.

Anodon dalei LESSON, Oeuvres Buffon, I, p. 155, pl. III, fig. 1. ?

**Anodonta dignota* RAFINESQUE, Cont. Mon., 1831, p. 6.

**Anodonta fragilis* FITZINGER, Syst. Verz., 1833, p. 120.

**Anodonta gallandi* BOURGUIGNAT, Mat. Aceph. Eur., 1881, p. 95.

**Anodonta hockingensis* CALL, Am. Nat., 1880, p. 529, Moore, manuscript. According to Call, it is *A. grandis* Say.

**Anodonta inflata* RAFINESQUE, Cont. Monog., 1831, p. 6.

**Anodonta laminata* ROCHEBRUNE, Bull. Soc. Philom., VI, 1882, p. 40.

**Anodonta martensi* CLESSIN, C. Cab. An., 1876, p. 181, pl. LXIII, fig. 2.

**Anodonta ohioensis* RAFINESQUE, An. Gen. Sci. Brux., V, 1820, p. 316.

**Anodonta ovata* STARK, Elements Nat. Hist., II, 1822, p. 90.

**Anodon pictus* SWAINSON, Ex. Conch., 2d ed., 1841, p. 39.

**Anodonta polymorpha* LEA, Syn., 1870, p. 84. Credited to Kuster. Where?

**Anodonta pseudodontopsis* BOURGUIGNAT, Jl. de Conch., 1883, p. 187.

**Anodontites radiata* VALENCIENNES, Enc. Meth., 1824, p. 147, pl. cccii, fig. 4 = *Modiolaria nigra*.

**Anodonta recurvirostra* LEA, Syn., 1870, p. 84; Kuster (?).

**Anodonta rugifera* DUNKER, Mal. Bl., 1858, p. 225. Probably a *Spatha*.

**Anodonta schlastii* MOUSSON, J. de Conch., 1874, p. 51.

**Anodonta sedakowi* SIECMASCHKO, Bull. de Ac. Petersb., 1849, p. 225.

**Anodonta somersi* CALL, Am. Nat., 1880, p. 529, credited to Moore, manuscript, *A. grandis* fide Call.

**Anodonta subrostrata* PHILIPPI, Mal. Bl., 1869, p. 39.

**Anodonta subsinuata* PHILIPPI, Mal. Bl., 1869, p. 41. A *glabaris* probably.

**Anodonta sulcosa* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503. Said to be of Conrad. Where?

**Anodon triangularis* SOWERBY, Conch. Icon., XVII, 1867, pl. xv, fig. 56.

**Anodonta trigona* HELD, Isis., 1836, p. 280, *A. cygnea* probably. The name was used by Spix in 1827.

¹I do not know what this is. It is said to come from the Cumberland River, and is very likely one of the forms of *A. grandis*. I have omitted the synonymy.

* *Anodonta truncata* KUSTER, Faun. Dalm., 1866, p. 131.

* *Anodonta tuniziana* MORELET, J. de Conch., 1864, p. 156.

* *Anodonta viridis* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503, as of Lea. Lea did not describe it.

Genus COLLETOPTERUM Bourguignat, 1881.

(Type, *Anodonta letourneuxi* Bourguignat.)

Colletopterum BOURGUIGNAT, Lettres Malacologiques, 1881, p. 45.

Shell inflated, thin, winged in front and behind, hinge arched, very short, without teeth, but with a feeble lateral lamella shown in pronounced relief; ligament internal.

Animal unknown.

COLLETOPTERUM LETOURNEUXI Bourguignat.

Anodonta letourneuxi BOURGUIGNAT, Annales Mal., I, 1870, p. 76.

* *Anodonta (Colletopterum) letourneuxi* WESTERLUND, Faun. Pal., II, 1890, Pt. 7, p. 310.

Colletopterum letourneuxi BOURGUIGNAT, Lett. Mal., 1882, p. 46; * Bull. Soc. Mal. Fr., VII, 1890, pl. VI, figs. 1, 2.

Servia, at Belgrade.

COLLETOPTERUM PRÆCLARUM Bourguignat.

Anodonta præclara BOURGUIGNAT, Ann. Mal., I, 1870, p. 78.

* *Anodonta (Colletopterum) præclara*, WESTERLUND, Faun. Pal., II, 1890, Pt. 7, p. 310.

Colletopterum præclarum BOURGUIGNAT, Lett. Mal., 1882, p. 46.

Bulgaria, at Rutschuk.

COLLETOPTERUM EXIMIUM Bourguignat.

Anodonta eximia BOURGUIGNAT, Ann. Mal., I, 1870, p. 80.

* *Anodonta (Colletopterum) eximia* WESTERLUND, Faun. Pal., II, 1890, Pt. 7 p. 310.

Wallachia at Giurgevo.

COLLETOPTERUM TANOUSI Bourguignat.

Anodonta tanousi BOURGUIGNAT, Ann. Mal., I, 1870.

* *Anodonta (Colletopterum) tanousi* WESTERLUND, Faun. Pal., II, 1890, Pt. 7, p. 311.

Servia at Belgrade.¹

Genus GABILLOTIA Servain, 1890.

(Type, *Anodonta pseudodopsis* Locard.)

Gabillotia SERVAIN, Bull. Soc. Mal. Fr., VII, 1890, p. 296.

Shell large, subsolid, subcompressed, more or less rhomboid gaping behind; beaks low, with fine, broken, concentric sculpture; epidermis

¹ I am wholly unacquainted with this genus. All the species are from the Danube, and if the characters are accurately given it may possibly be a valid genus, though Westerlund gives it subgeneric rank under *Anodonta*. It is more than likely, however, that all the so-called species are merely specimens of the well-known *Anodonta cygnea*, having a dorsal wing which conceals the ligament, and something which may be vestiges of lateral teeth. Such examples occur among *Anodontas* in other parts of the world.

shining; teeth rudimentary, one in each valve, sometimes rather sharp pointed and flattened; hinge with occasional vestiges of laterals; epidermal matter mingled with the nacre on the hinge; nacre brilliant, often finely radially ridged, especially at the palleal line.

Animal unknown.

GABILLOTIA PSEUDODOPSIS Locard.

* *Auodonta pseudodopsis* LOCARD, Mal. d'Iacs Tib., 1883, p. 61, pl. XIX bis., figs. 1-3.

* *Gabillotia pseudodopsis*, SERVAIN, Bull. Soc. Mal. Fr., VII, 1890, p. 296, fig.

Syria.

GABILLOTIA LOCARDI Servain.

* *Gabillotia locardi* SERVAIN, Bull. Soc. Mal. Fr., VII, 1890, p. 296, pl. v, figs. 1, 2.

Asia Minor.

GABILLOTIA OPPERTI Bourguignat.

* *Unio opperti* Bourguignat, Rev. et Mag., VIII, 1856, p. 71, pls. VIII, fig. 6; IX, fig. 1.

* *Pseudodon opperti* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 182.

* *Margaritana opperti* PÆTEL, Conch. Sam., III, 1890, p. 173.

* *Margaritana euphratica* KOBELT, Icon., new ed., II, 1886, p. 26, pl. XLV, fig. 266.

Euphrates River.

† GABILLIOTIA EUPHRATICA Bourguignat.

* *Unio euphraticus* BOURGUIGNAT, Test. Nov., 1852, p. 28; * Cat. Rais., 1853, p. 75, pl. IV, figs. 1-3; * Rev. et Mag., VIII, 1856, p. 72.

* *Pseudodon euphratica* CONRAD, Am. Jl. Conch., I, 1865, p. 233.

Margaritana euphratica VON MARTENS, Vorderas Conch., 1874, p.*—KOBELT, Icon., new ed., II, 1886, p. 26, pl. XLV, fig. 266.—* PÆTEL, Conch. Sam., III, 1890, p. 173.

* *Leguminaia euphratica* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 188.

* *Unio churchillianus* SOWERBY, Conch. Icon., XVI, 1868, pl. XCVI, fig. 526.

† GABILLOTIA EUPHRATICA var. CHURCHILLIANUS Bourguignat.

* *Unio churchillianus* BOURGUIGNAT, Rev. et Mag., 1857, p. 18, pl. II, figs. 1-4.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Pseudodon churchillianus* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 183.

† *Monococondylea rhomboidea* LEA, Pr. Ac. N. Sci., Phila., III, 1859, p. 187; * Jl. Ac. N. Sci., Phila., IV, 1860, p. 263, pl. XLII, fig. 143; * Obs., VII, 1860, p. 81, pl. XLII, fig. 143.

* *Margarou (Monococondylea) rhomboidea* LEA, Syn., 1870, p. 72.

* *Microcondylea rhomboidea* PÆTEL, Conch. Sam., III, 1890, p. 175.

* *Leguminaia rhomboidea* KOBELT, Icon., new ed., VI, 1893, p. 94, pl. CLXXVIII, figs. 1124, 1125.

* *Unio rhomboideus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIX, fig. 480.

* *Pseudodon rhomboideus* WESTERLUND, Faun. Pal., II, pl. VII, 1890, p. 183.

Asiatic Turkey.

Genus LEGUMINAIA Conrad, 1865.

(Type, *Monocondylaea mardinensis* Lea.)*Leguminaia* CONRAD, Am. Jl. Conch., I, 1865, p. 233.*Microcondylaea* VEST, Verh. Mitth. Sieben. Ver. Nat., 1866, p. 201.*Microcondylus* DROUET, Jl. de Conch., 1879, p. 138.

Shell rhomboid-elliptical, slightly biangulate behind; posterior ridge faint and double; beaks anterior, sculptured with fine, concentric ridges which are sometimes slightly corrugated, but which show a tendency to form two rounded loops; surface smooth or with very faint corrugations on the posterior slope; epidermis rayless or nearly so; a single tooth in each valve, that in the left under the beak, that in the right in front of it, teeth smooth; epidermal and ligamentary matter mingled with the nacre along the hinge; the two front anterior muscle scars united, the hinder distinct, posterior scars faint; beak cavities shallow; dorsal scars few, irregularly disposed.

Animal with the outer branchiæ adherent to the mantle throughout their entire length; inner free from the abdominal sac. (Drouet.)

Section LEGUMINAIA Conrad, 1865.

(Type, *Monocondylaea mardinensis* Lea.)

Shell somewhat solid, elliptical to rhomboid; beaks rather full; teeth strong, with sometimes a slight secondary tooth in the left valve, well in front.

Group of *Leguminaia mardinensis*.

Characters as in the subgenus.

† LEGUMINAIA MARDINENSIS Lea.

* *Monocondylaea mardinensis* LEA, Pr. Ac. N. Sci., Phila., VIII, 1864, p. 286; * Jl. Ac. N. Sci. Phila., VI, 1869, p. 252, pl. XXX, fig. 67; * Obs., XII, 1869, p. 12, pl. XXX, fig. 67.

* *Leguminaia mardinensis* CONRAD, Am. Jl. Conch., I, 1865, p. 233.—* LOCARD, Arch. Mus. Lyon., III, 1883, p. 250.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 188.—KOBELT, Icon., new ed., VI, 1893, p. 92, pl. CLXXVII, figs. 1122, 1123.

* *Margaron (Monocondylaea) mardinensis* LEA, Syn., 1870, p. 73.

* *Margaritana mardinensis* CLESSIN, Conch. Cab. An., 1876, p. 266, pl. LXXXIII, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 173.

LEGUMINAIA MARDINENSIS var. CHANTREI Locard.

* *Leguminaia chantrei* LOCARD, Arch. Mus. Lyon, III, 1883, p. 252, pl. XIXbis, figs. 8-10.—* KOBELT, Icon, 1st sup., 1895, p. 23, pl. IV, fig. 3.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 198.

* *Monocondylaea chantreyi* PÆTEL, Conch. Sam., III, 1890, p. 174.

* *Leguminaia bourguignati* LOCARD, Arch. Mus. Lyon, III, 1883, p. 252, pl. XIXbis, figs. 11-18.—WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 189.

Southern Turkey in Asia.

LEGUMINAIA TRIPOLITANA Bourguignat.¹

* *Unio tripolitans* BOURGUIGNAT, Test. Nov., 1852, p. 28; * Cat. Rais., 1853, p. 75, pl. IV, figs. 12, 12a; * Rev. et Mag., 1856, p. 72.—* PÆTEL, Conch. Sam., III, 1890, p. 155.

* *Pseudodon tripolitans* CONRAD, Am. Jl. Conch., I, 1865, p. 233.

* *Margaritana tripolitana* CLESSIN, Conch. Cab. Ano., 1876, p. 265, pl. LXXXV, figs. 6, 7.—* PÆTEL, Conch. Sam., III, 1890, p. 174.

* *Leguminaia tripolitana* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 190.

Tripoli, Syria.

† LEGUMINAIA WHEATLEYI Lea.

* *Monocondylaea wheatleyi* LEA, Pr. Ac. N. Sci, Phila., VI, 1862, p. 176; * Jl. Ac. N. Sci., Phila., V, 1863, p. 400, pl. I, fig. 307; * Obs., X, 1863, p. 34, pl. I, fig. 307.

* *Pseudodon wheatleyi* CONRAD, Am. Jl. Conch., I, 1865, p. 233.

* *Margaron (Monocondylaea) wheatleyi* LEA, Syn., 1870, p. 72.

* *Microcondylaea (Margaritana) wheatleyi* CLESSIN, Conch. Cab. Ano., 1875, p. 259, pl. LXXXI, figs. 1, 2.

* *Myrocondylaea wheatleyi* PÆTEL, Conch. Sam., III, 1890, p. 175.

* *Leguminaia wheatleyi* LOCARD, Arch. Mus. Lyon, III, 1883, p. 276.—WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 189.

Southern Turkey in Asia.

LEGUMINAIA SAULCYI Bourguignat.

* *Unio sauleyi* BOURGUIGNAT, Test. Noviss., 1852, p. 27; * Cat. Rais., 1853, p. 74, pl. III, figs. 1-3.—* TRISTRAM, Pr. Zool. Soc. Lond., 1865, p. 544.

* *Pseudodon sauleyi* CONRAD, Am. Jl. Conch., I, 1865, p. 233.

* *Margaron (Monocondylaea) sauleyi* LEA, Syn., 1870, p. 72.

* *Microcondylaea sauleyi* CLESSIN, Conch. Cab. Ano., 1876, p. 260, pl. LXXXVI, figs. 4, 5.—* PÆTEL, Conch. Sam., III, 1890, p. 175.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 190.

Syria.

LEGUMINAIA MICHONII Bourguignat.

* *Unio michonii* BOURGUIGNAT, Test. Nov., 1852, p. 27; * Cat. Rais., 1853, p. 74, pl. III, figs. 10-12; Rev. et Mag., 1856, p. 72.

* *Pseudodon michonii* CONRAD, Am. Jl., I, 1865, p. 233.

* *Margaritana michonii* PÆTEL, Conch. Sam., III, 1890, p. 173.

* *Leguminaia michonii* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 190.

Jaffa, Syria.

(Group of *Leguminaia locardi*.)

Shell nearly evenly elliptical, somewhat inflated, rather thin, sub-transparent; beaks near the center, rather full, curved forward, with irregular undulations; epidermis bright yellowish brown; naere brilliant; pseudocardinals very obtuse, rather prominent and thick.

¹ Probably a mere variety of *L. mardinensis*.

LEGUMINAIA LOCARDI Simpson.

* *Pseudodon chantrei* LOCARD, Arch. Mus. Lyon, III, 1883, p. 254, pl. XIXbis, figs. 4-7.¹—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 183.

Lake Antioch, Syria.

Section MICROCONDYLÆA Vest, 1866.

(Type, *Anodonta uniopsis* LAMARCK.²)

Shell inequilateral, elongate, subrhomboid or elliptical, compressed, rather thin, with low beaks; teeth rudimentary, much compressed, a single one in each valve; nacre bluish or purplish white.

Animal, as in typical *Leguminaia*.

† LEGUMINAIA UNIOPSIS Lamarck.³

* *Anodonta uniopsis* LAMARCK, An. sans Vert., VI, 1819, p. 86.—* HANLEY, Test. Moll., 1842, p. 217; * Biv. Shells, 1843, p. 217.—* DESHAYES, Tr. Element., II, 1853, p. 218, pl. XXX, fig. 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* PÆTEL, Conch. Sam., III, 1890, p. 186.

* *Margarita (Anodonta) uniopsis* LEA, Syn., 1836, p. 50; 1838, p. 30.

* *Anodonta uniopsis* CATLOW and REEVE, Conch. Nom., 1845, p. 68.

* *Margaron (Anodonta) uniopsis* LEA, Syn., 1852, p. 49; 1870, p. 78.

* *Unio depressa* C. PFEIFFER, Nat. Deuts. Moll., 1825, Pt. 2, p. 32, pl. VIII, figs. 3, 4.⁴

* *Leguminaia depressa* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 191.

* *Alasmodonta compressa* MENKE, Syn., 1828, p. 106.—* PORRO, Mal. Como., 1838, p. 113.—* STABILE, Faun. Lug., 1845, p. 60, pl. III, fig. 71.

* *Unio bonelli* ROSSMÄSSLER, Icon., II, 1835, p. 24, pl. IX, fig. 134.⁵—* HANLEY, Test. Moll., 1842, p. 212; * Biv. Shells, 1843, p. 212, pl. XXIII, fig. 59.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIX, fig. 414.

* *Margarita (Margaritana) bonellii* LEA, Syn., 1836, p. 45; 1838, p. 27.

* *Margaritana bonellii* KUSTER, Conch. Cab. Unio, 1862, p. 296, pl. XCIX, fig. 1.—* KOBELT, Icon., 1884, p. 62, pl. XXV, figs. 208, 209; XXVI, fig. 210.

* *Margaron (Margaritana) bonellii* LEA, Syn., 1852, p. 43; 1870, p. 72.

* *Baphia bonellii* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.

¹Locard described this as a *Pseudodon*, and previously in the same year described a *Leguminaia chantrei*, which seems to me to be a mere variety of *L. mardinensis*. As both are undoubtedly *Leguminaias*, and as the present species was the last described, I am compelled to change its name.

²Lamarck's brief description of *Anodonta uniopsis* entirely agrees with the shell commonly known as *Microcondylæa* or *Monocoudylæa bonelli*. The statement that the ligament passes into the hinge exactly fits this, and this is one of the best generic characters of *Leguminaia*.

³The amount of variation of this species is very great. In many cases the posterior end has evidently been injured by unfavorable environment, and the shell is dwarfed and variously distorted, and sometimes a good deal thickened. Of course every individual variation and distortion of this kind has been seized on by the New School and elevated to specific rank. I have seen only what seemed to me a single species of this subgenus, and nothing which really was worthy of a varietal name.

⁴Credited to Muhlfield in literature.

⁵Credited by Rossmässler to Ferussac, but without other reference. Lea says Ferussac's manuscript labels, neither of which constitutes a published description.

- * *Anodon bonelli* SOWERBY, Conch. Icon., XVII, 1867, pl. XI, fig. 34.
 * *Microcondylaea bonelli* CLESSIN, Conch. Cab. Ano., 1861, p. 257; Moll. Osterr., 1887, p. 719, figs. 486, 487.—* P. ET EL, Conch. Sam. III, 1890, p. 175.
 * *Microcondylus bonelli* DROUET, Jl. de Conch., XXVI, 1879, p. 138; Union. Italie, 1885, p. 110.
 * *Margaritana (Microcondylaea) bonellii* KOBELT, Icon., 1884, p. 62, pl. XXV, figs. 208, 209.
 * *Leguminaia bonellii* WESTERLUND Faun. Pal., II, Pt. 7, 1890, p. 191.

South central Europe.

Genus LASTENA Rafinesque, 1820.

(Type, *Lastena lata* Rafinesque.)

- Lastena* RAFINESQUE, Ann. Gen. Sci. Phys. Brux., 1820, p. 316.
Odatelia RAFINESQUE, Atlantic Jl. and Friend., 1832, p. 154.
Leptodea (Rafinesque) CONRAD, Pr. Ac. N. Sci. Phila., 1853, p. 262.

Shell elongated, subsolid, inequilateral, generally wider in front, rounded-truncate at anterior base, pointed at post-basal region, and having a low posterior ridge, with one or more secondary ridges above it; beaks low, sculpture consisting of a few coarse, irregular, longitudinal folds; epidermis shining, often rayed; a single imperfect tooth occurs in each valve, and sometimes vestiges of laterals; there is one roughened dorsal scar in the shallow beak cavity; muscle scars very large, deep and distinct, the posterior greatly elongated; nacre purplish, shading to blue at the edge; palleal line radially ridged.

Animal with very long branchiæ, inner and outer about alike in size and form, projecting free slightly behind, the inner free from the abdominal sac nearly the whole length, brownish throughout; palpi long, large; mantle thickened at edge, brown, black above; branchial opening large, with heavy papillæ; anal opening large, without papillæ; super-anal opening united below; foot very large when living, club-shaped, capable of great extension. No gravid specimens have been seen, but the outer branchiæ are probably used as a marsupium.

† LASTENA LATA Rafinesque.

- * *Anodonta (Lastena) lata* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 317, pl. LXXXII, figs. 17, 18.
 * *Anodonta lata* FERUSSAC, Guer. Mag., 1835, p. 25.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 26, pl. III, figs. 17, 18.
 * *Leptodea lata* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 262.
 * *Anodon lata* SOWERBY, Conch. Icon., XVII, 1867, pl. XIX, fig. 76.
 * *Unio latus* CONRAD, New F. W. Shells, 1834, p. 70.—* SAY, Am. Conch., VI, 1834.—* KUSTER, Conch. Cab. Unio, 1861, p. 388, pl. LXVII, fig. 5.
Unio dehiscens SAY, N. Harm. Diss., II, 1829, p. 308; * Am. Conch., III, 1830, pl. XXIV.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 554; 3d ed., II, 1839, p. 674.—* HANLEY, Test. Moll., 1842, p. 204; * Biv. Shells, 1843, p. 204, pl. XXI, fig. 36.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 32, pl. IX, figs. 7-9.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXV, fig. 393.
 * *Margarita (Unio) dehiscens* LEA, Syn., 1836, p. 35; 1838, p. 23.

- * *Hemilastena dehiscens* AGASSIZ, Arch. für Nat., I, 1852, p. 50.
 * *Margaron (Margaritana) dehiscens* LEA, Syn., 1852, p. 43; 1870, p. 69.
 * *Baphia dehiscens* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.
 * *Margaritana dehiscens* CLESSIN, Conch. Cab. Ano., 1873, p. 274, pl. XXIV, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
 * *Anodonta dehiscens* PÆTEL, Conch. Sam., III, 1890, p. 178.
 * † *Unio oriens* LEA, Tr. Am. Phil. Soc., IV, 1834, p. 73, pl. VI, fig. 5; Obs., I, 1834, p. 83, pl. VI, fig. 5.—* CHENU, Ill. Conch., 1858, pl. XIV, figs. 2, 2a, 2b.— KUSTER, Conch. Cab., 1861, p. 222, pl. LXXV, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIII, fig. 314.
 * *Unio hildrethi* DELESSERT, Rec. Coq. Lam., 1841, pl. XIX, figs. 4a, 4b.

Ohio, Cumberland, and Tennessee river systems.

Genus SOLENAIA Conrad, 1868.

(Type, *Mycetopus emarginatus* Lea.)

Solenia CONRAD, Am. Jl. Conch., IV, 1869, p. 249.

Shell greatly elongated, falcate, rather thin, narrower and rounded in front, the upper anterior portion being strongly sulcate, gaping at anterior base and behind, having a strong posterior ridge that ends in a point at the post base; beaks low; sculpture of slightly double-looped concentric ridges; epidermis rayless; hinge line narrow; teeth rudimentary, being mere vestiges of one or more lamellar laterals in each valve; dorsal scars numerous, in a line under the hinge; anterior scars faint; posterior elongated; pallear line with a distinct posterior sinus.

According to Fischer the foot is enormously developed for the purpose of burrowing, as in *Mycetopoda*. It is probable that the mantle is closed behind into two siphons.

(Group of *Solenia emarginata*.)

Anterior region much narrowed, drawn out in the direction of the anterior base. marked off from the rest of the shell by a faint ridge.

† SOLENAIA EMARGINATA Lea.

- * *Mycetopus emarginatus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 308; * Jl. Ac. N. Sci. Phila., V, 1863, p. 398, pl. L, fig. 305; * Obs., X, 1863, p. 34, pl. I, fig. 305.—SOWERBY, Conch. Icon., XVI, 1868, pl. II, fig. 6.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III, 1890, p. 186.
 * *Platiris (Mycetopus) emarginatus* LEA.
 * *Anodonta emarginatus* CLESSIN, Conch. Cab. Ano., 1875, p. 169, pl. LV, figs. 5, 6.
 * *Mycetopus (Solenia) emarginatus* FISCHER, Bull. Soc. d'Autun, IV, 1891, p. 135.

Siam.

† SOLENAIA FALCATA Higgins.

* *Mycetopus falcatus* HIGGINS, Proc. Zool. Soc. Lond., 1868, p. 179, pl. XIV, fig. 6.—
SOWERBY, Conch. Icon., XVI, 1868, pl. IV, fig. 9.—* CLESSIN, Conch. Cab. An.,
1875, p. 204, pl. LXVII, figs. 1, 2.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p.
8.—* PÆTEL, Conch. Sam., III, 1890, p. 186.

* *Platiris (Mycetopus) falcatus* LEA, Syn., 1870, p. 90.

Southeastern Asia.?

(Group of *Solenaia soleniformis*.)

Shell only slightly narrowed in front, the narrow area not distinctly marked off from the rest of the shell.

† SOLENAIA SOLENIFORMIS Benson.

* *Anodonta soleniformis* BENSON, Jl. As. Soc. Bengal, V, 1836, p. 749.

* *Spatha soleniformis* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. IX, fig. 1.

* *Mycetopus soleniformis* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 94.

* *Margaron (Unio) bensoni* LEA, Syn., 1870, p. 57.

* *Mycetopus bensonianus* PÆTEL, Conch. Sam., III, 1890, p. 186.

Assam, India.

† SOLENAIA OLEIVORA Heude.

* *Mycetopus oleivorus* HEUDE, Conch. Fluv. Nank., III, 1877, pl. XXII, fig. 46;
XXIII, fig. 48.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL,
Conch. Sam., III, 1890, p. 187.

* † *Mycetopus recognitus* HEUDE, Conch. Fluv. Nank., III, 1877, pl. XXII, fig. 47.—
* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III,
1890, p. 187.

* *Mycetopus caruleus* HEUDE, Conch. Fluv. Nank., IX, 1885, pl. LXXI, fig. 135.—
* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III,
1890, p. 186.

* *Mycetopus armatus* HEUDE, Conch. Fluv. Nank., IX, 1885, pl. LXX, fig. 133.²

* *Mycetopus arcuatus* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—PÆTEL,
Conch. Sam., III, 1890, p. 186.

* *Mycetopus viridis* HEUDE, Conch. Fluv. Nank., IX, 1885, pl. LXXI, fig. 136.—
* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III,
1890, p. 187.

* *Mycetopus succineus* HEUDE, Conch. Fluv. Nank., IX, 1885, pl. LXX, fig. 184.—
* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III,
1890, p. 187.

China.

¹Said to come from forest streams near Chyavetas, Upper Amazon, and to have been discovered by Mr. Bartlett. I can not believe that it is a South American species at all, but rather that it is from southeastern Asia, as it is an almost exact miniature copy of *S. emarginatus* Lea from that region, having its texture, and not the soft, shining appearance of the Mycetopodas. It was described with a miscellaneous lot of shells from various localities, and that given for this is, I think, erroneous.

²*M. arcuatus* Heude in explanation of plate.

† SOLENAIA IRIDINEA Heude.

- * *Mycetopus iridineus* HEUDE, Jl. de Conch., XXII, 1874, p. 117; Conch. Fluv. Nank., I, 1875, pl. VIII, fig. 19.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III, 1890, p. 187.
- * *Mycetopus similis* HEUDE, Conch. Fluv. Nank., III, 1877, pl. XXIII, fig. 50.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III, 1890, p. 187.

China.

SOLENAIA RIVULARIS Heude.

- * *Mycetopus rivularis* HEUDE, Conch. Fluv. Nank., III, 1877, pl. XXIII, fig. 49.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.

China.

SOLENAIA CARINATA Heude.¹

- * *Mycetopus carinatus* HEUDE, Conch. Fluv. Nank., III, 1877, pl. XXI, fig. 45.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III, 1890, p. 186.

China.

SOLENAIA RUGATA Sowerby.

- * *Mycetopus rugatus* SOWERBY, Conch. Icon., XVI, 1868, pl. III, fig. 7.—* SMITH, Jl. de Conch., XXII, 1874, pl. IV, fig. 1.—* CLESSIN, Conch. Cab. An., 1876, p. 205, pl. LXVII, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 187.
- * *Platiris (Mycetopus) rugatus* LEA, Syn., 1870, p. 90.

Said to come from Victoria River, Australia. I am a little in doubt about the locality.

(Group of *Solenaia triangularis*.)

Shell short, rounded on post base; very narrow in front.

SOLENAIA TRIANGULARIS Heude.

- * *Mycetopus triangularis* HEUDE, Conch. Fluv. Nank., IX, 1885, pl. LXXII, fig. 138.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 11.—* PÆTEL, Conch. Sam., III, 1890, p. 187.

China.

Genus GONIDEA Conrad, 1857.

(Type, *Anodonta randalli* Trask, and *Anodonta feminalis* Gould.)*Gonidea* CONRAD, Pr. Ae. Nat. Sci. Phila., I, 1857, p. 165.

Shell elongated, subtriangular, much narrowed in front, wide behind, inflated, subsolid, usually with a high, sharp, posterior ridge; beaks rather sharp but not high, the sculpture consisting of a few, strong, concentric bars; epidermis rayless; hinge with a rudimentary pseudo-cardinal and lateral in each valve, though these are sometimes wanting; dorsal scars forming a row within the shallow beak cavity; muscle scars irregular; pallial line with a trace of a sinus behind; nacre lurid to purplish.

¹The type and only known shell is a fossil fragment. It may be a recent species. Proc. N. M. vol. xxii—42

Animal with the outer gills larger than the inner behind, narrower in front, inner free from the abdominal sac, all united to the mantle nearly to their posterior points; mantle double edged; branchial opening large, a few irregular, large and small branched papillæ on it; anal opening large, with rudimentary papillæ; superanal opening closed a long way below; foot very large when living. No ova were found in the branchiæ in numerous specimens taken at different dates and localities.

† GONIDEA ANGULATA Lea.

- * *Anodonta angulata* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 97, pl. XVI, fig. 52; * Obs., II, 1838, p. 97, pl. XVI, fig. 52.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 239.—* HANLEY, Test. Moll., 1842, p. 222; * Biv. Shells, 1843, p. 222, pl. XXIV, fig. 15.—* GOULD, U. S. Expl. Exp., XII, 1852, p. 436.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 263.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—* CHENU, Man., 1859, II, p. 146, fig. 722.—* REEVE, Elem. Conch., II, 1860, pl. XXXI, fig. 180.—* CLESSIN, Conch. Cab. Ano., 1874, p. 159, pl. LIII, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 176.
- * *Margarita (Anodonta) angulata* LEA, Syn., 1838, p. 32.
- * *Margaron (Anodonta) angulata* LEA, Syn., 1852, p. 52; 1870, p. 83.
- * *Anodon angulata* CALTOW and REEVE, Conch. Nom., 1845, p. 66.
- * *Anodon angulatus* SOWERBY, Conch. Icon., XVII, 1867, pl. III, fig. 6.
- *† *Anodon feminalis* GOULD, Pr. Bost. Soc. N. Hist., III, 1850, p. 293; * Otia Conch., 1862, p. 87.
- * *Anodonta feminalis* GOULD, U. S. Expl. Exp., XII, 1852, p. 436, figs. 547, 547a, 547b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* PÆTEL, Conch. Sam., III, 1890, p. 179.
- * *Anodonta randalli* TRASK, Pr. Cal. Ac. N. Sci., I, 1855, p. 29.—* PÆTEL, Conch. Sam., III, 1890, p. 177.
- * *Anodon biangulata* SOWERBY, Conch. Icon., XVII, 1869, pl. XXIII, figs. 8, 8a, 8b.
- * *Anodonta biangulata* CLESSIN, Conch. Cab. Ano., 1876, p. 234, pl. LXXVII, fig. 3.

Central California; north to British Columbia; east to Idaho.

Genus ANODONTOIDES Simpson (in Baker) 1898.

(Type, *Anodonta ferussaciana* Lea.)¹

- Anodontopsis* SIMPSON (in Baker), Tr. St. Louis Ac. Sci., VIII, 1898, p. 76; not *Anodontopsis* MCCOY.
- Anodontoides* SIMPSON (in Baker), Moll. Chicago, 1898, p. 72.

Shell elliptical, inflated, thin, with a faint posterior ridge, sometimes constricted at the center of the base; beaks rather full, with a few coarse, subparallel, concentric ridges, which are curved up rather

¹ The shells of this group are much like those of *Strophitus*, but have different beak sculpture. The character of the marsupia is also different in the two genera. In this group a limited number of ovules was found in the inner gills of one of the few gravid specimens seen, while in *Anodonta* only the outer gills contain ova so far as I have observed. It differs from *Anodonta* in the curving in of the hinge line in front of the beaks, in the beak sculpture, and in having papillæ on the anal opening. Notwithstanding the fact that I have found embryos in all four gills of a specimen of this genus, I have placed it with the Homogenæ rather than with the Tetragenæ because the characters of shell and animal seem to agree better with the former than with the latter.

suddenly behind, and back of these there are fine radiating ridges; epidermis smooth, shining, often rayed; hinge line slightly incurved in front of the beaks, edentulous or bearing the merest rudiments of teeth; muscle scars shallow, irregular; nacre bluish white.

Animal with marsupium occupying the outer and sometimes the four leaves of the branchiæ; ovules more numerous in the outer, the whole pad like; gills large, inner semicircular, free from the abdominal sac, or united to it; branchial opening large, with many small papillæ; anal opening with well-developed papillæ.

† ANODONTOIDES FERUSSACIANUS LEA.

- * *Anodonta ferussaciana* LEA, Tr. Am. Phil. Soc., V, 1834, p. 45, pl. VI, fig. 15; * Obs., I, 1834, p. 157, pl. VI, p. 15.—* HANLEY, Test. Moll., 1842, p. 218.—* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* MUSGROVE, Phot. Conch., 1863, pl. I, fig. 15.—* CLESSIN, Conch. Cab. Ano., 1873, p. 75, pl. XXIII, fig. 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.
- * *Anodon ferussaciana* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 200, pl. XVI, fig. 230.—SOWERBY, Conch. Icon., XVII, 1867, pl. XIV, fig. 51.
- * *Margarita (Anodonta) ferussaciana* LEA, Syn., 1836, p. 51; 1833, p. 30.
- * *Margaron (Anodonta) ferussaciana* LEA, Syn., 1852, p. 50; 1870, p. 79.
- * *Anodontoides ferussacianus* BAKER, Moll. Chicago, Pt. 1, 1898, p. 72, pl. III, fig. 6; v, fig. 2.
- *† *Anodonta buchaneensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 47, pl. XIV, fig. 43; * Obs., II, 1838, p. 47, pl. XIV, fig. 43.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 223; Biv. Shells, 1843, p. 223.—* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 263.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* SOWERBY, Conch. Icon., XVII, 1869, pl. XXIV, fig. 92.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 177.
- * *Margarita (Anodonta) buchaneensis* LEA, Syn., 1836, p. 54; 1838, p. 32.
- * *Margaron (Anodonta) buchaneensis* LEA, Syn., 1852, p. 51; 1870, p. 82.
- *† *Anodonta argentea* LEA, Pr. Ac. Nat. Sci. Phila., I, 1840, p. 289; * Tr. Am. Phil. Soc., VIII, 1842, p. 223, pl. XIX, fig. 41; * Obs., III, 1842, p. 61, pl. XIX, fig. 41.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1876, p. 218, pl. LXXII, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 176.
- * *Margaron (Anodonta) argentea* LEA, Syn., 1852, p. 50; 1870, p. 79.
- * *Strophitus argenteus* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 262.
- *† *Anodonta ferruginea* LEA, Pr. Am. Phil. Soc., I, 1840, p. 289; * Tr. Am. Phil. Soc., VIII, 1842, p. 225, pl. XIX, fig. 43; * Obs., III, 1842, p. 63, pl. XIX, fig. 43.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* MUSGROVE, Phot. Conch., 1863, pl. I, fig. 2.—* CLESSIN, Conch. Cab. Ano., 1876, p. 219, pl. LXXII, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 179.
- * *Margaron (Anodonta) ferruginea* LEA, Syn., 1852, p. 50; 1870, p. 79.
- *† *Anodonta plicata* HALDEMAN, Jl. Ac. Nat. Sci. Phila., VIII, 1842, p. 201.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Anodonta) plicata* LEA, Syn., 1870, p. 79.
- *† *Anodonta denigrata* LEA, Tr. Am. Phil. Soc., X, 1852, p. 285, pl. XXV, fig. 45; * Obs., V, 1852, p. 41, pl. XXV, fig. 45.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN,

Conch. Cab. Ano., 1875, p. 210, pl. LXIV, figs. 4, 5.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 178.

**Margaron (Anodonta) denigrata* LEA, Syn., 1852, p. 50; 1870, p. 79.

*†*Anodonta oblita* LEA, Tr. Am. Phil. Soc., X, 1852, p. 290, pl. XXVIII, fig. 52; *Obs., V, 1852, p. 46, pl. XXVIII, fig. 52.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1875, p. 165, pl. LIV, figs. 7, 8.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Anodonta) oblita* LEA, Syn., 1852, p. 50; 1870, p. 79.

**Anodon subcylindracea* SOWERBY, Conch. Icon., XVII, 1867, pl. XIV, fig. 47.

**Anodonta subcylindracea* CLESSIN, Conch. Cab. Ano., 1873, p. 92, pl. XXVI, figs. 6, 7.

†ANODONTOIDES FERUSSACIANUS var. SUBCYLINDRACEUS Lea.

*†*Anodonta subcylindracea* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 106, pl. XXIV, fig. 117; *Obs., II, 1838, p. 106, pl. XXIV, fig. 117.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 239.—* HANLEY, Test. Moll., 1842, p. 223; *Biv. Shells, 1843, p. 223.—* STIMPSON, Shells of N. Eng., 1851, p. 15.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 55.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 185.—* WALTON, Moll. Mourue Co., 1892, p. 17, pl. VIII, fig. 3.

**Margarita (Anodonta) subcylindracea* LEA, Syn., 1838, p. 32.

**Anodon subcylindracea* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 200, pl. XVI, fig. 229.—* CATLOW and REEVE, Conch. Nom., 1845, p. 68.

**Margaron (Anodonta) subcylindracea* LEA, Syn., 1852, p. 51; 1870, p. 82.

**Anodontoides subcylindraceus* BAKER, Moll. Chicago, Pt. 1, 1898, p. 74, pl. IV, fig. 4; VI, fig. 1.

ANODONTOIDES FERUSSACIANUS var. MODESTUS Lea.

*†*Anodonta modesta* LEA, Pr. Ac. Nat. Sci. Phila., 1857, p. 84; *Jl. Ac. Nat. Sci. Phila., IV, 1860, p. 364, pl. LXIII, fig. 189; *Obs., VIII, 1860, p. 46, pl. LXIII, fig. 189.—* CLESSIN, Conch. Cab. Ano., 1874, p. 153, pl. XLIX, figs. 7, 8.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 182.

**Margaron (Anodonta) modesta* LEA, Syn., 1879, p. 79.

**Anodon modestus* SOWERBY, Conch. Icon., XVII, 1867, pl. X, fig. 26.

Mississippi drainage area generally; St. Lawrence River system; Red River of the North; Saskatchewan River; Connecticut? The varieties are found in the St. Lawrence system.

Genus PEGIAS Simpson, 1900.

(Type, *Margaritana fabula* Lea.)

Shell small, thickened in front, with a sharp posterior ridge, in front of which is a wide radial depression, ending in a basal sinus; above this ridge is another, making the shell decidedly biangulate and truncate behind; beak sculpture consisting of subconcentric corrugations, generally swollen on the posterior ridge; epidermis decorticated, but showing a few dark, radial rays on the base of the shell; pseudocardinals rather solid; laterals wanting. Animal having the marsupium empty in the specimen examined; inner gills larger in front, free from the abdominal sac, all four truncated behind; palpi large; mantle with square spots on its edge; branchial opening with a few large papillæ; anal opening smooth, not separated from the superanal.

† PEGIAS FABULA Lea.

- **Margarita (Margaritana) fabula* LEA, Syn., 1836, p. 46; 1838, p. 28.
 **Margaritana fabula* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 44, pl. XIII, fig. 39; * Obs., II, 1838, p. 44, pl. XIII, fig. 39.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* KUSTER, Conch. Cab. Unio, 1862, p. 301, pl. c, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
 **Unio fabula* HANLEY, Test. Moll., 1842, p. 213; Biv. Shells, 1843, p. 213, pl. XXII, fig. 45.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVI, fig. 394.
 **Margaron (Margaritana) fabula* LEA, Syn., 1852, p. 44; 1870, p. 70.
 **Micromya fabula* AGASSIZ, Arch. für Nat., I, 1852, p. 47.
 **Strophitus fabula* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 263.
 **Baphia fabula* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.
 *†*Margaritana curreyana* LEA, Pr. Ac. Nat. Sci. Phila., I, 1840, p. 288; *Tr. Am. Phil. Soc., VIII, 1842, p. 223, pl. XVIII, fig. 40; * Obs., III, 1842, p. 61, pl. XVIII, fig. 40.—* KUSTER, Conch. Cab. Unio, 1862, p. 300, pl. c, fig. 2.—* B. H. WRIGHT, Check List, 1888.
 **Micromya curreyana* AGASSIZ, Arch. für Nat. I, 1852, p. 47.
 **Margaron (Margaritana) curreyana* LEA, Syn., 1852, p. 42; 1870, p. 68.
 **Strophitus curreyana* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 263.
 **Baphia curreyana* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.
 **Unio curreyana* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIII, fig. 319.
 **Unio curreyanus* HANLEY, Biv. Shells, 1856, p. 386, pl. XXIV, fig. 10.
 **Margaritana curreyana* PÆTEL, Conch. Sam., III, 1890, p. 173.

Cumberland and Tennessee river systems.

Genus ARCIDENS Simpson, 1900.

(Type, *Alasmodonta confragosa* Say.)

Shell subsolid, inflated, subrhomboid, with full, high beaks; beak sculpture very strong, consisting of irregular corrugations which fall into two loops, at the bases of which the ridges are swollen into knobs that continue out in two radiating rows on to the disk of the shell; in front of and behind the beaks are many fine, radial wrinkles, the posterior ones being zigzagged; surface of the shell covered with oblique folds and wrinkles; epidermis dark olive, shining; there are two elongated, compressed pseudocardinals in the left valve, the posterior under the beak, and curved upward, cutting off the hinge plate in the right valve, which has a single, compressed pseudocardinal in front; laterals numerous, short, blurred; muscle scars irregular; nacre white. Animal with the gills very large, rounded below; inner the larger, free from the abdominal sac; marsupium filling the outer gills, of a peculiar, granular texture; palpi very large, elongated, attached half way to the mantle; mantle with a thick, unspotted border; branchial opening large, papillose; anal opening with rudimentary papillæ.¹

¹ In the only gravid specimen I have seen the marsupium presented a peculiar, striated, granular structure, different from that of any Naiad I know. It was narrowed in the middle, and produced into a sort of lobe behind, but, though the specimen seemed to be a perfectly normal one, I am in doubt whether this peculiar form is constant. I do not think that this granulation is the result of a diseased condition, though it may be.

† *ARCIDENS CONFRAGOSUS* Say.

- * *Alasmodonta confragosa* SAY, N. Harm. Diss., II, 1829, p. 339: * Am. Conch., I, 1830, pl. XXI; IV, 1832 (cover p. 4).—* CONRAD, New F. W. Shells, 1834, p. 72.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 30, pl. VIII, figs. 1, 1a.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 262.
- * *Margarita (Margaritana) confragosa* LEA, Syn., 1836, p. 43; 1838, p. 27.
- * *Unio confragosa* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 552; 3d ed., II, 1837, p. 674.—* HANLEY, Test. Moll., 1842, p. 210; * Biv. Shells, 1843, p. 210, pl. XXIII, fig. 52.—* DESHAYES, Tr. Elem., 1853, p. 217, pl. XXX, figs. 5-7.
- * *Baphia confragosa* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 500.
- * *Margarou (Margaritana) confragosa* LEA, Syn., 1852, p. 42; 1870, p. 67.
- * *Margaritana confragosa* CALKINS, Pr. Ottawa Acad., 1874, p. 46.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 172.
- * *Unio confragosus* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* SOWERBY, Conch. Icon., XVI, 1867, pl. LX, fig. 299.

Mississippi River and States adjoining it; Ohio River drainage; southwest to the Colorado River, Texas. A specimen is in the Lea collection, said to be from Enterprise, southeastern Alabama, but I am doubtful about the locality.

Genus *SYMPHYNOTA* Lea, 1829.

(Type, *Symphynota compressa* LEA.)

Symphynota LEA, Tr. Am. Phil. Soc., III, 1829, p. 424.

? *Megadomus* SWAINSON, Tr. on Mal., 1840, p. 266.

? *Complanaria* SWAINSON, Tr. on Mal., 1840, p. 290.

Shell elliptic rhomboid, compressed; beaks low, their sculpture consisting of strong bars; one pseudocardinal in the right valve and two in the left, the hinder somewhat Λ -shaped, cutting off the hinge plate in the right valve; laterals generally imperfect.

Animal with the gills semicircular below, inner the larger, free nearly the whole length from the abdominal sac; marsupium thick, padlike, filling the outer gills; mantle strongly attached at palleal line; branchial opening papillose; anal opening without papillæ.

Subgenus *SYMPHYNOTA* Lea, 1829.

Shell smooth, subsolid, shining, rayed; teeth delicate; laterals compressed, moderately developed.

SYMPHYNOTA COMPRESSA Lea.

- * *Symphynota compressa* LEA, Tr. Am. Phil. Soc., 1829, p. 450, pl. XII, fig. 22; * Obs., I, 1834, p. 64, pl. XII, fig. 22.—* FERUSSAC, Guer. Mag., 1835, p. 25.
- * *Complanaria compressa* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 261.
- * *Microcondylaea compressa* PÆTEL, Conch. Sam., III, 1890, p. 175.
- * *Unio compressus* CONRAD, New F. W. Shells, 1834, p. 68; * Monog., VIII, 1837, p. 71, pl. XL, fig. 1.—* C. B. ADAMS, Thompson's Hist. Vt., 1842, p. 166.—* HANLEY, Test. Moll., 1842, p. 174; * Biv. Shells, 1843, p. 174, pl. XX, fig. 39.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 191, pl. XXI, fig. 245.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* KUSTER, Conch. Cab. Unio, 1861, p. 198, pl. LXIV, figs. 3, 4.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXI, fig. 303.

- * *Margarita (Unio) compressus* LEA, Syn., 1836, p. 11; 1838, p. 13.
 * *Complanaria compressus* AGASSIZ, Arch. für Nat., I, 1852, p. 48.
 * *Complanaria alasmodontina* STIMPSON, Shells of N. Eng., 1851, p. 14.
 * *Unio alasmodontinas* PÆTEL, Conch. Sam., III, 1890, p. 144.
 * *Margaron (Unio) pressus* LEA, Syn., 1852, p. 19; 1870, p. 29.¹
 * *Unio pressus* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* LATCHFORD, Tr. Ottawa F. N. Club., 1882, p. 52.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.
 * *Alasmodonta pressa* BAKER, Tr. Ac. N. Sci. St. L., VIII, 1898, p. 76, fig. ; * Moll. Chicago, Pt. 1, 1898, p. 58, pl. VI, fig. 3; X, fig. 4.

SYMPHYNOTA COMPRESSA var. PLEBIUS C. B. Adams

- * *Unio compressus* var. *plebius* C. B. ADAMS, F. W. and L. Shells of Vt., p. 16.

Ohio and St. Lawrence drainage areas; west to Arkansas, north through Nebraska to Wisconsin; Hudson River.

† SYMPHYNOTA CHARLOTTENSIS Lea.

- * *Unio charlottensis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 191; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 8, pl. II, fig. 5; * Obs., XI, 1867, p. 12, pl. II, fig. 5.—* B. H. WRIGHT, Check List, 1888.
 * *Margaron (Unio) charlottensis* LEA, Syn., 1870, p. 51.

Near Charlotte, North Carolina.

† SYMPHYNOTA VIRIDIS Conrad.

- * *Unio viridis* CONRAD, Monog., IV, 1836, p. 35, pl. XVII, fig. 1;² * Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLV, fig. 244.—* B. H. WRIGHT, Check List, 1888.
 * *Margarita (Unio) tappanianus* LEA, Syn., 1836, p. 39; 1838, p. 25.
 * *Unio tappanianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 62, pl. XVII, fig. 55; * Obs. II, 1838, p. 62, pl. XVII, fig. 55.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll., 1842, p. 209; Biv. Shells, 1843, p. 209, pl. XXI, fig. 38.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 194, pl. XX, fig. 242.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Ill. Conch., 1858, pl. XX, figs. 2, 2a, 2b.—* KUSTER, Conch. Cab. Unio, 1862, p. 270, pl. XCI, fig. 3.—* HARTMAN and MICHENER, Conch. Test., 1874, p. 89, fig. 185.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 169.
 * *Margaron (Unio) tappanianus* LEA, Syn., 1852, p. 39; 1870, p. 62.
 * *Unio tappianus* CATLOW and REEVE, Conch. Nom., 1845, p. 64.
 * † *Unio hyalinus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; * Tr. Am. Phil. Soc., X, 1848, p. 69, pl. II, fig. 4; Obs., IV, 1848, p. 43, pl. II, fig. 4.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* KUSTER, Conch. Cab. Unio, 1861, p. 204, pl. LXVIII, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
 * *Margaron (Unio) hyalinus* LEA, Syn., 1852, p. 39; 1870, p. 62.

¹ Lea changed his name *compressa* to *pressus* because the former had been used for a *Unio* previously by Sowerby. The restoration of the genus *Symphynota* makes the earlier name of Lea valid.

² Credited by Conrad and others to Rafinesque. The description of the latter of *Unio viridis* is not sufficiently clear to distinguish it from some of the other members of this genus, and the locality given is in error for the shell figured by Conrad, which belongs exclusively to the Atlantic drainage, and not to the Ohio River and Kentucky, localities given by Rafinesque.

† *Unio pertenuis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 193; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 8, pl. II, fig. 4; *Obs., XI, 1867, p. 12, pl. II, fig. 4.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) pertenuis* LEA, Syn., 1870, p. 62.

Streams draining into the Atlantic from New York south to North Carolina; Monroe County, Michigan?

† SYMPHYNOTA DECORATA Lea.

* *Unio decoratus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 257, pl. XIII, fig. 6; * Obs., V, 1852, p. 13, pl. XIII, fig. 6.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCI, fig. 496.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 150.

* *Margaron (Unio) decoratus* LEA, Syn., 1852, p. 19; 1870, p. 29.

*† *Unio insolitus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 159; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 40, pl. XIII, fig. 37; *Obs., XIII, 1874, p. 44, pl. XIII, fig. 37.—* B. H. WRIGHT, Check List, 1888.

Virginia to South Carolina.

† SYMPHYNOTA NEGLECTA Lea.

Unio neglectus LEA, Desc. 12 Uniones, 1843; * Tr. Am. Phil. Soc., IX, 1846, p. 280, pl. XLII, fig. 10; * Obs., IV, 1848, p. 88, pl. XLII, fig. 10.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* KUSTER, Conch. Cab. Unio, 1861, p. 225, pl. LXXVI, fig. 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 160.

* *Margaron (Unio) neglectus* LEA, Syn., 1852, p. 33; 1870, p. 54.

Northern Alabama.

† SYMPHYNOTA QUADRATA Lea.

* *Margaritana quadrata* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 41; *Jl. Ac. N. Sci. Phila., II, 1862, p. 210, pl. XXXII, fig. 279; *Obs., IX, 1863, p. 32, pl. XXXII, fig. 279.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.

* *Margaron (Margaritana) quadrata* LEA, Syn., 1870, p. 68.

* *Margaritana (Alasmodonta) quadrata* CLESSIN, Conch. Cab. Ano., 1876, p. 273, pl. LXXXIII, figs. 5, 6.

Eastern Tennessee.

Subgenus LASMIGONA Rafinesque, 1831.

(Type, *Alasmodonta costata* Rafinesque.)¹

Shell subrhomboid, compressed, corrugated behind; beaks low, their sculpture consisting of several coarse ridges which generally fall into two slight loops, and often with radiating ridges in front and behind; epidermis shining; laterals partly developed, consisting of blurred ridges which slope diagonally downward and backward on the hinge plate; cavities of the beaks shallow; dorsal scars faint, irregular.

¹The description of *Alasmodonta costata* of Rafinesque so clearly covers the species described three years later as *Alasmodonta rugosa* by Barnes that the former name must be used.

Animal with the marsupium occupying the whole of the outer gills, very thick, like that of *Anodonta*; inner gills free all or the greater part of their length from the abdominal sac; branchial opening papillose; anal opening generally smooth or only slightly crenulate.

† SYMPHYNOTA COSTATA Rafinesque.

- * *Alasmodonta costata* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 313, pl. LXXXII, figs. 15, 16.
 * *Alasmodonta costata* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 72.—* FERUSSAC, Guer. Mag., 1835, p. 25
 * *Complanaria costata* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 261.
 * *Alasmodonta rugosa* BARNES, Am. Jl. Sci., VI, 1823, p. 278, pl. XIII, fig. 21.—SHORT and EATON, Transylvania Jl., 1831, p. 81.—* C. B. ADAMS, Thompson's Hist. of Vt., 1842, p. 165.—* BAKER, Moll. Chicago, Pt. 1, 1898, p. 57, pl. VII, figs. 1, 2; VIII, figs. 3, 4.
 * *Mya rugosa* EATON, Zool. Text-Book, 1826, p. 222.
 * *Margarita (Margaritana) rugosa* LEA, Syn., 1836, p. 44; 1838, p. 27.
 * *Unio rugosa* HANLEY, Test. Moll., 1842, p. 211; * Biv. Shells, 1843, p. 211, pl. XXI, fig. 8.
 * *Alasmodonta rugosa* DE KAY, Zool. N. Y., Pt. 5, 1843, p. 196, pl. XIV, fig. 226.
 * *Complanaria rugosa* STIMPSON, Shells of N. Eng., 1851, p. 14.
Margaron (Margaritana) rugosa LEA, Syn., 1852, p. 42; 1870, p. 67.
 * *Baphia rugosa* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 500.
 * *Margaritana rugosa* CALKINS, Pr. Ottawa Ac. Sci., 1874, p. 46.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.
 * *Lasmigona rugosum* RAFINESQUE, Cont. Mon., Og., 1831, p. 5.
 * *Unio rugosus* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—KUSTER, Conch. Cab. Unio, 1861, p. 200, pl. LXVI, figs. 1-3.—SOWERBY, Conch. Icon., XVI, 1867, pl. LX, fig. 302.
 * *Alasmodonta hians* FERUSSAC, Guer. Mag., 1835, p. 25.

Mississippi drainage generally; St. Lawrence basin; Manitoba; Hudson River?; Columbus, Mississippi. Texas?.

Subgenus PTEROSYGNA Rafinesque, 1831.

(Type, *Alasmodonta complanata* Barnes.)

Shell large, ovate-rhomboid, inflated in post basal region; beaks much compressed, their sculpture sharply and strongly doubly looped; epidermis dark, scarcely rayed; teeth very heavy.

Animal with an extremely thick marsupium; palpi large; mantle with small crenulations on lower border; branchial opening large; anal opening small, both slightly papillose.

† SYMPHYNOTA COMPLANATA Barnes.

- * *Alasmodonta complanata* BARNES, Am. Jl. Sci., VI, 1823, p. 278, pl. XIII, fig. 21.—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 289.—* CONRAD, New F. W. Shells, 1834, p. 72.—* SAY, Am. Conch., VI, 1834.—* BAKER, Moll. Chicago, Pt. 1, 1898, p. 60, pl. VIII, figs. 1, 2; IX, figs. 1-4.
 * *Mya complanata* EATON, Zool. Text-Book, 1826, p. 222.
 * *Symphynota complanata* LEA, Tr. Am. Phil. Soc., III, 1830, p. 448.—* SHORT and EATON, Transylvania Jl., 1831, p. 80.—* LEA, Obs., I, 1834, p. 62.—FERUSSAC, Guer. Mag., 1835, p. 25.

- **Margarita (Margaritana) complanata* LEA, Syn., 1836, p. 43; 1838, p. 26.
 **Unio complanata* HANLEY, Test. Moll., 1842, p. 210; * Biv. Shells, 1843, p. 210, pl. XXI, fig. 9.
 **Complanaria complanata* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 261.
 **Baphia complanata* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 500.
 **Margaritina complanata* CALKINS, Pr. Ottawa Acad., 1874, p. 46.—* B. H. WRIGHT, Check List, 1888.—* P. ETTEL, Conch. Sam., III, 1890, p. 172.
 **Alasmodon complanatus* SOWERBY, Conch. Man., 1842, p. 61, fig. 140.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* KUSTER, Conch. Cab. Unio, 1861, p. 199, pl. LXV, fig. 1.—* SOWERBY, Conch. Icon., XVI, 1866, pl. L, fig. 266.
Complanaria gigas SOWERBY, Conch. Man., 1839, fig. 141, *; 1842, p. 115, fig. 141.
 *? *Megadomus gigas* SWAINSON, Tr. on Mal., 1840, pp. 265, 378.

† SYMPHYNOTA COMPLANATA var. KATHERINÆ Lea.

Unio katherinæ LEA, Syn., 1838, p. 35; ¹ Tr. Am. Phil. Soc., VI, 1839, p. 143.—* TROSCHEL, Arch. für Nat., V, 1839, II, p. 237.

Upper Mississippi drainage, as far south as Arkansas on the west; Ohio River system; upper St. Lawrence and its tributaries; north into the Mackenzie River.

Genus ALASMIDONTA Say, 1818.

(Type, *Monodonta undulata* Say.)²

- Monodonta* SAY, Nich. Enc., II, 1816.
Alasmidonta SAY, Jl. Ac. N. Sci. Phila., I, 1818, p. 459.
Alasmodonta SAY, Nich. Enc., 3d ed., IV, 1819.
Alasmodon SWAINSON, Tr. on Mal., 1840, p. 382.
Unopsis SWAINSON, Tr. on Mal., 1840, p. 382.

Shell generally rhomboid, inflated, with a well-developed posterior ridge, which ends in a point behind when it is single or a biangulation when double; beaks full and high, with coarse, concentric or slightly doubly-looped bars; epidermis rayed, shining; hinge with two pseudo-cardinals in the left valve and one in the right; laterals wanting or imperfect; cavity of the beaks deep; dorsal scars under the hinge plate; nacre bluish.

Animal with the marsupium occupying the entire outer gills; gills rounded below, inner much the larger, united to the abdominal sac, or free; mantle generally having square spots on the posterior border; branchial opening papillose; anal opening smooth or crenulate.

Subgenus ALASMIDONTA Say, 1818.

(Type, *Monodonta undulata* Say.)

Shell ovate-rhomboid, solid, inflated, shining, with very strong, generally concentric beak sculpture; pseudocardinals solid, stumpy, some-

¹This is probably the small, peculiar boreal form of this species, which appears very different from the type.

²Changed by Say afterwards to *Alasmidonta undulata* as the name *Monodonta* was preoccupied. For some reason Say later on called his genus *Alasmodonta*.

what radiately ridged; laterals short, very imperfect, or wanting; beak cavities deep, compressed.

Animal with inner gills wider than the outer throughout; palpi long; marsupium loose and flabby, and having ova scattered throughout it in the only gravid specimen seen.

† ALASMIDONTA UNDULATA Say.

Monodonta undulata SAY, Nich. Enc.; 1816, pl. III, fig. 3.

* *Alasmodonta undulata* SAY, Jl. Acad. N. Sci. Phila., I, 1818, p. 460.

* *Alasmodonta undulata* SAY, Nich. Enc., IV, 1819, pl. III, fig. 3.—* CONRAD, New F. W. Shells, 1834, p. 73.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* C. B. ADAMS, F. W. and L. S. of Vt., 1842, p. 15.

* *Alasmodon undulata* SWAINSON, Tr. on Mal., 1840, p. 288, fig. 61.—* GOULD, Inv. Mass., 1841, p. 115, fig. 76.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 198, pl. XV, fig. 227.

* *Margarita (Margaritana) undulata* LEA, Syn., 1836, p. 44; 1838, p. 27.

* *Unio undulata* HANLEY, Test. Moll., 1842, p. 211.—* Biv. Shells, 1843, p. 211.

* *Margaritana undulata* KÜSTER, Conch. Cab. Unio, 1862, p. 298, pl. XCIX, fig. 4.—* GOULD, Inv. Mass., 1870, p. 176, fig. 478.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 92, fig. 190.—* LATCHFORD, Tr. Ottawa F. N. Cl., 1882, p. 54.—* H. CARPENTER, Naut., IV, 1890, p. 47.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 174.

* *Margaron (Margaritana) undulata* LEA, Syn., 1852, p. 42; 1870, p. 68.

* *Mya undulata* WOOD, Ind. Test. Rev., 1856, p. 199, pl. I, supp., fig. 5.

* *Baphia undulata* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.

* *Unio undulatus* CATLOW and REEVE, Conch. Nom., 1845, p. 65.

* *Strophitus undulatus* STIMPSON, Shells of New Eng., 1851, p. 15.

* ? *Unio glabratus* SOWERBY, Rec. and Foss. Shells, XVI, 1823, fig.

Alasmodonta sculptilis SAY, N. Harmony Diss., II, 1829, p. 339.—FERUSSAC, Guer. Mag., 1835, p. 26.—L. W. SAY, Terr. and Fluv. Shells, 1840, p. 9.

* *Strophitus sculptilis* STIMPSON, Shells of New Eng., 1851, p. 15.

* *Unio hians* VALENCIENNES Rec. Obs. Zool., II, 1833, p. 235, pl. LIV, figs. 2a, 2b.

* *Unioopsis radiata* SWAINSON, Tr. on Mal., 1840, p. 289, fig. 62.

* *Unioopsis mytiloides* SWAINSON, Tr. on Mal., 1840, p. 382, fig. 62.

* ? *Unio swainsoni* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVI, fig. 396.

* *Margaron (Margaritana) swainsoni* LEA, Syn., 1870, p. 30.

Lower St. Lawrence drainage; southward to North Carolina.

Subgenus PRESSODONTA Simpson, 1900.

(Type, *Unio calceolus* Lea.¹)

Shell decidedly rhomboid, surface generally painted with unbroken rays; beak sculpture slightly corrugated; teeth compressed.

Animal with a thick, smooth, pad-like marsupium.

(Group of *Alasmodonta calceola*.)

Shell small, subsolid, rhomboid, inflated, rayed but not shining; beak sculpture varying from strong concentric bars to irregular corrugations, sometimes faintly doubly looped; and with fine radiating

¹The names *Hemiodon*, *Hemiodonta*, and *Hemidon* were applied by Swainson to this group, but he used the first name previously for a division of the Helicidæ. It is better to apply a new name.

ridges in front and behind; pseudocardinals rather solid; laterals very faint; marsupium occupying the whole of the outer gills, thick, pad-like; inner gills wholly or partly free from the abdominal sac; mantle bordered with square, black spots.

† *ALASMIDONTA CALCEOLA* Lea.

- * *Unio calceolus* LEA, Tr. Am. Phil. Soc., III, 1830, p. 265, pl. III, fig. 1; * Obs., I, 1834, p. 7, pl. III, fig. 1.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* CHENU, III. Conch., 1858, pl. VIII, figs. 2, 2a, 2c.—* KUSTER, Conch. Cab. Unio, 1861, p. 187, pl. LIX, fig. 3.
- * *Strophitus calceolus* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 262.
- * *Unio calceola* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 546; 3d ed., II, 1839, p. 672.—* HANLEY, Test. Moll., 1842, p. 212; * Biv. Shells, 1843, p. 212, pl. XXII, fig. 29.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVIII, fig. 410.
- * *Margarita (Margaritana) calceola* LEA, Syn., 1836, p. 45; 1838, p. 27.
- * *Margaron (Margaritana) calceola* LEA, Syn., 1852, p. 43; 1870, p. 68.
- * *Margaritana calceola* KUSTER, Conch. Cab. Unio, 1862, p. 299, pl. XCIX, fig. 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 172.
- * *Baphia calceola* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 500.
- * *Alasmodonta truncata* CONRAD, New F. W. Shells, 1834, p. 73.
- * *Margarita (Margaritana) deltoidea* LEA, Syn., 1836, p. 44; 1838, p. 27.
- * *Margaritana deltoidea* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 43, pl. XIII; fig. 38; Obs., II, 1838, p. 43, pl. XIII, fig. 38.—* TROSCHEL, Arch. für Nat., V, 1839, II, p. 238.—* CHENU, Man., 1859, II, p. 144, fig. 711.—* KUSTER, Conch. Cab., 1862, p. 299, pl. XCIX, fig. 5.—* CALKINS, Pr. Ottawa Ac. Sci., 1874, p. 46.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
- * *Unio deltoidea* HANLEY, Test. Moll., 1842, p. 211; * Biv. Shells, 1843, p. 211, pl. XXII, fig. 50.
- * *Margaron (Margaritana) deltoidea* LEA, Syn., 1852, p. 42, 1870, p. 67.
- * *Strophitus deltoidea* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 263.
- * *Baphia deltoidea* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.
- * *Alasmodonta deltoidea* BAKER, Moll. Chicago, Pt. 1, 1898, p. 63, pl. VI, fig. 2; VII, fig. 4.
- * *Unio deltoideus* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVI, fig. 395.

Upper Mississippi drainage; Ohio, Cumberland, and Tennessee rivers;
Lower and Middle St. Lawrence systems.

† *ALASMIDONTA MINOR* Lea.

- * *Margaritana minor* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 166; Tr. Am. Phil. Soc., X, 1848, p. 82, pl. VIII, fig. 26; * Obs., IV, 1848, p. 56, pl. VIII, fig. 26.—* CHENU, Man., 1859, II, p. 144, fig. 713.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
- * *Strophitus minor* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 263.
- * *Margaron (Margaritana) minor* LEA, Syn., 1852, p. 42; 1870, p. 67.
- * *Baphia minor* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.

Tennessee and Cumberland river systems.

(Group of *Alasmodonta heterodon*.)

Shell small, rather thin, rhomboid; beak sculpture very strong, consisting of concentric ridges or irregular corrugations, often slightly

doubly looped and swollen on the well-developed posterior ridge; surface rayed; pseudocardinals compressed, reflexed; laterals single, double, or triple in each valve.

Animal with branchial opening having a few coarse papillæ; anal opening smooth, or with very fine crenulations.

†ALASMIDONTA HETERODON Lea.

**Unio heterodon* LEA, Tr. Am. Phil. Soc., III, 1830, p. 428, pl. VIII, fig. 11; *Obs., I, 1834, p. 42, pl. VIII, fig. 11.—*CONRAD, New F. W. Shells, 1834, p. 69.—*FERUSSAC, Guer. Mag., 1835, p. 26.—*DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 548; 3d ed., II, 1839, p. 672.—*CONRAD, Monog., X, 1838, p. 90, pl. XLIX, fig. 3.—*HANLEY, Test. Moll., 1842, p. 183; Biv. Shells, 1843, p. 183, pl. XXI, fig. 42.—*CATLOW and REEVE, Conch. Nom., 1845, p. 59.—*CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 250.—*CHENU, Ill. Conch., 1858, pl. XVI, figs. 2, 2a, 2b.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*KUSTER, Conch. Cab., 1861, p. 192, pl. LXI, fig. 2.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XXXV, fig. 184.—*HARTMAN and MICHENER, Conch. Cest., 1874, p. 91, fig. 188.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 155.

**Margarita (Unio) heterodon* LEA, Syn., 1836, p. 18; 1838, p. 16.

**Margaron (Unio) heterodon* LEA, Syn., 1852, p. 24; 1870, p. 36.

Northern New England to Virginia.

ALASMIDONTA DIVERSA Conrad.

**Unio diversus* CONRAD, Am. Jl. Sci., XXI, 1856, p. 172 (fig. in outline).—B. H. WRIGHT, Check List, 1888.¹

Alabama.

(Group of *Alasmidonta collina*.)

Shell rhomboid, subsolid, with beak sculpture consisting of strong, concentric bars, sometimes slightly doubly looped and swollen on the low, posterior ridge; often with one or more small spines on the disk in front of the posterior ridge; epidermis brown, rayless or feebly rayed; rest marks well defined; teeth rather compressed; laterals lamellar.

Animal unknown.

†ALASMIDONTA COLLINA Conrad.

**Unio collinus* CONRAD, Monog., VIII, 1837, p. 65, pl. XXXVI, fig. 2; XII, 1840, p. 109, pl. LX, fig. 3.—*TROSCHEL, Arch. für Nat., IV, 1838, p. 287.—*CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 247.—*HANLEY, Biv. Shells, 1856, p. 382, pl. XX, fig. 57.—*KUSTER, Conch. Cab. Unio, 1861, p. 188, pl. LIX, fig. 5.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XLIX, fig. 263.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 148.

**Margaron (Unio) collinus* LEA, Syn., 1852, p. 23; 1870, p. 35.

North Carolina and Virginia.

¹Conrad says this has a remarkable resemblance to *Unio heterodon*, but is shorter.

(Group of *Alasmodonta holstonia*.)

Shell subsolid, beak sculpture rather strong, decidedly doubly looped, surface brownish, slightly rayed; pseudocardinals delicate; laterals nearly or quite wanting. Animal like that of *A. calceola*.

†ALASMODONTA HOLSTONIA Lea.

- * *Margaritana holstonia* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 42, pl. XIII, fig. 37; *Obs., II, 1838, p. 42, pl. XIII, fig. 37.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
- * *Margarita* (*Margaritana*) *holstonia* LEA, Syn., 1836, p. 46; 1838, p. 28.
- * *Margaron* (*Margaritana*) *holstonia* LEA, Syn., 1852, p. 44; 1870, p. 70.
- * *Strophitus holstonia* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.
- * *Baphia holstonia* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.
- * *Unio holstonianus* HANLEY, Biv. Shells, 1843, p. 213, pl. XXII, fig. 44.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVI, fig. 398.
- * *Margaritana holstoniana* KUSTER, Conch. Cab. Unio, 1862, p. 302, pl. c, fig. 4.
- * ? *Unio striatus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVIII, fig. 407.

Tennessee River system; headwaters of the Coosa River.

†ALASMODONTA GEORGIANA Lea.¹

- * *Margaritana etowahensis* LEA, Pr. Ac. Nat. Sci. Phila., II, 1858, p. 138; * JI. Ac. Nat. Sci. Phila., IV, 1859, p. 227, pl. XXXI, fig. 110; * Obs., VII, 1859, p. 45, pl. XXXI, fig. 110.—* B. H. WRIGHT, Check List, 1888.
- * *Margaritana* (*Alasmodonta*) *etowahensis* CLESSIN, Conch. Cab. An., 1875, p. 270, pl. LXXXI, figs. 1, 2.
- * *Margaritana etowahensis* PÆTEL, Conch. Sam., III, 1890, p. 173.
- * *Margaritana georgiana* LEA, Pr. Ac. Nat. Sci. Phila., III, 1859, p. 280.—B. H. WRIGHT, Check List, 1888.
- * *Margaron* (*Margaritana*) *georgiana* LEA, Syn., 1870, p. 68.
- * *Alasmodonta impressa* ANTHONY, Am. JI. Conch., I, 1865, p. 157, pl. XII, fig. 4.

Tennessee; Etowah River, Georgia.

Subgenus RUGIFERA Simpson, 1900.

(Type, *Alasmodonta marginata* Say.)

Shell elongated, rhomboid, inflated, surface brilliantly painted with radiations, which often break into a dappled or splashed pattern of color; posterior slope slightly corrugated; teeth very imperfect; laterals wanting.

Animal with a thick, smooth, pad like marsupium. Mantle with square spots behind.

†ALASMODONTA MARGINATA Say

- * *Alasmodonta marginata* SAY, Nich. Enc., 1819, No. 1; Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 72.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* STIMPSON, Shells of N. Eng., 1851, p. 15.—* AGASSIZ, Arch. für Nat., I, 1852, p. 46.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 262.

¹ First called *Margaritana etowahensis* by Dr. Lea, but as that name had previously been used by Conrad its author changed it to *georgiana*.

- * *Alasmodonta marginata* RAFINESQUE, An. Gen. Sci. Brux., V, 1820, p. 317.
 * *Margarita (Margaritana) marginata* LEA, Syn., 1836, p. 43; 1838, p. 27.
 * *Alasmodon marginata* GOULD, Inv. Mass., 1841, p. 116, fig. 77.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 196, pl. XIV, fig. 225.
 * *Unio marginata* HANLEY, Test. Moll., 1842, p. 211; * Biv. Shells, 1843, p. 211, pl. XXI, fig. 23.
 * *Anodonta marginata* C. B. ADAMS, Thompson's Hist. Vt., 1842, p. 164; * F. W. and L. S. of Vt., 1842, p. 14.—* STIMPSON, Shells of N. Eng., 1851, p. 15.
 * *Margaron (Margaritana) marginata* LEA, Syn., 1852, p. 42; 1870, p. 67.
 * *Baphia marginata* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 500.
 * *Margaritana marginata* GOULD, Inv. of Mass., 1870, p. 177, fig. 479.—HARTMAN and MICHENER, Conch. Cest., 1874, p. 93, fig. 191.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 54.—* B. H. WRIGHT, Check List, 1888.—* H. CARPENTER, Naut., IV, 1890, p. 46.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
 * *Unio marginatus* CATLOW and REEVE, Conch. Nom., 1845, p. 61.
 * *Unio varicosa* LAMARCK, An. sans Vert., VI, 1819, p. 78.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 543; 3d ed., II, 1839, p. 671.
 * *Unio cariosa* LAMARCK, An. sans Vert., VI, 1819, p. 80.
 * *Alasmodon corrugata* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 198, pl. XXIV, fig. 259.
 * *Mya rugulosa* WOOD, Ind. Test., 3d ed., 1856, p. 199, pl. I, supp. fig. 7.

Lower St. Lawrence; southward in streams draining into the Atlantic to South Carolina.

† ALASMIDONTA TRUNCATA B. H. WRIGHT.¹

- * *Alasmodonta truncata* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 262.
 * *Margaritana marginata* KUSTER, Conch. Cab. Unio, 1862, p. 297, pl. XCIX, fig. 3.—* CALKINS, Pr. Ottawa Acad., 1874, p. 46.
 * *Alasmodonta marginata* BAKER, Moll. Chicago, Pt. 1, 1898, p. 62, pl. IV, fig. 4; VII, fig. 7; XXII, fig. 3.
 * *Margaritana marginata* var. *truncata* B. H. WRIGHT, Naut., XI, 1898, p. 124
 * *Unio marginatus* SOWERBY, Conch. Icon., XVI, 1866, pl. LI, fig. 267.

Upper Mississippi drainage; Ohio, Cumberland, and Tennessee river systems; Michigan; Upper St. Lawrence drainage.

† ALASMIDONTA RAVENELIANA Lea.

- * *Margaritana raveneliana* LEA, Tr. Am. Phil. Soc., V, 1834, p. 106, pl. XVII, fig. 50; * Obs., I, 1834, p. 218, pl. XVII, fig. 50.—* KUSTER, Conch. Cab. Unio, 1862, p. 297, pl. XCIX, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
 * *Alasmodonta raveneliana* FERUSSAC, Guer. Mag., 1835, p. 26.
 * *Margarita (Margaritana) raveneliana* LEA, Syn., 1836, p. 44; 1838, p. 27.
 * *Margaron (Margaritana) raveneliana* LEA, Syn., 1852, p. 42; 1870, p. 68.
 * *Baphia raveneliana* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 500.
 * *Strophitus ravenelianus* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 263.
 * *Unio swananoensis* HANLEY, Test. Moll., 1842, p. 211; Biv. Shells, 1843, p. 211, pl. XXIII, fig. 39.—CATLOW and REEVE, Conch. Nom., 1845, p. 64.

¹ Say's manuscript. I believe this to be specifically different from the smaller, thinner, less inflated, biangulate *A. marginata*. The latter is confined to the Atlantic drainage; the former belongs to the Mississippi Valley, but has migrated into the St. Lawrence basin. No description was published of this form that I know of until that of Mr. Wright appeared.

Tennessee and Cumberland river systems.

Unfigured species.

Margaritana etowahensis CONRAD, Pr. Ac. Nat. Sci. Phila., IV, 1849, p. 154.¹

Etowah River, Georgia.

Subgenus **BULLELLA** Simpson, 1900.

(Type, *Margaritana arcula* Lea.)

Shell thin, greatly inflated, somewhat triangular, with a high, sharp posterior ridge; beaks very full, having exceedingly strong, concentric sculpture, extending well on to the disk; pseudocardinals reflexed, compressed.

Animal with the gills large, nearly semicircular below, inner the larger, united the whole length to the abdominal sac; mantle border with square spots.²

†ALASMIDONTA ARCULA Lea.

* *Margarita* (*Margaritana*) *arcula* LEA, Syn., 1836, p. 43; 1838, p. 27.

* *Margaritana arcula* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 71, pl. XXII, fig. 69; * Obs., II, 1838, p. 71, pl. XXII, fig. 69.—* TROSCHEL, Arch. für. Nat., V, 1893, Pt. 2, p. 238.—* CHENU, Man., 1859, II, p. 144, fig. 712.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 172

* *Unio arcula* HANLEY, Test. Moll., 1842, p. 210; Biv. Shells, 1843, p. 210, pl. XXII, fig. 49.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVIII, fig. 259.

* *Margaron* (*Margaritana*) *arcula* LEA, Syn., 1852, p. 42; 1870, p. 67.

* *Alasmodonta arcula* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 262.

* *Baphia arcula* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 500.

* *Margaritana* (*Alasmodonta*) *arcula* CLESSIN, Conch. Cab. Ano., 1876, p. 272, pl. LXXXIII, figs. 7, 8.

Altamaha River, Georgia.

†ALASMIDONTA TRIANGULATA Lea.

* *Margaritana triangulata* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 138; * Jl. Ac. N. Sci. Phila., IV, 1859, p. 228, pl. XXXII, fig. 111; * Obs., VII, 1859, p. 46, pl. XXXII, fig. 111.—* KUSTER, Conch. Cab. Unio, 1862, p. 303, pl. c, fig. 6.—* B. H. WRIGHT, Check List, 1888.

* *Unio triangulata* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXX, fig. 414.

* *Margaron*, (*Margaritana*) *triangulata* LEA, Syn., 1870, p. 68.

* *Margaritana triangulatus* PÆTEL, Conch., Sam., III, 1890, p. 174.

South Carolina and Georgia.

The following species are unknown to me:

* *Alasmodon* (*Decurambis*) *atropurpureum* RAFINESQUE, Cont. Monog., 1831, p. 5.

* *Alasmodon* (*Decurambis*) *scriptum* RAFINESQUE, Cont. Monog., 1831, p. 5.

¹ Allied to *ravenelianus* LEA, according to Conrad.

² In the only gravid specimen seen the outer gills were curiously wrinkled and folded longitudinally, though the inner gills were plain. If this were a normal character it would entitle the species to generic rank, but I can not feel certain that it is. *A. triangulata* seems to stand between this and the ordinary *Alasmodontas*.

- * *Alasmodon (Lasmigona) viridis* RAFINESQUE, Cont. Monog., 1831, p. 5.
 * *Alasmodon (Sulcataria) papyraceum* RAFINESQUE, Cont. Monog., 1831, p. 5.
 * *Alasmodon (Sulcataria) badium* RAFINESQUE, Cont. Monog., 1831, p. 5.
 * *Alasmodon (Amblasmodon) hians* RAFINESQUE, Cont. Monog., 1831, p. 5.
 * *Margaritana columbensis* LEA,¹ Pr. Ac. N. Sci. Phila., XI, 1867, p. 81.

Genus HEMILASTENA (Agassiz, 1852) Simpson.

(Type, *Alasmodonta ambigua* Say.)²

Shell small, elongate elliptical, rounded in front and behind, often slightly incurved at the central base; beaks rather sharp, but not full; sculpture consisting of fine, parallel ridges which are looped up in the middle, and open behind; epidermis brownish, rayless; teeth imperfect, a single irregular, compressed tooth in each valve; that of the left under the beak, that of the right in front of it; laterals nearly or quite wanting; anterior end of the shell much thickened; anterior muscle scars united; posterior faint; nacre dull whitish.

Animal with the marsupium occupying the whole of the outer branchiæ; ovules very large; ovisacs not separated by a sulcus; inner gills the larger in front, free from the abdominal sac part of the way, all four united to the mantle to the posterior end; mantle with a double border; branchial opening large, with many crowded papillæ; anal opening smooth; animal whitish.

† HEMILASTENA AMBIGUA Say.

- * *Alasmodonta ambigua* SAY, Jl. Ac. N. Sci. Phila., V, 1825, p. 131.—* FERUSSAC, Guer. Mag., 1835, p. 26.
 * *Margaritana ambigua* KUSTER, Conch. Cab. Unio, 1862, p. 300, pl. XCIX, fig. 7.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
 * † *Unio hildrethianus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 36, pl. III, fig. 8; * Obs., I, 1834, p. 148, pl. III, fig. 8.—* HANLEY, Test. Moll., 1842, p. 196; * Biv. Shells, 1843, p. 196, pl. XXIII, fig. 38.—* CATLOW and REEVE, Conch. Nou., 1845, p. 59.—* KUSTER, Conch. Cab. Unio, 1861, p. 206, pl. LXXVIII, fig. 8.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 192.—* BAKER, Moll. Chicago, Pt. 1, 1898, p. 71, pl. v, fig. 4.
 * *Margarita (Unio) hildrethianus* LEA, Syn., 1836, p. 28; 1838, p. 20.
 * *Margaron (Margaritana) hildrethianus* LEA, Syn., 1852, p. 43; 1870, p. 69.
 * *Strophitus hildrethiana* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.
 * *Baphia hildrethiana* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.
 * *Margaritana hildrethiana* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.
 * *Alasmodonta dubia* FERUSSAC, Guer. Mag., 1835, p. 26.

Ohio River system; north to Michigan; west to Iowa; south to Arkansas; east to Tennessee.

¹Dr. Lea does not mention this in his Synopsis.

²This species, the only member of the group, differs from *Margaritana* in the beak sculpture, the thickening of the anterior end of the shell, in the want of muscle scars in the shell cavities, in the color of the animal, and in having the gills united to the mantle posteriorly to their ends, and the shell is not that of a *Unio*, as it differs in the beak sculpture and the teeth. I regret that Lea's well-known name must be displaced for the obscure one of Say, who undoubtedly had this shell before him when he described his *Alasmodonta ambigua*.

Genus MARGARITANA Schumacher, 1817.

(Type, *Mya margaritifera* Linnæus.)*Baphia* MEUSCHEN, Mus. Gevers, 1787, p. 472.*Unio* RETZIUS, part, Diss. Hist. Nov. Test. Gen., 1788, p. 16.*Unio* OKEN, Lehrbuch der Nat., 1815, p. 236.*Margaritana* SCHUMACHER, Essai Nouv. Syst., 1817, p. 137.*Damalis* (LEACH manuscript) GRAY, Pr. Zool. Soc. Lond., 1847, p. 196.*Baphia* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499.¹

Shell elongated, usually arcuate, rounded in front, almost lacking a posterior ridge; beaks rather low, the sculpture consisting of a few coarse, parallel ridges, which follow the growth lines; epidermis concentrically striate, brownish or blackish; hinge teeth generally imperfect or not fully developed; two more or less perfect pseudocardinals in the left valve, and one in the right, often reduced to mere tubercles; behind these the hinge plate is narrow and rounded for some distance; laterals short, usually imperfect or wholly wanting; cavity of the beaks rather shallow; muscle scars large, those of the anterior roughened, posterior elliptical; nacre generally more or less covered inside the pal-leal line with small muscle scars.

Animal with very long gills, inner wider in front, free for the greater part of their length from the abdominal sac, the two pairs united to their posterior ends, which project backward for some distance unconnected with the mantle; palpi very large, falcate, united half way posteriorly; branchial opening having crowded, often arborescent papillæ arranged in folds; anal opening smooth or crenulate; superanal opening not closed below; marsupium occupying the entire outer gills.² Foot and abdomen small; whole animal dark colored.

† MARGARITANA MARGARITIFERA Linnæus.

Mya margaritifera LISTER, Hist. Anim. Ang. App., 1685, pl. 1, fig. 1.—Hist. Conch., 1685, pl. CXLIX, fig. 4.—* LINNÆUS, Systema. Nat., 10th ed., 1, 1758, p. 671.—* DA COSTA, Hist. Nat. Brit., 1778, p. 225, pl. xv, fig. 33.—* GMELIN, Syst. Nat., 13th ed., 1792, p. 3219.³—* LINNÆUS, Fauna Suecica, 1761, p. 2130.—KNORR, Vergn., IV, 1769, pl. xxv, fig. 2.—* MÜLLER, Vermes, 1774, p. 210.—PENNANT, Brit. Zool., IV, 1777, pl. xlIII, fig. 18.—* DA COSTA, Hist. Nat. Brit., 1778, p. 225, pl. xv, fig. 3.—* SCHRÖTER, Fluss Conch., 1779, p. 168, pl. iv, fig. 1.—* BORN, Test. Mus. Vind., 1780, p. 21.—* SCHRÖTER, Ein. Conch., 1783, II, p. 606.—* DONOVAN, Brit. Shells, III, 1801, pl. LXXIII.—* MONTAGU, Test. Brit., 1803, p. 33.—* TURTON, Brit. Fauna, 1807, p. 146.—* MATON and

¹The name *Baphia* Menschen has precedence, but was never described; it was applied to a miscellaneous lot of bivalves, and is in the plural number. Retzius' first species in *Unio*, the type of a section without laterals, is the *U. margaritifera*, but in 1792 Brugnière in *Choix de Mémoires*, I, p. 106, fully and carefully redefined the genus *Unio*, restricting it to species with cardinal and lateral teeth.

²According to Van Wahl. I have examined a great many animals taken at different seasons, but have never seen one gravid.

³Refers to *Conchylien Cabinet* VI, pl. 1, fig. 5, which is the form we know as *Margaritana margaritifera*.

- RACKETT, Tr. Linn. Soc. Lond., VIII, 1807, p. 40.—* WOOD, Gen. Conch., I, 1815, p. 107, pl. XXIII, figs. 1-3.—* DILLWYN, Cat., I, 1817, p. 52.—* TURTON, Conch. Dict., 1819, p. 106.—* BINGLEY, Useful Knowledge, III, 1825, p. 245.—* WOOD, Index Test., 1825, p. 12, pl. II, fig. 30.—* EATON, Zool. Text-Book, 1826, p. 216.—* WAARDENBERG, Com. Hist. Nat. Anim., 1827, p. 360.—* CHENU, Bib. Conch., 1st ser., I, 1845, p. 57, pl. XX, figs. 1, 2.—* HANLEY, Ipsa. Linn. Conch., 1855, p. 460.—* HANLEY (WOOD), Ind. Test., 3d ed., 1856, p. 16, pl. II, fig. 30.
- Mya margaritifera* testa ovali oblonga, etc.—* MÖLLER, Zool. Danicæ, 1776, p. 245.—* CHEMNITZ, Conch. Cab., VI, 1782, p. 15, pl. I, fig. 5.
- * *Baphia margaritifera* MEUSCHEN, Mus. Gevers, 1787, p. 472.
- * *Unio margaritifera* DRAPARNAUD, Tab. Moll. Fr., 1801, p. 107; Hist. Moll. Fr., 1806, p. 132, pl. X, figs. 17-19; pl. XI, fig. 5. ?!—* GAERTNER, Vers. Syst., 1813, p. 37.—* OKEN, Lehrbuch, 1815, p. 238.—* CUVIER, Règne Animal, II, 1817, p. 473.—* C. PFEIFFER, Nat. Deutsch. Land und Suss. Moll., 1821, Pt. 1, p. 115, pl. V, fig. 11.—* BOSCH, Hist. Nat. Coq., III, 1824, p. 139.—* GRAS, Moll. Isère. Ap., 1840, p. 22.—* FRIELE, Norske L. Fersk Moll., 1853, p. 53.
- * *Margaritana margaritifera* SCHUMACHER, Essai. Nouv. Syst., I, 1817, p. 124, pl. X, fig. 4.—* MICHAUD, Comp. Hist. Moll. Fr., 1831, p. 114.—* SCHOLZ, Schleis L. and W. Moll., 1843, p. 135.—* TROSCHEL, Arch. für Naturg., XIII, Pt. 1, 1847, p. 270; VI, fig. 1.—* MOQUIN-TANDON, Hist. Moll. Fr., 1855, p. 623, pl. XXII, figs. 14-16.—* VON WAHL, Arch. für die Nat. Kunde Liv., 2d ser., I, 1855, p. 118.—* KUSTER, Conch. Cab., 1856, p. 293, pl. XXXVIII; XXXIX, figs. 2-4.—* CHENU, Manual, 1859, II, p. 144, fig. 710.—* WESTERLUND, Faun. Sw. Nor. and Den., 1873, p. 577.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 91, fig. 189.—* CLESSIN, Deutsch. Ex. Moll., 1876, p. 449, fig. 293.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 173.—* STEARNS, Pr. U. S. Nat. Mus., XIV, 1891, p. 105.—* LOCARD, Coq. de France, 1893, p. 149.—* VON IHERING, Abh. Senck. Nat. Ges., XVII, 1893, p. 155.—* WESTERLUND, Act. Soc. F. and F. F., XIII, No. 7, 1897, p. 166.
- * *Alasmodonta margaritifera* CONRAD, New F. W. Shells, 1834, p. 72.—FERUSSAC, Gner. Mag., 1835, p. 26.
- * *Margarita (Margaritana) margaritifera* LEA, Syn., 1836, p. 45; 1838, p. 28.
- * *Margaron (Margaritana) margaritifera* LEA, Syn., 1852, p. 43; 1870, p. 69.
- * *Baphia margaritifera* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 499, III, pl. CXVII, figs. 2, 2a.
- * *Unio margaritiferus* RETZIUS, Dis. S. Hist. Nat., 1788, p. 16.—* SPENGLER, Skriv. Nat. Selsk., III, 1793, p. 52.—* TURTON, Conch. Ins. Brit., 1822, p. 241, pl. XVI, fig. 1.—* NILSSON, Hist. Moll. Svec., 1822, p. 103.—* TURTON, Man. L. and F. W. Shells, 1831, p. 19, fig. 9.—* ? ANTON, Verz. der Conch., 1839, p. 15.—* HANLEY, Test. Moll., 1842, p. 213; *Biv. Shells, 1843, p. 213.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* FORBES and HANLEY, Hist. Brit. Moll., II, 1853, p. 146, pl. XXXVIII.—* SOWERBY, Ill. Ind. Brit. Shells, 1859, pl. VII, No. 1.—* TATE, L. and F. W. Moll. Brit., 1866, pl. III, fig. 15.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIV, fig. 325.
- * *Alasmodon margaritiferus* BROWN, L. and F. W. Conch., 1836, p. 112, pl. XXI, fig. 13, pl. XXII, figs. 1-3.—* THOMPSON, Ann. and Mag. Nat. Hist., VI, 1840, p. 197.—* BROWN, Ill. Recent Conch., 1844, p. 83, pls. XXX, figs. 1-4; XXXI, figs. 1, 2; XXXII, figs. 13-15.—* TURTON, Man. L. and F. W. Shells, 1857, p. 277, pl. II, fig. 9.
- * *Margaritana margaritiferus* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 184.
- * *Alasmodon margaritiferum* FLEMING, Hist. Brit. Moll., 1828, p. 417.
- * *Unio margaritifer* var. *minor* ROSSMASSLER, Icon., Pt. 2, 1835, p. 19, pl. IX, fig. 129.

¹The figures on pl. X are of Linnaeus's species; that on pl. XI may be *Unio batavus* Lamarck.

- * *Unio margaritifera* KUSTER, Conch. Cab., 1856, p. 130, pls. XXXVIII, XXXIX.—
 * MOQUIN-TANDON, Moll. Terr. et Fluv. Fr., II, 1855, p. 566, pl. XLVII.—* NORDENSKIÖLD and NYLANDER, Fin. Moll., 1856, p. 86, pl. VI, fig. 74.—* DROUET, Nay. Fr., II, 1857, p. 57, pl. I.—* HESSLING, Perl. und Ihre Perlen, 1859, p. 86, pl. I.—* JEFFREYS, Brit. Conch., I, 1862, p. 37.—* REEVE, L. and F. W. Moll. Brit., 1863, p. 223, fig. 3.—* L. ADAMS, Coll. Man., 1884, p. 19, pl. I, fig. 12.
- * *Unio (Margaritana) margaritifera* SCHRENCK, Reis. und F. im Amur-Lande, II, 1867? p. 700.
- * *Unio auricularius* SPENGLER, Skriv. Nat. Selsk., III, 1793, p. 44.
- * *Unio elongata* LAMARCK, Ann. sans Vert., VI, 1819, p. 70.—* STARK, Nat. Hist., II, 1828, p. 90.—* GRAS, Moll. Isère Ap., 1840, p. 22.—* PUTON, Moll. Vosges., 1847, p. 72.
- * *Damaris elongata* LEACH, Syn. Moll. Gt. Brit., 1852, p. 322.
- * *Margaritana elongata* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 185.—* LOCARD, Coq. de Fr., 1893, p. 149, fig. 162.
- * *Unio elongatus* NILSSON, Hist. Moll. Svec., 1822, p. 106.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVI, fig. 397.—* PÆTEL, Conch. Sam., III, 1890, p. 151.
- * *Alasmodonta arcuata* BARNES, Am. Jl. Sci., VI, 1823, p. 277, pl. XII, fig. 20.—* C. B. ADAMS, Thompson's Hist. of Vermont, 1842, p. 165, figured; * F. W. and L. S. of Vt., 1842, p. 165, figured.—* HESSLING, Die. Perl. und Ihre Perlen, 1859, p. 205.
- * *Mya arcuata* EATON, Zool. Text Book, 1826, p. 222.
- * *Alasmodon arcuata* GOULD, Inv. of Mass., 1841, p. 113, fig. 75.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 197, pl. XIV, fig. 224.—* MIGHELS, Bost. Jl. N. Hist., 1844, p. 325.
- * *Margaritana arcuata* STIMPSON, Shells of N. Eng., 1851, p. 15.—* KUSTER, Conch. Cab., 1856, p. 293, pl. XXXIX, fig. 1.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 262.—* GOULD, Inv. of Mass., 1870, p. 174, fig. 477.—* PÆTEL, Conch. Sam., III, 1890, p. 172.—* H. CARPENTER, Naut., IV, 1890, p. 35.
- * *Unio sinuata* C. PFEIFFER, Nat. Deutsch. L. und S. W. Moll., Pt. 2, 1825, p. 33, pl. VII, fig. 4.
- * *Unio roissyi* MICHAUD, Comp. Hist. Moll., Fr., 1831, p. 112, pl. XVI, fig. 28.—
 * GRAS, Moll. Isère Ap., 1840, p. 22.
- * *Margaritana roissyi* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 186.—* LOCARD, Coq. de France, 1893, p. 150.
- * *Unio tristis* MORELET, Moll. Portugal, 1845, p. 107, pl. XIII, fig. 2.²
- * *Margarita (Unio) crassissima* LEA, Syn., 1836, p. 40; 1838, p. 26.³
- * *Unio (Alasmodonta) dahuricus* MIDDENDORFF, Bull. Phys. Math. Ac. St. Petersburg, IX, 1850, p. ?; * Sib. Reise, II, 1851, p. 275, pl. XXVI, figs. 3-5.
- * *Unio dahuricus* MIDDENDORFF, L. and S. Moll. Sib., 1859, p. 26.—* HESSLING, Perl. und Ihre Perlen, 1859, p. 202.—* WESTERLUND, Kong. Sv. Vet. Ak. Handl., XIV, No. 12, p. 74.
- * *Unio (Margaritana) dahuricus* SCHRENCK, Reis. und Forsh. Amur-Lande, II, 1867, p. 699.
- * *Margaritana dahurica* KOBELT, Abh. Senck, Nat. Ges., XI, 1875, p. 427.—* KOBELT, Faun. Jap. Ext., 1879, p. 143, pl. XIII, figs. 1, 2.—* MIDDENDORFF, Kong. Svensk. Vetensk. Ak. Handl., XIV, No. 12, p. 110.—* PÆTEL, Conch. Sam., III, 1890, p. 173.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 187.

¹ Lamarck thinks this may be the *Mya margaritifera* of Linnaeus; Lea is certain that it is.

² The figure looks like an elongated *batavus*, but Morelet afterwards acknowledged that his shell was probably a young *margaritifera*.

³ The naked name *crassissima* was first applied to this by Klein, Methodi Ostracologicae, 1753, p. 128, pl. x.

- *† *Alasmodon falcata* GOULD, Pr. Boston Soc. Nat. Hist., III, 1850, p. 294; * *Otia* Conch., 1862, p. 87;¹—* U. S. Expl. Exp., XII, 1852, p. 433, figs. 545, 545a, 545b.—CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 262.—P.ETEL, Conch. Sam., III, 1890, p. 173.
- * *Unio falcatus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXV, fig. 390.
- * *Unio (Alasmodonta) complanatus* MIDDENDORFF, Sib. Reise, II, 1851, Pt. 1, p. 273, pl. XXVII, figs. 1-6.²
- * *Margaritana complanata* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 187.
- * *Unio mongolicus* MIDDENDORFF, Sib. Reise, II, 1851, p. 277, pl. XXVII, figs. 7, 8.—* HESSLING, Perl. und Ihre Perlen, 1859, p. 203.—* SCHRENCK, Reise und F. im Amur-Lande, II, 1867, p. 699.—* WESTERLUND, Kong. Sv. Vet. Ak. Hand, XIV, no. 12, 1876, p. 74.—* P.ETEL, Conch. Sam., III, 1890, p. 159.—* WESTERLUND, Faun. der Pal., II, Pt. 7, 1890, p. 113.
- * *Alasmodon yubaensis* TRASK, Pr. Cal. Acad. Sci., I, 1855, p. 30.
- *? *Margaritana raveneliana* CHENU., Man., 1859, II, p. 144, fig. 714.³

All Europe except the southernmost portion; northern Asia; Japan; northern North America; Iceland. Its southern limit seems to be about north latitude 40°. It appears to be entirely circumboreal, except that, so far as is known, it is missing in the central part of the North American continent. Wetherby has suggested that it may have been destroyed in this region by the ice of the glacial epoch. It is found in the upper Missouri and in Canada East, New York, and the New England States.

† MARGARITANA CRASSA Retzius.

- * *Mya testa crassa*, SCHRÖTER, Flussconch., 1779, p. 182, pl. II, fig. 2.
- * *Unio crassus* RETZIUS, Diss. Hist. Nat., 1778, p. 17.⁴—SPENGLER, Skriv. Nat. Selsk., III, 1793, p. 56.—* SCHOLZ, Schleis., L. und W. Moll., 1843, p. 130.—* VON WAHL, Arch. Naturkunde Liv., 2d. ser., I, 1855, p. 94.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* DROUET, Moll. Cote d'Or., 1867, p. 101.—* JORDAN, Jahrb. Deutsch. Mal. Ges., VI, 1879, p. 306.—* DROUET, Mem. Acad. Dijon, 3d ser., VII, 1882, p. 13.⁵—* P.ETEL, Conch. Sam., III, 1890, p. 149.

¹This is undoubtedly *margaritifera*, but in the types the young shells show laterals.

²I have no doubt that this is *Margaritana margaritifera* L. and not *Unio complanatus* Solander as Middendorff supposes. The specimens figured are terribly eroded, and the hinges are in very bad order, but they do not show laterals.

³Numerous varieties as well as species have been made of this abundant, widespread form. Notwithstanding its enormous distribution, the widest of any Naiad known, I have seen no variation that seems to me to be worthy of a varietal name.

⁴Retzius' description is in Latin, and consists of ten words, and as he does not figure the species, it would be impossible to determine what he meant only for the fact that he refers to the Flussconchylien of Schröter (*Mya testa crassa*, p. 182, pl. II, fig. 2). Schröter's figure is not a very good one, but I can have no doubt that he had before him the large, heavy, black Naiad, with lateral teeth, found in southern Europe. In general it closely resembles the *M. margaritifera* externally, but the epidermis is a more dull black, the beaks are usually higher and more strongly developed, the naere is white, and it has fairly well-developed laterals. European conchologists seem to have quite commonly mistaken heavy, large forms of *Unio batavus* for Retzius' species, and in a number of cases the *M. margaritifera* has been taken for it.

⁵Page 13 of reprint; I have not seen the original.

* *Margaron (Unio) crassus* LEA, Syn., 1852, p. 39; 1870, p. 62.¹

* *Unio auricularius* SPENGLER, Skriv. Nat. Selsk., III, 1792, p. 54.—* WESTERLUND, Fann. Pal., II, Pt. 7, 1890, p. 50.

Unio rugosa POIRET, Coq. Fluv., et Terr. de l'Aisne, 1801, p. 105.²

* *Unio sinuata* LAMARCK, An. sans Vert., VI, 1819, p. 70.³—BLAINVILLE, Man., 1825, p. 539, pl. LXVII, fig. 3.—* DESHAYES, Enc. Méth., II, 1827, p. 151, pl. CCXLVIII, fig. 1; II, 1830, p. 579, pl. CCXLVIII, fig. 1, 1a, 1b.⁴—* SGANZIN, Mem. Hist. Nat. Strasb., III, 1842, II, p. 8.⁵—* PUTON, Moll. Vosges, 1847, p. 72.

* *Unio (Potamida) sinuata* SWAINSON, Tr. on Mal., 1840, p. 268.

* *Unio sinuatus* ROSSMASSLER, Icon., III, 1836, p. 22, pl. XIII, fig. 195.—* GASSIES, Moll. de l'Ag., 1849, p. 198.—* DUPUY, Hist. Moll. Fr., 1852, p. 630, pl. XXIII, fig. 7.—* ROSSMASSLER, Icon., III, 1854, p. 38, pl. LXX, fig. 853, 853a.⁶—* MOQUIN-TANDON, Moll. Terr. and Fluv. Fr., II, 1855, p. 567; III, pl. XLVIII, figs. 1-3.—* DROUET, Nay. Fr., II, 1857, p. 61, pl. II.—* HESSLING, Die Perl. and Ihre Perlen, 1859, p. 184.—* SOWERBY, Conch. Icon., XVI, pl. LXII, fig. 311.—* PETEL, Conch. Sam., III, 1890, p. 167.—* LOCARD, Coq. de Fr., 1893, p. 151, fig. 164.

*? *Unio litoralis* C. PFEIFFER, Nat. Deutsch. L. und S. W. Moll., Pt. 1, 1821, p. 117, pl. v, fig. 12.⁷

* *Unio crassissimus* HANLEY, Test. Moll., 1842, p. 209; * Biv. Shells, 1843, p. 209, pl. XXIII, fig. 54.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.

* *Unio gargotta* PHILIPPI, Moll. Sic., 1836, p. 66.—* ROSSMASSLER, Icon., VII and VIII, 1838, p. 26, pl. XXXV, fig. 493.⁸—* DROUET, Jl. de Conch., XXIX., 1881, p. 25.—* WESTERLUND, Fann. Pal., II, Pt. 7, 1890, p. 156.

Southern Europe; possibly into Asia Minor and southwest Siberia.

† **MARGARITANA LAOSENSIS** Lea.

* *Unio laosensis* LEA, Pr. Ac. Nat. Sci. Phila., VII, 1863, p. 190; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 63, pl. XXI, fig. 61; * Obs., XI, 1867, p. 67, pl. XXI, fig. 61.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVII, fig. 256.—* PETEL, Conch. Sam., III, 1890, p. 156.

* *Margaron (Unio) laosensis* LEA, Syn., 1870, p. 62.

Unio sula THEOBALD (where?).

Laos Mountains, Cambodia; Siam.

¹ It has often been impossible to determine what species has been referred to by authors under the name *crassus*. In cases where they have cited this species from the north of Europe I have no doubt that they either had *Margaritana margaritifera* or *Unio batavus* before them. In those cases where I could not be certain as to what was meant I have omitted references.

² According to Moquin Tandon this is *U. sinuatus* Lamarck.

³ Lamarck refers to Encyc. Méth., 1797, pl. CCXLVIII, figs. 1a, 1b, which seem to be the *crassus* of Retzius. Lea, who examined Lamarck's type, says he had thought it was the *Margaritana margaritifera*, but that it had lateral teeth. (Obs. I, pp. 35, 198.)

⁴ These figures look something like a heavy inflated *Lampsilis alatus* Say, but are probably the *crassus* of Retzius.

⁵ Given to Sganzin by M. Fabert, chief of battalion of infantry, as having been found at St. Paul in the Isle of Bourbon, but Sganzin very much doubts the locality. Of course it was never found in the Indian Ocean region.

⁶ A magnificent figure of this fine species, and in *a*, which shows the hinge, the laterals are plainly delineated.

⁷ Dr. Lea is doubtful about this being *litoralis*, and I am sure it is not. It appears more like *M. crassus* than anything else.

⁸ Dr. Lea makes this a synonym of Pfeiffer's *elongatulus*, which is, I believe, quite near to *U. pictorum*. Rossmassler's figure shows a shell very much like *Margaritana margaritifera*, but it has lateral teeth.

† MARGARITANA HEMBELI Conrad.

- * *Unio hembeli* CONRAD, Monog., X, 1838, p. 93, pl. LI, fig. 1.—* HANLEY, Biv. Shells, 1856, p. 383, pl. XXIV, fig. 3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIII, fig. 172.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.
* *Margaron (Unio) hembeli* LEA, Syn., 1852, p. 21; 1870, p. 32.

Louisiana; Burnt Corn, Alabama.

† MARGARITANA MONODONTA Say.

- Unio monodonta* SAY, N. Harm. Diss., II, 1829, p. 293; * Am. Conch., I, 1830, pl. VI.—SHORT and EATON, Trans. Jl., 1831, p. 79.—* CONRAD, New F. W. Shells, 1834, p. 70.—DESHAYES, An. sans. Vert., 2d ed., VI, 1835, p. 553; 3d ed., II, 1839, p. 674.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 12, pl. II, fig. 1.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.
* *Alasmodontia monodonta* FERUSSAC, Guer. Mag., 1835, p. 26.
* *Margaritana monodonta* CONRAD, Pr. Ac. N. Sci., Phila. VI, 1853, p. 262.
* *Unio monodontus* SAY, Am. Conch., VI, 1834.—* HANLEY, Test. Moll., 1842, p. 210; * Biv. Shells, 1843, p. 210, pl. XXIII, fig. 48.—* H. and A. ADAMS, Gen., Rec. Moll., II, 1857, p. 491.—* KÜSTER, Conch. Cab., 1861, p. 221, pl. LXXV, fig. 1.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 159.
* *Margarita (Unio) monodontus* LEA, Syn., 1836, p. 40; 1838, p. 26.
* *Margaron (Unio) monodontus* LEA, Syn., 1852, p. 39; 1870, p. 62.
* *Unio soleniformis* LEA, Tr. Am. Phil. Soc., LV, 1831, p. 87, pl. x, fig. 17; * Obs., I, 1834, p. 97, pl. x, fig. 17.—* CHENU, Ill. Conch., 1858, pl. XIV, figs. 4, 4a, 4b; * Manual, II, 1859, p. 137, fig. 661.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLV, fig. 243.
* *Margaritana soleniformis* PÆTEL, Conch. Sam., III, 1890, p. 173.

Ohio; Cumberland, and Tennessee river systems; Illinois; eastern Iowa; Nebraska?

† MARGARITANA DECUMBENS Lea.

- * *Unio decumbens* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 40.—* LEA, Jl. Ac. N. Sci. Phila., 1862, p. 87, pl. XII, fig. 236.—* LEA, Obs., VIII, 1862, p. 91, pl. XII, fig. 236.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXII, fig. 432.—* B. H. WRIGHT, Check List, 1888.
* *Margaron (Unio) decumbens* LEA, Syn., 1870, p. 62.

Alabama.

Genus UNIO Retzius, 1788.¹

(Type, *Unio tumidus* Retzius.)

- Unio* RETZIUS, Diss. Hist. Nov. Test. Gen., 1788, p. 16.—BRUGUIERE, Choix de Memoirs, I, 1792, p. 106.
Limnaea POLI (part), Test. Utr. Sic., I, 1791, p. 31.
Lymnium OKEN, Lehrbuch, 1815, p. 237.
Elliptio RAFINESQUE, Jl. de Phys. Nat. Hist., 1819, p. 426.
Mysca TURTON, Conch. Ins. Brit., 1822, p. 243.

¹This genus was described in a thesis by Laurentius Münter Philipsson under his master, Retzius, in the University of Lund, Sweden, and it is often credited to the former. I am informed by Professor Joh. Chr. Moberg, of Lund, that by a former law or custom of the university the professor was considered the author of all papers which a student under him defended. According to this, Retzius must be credited with the genus. This law was repealed in Lund in 1852.

Canthyria SWAINSON, Tr. on Mal., 1840, p. 278.

Uniomereus CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 268.

Shell inequilateral, oval to elongated, rounded in front and pointed or biangulate behind, with a more or less developed posterior ridge, often becoming slightly arcuate when old; beaks only moderately full, generally sculptured with coarse ridges, which run parallel with the growth lines, or are somewhat doubly looped, sometimes broken and showing fine radiating lines behind; surface smooth, slightly concentrically ridged or pustulous; epidermis generally rather dull colored, rayless or feebly rayed; hinge plate narrow; two pseudocardinals and two laterals in the left valve and one pseudocardinal and one lateral in the right, with rarely a vestige of a second lateral; cavity of the beaks not deep or compressed. Animal having the inner branchiæ free from the abdominal sac for from one-half to their entire length; marsupium occupying the whole length of the outer gills only, forming a thick, smooth pad when filled with young; gills united to the mantle behind to their extreme points, or very nearly so; papillæ on branchial and anal openings unbranched; superanal opening always closed below.

Section LYMNIIUM Oken, 1815.

(Type, *Unio pictorum* Retzius.)

Shell generally smooth; beak sculpture broken, often somewhat corrugated or pustulous; pseudocardinals compressed; beak cavities well excavated, not compressed. Animal highly colored, anal opening crenulate or smooth.

(Group of *Unio pictorum*.)

Shell inflated, elongate, oval, anterior end angled above, swollen a little at posterior base; beaks full, their sculpture consisting of numerous slightly doubly looped bars which often become pustulous; posterior ridge rather low; epidermis smooth, rather bright, sometimes slightly rayed behind; rest periods well marked; pseudocardinals compressed, often a little reflexed, smooth below, those of the left valve partly united; muscle scars smooth; nacre whitish to salmon. Animal the same as described for the section.

† UNIO PICTORUM Linnæus.¹

* *Mya pictorum* LINNÆUS, Syst. Nature, 10th ed., 1758, I, p. 671; Faun. Suec., 1761, No. 2129.—* MÜLLER, Vermes, 1774, p. 211.—* PENNANT, Brit. Zool., IV, 1777? pl. XLIII, fig. 17.—* DA COSTA, Hist. Nat. Brit., 1778, p. 228, pl. xv, fig. 4.—* SCHRÖTER, Flusseeconch., 1779, p. 178, pl. III, figs. 2, 4, 5.—* BORN, Test. Mus. Vind., 1780, p. 20.—* SCHRÖTER, Ein. Conch., 1783, II, p. 604.—* OLIVI, Zool. Adriatic, 1792, p. 95.—* STURM, Deuts. Faun., VI, 1803, 2d ed., p. 19, pls. a, b, c.—* MONTAGU, Test. Brit., 1803, p. 36.—* TURTON, Brit. Fauna,

¹Hanley says [Ipse Linnæi Conchyliæ, p. 27]: "More Uniones than one are present in the [Linnæan] collection, but upon the whole the *U. pictorum* of authors [Rossin. Icon., fig. 196] agrees best with synonymy and description. The figure referred to of Lister is *U. pictorum*; Bonanni's drawing is more doubtful and was possibly meant for *U. tumidus*. The descriptions in Fauna Suecica and Systema are brief and unsatisfactory and might suit either species alike."

1807, p. 146.—*MATON and RACKETT, Tr. Linn. Soc. Lond., VIII, 1807, p. 38.—*WOOD, Gen. Conch., I, 1815, p. 104, pl. XIX, figs. 3, 4.—*DILLWYN, Cat., I, 1817, p. 49.—*TURTON, Conch. Diet., 1819, p. 106.—*WOOD, Index Test., 1825, p. 12, pl. II, fig. 26c; *rev. ed., 1856, p. 15, pl. II, fig. 26.—*CHENU, Bib. Conch., 1st ser., I, 1845, p. 114, pl. XLVII, figs. 8, 9.—*HANLEY, Ipsa. Linn. Conch., 1855, p. 460.

**Unio pictorum* RETZIUS, Diss. Hist. Nat., 1778, p. 17.—*SPENGLER, Skriv. Selsk. Nat., III, 1793, p. 59.—*DRAPARNAUD, Tab. Moll. Fr., 1801, p. 106; in part Hist. Moll. Fr., 1806, p. 131, pl. XI, fig. 4.¹—*GAERTNER, Vers. Ein. Syst., 1813, p. 36.—*MILLET, Moll. Maine et Loire, 1813, p. 74.—*BRARD, Hist. Coq. Paris, 1815, p. 226, pl. VIII, fig. 1.—*BROOKES, Int. to Conch., 1815, p. 51, pl. II, fig. 12.—*CUVIER, Règne Animal, II, 1817, p. 473.—*KLEES, Diss. Test., 1818, p. 45.—*LAMARCK, An. sans Vert., VI, 1819, p. 77.—*C. PREIFFER, L. and Suss. Moll., Pt. 1, 1821, p. 115, pl. V, figs. 9, 20.—*NILSSON, Hist. Moll. Svec., 1822, p. 111.—*BOSC, Hist. Nat. Coq., III, 1824, p. 139, pl. XXIII, fig. 3.—*BLAINVILLE, Manual, Mal., 1825, p. 539, pl. LXVII, fig. 2.—*CROUCH, Ill. Int. Lamarek, 1827, p. 16, pl. IX, figs. 4, 4a, 4b.—*WAARDENBERG, Com. Hist. Nat., 1827, p. 36.—*KLEEGER, Moll. Bourss., 1828, p. 38.—*STARK, Nat. Hist., II, 1828, p. 90.—*FLEMING, Hist. Brit. Animals, 1828, p. 416.—*GOUPII, Hist. Moll. Sarthe, 1835, p. 84.—*ROSSMASSLER, Icon., I, 1835, p. 118, pl. III, figs. 71, 71a, 71b; III, 1836, p. 23, pl. XIII, fig. 196; VI, 1837, p. 55, pl. XXIX, fig. 409; IX, 1839, p. 10, pl. XLV, fig. 587-590; XI, 1842, p. 14, pl. LV, fig. 741; XII, 1844, p. 30, pl. LVIII, figs. 762-766; p. 31, pl. LIX, figs. 767-769.—*FOURNEL, Faun. Moselle, I, 1836, p. 486.—*FLEMING, Moll. Animals, 1837, pl. XIV, fig. 51.—*WYATT, Man. Conch., 1838, p. 67, pl. VIII, fig. 6.—*PORRO, Mal. Como., 1838, p. 117.—*TERVER, Moll. Terr. et Flav., 1839, p. 39.—*ANTON, Verz. der Conch., 1839, p. 15.—*?GRAS, Moll. Isere., 1840, p. 71, pl. 1, fig. 8.³—*HANLEY, Test. Moll., 1842, p. 205; *Biv. Shells, 1843, p. 205.—*SCHOLZ, Schleis, L. and W. Moll., 1843, p. 127.—*CATLOW and REEVE, Conch. Nom., 1845, p. 62.—*STABLE, Faun. Lug., 1845, p. 60, pl. III, fig. 73.—*MORELET, Moll. Port., 1845, p. 108.—*BROWN, L. and F. W. Conch., 1845, p. 107, pl. XIX, figs. 1-4.—*PUTON, Moll. Vosges, 1847, p. 70.—*STEIN, Die Lebend. Schneck., 1850, p. 104, pls. XXIV, XXV, figs. 1, 2.—*MIDDENDORFF, Sib. Reise, II, 1851, p. 276, pl. XXVIII, figs. 1-3.—*LEACH, Syn. Moll. Gt. Brit., 1852, p. 234.—*DUPUY, Hist. M. Fr., 1852, p. 617, pl. XXVI, fig. 20.—*FORBES and HANLEY, Hist. Brit. Moll., II, 1853, p. 142, pl. XXXIX, fig. 1.—*KUSTER, Conch. Cab. Unio, 1854, p. 88, pl. XXIII, figs. 1, 2; pl. XXIV; XXV, figs. 1, 2.—*MOQUIN-TANDON, Moll. Terr. Fluv. Fr., II, 1855, p. 576, pl. L, figs. 8, 10; LI, figs. 1, 10.—*VON WAHL, Arch. Naturk. Liv. Est., 2d ser., 1855, p. 105.—*NORDENSKIÖLD and NYLANDER, Fin. Moll., 1856, p. 83, pl. V, fig. 72.—*DROUET, Nay. Fr., II, 1857, p. 103, pl. VIII.—*TURTON, Man. L. and F. W. Shells, 1857, p. 279, pl. II, fig. 11.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491; III, pl. CXVI, figs. 5, 5a, 5b.—*SOWERBY, Ill. Index Brit. Shells, 1859, No. 2, pl. VII.—*GOODRICH, Ill. Nat. Hist., II, 1859, p. 523, fig.—*JEFFREYS, Brit. Conch., I, 1862, p. 34.—*BIELZ, Faun. Sieben, 1863, p. 192.—*REEVE, L. and F. W. Moll. Brit., 1863, p. 221, fig. 2.—*TATE, L. and F. W. Moll. G. Brit., 1866, pl. II, fig. 3.—*?SCHRENCK, Reise und F. im Am. Lande, II, 1867, p. 696.—*KOBELT, Faun. Nass. Moll., 1871, p. 241.—*WESTER-

¹ *U. batavus* perhaps.

² Draparnaud gives figures 1-4 for *pictorum*. One and 2 may possibly be that species, but they look more like *batavus*, and 3 is certainly *batavus*, while 4 is probably *pictorum*.

³ Doubtful, may be *batavus*.

⁴ It is very probable that the specimens from Amur Land and vicinity which have been referred to *U. pictorum* are a smooth variety of *Nodularia douglasii* Gray, a species resembling it in form, but not at all closely related to it.

- LUND, Faun. S. N. and D., 1873, p. 574.—* LEHMAN, Die Schnecken, 1873, p. 290.—* CLESSIN, Deutsche Ex. Moll., 1876, p. 453, fig. 294.—* JORDAN, Jahrb. Deuts. Mal. Ges., VI, 1879, p. 301.—* DROUET, Mem. Acad. Dijon, VII, 1882, p. 10 (reprint).—* L. ADAMS, Coll. Mân., 1884, p. 18, pl. 1, fig. 11.—* ? CLESSIN, Moll. Oest., 1887, p. 723.—P.ÉTEL, Conch. Sam., III, 1890, p. 163.
- * *Baphia pictorum* MEUSCHEN, Mus. Gevers., 1787, p. 472.
- * *Lymnium pictorum* OKEN, Lehrb., 1815, p. 237.
- * *Mysea pictorum* TURTON, Conch. Ins. Brit., 1822, p. 245; * Man. L. and F. W. Shells, Brit. Is., 1831, p. 20, fig. 11.
- * *Margarita (Unio) pictorum* LEA, Syn., 1836, p. 36; 1838, p. 24.
- * *Margaron (Unio) pictorum* LEA, Syn., 1852, p. 36; 1870, p. 58.
- * *Mya augusta subglara*, etc., SCHRÖTER, Fluss. Conch., 1779, p. 184, pl. III, fig. 3; pl. IV, fig. 6.
- * *Mya nodosa* GMELIN, Syst. Nat., 13th ed., 1788, p. 3222.¹—* WOOD, Gen. Conch., I, 1815, p. 110.—* DILLWYN, Cat., I, 1817, p. 54.—* WOOD, Ind. Test., 1825, p. 12, pl. II, fig. 34a; * rev. ed., 1856, p. 16, pl. II, fig. 34.—* P.ÉTEL, Conch. Sam., III, 1890, p. 161.
- * ? *Unio conus* SPENGLER, Skriv. Selsk. Nat., III, 1793, p. 60.
- * *Mya ovalis* DONOVAN, Brit. Shells, III, 1801, pl. LXXXIX.—* TURTON, Brit. Fauna, 1807, p. 146.
- * ? *Unio oralis* SOWERBY, Rec. and Foss. Shells, No. XVI, 1823, fig. .—* ? REEVE, Conch. Syst., I, 1841, p. 117, pl. LXXXVII, fig. 1.—* CHENU, Bib. Conch., 1st ser., I, 1845, p. 67, pl. XXIV, figs. 1-3.—* P.ÉTEL, Conch. Sam., III, 1890, p. 162.
- * *Mya nodulosa* WOOD (part), Gen. Conch., I, 1815, p. 106, pl. XXII, figs. 3, 4.²
- * *Unio nodulosa* LAMARCK, An. sans Vert., VI, 1819, p. 78.
- * *Unio rostrata* LAMARCK, An. sans Vert., VI, 1819, p. 77.—* C. PFEIFFER, Nat. Deuts. L. and Suss. Moll., Pt. 1, 1821, p. 114, pl. V, fig. 8.—* WAARDENBERG, Com. Hist. Nat. Animalium, 1827, p. 36.—* LAMARCK, Enc. Méth., II, 1830, p. 586.—* MICHAUD, Comp. Hist. Moll. Fr., 1831, p. 108, pl. XVI, fig. 25.—* BROWN, L. and F. W. Conch., 1836, p. 109, pl. XX, figs. 1, 2; * Ill. Rec. Conch., 1844, p. 82, pl. XXXII, figs. 9-12.—* PUTON, Moll. Vosges, 1847, p. 70.—* GRAS, Moll. Isere., 1840, p. 71, pl. V, fig. 21.
- * *Unio rostratus* CHENU, Man., II, 1859, p. 137, fig. 658.—* WESTERLUND, Faun. der Pal., II, Pt. 7, 1890, p. 104.—* P.ÉTEL, Conch. Sam., III, 1890, p. 166.—* LOCARD, Les Coq. de Fr., 1893, p. 207.—WESTERLUND, Act. Soc. F. and F. F., XIII, No. 7, 1897, p. 165.
- * *Unio manca* LAMARCK, An. sans Vert., VI, 1819, p. 80.
- * *Unio mancus* DROUET, Moll. Côte d'Or, 1867, p. 103.—* WESTERLUND, Faun. der Pal., II, Pt. 7, 1890, p. 85.
- * *Unio limosus* NILSSON, Hist. Moll. Svec., 1822, p. 110.—* ROSSMASSLER, Icon., III, 1836, p. 24, pl. XIII, fig. 199.—* KUSTER, Conch. Cab. Unio, 1854, p. 80, pls. XXI, XXII, XXIII.—* P.ÉTEL, Conch. Sam., III, 1890, p. 157.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 115.—* LOCARD, Coq. de Fr., 1893, p. 211.—* WESTERLUND, Act. Soc. F. and F. F., XIII, No. 7, 1897, p. 166.
- * *Unio deshayesii* MICHAUD, Comp. Hist. Moll. Fr., 1831, p. 107, pl. XVI, fig. 30.—* ROSSMASSLER, Icon., III, 1836, p. 23, pl. XIII, fig. 197.—* GRAS, Moll. Isere. App., 1840, p. 21.—* BROWN, Ill. Rec. Conch., 1844, p. 81, pl. XXXII, figs. 1-4; L. and F. W. Conch., 1845, p. 108, pl. XX, figs. 3, 4.—* LOCARD, Coq. de Fr., 1893, p. 210.
- * *Unio dubius* FITZINGER, Syst. Verz., 1833, p. 119.
- * *Unio michaudiana* DES MOULINS, Actes Soc. Linn. Bord., VI, 1833, p. 27, plate.
- * *Unio longirostris*, ROSSMASSLER, Icon., III, 1836, p. 26, pl. XIV, fig. 200; XI, 1842,

¹Gmelin refers to Conch. Cabinet X, p. 347, pl. CLXX, fig. 1650, which is, I am quite certain, a young *U. pictorum*.

²Two species are figured; figs. 1 and 2 are a heavy, inflated Chinese species; figs. 3 and 4 are no doubt *pictorum*.

- p. 13, pl. LIV, fig. 738.—*STABLE, Faun. Lug., 1845, p. 60.—*DROUET, Mem. Ac. Dijon, VII, 1882, p. 11 (reprint).—*WESTERLUND, Faun. der Pal., II, Pt. 7, 1890, p. 117.—*PÆTEL, Conch. Sam., III, 1890, p. 158.—*LOCARD, Coq. de Fr., 1893, p. 209.
- **Potamida sicula* SWAINSON, Treatise on Mal., 1840, p. 282, fig. 58.
- **Unio siculus* HANLEY, Biv. Shells, 1856, p. 383, pl. XX, fig. 19.—*PÆTEL, Conch. Sam., III, 1890, p. 167.
- **Unio aradæ* PHILIPPI, Enum. Moll. Sic., III, 1844, p. 49.—*KUSTER, Conch. Cab. Unio, 1854, p. 105, pl. XXVIII, fig. 6.—*KOBELT, Icon., IV, 1876, p. 62, pl. CXVII, figs. 1146, 1147.—*DROUET, Jl. de Conch., XXIX, 1881, p. 25.
- **Unio dactylus* MORELET, Moll. Port., 1845, p. 110, pl. XIV, fig. 2.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 111.—*KOBELT, Icon., new ser., VI, 1893, p. 98, pl. CXXX, fig. 1132.
- **Unio mucidus* MORELET, Moll. Port., 1845, p. 111.—*KOBELT, Icon., new ser., VI, 1893, p. 98, pl. CLXXX, figs. 1130, 1131.—*PÆTEL, Conch. Sam., III, 1890, p. 160.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 111.
- **Unio quinqueannulatus* KUSTER, Conch. Cab. Unio, 1854, p. 93, pl. XXV, figs. 3, 4.—*PÆTEL, Conch. Sam., III, 1890, p. 165.
- **Unio pallens* KUSTER, Conch. Cab. Unio, 1854, p. 95, pl. XXV, fig. 5; XXVI, fig. 1.
- **Unio viridigliarus* KUSTER, Conch. Cab. Unio, 1854, p. 96, pl. XXVI, figs. 2, 3.—*PÆTEL, Conch. Sam., III, 1890, p. 171.
- **Unio petrovichii* KUSTER, Conch. Cab. Unio, 1854, p. 98, pl. XXVI, fig. 5; XXVII, fig. 1.—*PÆTEL, Conch. Sam., III, 1890, p. 163.
- **Unio maltzani* KUSTER, Conch. Cab. Unio, 1854, p. 106, pl. XXIX, figs. 1, 2.—*PÆTEL, Conch. Sam., III, 1890, p. 158.
- **Unio baletonicus* KUSTER, Conch. Cab. Unio, 1861, p. 231, pl. LXXVIII, fig. 1.—*SERVAIN, Hist. Mal. Bal., 1881, p. 98.
- **Unio proechus* BOURGUIGNAT, Rev. et Mag., XIV, 1862, pl. XIX, figs. 1-3; XV, 1863, p. 19, XIX.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 118.
- **Unio acetophilus* BOURGUIGNAT, Rev. et Mag., XIV, 1862, pl. XIX, figs. 7, 8, XX, fig. 3; XV, 1863, p. 20.
- **Unio lawleyanus* GENTILUOMO, Bull. Mal. Ital., I, 1868, p. 54, pl. IV, figs. 1-3.

Europe generally; Siberia east to the Lena River and perhaps farther; south into Asia Minor?; Algiers?.

† UNIO PLATYRHYNCHUS Rossmassler.

- **Unio platyrhynchus* ROSSMASSLER, Icon., II, 1835, p. 22, pl. IX, fig. 130; V, 1837, p. 20, pl. XXIV, fig. 338.—*PORRO, Mal. Como, 1838, p. 117.—*HANLEY, Test. Moll., 1842, p. 205; *Biv. Shells., 1843, p. 205, pl. XXIII, fig. 53.—*CATLOW and REEVE, Conch. Nom., 1845, p. 62.—*KUSTER, Conch. Cab. Unio, 1854, p. 77, pls. XIX, XX.—*SOWERBY, Conch. Icon., XVI, 1856, pl. XXX, fig. 154.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—*PÆTEL, Conch. Sam., III, 1890, p. 163.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 118.
- **Margarita (Unio) platyrhynchus* LEA, Syn., 1836, p. 35; 1838, p. 24.
- **Margarita (Unio) platyrhynchus* LEA, Syn., 1852, p. 36; 1870, p. 58.
- **Unio fiscallianus* KLECIACH, Atti. Soc. Ital., XV, 1872, p. 92.—*PFEIFFER and KOBELT, Mal. Blatt., XX, 1873, p. 92, fig.
- Unio limosus* *KOBELT, Icon., new ser., VI, 1893, p. 44, pl. CLVII, figs. 1024-1027.¹

Central and southwestern Europe.

¹ According to Kobelt in above reference, his *platyrhynchus* = the *limosus* of Nilsson. Nilsson does not figure his species in Hist. Moll. Svec., but refers to pl. v, fig. 10, in Pfeiffer's Land and Susswasser Mollusken, which is plainly a *Unio pictorum*. Kobelt's figures, the latter three certainly, are genuine *platyrhynchus*, which I consider a perfectly good species.

† UNIO PLATYRINCHOIDEUS Dupuy.

Unio platyrinchoideus DUPUY, Cat. Ext. Gall. Test., 1849;¹ * Hist. Moll. Fr., VI, 1852, p. 649, pl. XXVII, fig. 16.—? DROUET, Nay. Fr., II, 1857, p. 100, pl. IX, fig. 1.—PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Unio platyrhynchoideus* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 121.

* *Unio platyrhynchoideus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXX, fig. 358.

* *Unio danielis* GASSIES, Actes. Soc. Linn. de Bord., XXVI, 1866, p. 132, pl. I, fig. 8.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 110.—* PÆTEL, Conch. Sam., III, 1890, p. 150.—* LOCARD, Coq. de Fr., 1893, p. 199.

Unio lardelianus PECCHIOLI, Bull. Mal. It., II, 1869, p. 163, pl. V.

South France.

† UNIO ELONGATULUS C. Pfeiffer.

* *Unio elongatula* C. PFEIFFER,² Nat. Dents., L. and S. Moll., II, 1825, p. 35, pl. VIII, figs. 5, 6.—ROSSMASSLER, Icon., II, 1835, p. 23, pl. IX, fig. 132; XII, 1844, p. 27, pl. LVI, fig. 751; VI, 1879, p. 42, pl. CLXII, figs. 1644, 1645.—PORRO, Mal. Como, 1838, p. 114.—CATLOW and REEVE, Conch. Nom., 1845, p. 59.—KÜSTER, Conch. Cab. Unio., 1854, p. 104, pl. XXVIII, figs. 4, 5.—DROUET, Nay. Fr., II, 1857, p. 91, pl. VI, fig. 2.—H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXV, fig. 451.—DROUET, J. de Conch., XXVII, 1879, p. 331.—* CLESSIN, Moll. Oest., 1887, p. 735.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 163.—* PÆTEL, Conch. Sam., III, 1890, p. 151.—* LOCARD, Coq. de Fr., 1893, p. 166, fig. 180.

* *Margarita (Unio) elongatulus* LEA, Syn., 1836, 1838, p. 24.

* *Margaron (Unio) elongatulus* LEA, Syn., 1852, p. 37, 1870, p. 59.

Central Europe.

† UNIO TUMIDUS Retzius.

* *Unio tumidus* RETZIUS, Diss. Hist. Nat., 1778, p. 17.—SPENGLER, Skriv. Selsk. Nat., III, 1793, p. 57.—NILSSON, Hist. Moll. Svec., 1822, p. 109.—ROSSMASSLER, Icon., I, 1835, p. 117, pl. III, figs. 70, 70a, 70b; III, 1836, p. 27, pl. XIV, figs. 202-204; VIII, 1838, p. 41, pl. XL, fig. 543; XII, 1844, p. 32, pl. LX, figs. 772-778.³—* BROWN, L. and F. W. Conch., 1836, p. 109, pl. XXI, figs. 8, 9.—* HANLEY, Test. Moll., 1842, p. 205; * Biv. Shells, 1843, p. 205.—* BROWN, Ill. Rec. Conch., 1844, p. 82, pl. XXXII, figs. 5-8.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* STABILE, Faun. Lug., 1845, p. 61, pl. III, fig. 74.—* STEIN, Die Leb. Schnecken, 1850, p. 103.—* DUPUY, Hist. Moll. Fr., 1852, p. 655, pl. XXVIII, fig. 20.—* FORBES and HANLEY, Hist. Brit. Moll., II, 1853, p. 140, pl. XL, fig. 1.—* KÜSTER, Conch. Cab. Unio, 1854, p. 71, pls. XVII, XVIII.—* MOQUIN-TANDON, Moll. Terr. Fluv., II, 1855, p. 577, pl. LI, figs. 11, 14.—* VON WAHL, Arch. für Naturkunde Liv., 2d ser., I, p. 115.—* NORDENSKIÖLD and NYLANDER, Fin. Moll., 1856, p. 85, pl. VI, figs. 7, 8.—* GRAY, Turton's Man., 1857, p. 297.—* DROUET, Nay. Fr., II, 1857, p. 110, pl. IX, fig. 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* SOWERBY, Ill. Int. British Shells, 1859, pl. VII, No. 3.—* JEFFREYS, Brit. Conch., I, 1862, p. 32.—* REEVE, L. and P. W. Moll. Brit., 1863, p. 219, fig. 1.—* REEVE, Conch. Icon., XVI, 1865, pl.

¹Credited by Lea to the above without page reference. I have not seen the paper.

²Pfeiffer credits this to Muhlfield in *litt.* It is a doubtful species, perhaps a variety of *pictorum*, but is generally smaller, thinner, and more compressed, and is rather more biangulate behind. Pfeiffer's two figures represent somewhat different forms, but they may be the same thing.

³Fig. 776 is probably a form of *batarus*.

- xxv, fig. 124.—*TATE, L. and F. W. Moll. Brit., 1866, pl. II, fig. 2.—*KOBELT, Faun. Nass. Moll., 1871, p. 239.—*LEHMAN, Die Schnecken, 1873, p. 292.—*WESTERLUND, Faun. S. N. and D., 1873, p. 572.—*CLESSIN, Dents. Ex. Moll., 1876, p. 458, fig. 299.—*JORDAN, Jahrb. Deuts. Mal. Ges., VI, 1879, p. 305.—*DROUET, Union. Russ., 1881, p. 9; *Mem. Ac. Dijon, 3d ser., VII, 1882, p. 12 (reprint).—*L. ADAMS, Coll. Man., 1884, p. 18, pl. L, fig. 10.—*CLESSIN, Moll. Oest., 1887, p. 738.—*PÆTEL, Conch. Sam., III, 1890, p. 170.—*KOBELT, Icon., new ed., VI, 1893, p. 87, pl. CLXXIII, fig. 1115.—*LOCARD, Coq. Fr., 1893, p. 212.—*WESTERLUND, Act. Soc. F. and F. F., XIII, 1897, p. 162.
- **Margarona (Unio) tumidus* LEA, Syn., 1852, p. 36; 1870, p. 58.
- **Unio tumida* C. PFEIFFER, Nat. Deuts. L. and S. Moll., II, 1825, p. 34, pl. VII, figs. 2, 3; pl. VIII, figs. 1, 2.—*KLEEGER, Moll. Bor., 1828, p. 38.—*PUTON, Moll. Vosges, 1847, p. 71.
- **Mya depressa* DONOVAN, Brit. Shells, III, 1801, pl. CI.—*CHENU, Bib. Conch., 1st Ser., I, 1845, p. 71, pl. XXVI, figs. 1-3.
- **Unio depressus* PÆTEL, Conch. Sam., III, 1890, p. 150.
- **Mya orata* DONOVAN, Brit. Shells, IV, 1802, pl. CXXII.¹—*MATON and RACKETT, Tr. Linn. Soc. Lond., VIII, 1807, p. 39.—*WOOD, Gen. Conch., I, 1815, p. 105, pl. XIX, fig. 5.—*DILLWYN, Cat., I, 1817, p. 50.—?TURTON, Conch. Diet., 1819, p. 106.—*WOOD, Ind. Test., 1825, p. 12, pl. II, fig. 27c; *rev. ed., 1856, p. 16, pl. II, fig. 27.—*CHENU, Bib. Conch., 1st ser., I, 1845, p. 82, pl. XXXII, figs. 1-3.
- **Mysca orata* TURTON, Conch. Ins. Brit., 1822, p. 246; Man. Shells Brit. Is., 1831, p. 21, fig. 12.—*SWAINSON, Treat. on Mal., 1840, p. 277, fig. 56.
- **Mysca solida* TURTON, Conch. Ins. Brit., 1822, p. 246, pl. XVI, fig. 2; Man. Shells Brit. Is., 1831, p. 22, fig. 13.
- **Mya ovalis* MONTAGU, Test. Brit., 1803, p. 34.—*FLEMING, Hist. Br. Anim., 1828, p. 416.
- **Unio oralis* BROWN, L. and F. W. Conch., 1836, p. 101, pl. XVIII, figs. 4, 5; Ill. Rec. Conch., 1844, p. 82, pl. XXXI, figs. 12-14.—*LEACH, Syn. Moll. Gt. Br., 1852, p. 322.
- **Margarita (Unio) ovalis* LEA, Syn., 1836, p. 35; 1838, p. 24.
- **Unio muelleri* ROSSMASSLER, Icon., VIII, 1838, p. 41, pl. XL, fig. 541; XI, 1842, p. 13, pl. LIV, fig. 739.
- **Unio pictorum* BROWN, Ill. Rec. Conch., 1844, p. 81, pl. XXXI, figs. 8-11.

Northern and middle Europe; eastern Siberia.

UNIO TURTONI Payraudeau.

- **Unio turtoni* PAYRAUDEAU, Cat. Moll. Corse, 1826, p. 65, pl. II, fig. 65.²—*PHILIPPI, Moll. Sic., 1836, p. 67.—*ROSSMASSLER, Icon., VII, 1838, p. 25, pl. XXXV, fig. 492.—*CATLOW and REEVE, Conch. Nom., 1845, p. 65.—*REQUIEN, Cat. Coq. Corse, 1848, p. 29.—*DUPUY, Hist. Moll. Franc., 1852, p. 651, pl. XXVII, fig. 17.—*PAULLUCCI, Bull. Soc. Mal. It., V, 1879, p. 107.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 160.—*PÆTEL, Conch. Sam., III, 1890, p. 170.
- **Unio capigliolo* PAYRAUDEAU, Cat. Moll. Corse, 1826, p. 66, pl. II, fig. 4.—*ROSSMASSLER, Icon., V and VI, 1837, p. 22, pl. XXIV, fig. 341; XII, 1844, p. 28, pl. LVII, figs. 755, 756.—*MOQUIN-TANDON, Moll. Terr. Fluv. Fr., II, 1855, p. 574, pl. L, figs. 3, 4.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 146.—*PÆTEL, Conch. Sam., III, 1890, p. 147.
- **Unio capigliolo* var. *bondini* PÆTEL, Conch. Sam., III, 1890, p. 147.

¹ First described by Lister in *Historia Animalium Angliæ*, 1678.

² This has often been confounded with *U. pictorum*, but is generally more rhomboid, higher at the posterior part of the ligament, and more plainly marked at the rest periods than that species.

- * *Unio pictorum* GUERIN, Icon. Règne Anim., II, 1829-1844, pl. XXVIII, fig. 16.—* BOURGUIGNAT, Mal. Alg., II, 1864, p. 292, pl. XXII, figs. 6-11.—* REEVE, Conch. Icon., XVI, 1865, pl. XXV, fig. 123.
- * *Unio requienii* MICHAUD, Comp. Hist. Nat. Moll. Fr., 1831, p. 106, pl. XVI, fig. 24.—* ROSSMASSLER, Icon., III, 1836, p. 24, pl. XIII, fig. 198.—* GRAS, Moll. Isere, 1840, p. 21.—* STABLE, Faun. Lug., 1845, p. 62, pl. III, fig. 1786.—* GASSIES, Moll. Agen., 1849, p. 195, pl. I, figs. 4, 5.—* DUPUY, Hist. M. Fr., 1852, p. 652, pl. XXVII, fig. 18.—* KUSTER, Conch. Cab. Unio, 1854, p. 126, pl. XXI, fig. 7; XXVI, figs. 1-3; XXXVII, figs. 2-4.—* DROUET, Nay. Fr., II, 1857, p. 93, pl. VII, figs. 1-3.—* MOUSSON, Coq. Terr. Fluv. Pal., 1861, p. 66.—* DROUET, Moll. Côte d'Or, 1867, p. 102.—* BENOIT, Mns. Cat. Sic., 1881, p. 170.—* CLESSIN, Moll. Oest., 1887, p. 731, fig. 494.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 121.—* PÆTEL, Conch. Sam., III, 1890, p. 165.
- * *Unio lobata* PHILIPPI, Moll. Sic., 1836, p. 67.
- * *Unio bandanii* ROSSMASSLER, Icon., V, 1837, p. 22, pl. XXIV, fig. 341.
- * *Unio pallens* ROSSMASSLER, Icon., XI, 1842, p. 13, pl. LIV, fig. 740.¹—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 114.
- * *Unio hispanus* ROSSMASSLER, Icon., XII, 1844, p. 26, pl. LVI, fig. 747.—* BOURGUIGNAT, Moll. Peu. Con., 1863, p. 46, pl. XXIV, figs. 1-3.—* BOURGUIGNAT, Rev. et Mag., XVII, 1865, p. 344, pl. XXIII, figs. 1-3.—* PÆTEL, Conch. Sam., III, 1890, p. 155.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 139.
- * *Unio alroni* COMPANYO and MASSOT, Bull. Soc. Pyr. d'Or, VI, Pt. 2, 1845, p. 234, fig. .—* BOURGUIGNAT, Moll. Peu. Con., 1863, p. 49, pl. XXIII, figs. 1-3; Rev. et Mag., XVII, 1865, pl. XIX, figs. 1-3.
- * *Unio rousii* DUPUY, Hist. Moll., VI, 1852, p. 653, pl. XVIII, fig. 18.—* MUSGRAVE, Phot. Conch., 1863, pl. II, fig. 7.
- * *Unio valentinus* ROSSMASSLER, Icon., III, 1854, p. 37, pl. LXIX, p. 852.—* BOURGUIGNAT, Moll. Peu. Con., 1863, p. 45, pl. XXVII; Rev. et Mag. Zool., XVII, 1865, p. 343, pl. XX.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 140.—* PÆTEL, Conch. Sam., III, 1890, p. 171.
- * *Margarou (Unio) valentinus* LEA, Syn., 1870, p. 52.
- * *Unio arduisianus* MOQUIN-TANDON, Hist. Moll. Fr., II, 1855, p. 575.²—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 109.—* LOCARD, Coq. de Franc., 1893, p. 205.
- * *Unio graellsianus* BOURGUIGNAT, Moll. Peu. Con., 1863, p. 47, pl. XXIII, figs. 4-7; * Rev. et Mag., 1865, p. 345, pl. XIX, figs. 4-7.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 140.
- *? *Unio letourneuxi* BOURGUIGNAT, Mal. Alg., 1864, p. 289, pl. XVII, fig. 47.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 58.—* PÆTEL, Conch. Sam., III, 1890, p. 157.
- * *Unio courquinianus* BOURGUIGNAT, Moll. Peu. Con., 1863, p. 48; * part, Rev. et Mag., 1865, p. 346, pl. XXII, figs. 1, 2.
- * *Unio sienlus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXI, fig. 364.³
- * *Unio ravoisieri* var. *issericus* KOBELT, Icon., new ser., I, 1884, p. 65, pl. XXVIII, fig. 215.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 142.
- * *Unio alexandri* KOBELT, Icon., 1st sup., 1895, p. 14, pl. II, fig. 2.

Entire circummediterranean region.

¹ Credited by Rossmassler to Parreyss. I do not know where the latter described it or whether he described it at all.

² Moquin-Tandou credits this to a letter from Reynies, 1843, and gives a reference to p. 5, pl. 1, figs. 6, 7, of the letter. I do not know that this was ever published. He makes it a variety of *requienii*.

³ This is *Potamida sienlus* Swainson according to Sowerby. I refer Swainson's shell to *Unio pictorum*.

† UNIO RAVOISIERI Deshayes.¹

* *Unio ravoisieri* DESHAYES, Hist. Nat. Moll. Aceph. Alg., 1848, pl. CVIII, figs. 4-7.²—* BOURGUIGNAT, Mal. Alg., 1864, p. 291, pl. XX, figs. 5-10.—* P.ETEL, Conch. Sam., III, 1890, p. 165.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 142.

* *Margaron (Unio) ravoisieri* LEA, Syn., 1870, p. 48.

* *Unio moreleti* DESHAYES, Hist. Moll. Alg., 1848, pl. CIX, figs. 1-4; CXII, fig. 5.—* KOBELT, Icon., new ser., II, 1886, p. 4, pl. XXXIII, fig. 228.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 141.—* P.ETEL, Conch. Sam., III, 1890, p. 160.

* *Margaron (Unio) moreleti* LEA, Syn., 1870, p. 60.

*? *Unio maccarthyanus* BOURGUIGNAT, Moll. Pen. Con., 1886, p. 221, pl. XXXIV, figs. 8-11.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 57.—* P.ETEL, Conch. Sam., III, 1890, p. 158.

Algiers.

† UNIO MUSSOLIANUS Kuster.

* *Unio mussolianus* KUSTER, Conch. Cab. Unio, 1861, p. 244, pl. LXXXII, fig. 1.³—* P.ETEL, Conch. Sam., III, 1890, p. 160.

* *Unio bourguignatianus* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 189; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 54, pl. XVIII, fig. 51; *Obs., XI, 1867, p. 55, pl. XVIII, fig. 51.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 178.—* P.ETEL, Conch. Sam., III, 1890, p. 146.

* *Margaron (Unio) bourguignatianus* LEA, Syn., 1870, p. 39.

* *Unio rarus* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 189; *Jl. Acad. N. Sci. Phila., VI, 1866, p. 50, pl. XVII, fig. 47; *Obs., XI, 1867, p. 54, pl. XVII, fig. 47.—* P.ETEL, Conch. Sam., III, 1890, p. 165.

* *Margaron (Unio) rarus* LEA, Syn., 1870, p. 58.

* *Unio mosulensis* LEA, Pr. Acad. N. Sci. Phila., VII, 1863, p. 190; *Jl. Acad. N. Sci. Phila., VI, 1866, p. 52, pl. XVII, fig. 49; *Obs., XI, 1867, p. 56, pl. XVII, fig. 49.

* *Margaron (Unio) mosulensis* LEA, Syn., 1870, p. 48.

* *Margaritana mosulensis* P.ETEL, Conch. Sam., III, 1890, p. 173.

Assyria.

UNIO HUETI Bourguignat.

* *Unio luetti* BOURGUIGNAT, Rev. et Mag., VII, 1855, p. 332, pl. VIII, figs. 1-4.—VON MARTENS, Vorderas. Conch., 1874, p. 35, pl. VII, fig. 54.—* P.ETEL, Conch. Sam., III, 1890, p. 155.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 171.⁴

Asia Minor.

¹ Doubtfully distinct from *U. turtoni*. It is not quite so rhomboid as that species, which is also found in Algiers, but I have seen much intermediate material which hints at a connection of the two.

² The magnificent work in which this species with other Uniones was figured was never finished, and no descriptions of the *Naiades* were written. The beautiful colored figures are wonderfully characteristic and are accompanied by names.

³ Credited to Parreyss in catalogue.

⁴ This is quite likely only a variety of the preceding, but seems to be thinner and is more evenly elliptical. Von Martens believes it to be the same as Lea's *mosulensis*.

UNIO EUCIRRUS Bourguignat.

- * *Unio eucirrus* BOURGUIGNAT, Mag. Zool., IX, 1857, p. 20, pl. VIII, figs. 4-6.—
 * KOBELT, Icon., VII, 1880, p. 82, pl. CCVI, fig. 2101.—* WESTERLUND, Faun.
 Pal., II, Pt. 7, 1890, p. 171.—* PÆTEL, Conch. Sam., III, 1890, p. 152.
 * *Margaron (Unio) eucirrus* LEA, Syn., 1870, p. 46.

Asia Minor. Probably a form of *hueti*.

† UNIO TIGRIDIS Bourguignat.¹

- * *Unio truncatus* SWAINSON, Zool. Ill., 2d ser., I, 1829, pl. X.—* HANLEY, Test. Moll.,
 1842, p. 187; * Biv. Shells., 1843, p. 187.—* CATLOW and REEVE, Conch. Nom.,
 1845, p. 64.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* SOWERBY,
 Conch. Icon., XVI, 1868, pl. LXXXV, fig. 453.
 * *Margarita (Unio) truncatus* LEA, Syn., 1836, p. 21; 1838, p. 18.
 * *Margaron (Unio) truncatus* LEA, Syn., 1852, p. 26; 1870, p. 39.
 * *Unio tigridis* BOURGUIGNAT, Test. Nov. Saul., 1852, p. 30; * Cat. Rais. Moll., 1853,
 p. 77, pl. IV, figs. 7-9.—* KUSTER, Conch. Cab. Unio, 1861, p. 227, pl. LXXXVII,
 fig. 1.—* KOBELT, Icon., new ser., II, 1886, p. 2, pl. XXXII, fig. 226.—* WESTER-
 LUND, Faun. Pal., II, Pt. 7, 1890, p. 175.—* PÆTEL, Conch. Sam., III, 1890, p.
 169.
 * *Unio dignatus* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 189; * JI. Acad. N. Sci.
 Phila., VI, 1866, p. 51, pl. XVII, fig. 48; * Obs., XI, 1867, p. 55, pl. XVII, fig. 48.—
 * PÆTEL, Conch. Sam., III, 1890, p. 150.
 * *Margaron (Unio) dignatus* LEA, Syn., 1870, p. 39.
 * *Margaron (Unio) tigris* LEA, Syn., 1870, p. 39.
Unio tigris FERUSSAC, manuscript.²
 * ? *Unio kisonis* KOBELT, Icon., 1st sup., 1895, p. 17, pl. VII, figs. 2, 3.³

Asia Minor; Assyria.

UNIO PIETRI Locard.

- * *Unio pietri* LOCARD, Comptes Rendus, XCI, 1880, p. 500; * Arch. Mus. Lyon, III,
 1883, p. 210, pl. XX, figs. 17-19.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890,
 p. 170.
 * *Unio petroi* PÆTEL, Conch. Sam., III, 1890, p. 163.
 * *Unio lorteti* LOCARD, Comptes Rendus, XCI, 1880, p. 502; * Arch. Mus. Lyon, III,
 1883, p. 215, pl. XXI, figs. 7-12.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890,
 p. 173.
 * *Unio tristrami* LOCARD, Arch. Mus. Lyon, III, 1883, p. 209, pl. XX, figs. 15, 16.—
 * PÆTEL, Conch. Sam., III, 1890, p. 170.—* WESTERLUND, Faun. Pal., II, Pt. 7,
 1890, p. 170.
 * *Unio tiberiadensis* LOCARD, Arch. Mus. Lyon, III, 1883, p. 216, pl. XXI, figs. 13-15.—
 * PÆTEL, Conch. Sam., III, 1890, p. 169.—* WESTERLUND, Faun. Pal., II, Pt.
 7, 1890, p. 174.

¹Swainson gave the name *Unio truncatus* to this species in 1829, but that name had been applied to a *Unio* by Spengler in 1793. Bourguignat credits this to Ferussac manuscript under the name of *Unio tigris*.

²Lea credits this to Ferussac manuscript in museum at Paris. No description has ever been published, so far as I know, though several authors have cited it and credited it to Ferussac. A specimen in the Lea collection which is no doubt authentic is apparently a delicate young *tigridis*.

³Young shells, and it is very hard to say whether they are *tigridis* or *terminalis*.

- * *Unio prosacrus* LOCARD, Arch. Mus. Lyon, III, 1883, p. 219, pl. XXI, figs. 16, 17.—
* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 174.
- * *Unio axiacus* LOCARD, Arch. Mus. Lyon, III, 1883, p. 242, pl. XX, figs. 20-23.—
* PÆTEL, Conch. Sam., III, 1890, p. 145.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 170.
- * *Unio subtigridis* LOCARD, Arch. Mus. Lyon, III, 1883, p. 245, pl. XXI, figs. 18-20.—
* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 175.—* PÆTEL, Conch. Sam., III, 1890, p. 168.
- * *Unio aremprosthus* LOCARD, Arch. Mus. Lyon, III, 1883, p. 246, pl. XXI, figs. 21-23.—
* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 175.
- * *Unio chantri* LOCARD, Arch. Mus. Lyon, III, 1883, p. 247, pl. XXII, figs. 1-7.—
* PÆTEL, Conch. Sam., III, 1890, p. 147.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 176.¹

Asia Minor.

UNIO ZABULONICUS Locard.

- * *Unio zabulonicus* LOCARD, Arch. Mus. Lyon, III, 1883, p. 220, pl. XXII, figs. 11-18.—
* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 177.—* PÆTEL, Conch. Sam., III, 1890, p. 172.
- * *Unio antiochianus* LOCARD, Arch. Mus. Lyon, III, 1883, p. 249, pl. XXII, figs. 14-16.—
* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 176.

Asia Minor.

† UNIO TERMINALIS Bourguignat.

- * *Unio terminalis* BOURGUIGNAT, Test. Noviss., 1852, p. 31; * Cat. Rais. Moll., 1853, p. 76, pl. III, figs. 4-6; * JI. de Conch., IV, 1853, p. 74, pl. III, figs. 10' 10".—* MOUSSON, Coq. Terr. et Fluv. Pal., 1861, p. 65.—* KOBELT, Icon., IV, 1876, p. 65, pl. CXIX, fig. 115.—* PÆTEL, Conch. Sam., III, 1890, p. 169.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 174.
- * *Margaron (Unio) terminalis* LEA, Syn., 1870, p. 39.

Lake Tiberias.

UNIO GRELLOISIANUS Bourguignat.

- * *Unio grelloisianus* BOURGUIGNAT, Rev. et Mag., VIII, 1856, p. 227, pl. XI, figs. 1-4; Moll. Peü. Con., 1863, p. 74, pl. XXIII, figs. 4-7.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, pp. 140, 173.—* PÆTEL, Conch. Sam., III, 1890, p. 154.
- * *Unio lunulifer* BOURGUIGNAT, Rev. et Mag., VIII, 1856, p. 227, pl. XI, figs. 5-8.—
* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 177.—* PÆTEL, Conch. Sam., III, 1890, p. 158.
- * *Margaron (Unio) lunulifer* LEA, Syn., 1870, p. 37.
- * *Unio jordanicus* BOURGUIGNAT, Rev. et Mag., VIII, 1856, p. 228, pl. X, figs. 1-4.—
* MOUSSON, Coq. Terr. Fluv. Pal., 1861, p. 66.—* PÆTEL, Conch. Sam., III, 1890, p. 156.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 172.
- * *Margaron (Unio) jordanicus* LEA, Syn., 1870, p. 44.

Jordon River.

¹All these so-called species of Locard, some of which he credits to the manuscripts of Bourguignat and Lortet, have high beaks placed at some distance from the anterior end, are wedge-shaped and more or less pointed posteriorly. I think it quite probable that all of them, together with the next species, are mere variations of Bourguignat's old *U. terminalis*. Of course Locard has figured every possible variation and distortion and called it a species.

UNIO ELLIPSOIDEUS Locard.

- * *Unio ellipsoideus* LOCARD, Arch. Mus. Lyon., III, 1883, p. 211, pl. XXI, figs. 1-3.¹—
* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 171.—* PÆTEL, Conch. Sam., III, 1890, p. 151.
- * *Unio genezaretheusis* LOCARD, Arch. Mus. Lyon., III, 1883, p. 213, pl. XXI, figs. 4-6.—* PÆTEL, Conch. Sam., III, 1890, p. 153.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 172.
- * *Unio jauberti* LOCARD, Arch. Mus. Lyon., III, 1883, p. 248, pl. XXII, figs. 8-10.—
* PÆTEL, Conch. Sam., III, 1890, p. 155.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 176.
- * *Unio zabulonius* KOBELT, Icon., new ser., VI, 1893, p. 96, pl. CLXXIX, fig. 1129.
- * *Unio lortiti* KOBELT, Icon., 1st sup., 1895, p. 14, pl. v, fig. 3.
- * *Unio kobelti* ROLLE, Icon., 1st sup., 1895, p. 15, pl. vi, fig. 3.
- * *Unio pictri* KOBELT (part), Icon., 1st sup., 1895, p. 16, pl. vi, figs. 1, 2.
- * *Unio herodes* KOBELT, Icon., 1st sup., 1895, p. 17, pl. vi, fig. 4.

Lake Tiberias.

† UNIO DELICATUS Lea.²

- * *Unio delicatus* LEA, Pr. Acad. N. Sci. Phila., VII, 1863, p. 189.—* JI. Acad. N. Sci. Phila., VI, 1866, p. 58, pl. XIX, fig. 56.—* Obs., XI, 1867, p. 62, pl. XIX, fig. 56.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 178.—* PÆTEL, Conch. Sam., III, 1890, p. 150.
- * *Margaron (Unio) delicatus* LEA, Syn., 1870, p. 42.

Orontes River, Syria.

(Group of *Unio littoralis*.)

Shell rather solid, subinflated, rounded rhomboid, with a faint posterior ridge, usually slightly biangulate behind and often becoming arcuate when old; beaks prominent and full; beak sculpture consisting of numerous rather fine, subparallel ridges or corrugations which are sometimes a good deal broken up, and which extend well out on the disk, but begin at the beaks as normal, somewhat coarse *Unio* sculpture, sometimes with fine radial lines posteriorly; pseudocardinals rather solid, subcompressed, smooth below; laterals straight or slightly curved; cavity of the beaks rather deep; muscle scars distinct.

I have never seen the soft parts of any member of this group. Quite a number of descriptions have been published of various nominal species, most of which go into details as to the color of the different parts, but do not give an atom of information as to real characters. The animal is dark or highly colored, and seems to be gravid in summer, and no doubt carries the young in the outer gills alone. Gills large, wider behind, inner the larger, especially in front; mantle thickened at the edges; palpi very large, elliptical, rounded behind, hanging at an angle of 45°; branchial opening large, strongly fringed.³

¹I think this is a form of *grelloisianus*. Some forms of the latter are very much like *U. tigrinus* Bourguignat, but he says that it has roughened beaks while those of *tigrinus* are always smooth.

²I have only seen the type, a young shell, and its relations are doubtful. The sharp, rather pustulous, beak sculpture, and the shining, yellowish epidermis are like the *pictorum* group, but its form is peculiar. It may not come from Syria at all.

³From a figure in Mal. d'Algérie, II, pl. XIX.

† UNIO LITTORALIS Lamarck.¹

- * *Unio littoralis* LAMARCK, Syst. An. sans Vert., 1801, p. 114.—* DRAPARNAUD, Tab. Moll. Fr., 1801, p. 101; *Hist. Moll. Fr., 1806, p. 135, pl. x, fig. 20.—* MILLET, Moll. Maine et Loire, 1813, p. 74.—* BRARD, Hist. Coq., 1815, p. 229.—* CUVIER, Règne Animal, II, 1817, p. 473.—* LAMARCK, An. sans Vert., VI, 1819, p. 76.—* DESHAYES, Enc. Méthod., II, 1827, p. 151, pl. CCXLVIII, fig. 2.—* MICHAUD, Comp. Hist. Moll. Fr., 1831, p. 110.—* LEA, Obs., I, 1834, p. 201.—* GOUPIL, Hist. Moll. Sarthe, 1835, p. 83.—* PHILIPPI, Moll. Sic., 1836, p. 66.—* ROSSMASSLER, Icon., V, 1837, p. 21, pl. XXIV, fig. 340.—* TERVER, Cat. Moll. Terr. et Fluv., 1839, p. 39.—* SOWERBY, Conch. Man., 1839, fig. 145.—* GRAS, Moll. Isere., 1840, p. 72, pl. v, fig. 20.—* HANLEY, Test. Moll., 1842, p. 201; *Biv. Shells, 1843, p. 201, pl. XXI, fig. 13.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* PUTON, Moll. Vosges., 1847, p. 74.—* GASSIES, Moll. Agenais, 1849, p. 197.—* DUPUY, Hist. Moll. Fr., 1852, p. 632, pl. XXIII, fig. 8; XXIV, figs. 5, 6, 8.—* ROSSMASSLER, Icon., III, 1854, p. 37, pl. LXIX, fig. 850.—* DROUET, Nay. Fr., II, 1857, p. 66, pl. III, figs. 1, 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* MOUSSON, Coq. Terr. Fluv. Pal., 1861, p. 64.—* REEVE, Conch. Icon., XVI, 1865, pl. XXII, fig. 98.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 52.—* PETEL, Conch. Sam., III, 1890, p. 157.
- * *Unio littoralis* var. *minor* ROSSMASSLER (part), Icon., XI, 1842, p. 14, pl. LV, figs. 743, ? 747.²
- * *Unio littoralis* var. *acarranicus* KOBELT, Icon., IV, 1879, p. 40, pl. CLXI, fig. 1638.
- * *Unio littoralis* var. *pianensis* KOBELT, Icon., VI, 1888, p. 43, pl. CLXIII, fig. 1648.
- * *Margarita (Unio) litoralis* LEA, Syn., 1836, p. 32; 1838, p. 22.
- * *Margaron (Unio) litoralis* LEA, Syn., 1852, p. 34; 1870, p. 54.
- * *Unio litoralis* var. *umbonatus* ROSSMASSLER, Icon., XII, 1844, p. 27, pl. LVI, fig. 754.
- * ? *Unio granosus* SCHUMACHER, Ess. Nouv. Syst., 1817, pl. II, fig. 1.³
- * *Unio brevisialis* LAMARCK, An. sans Vert., VI, 1819, p. 73.—* LEA, Obs., I, 1834, p. 200.⁴
- * *Unio naza* LAMARCK, An. sans Vert. VI, 1819, p. 76.—* LEA, Obs., I, 1834, p. 202.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 83.
- * *Unio rubens* MENKE, Syn., 1830, p. 149.—* ROSSMASSLER, Icon., V and VI, 1837, p. 56, pl. XXIX, fig. 412.
- * *Unio subtetragona* MICHAUD, Comp. Hist. Moll. Fr., 1831, p. 111.—* GRAS, Moll. Isere., 1840, p. 21.
- * *Unio subtetragonus* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* DUPUY, Hist. Moll. Fr., 1852, p. 634, pl. XXIV, fig. 7.

¹Lamarck refers this in the Animaux sans Vertébrés first to his *Système An. sans Vertébrés*, published in 1801, and thirdly to Draparnaud (*Hist. Moll. Fr.*, 1806). Draparnaud published this species under the name *Unio littoralis* without a figure in the *Tableau Mollusques de France*, 1801, which appeared, according to Moquin-Tandon, about July 1 of that year. I do not know which has priority, but Lamarck refers to a characteristic figure in the *Encyclopédie Méthodique* (1797), thus fixing the species without a doubt, and as he is most generally considered its author I shall credit it to him.

²Fig. 743 is a small *U. littoralis*. I think 747 is *U. batavus*.

³Only a partial inside view is given of two valves. Schumacher says it very much resembles *U. corrugatus* Retzius, but is larger, and the teeth are very different. I believe it is a *U. littoralis*.

⁴Lamarck refers this species to the Isle of France. Sganzin states (*Mém. Soc. Hist. Nat. Strasb.*, 1840-46, p. 8) that the amateurs he consulted in that island assured him that no such mollusk was found there. According to Lea it is *Unio littoralis*.

- * *Unio incurvus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 97, pl. XIII, fig. 27; * Obs., I, 1834, p. 107, pl. XIII, fig. 27.—* CHENU, Ill. Conch., 1858, pl. XI, figs. 1, 1a, 1b.
- Unio draparnaldi* DESHAYES, Desc. Coq. Terr., 1831, p. 38, pl. XIV, fig. 6.—* PÆTEL, Conch. Sam., III, 1890, p. 151.
- * *Unio pianensis* FARINES, Ann. des Sci. Nat., II, 1834, p. 118.—* MÖLLER, Syn. Nov. Gen., 1836, p. 197.—* DUPUY, Hist. Moll. Fr., 1852, p. 635, pl. XXIV, fig. 4.
- * *Unio bigerrensis* MILLET, Guer. Mag., 1843, p. 3, pl. LXIV, fig. 1.
- * *Unio bigorrensis* LOCARD, Coq. de Franc., 1893, p. 153.
- * *Unio fellmani* DESHAYES, Hist. Nat. Moll. Alg., 1848, pl. CVIII, figs. 8, 9.—* KUSTER, Conch. Cab., 1856, p. 151, pl. XLIV, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* PÆTEL, Conch. Sam., III, 1890, p. 152.
- * *Margaron (Unio) fellmani* LEA, Syn., 1870, p. 46.
- * *Unio barrandii* DUPUY, Hist. Moll. Fr., 1852, p. 635, pl. XXV, fig. 1.
- * *Unio astierianus* DUPUY, Hist. Moll. Fr., 1852, p. 636, pl. XXIII, fig. 9.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVI; fig. 461.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 53.—* LOCARD, Coq. de Franc., 1893, p. 153.
- * *Unio cuneatus* ROSSMASSLER, Icon., XIII and XIV, 1854, p. 37, pl. LXIX, fig. 851.—* PÆTEL, Conch. Sam., III, 1890, p. 149.
- * *Unio rhomboideus* MOQUIN-TANDON, Moll. Terr. Fluv. Fr., II, 1855, p. 568, pl. XLVII, figs. 4, 9; XLIX, figs. 1, 2.—* BOURGUIGNAT, Mal. Alg., 1864, II, p. 284, pl. XVIII; Rev. et Mag., XVIII, 1866, p. 11. —* LOCARD, Coq. de Franc., 1893, p. 152, fig. 165.
- * *Unio rothi* BOURGUIGNAT, Moll. Nouv., 1863, p. 41, pl. XX, figs. 1-6; Rev. et Mag., XVII, 1865, p. 337, pl. XVI.—* KOBELT, Icon., VI, 1879, p. 40, pl. CLXI, fig. 1639.—* PÆTEL, Conch. Sam., III, 1890, p. 166.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 59.
- * *Unio umbonatus* BOURGUIGNAT, Moll. Nouv., 1863, p. 42, pls. XXI, XXII; * Rev. et Mag., XVII, 1865, p. 339, pls. XVII, XVIII.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 54.
- * *Unio subreniformis* BOURGUIGNAT, Moll. Nouv., 1863, p. 43; Rev. et Mag., XVII, 1865, p. 340.—* KOBELT, Icon., IV, 1876, p. 64, pl. CXVIII, fig. 1151.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 54.
- * *Unio ater* REEVE, Conch. Icon., XVI, 1865, pl. XXI, fig. 19.
- * *Unio crassus* REEVE, Conch. Icon., XVI, 1865, pl. XXII, fig. 98.
- * *Unio valentinus* SOWERBY, Conch. Icon., XVI, 1866, pl. XLI, fig. 225.
- * *Unio mauritanicus* BOURGUIGNAT, Moll. Nouv., 1868, p. 317, pl. XLV, figs. 1-5.—* KOBELT, Icon., II, new ser., 1886, p. 5, pl. XXXIII, fig. 230.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 56.
- * *Unio ksibianus* MOUSSON, Mal. Blatt., XXI, 1873, p. 156; * Jahrb. Deuts. Mal. Ges., I, 1874, p. 104, pl. v, fig. 6.—* KOBELT, Icon., IV, new ser., 1876, p. 65, pl. CXIX, fig. 1153.—* PÆTEL, Conch. Sam., III, 1890, p. 156.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890.
- * *Unio jolyi* KOBELT, Icon., new ser., II, 1886, p. 22, pl. XLI, fig. 256.—* PÆTEL, Conch. Sam., III, 1890, p. 156.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 57.
- * *Unio maccarthyanus* KOBELT, Icon., new ser., II, 1886, p. 5, pl. XXXIII, fig. 229.
- * *Unio letourneauxi* KOBELT, Icon., new ser., II, 1886, p. 3, pl. XXXII, fig. 227.
- * *Unio lycicus* ROLLE, Icon., 1st sup., 1895, p. 18, pl. II, fig. 1.

Southern Europe; Asia Minor; Assyria; Morocco; Algiers.

† UNIO DELESSERTI Bourguignat.¹

Unio delesserti BOURGUIGNAT, Voy. Mer. Mort., 1852, p. 77; Test. Nov. Sanl., 1852, p. 29; * Cat. Rais. Moll., 1853, p. 77, pl. III, figs. 7-9.—* ROTH, Mal. Blatt., 1856,

¹ Approaches *U. littoralis*, and may be only a variety of that, but is not so elongated.

II, p. 57.—* PÆTEL, Conch. Sam., III, 1890, p. 150.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 172.

* *Margaron (Unio) delesserti* LEA, Syn., 1870, p. 46.

Syria.

† UNIO SEMIRUGATUS Lamarck.¹

* *Unio semirugatus* LAMARCK, An. san. Vert., VI. 1819, p. 76.—* DELESSERT, Rec. Coq. Lam., 1841, pl. XII, figs. 6, 6a, 6b.

*† *Unio emesaensis* LEA, Pr. Acad. N. Sci. Phila., VIII, p. 286; Jl. Acad. N. Sci. Phila., VI, 1868, p. 254, pl. xxx, fig. 68; * Obs., XII, 1869, p. 14, pl. xxx, fig. 68.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 61.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

* *Margaron (Unio) emesaensis* LEA, Syn., 1870, p. 57.

†* *Unio simonis* TRISTRAM, Pt. Zool. Soc. Lond., 1865, Pt. 2, p. 544.²—* LOCARD, Arch. Mus. Lyon, III, 1883, p. 239, pl. xx, figs. 1-3.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 60.—* PÆTEL, Conch. Sam., III, 1890, p. 167.—* KOBELT, Icon., new ser., VI, 1893, p. 91, pl. CLXXVI, fig. 1121; first supp., 1895, p. 18, pl. III, figs. 1-3.

* *Unio lynesii* LOCARD, Arch. Mus. Lyon, III, 1883, p. 205.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

* *Unio galilæi* LOCARD, Arch. Mus. Lyon, III, 1883, p. 206, pl. xx, figs. 10-12.³—WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 60.—* KOBELT, Icon., 1st sup., 1895, p. 20, pl. VII, figs. 4, 5.

* *Unio timius* LOCARD, Arch. Mus. Lyon, III, 1883, p. 207, pl. xx, figs. 13, 14.—* PÆTEL, Conch. Sam., III, 1890, p. 169.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 61.

* *Unio rhomboidopsis* LOCARD, Arch. Mus. Lyon, III, 1883, p. 239, pl. xx, figs. 7-9.—* PÆTEL, Conch. Sam., III, 1890, p. 165.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 61.

* *Unio rollei* KOBELT, Icon., 1st supp., 1895, p. 20, pl. IV, figs. 1, 2.

* *Unio trachæ* KOBELT, Icon., 1st supp., 1895, p. 21, pl. VIIa, fig. 2.⁴

* *Unio wagneri* KOBELT, Icon., 1st supp., 1895, p. 22, pl. VII, figs. 1, 2.

Asia Minor.

† UNIO HOMSENSIS Lea.

* *Unio homsensis* LEA, Proc. Acad. Nat. Sci. Phila., VIII, 1864, p. 285; Jl. Acad. Nat. Sci. Phila., VI, 1868, p. 249, pl. XXIX, figs. 63; * Obs., XII, 1869, p. 9, pl. XXIX, fig. 63.—* LOCARD, Arch. Mus. Lyon., III, 1883, p. 275.—* PÆTEL, Conch. Sam., III, 1890, p. 155.—* WESTERLUND, Faun. Pal. II, Pt. 7, 1890, p. 62.

* *Margaron (Unio) homsensis* LEA, Syn. 1870, p. 31.

Syria.

¹ Lea and Ferussac both referred this to *littoralis* after examining Lamarck's shells. I have seen specimens in the collection of the former from the Jardin des Plantes, Paris, which are, no doubt, authentic, and which, I think, perhaps, are specifically different from *littoralis*, being much shorter and more rounded.

²A specimen of this in the U. S. National Museum collection, from Tristram, labeled as above, is the same as Lea's examples of *semirugatus*.

³Published as *Unio maris-galilæi* in list in Comptes Rendus, XCI, p. 502; but not described.

⁴Some of these approach very close to specimens of *U. littoralis*, especially to the form called *U. rothi* Bourguignat, which I have placed in that species, and I should not be surprised if there was an absolute connection between the short, rounded forms of *U. semirugatus* and the longer rhomboid *U. littoralis*.

UNIO PSEUDONYMUS Simpson.¹

* *Unio huelti* KOBELT, Icon., new ser., II, 1886, p. 22, pl. XLI, fig. 225.

Euphrates and Tigris rivers.

† UNIO FERUSSACIANUS Lea.

* *Unio ferussacianus* LEA, Jl. Acad. Nat. Sci. Phila., VI, 1868, p. 255. Footnote to description of *U. cmesaensis*.—* LEA, Obs., XII, 1869, p. 15. Footnote.

* *Margaron (Unio) ferussacianus* LEA, Syn., 1870, p. 46.

Bagdad.

UNIO EPISCOPALIS Tristram.

* *Unio episcopalis* TRISTRAM,² Pr. Zool. Soc. Lond., 1865, p. 544.—VON MARTENS Vorderas. Conch., 1874, p. 68.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 62.—* PÆTEL, Conch. Sam., III, 1890, p. 151.—* KOBETT, Icon., VI, new ser., 1893, p. 89, pl. CLXXV, fig. 1119.

Orontes River, Syria.

† UNIO DURIEUI Deshayes.

* *Unio duricui* DESHAYES, Hist. Nat. Moll. Alg. Atlas, 1847, pl. CIX, figs. 5-8.³—BOURGUIGNAT, Mol. Alg., II, 1864, p. 288, pl. XIX, figs. 4-8.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 142.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

* *Margaron (Unio) duricui* LEA, Syn., 1852, p. 39; 1870, p. 48.

* *Unio sitifensis* MORELET, Jl. de Conch., II, 1851, p. 360.

* *Unio orientalis* BOURGUIGNAT, Test. Noviss., 1852, p. 29.

* *Unio bruguerianus* BOURGUIGNAT, Cat. Rais., 1853, p. 78, pl. II, figs. 54-58.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 172.—* PÆTEL, C. Sam., III, 1890, p. 146.

* *Margaron (Unio) bruguerianus* LEA, Syn., 1870, p. 44.

* *Unio vescoi* BOURGUIGNAT, Rev. et Mag., VIII, 1856, p. 74, pl. II, figs. 4-8.⁴—* KOBELT, Icon., IV, 1876, p. 66, pl. CXIX, fig. 1154.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 152.—* PÆTEL, Conch. Sam., III, 1890, p. 171.

* *Margaron (Unio) vescoi* LEA, Syn., 1870, p. 46.

* *Unio schwerzenbachi* BOURGUIGNAT, Rev. et Mag., VIII., 1856, p. 75, pl. VIII, figs. 1-5.—* KUSTER, Conch. Cab. Unio, 1862, p. 266, pl. xc, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XLIV, fig. 241.—* KOBELT, Icon., VII, 1880, p. 81, pl. CCVI, fig. 2099.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 95.

* *Unio prusii* BOURGUIGNAT, Rev. et Mag., VIII, 1856, p. 76, pl. III, figs. 1-4.

* *Unio damascensis* LEA,⁵ Proc. Acad. Nat. Sci. Phila., VII, 1863, p. 190; Jl. Acad.

¹ Kobelt supposed this to be the *U. huelti* of Bourguignat, and figured and described it for that species. It is, however, very distinct, and I therefore am compelled to give it a new name.

² Tristram only describes this in Latin, and does not figure it; and as I have never seen an authentic specimen I am obliged to depend on Kobelt's figure, which agrees well with Tristram's diagnosis. These make it a large, somewhat sulcate form, shaped like *batarus*, but more compressed and having a beautiful purple nacre.

³ There does not seem to be any essential difference between the Algerian and the Syria shells, which I have referred to this species.

⁴ Bourguignat says he has received numerous specimens of this from Drouet, labeled *U. turcius* Parreyss, but Parreyss's names were only in manuscript, and were never published, and have therefore no scientific standing.

⁵ Only the type is in the Lea collection, and it appears to be a delicate specimen of *duricui*.

Nat. Sci. Phila., VI, 1866, p. 55, pl. XVIII, p. 52; * Obs., XI, 1869, p. 59, pl. XVIII, fig. 52.—* PÆTEL, Conch. Sam., III, 1890, p. 150.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 178.

* *Margaron (Unio) damascensis* LEA, Syn., 1870, p. 52.

* *Unio orontesensis* LEA, Pr. Acad. Nat. Sci. Phila., VII, 1863, p. 190; Jl. Acad. Nat. Sci. Phila., VI, 1866, p. 53, pl. XVIII, fig. 50; * Obs., XI, p. 57, pl. XVIII, fig. 50.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 178.—PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Margaron (Unio) orontesensis* LEA, Syn., 1870, p. 52.

* *Unio orphaensis* LEA, Pr. Acad. Nat. Sci. Phila., VIII, 1864, p. 285; Jl. Acad. Nat. Sci. Phila., VI, 1868, p. 250, pl. XXIX, fig. 64; * Obs., XII, 1869, p. 10, pl. XXIX, fig. 64.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 179.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Margaron (Unio) orphaensis* LEA, Syn., 1870, p. 52.

* *Unio mardinensis* LEA, Pr. Acad. Nat. Sci. Phila., VIII, 1864, p. 286; * Jl. Acad. Nat. Sci. Phila., VI, 1868, p. 252, pl. XXX, fig. 66; * Obs., XII, 1869, p. 12, pl. XXX, fig. 66.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 179.

* *Margaron (Unio) mardinensis* LEA, Syn., 1870, p. 53.

† UNIO DURIEUI var. KULLETHENSIS Lea.

* *Unio kullethensis* LEA, Pr. Acad. Nat. Sci. Phila., VIII, 1864, p. 285; * Jl. Acad. Nat. Sci. Phila., VI, 1868, p. 251, pl. XXIX, fig. 65; * Obs., XII, 1869, p. 11, pl. XXIX, fig. 65.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 178.

* *Margaron (Unio) kullethensis* LEA, Syn., 1870, p. 53.

* *Unio kullethensis* and *kullinthisis* PÆTEL, Conch. Sam., III, 1890, p. 156.

Algiers; Tunis; Asia Minor, Assyria; Southeastern Europe.

† UNIO SYRIACUS Lea.¹

* *Unio syriacus* LEA, Pr. Acad. Nat. Sci. Phila., VII, 1863, p. 189; * Jl. Acad. Nat. Sci. Phila., VI, 1866, p. 56, pl. XIX, fig. 53; * Obs., XI, 1867, p. 60, pl. XIX, fig. 53.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 178.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

* *Margaron (Unio) syriacus* LEA, Syn., 1870, p. 35.

Orontes River, Syria.

UNIO BYTHINICUS Kobelt.

* *Unio bythinicus* KOBELT, Icon. new ser., VI, 1893, p. 96, pl. CLXXIX, fig. 1128.

Asia Minor.

UNIO MICELII Kobelt.

* *Unio micelii* KOBELT, Nach. Mal. Ges., XVI, 1884, p. 182; Icon., new ser., II, 1886, p. 24, pl. XLIII, figs. 260, 261.

Tunis.

† UNIO EMARGINATUS Lea.²

* *Unio emarginatus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 62, pl. IX, fig. 22; * Obs., I, 1834, p. 174, pl. IX, fig. 22.

¹ I have only seen a single, badly eroded specimen, the type, but it seems to differ from anything I know. It probably belongs to this group.

² Lea's only shell, the type, consists of two opposite, odd valves. One of these may possibly be an elongated *batavus*, the other appears distinct.

**Margarita (Unio) emarginatus* LEA, Syn., 1838, p. 26.

**Margaron (Unio) emarginatus* LEA, Syn., 1852, p. 39; 1870, p. 62.

Locality unknown. I have no doubt that it belongs somewhere in the circummediterranean region.

† UNIO CARNEUS Kuster.

**Unio carneus* KUSTER, Conch. Cab. Unio, 1854, p. 103, pl. XXVIII, figs. 1, 2.—

*DROUET, Mem. Acad. Dijon, VII, 1882, p. 23, reprint.—*P.ÉTEL, Conch. Sam., III, 1890, p. 147.

**Unio gontierii* BOURGUIGNAT, Rev. et Mag., IX, 1857, p. 16, pl. IV, figs. 1-4.—

*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 67.

**Margaron (Unio) gontieri* LEA, Syn. 1870, p. 44.

**Unio penchinatianus* BOURGUIGNAT, Moll. Pen. Con., 1863, p. 44, pl. XXV; * Rev. et Mag., XVII, 1865, p. 312, pl. XXI.—*KOBELT, Icon., IV, 1876, p. 66, pl. CXIX, fig. 1155.

Southern Europe.

† UNIO BATAVUS Maton and Rackett.

*? *Mya pictorum* GMELIN, Syst. Nat., 13th ed., 1788, p. 3218¹.—*DONOVAN, Brit. Shells, V, 1803, pl. CLXXIV.—*? CHENU, Bib. Conch., 1st ser., I, 1815, p. 114, pl. XLVII, figs. 8, 9.

**Unio pictorum* DRAPARNAUD, part, Hist. Moll. Fr., 1806, p. 131, pl. XI, figs. 1-4.²

**Mya batava* MATON and RACKETT,³ Tr. Linn. Soc. Lond., VIII, 1807, p. 37.—

*WOOD, Gen. Conch., I, 1815, p. 303, pl. XIX, figs. 1, 2.—*DILLWYN, Cat., I, 1817, p. 49.—*TURTON, Conch. Dict., 1819, p. 105.—*WOOD, Ind. Test., 1825, p. 12, pl. II, fig. 25b; rev. ed., 1856, p. 15, pl. II, fig. 25.

**Unio batava* LAMARCK, An. sans Vert., VI, 1819, p. 78.⁴—C. PFEIFFER, Nat. L. and Suss. Moll., Pt. 1, 1821, p. 119, pl. v, fig. 14.—*DESHAYES, Enc. Méth., II, 1827, p. 151, pl. CCXLVIII, fig. 3; II, 1830, p. 584, pl. CCXLVIII, fig. 3.—

*WAARDENBERG, Com. Hist. Nat. An., 1827, p. 36.—*KLEEBERG, Moll. Bor., 1828, p. 38.—*FLEMING, Hist. Brit. Moll., 1828, p. 416.—*STARK, Nat. Hist., II, 1828, p. 90.—*MICHAUD, Comp. Hist. Moll. Fr., 1831, p. 109.—*GOUPIÉ, Hist. Moll. Sarthe, 1835, p. 83.—*FOURNEL, Faun. Moselle, I, 1836, p. 487.—*GRAS, Moll. Isere., 1840, p. 21.—*CATLOW and REEVE, Conch. Nom., 1845, p. 56.—*PUTON, Moll. Vosges, 1847, p. 75.

**Mysca batava* TURTON, Conch. Ins. Brit., 1822, p. 244.—*TURTON, Man. L. and F. W. Shells, Brit. Is., 1831, pl. XX, fig. 10.

**Unio batavus* NILSSON, Hist. Moll. Svec., 1822, p. 112.—*ROSSMASSLER, Icon., II, 1835, p. 20, pl. VIII, figs. 128, 128a, 128b; III, 1836, pp. 28, 32, pl. XIV, fig. 205; XV, fig. 214; V and VI, 1837, p. 56, pl. XXIX, fig. 414; XI, 1842, p. 14, pl. LV, fig. 745.—*BROWN, L. and F. W. Conch., 1836, p. 111, pl. XVIII, figs. 6-8; XXI, figs. 10, 11.—*? ANTON, Verz. der Conch., 1839, p. 15.—*HANLEY, Test. Moll., 1842,

¹ Gmelin refers to the figure by Chemnitz in Conchylien Cabinet, VI. This figure is probably a light-colored *batavus*.

² Fig. 3 is certainly *batavus*, and figs. 1 and 2 may be.

³ Maton and Rackett do not figure their species, but refer to several figures. The first is in Ginanni, Opere Postume, 1755, pl. IV, fig. 17. This work I have not seen. The figures referred to in Schröter's Flussconchylien, in Chemnitz, and the Encyclopédie Méthodique (pl. 248, fig. 3) are what we understand as *U. batavus*, the latter being the one cited by Lamarck.

⁴ Lamarck does not figure his species, but refers to plate CCXLVIII, fig. 3, in the Encyclopédie Méthodique, which is the species commonly known as *Unio batavus*.

- p. 195; *Biv. Shells, 1843, p. 195.—*SCHOLZ, Schleis. L. and W. Moll., 1843, p. 133.—*BROWN, III. Recent Conch., 1844, p. 82, pl. XXXI, figs. 3, 3a, 4-6.—*DUPUY, Hist. Moll. Fr., 1852, p. 638, pl. XXV, figs. 14, 15.—*KUSTER, Conch. Cab. Unio, 1854, p. 121, pl. XXXIII, figs. 4-7; XXXIV, figs. 1, 2.—*VON WAHL, Suss. Biv. Liv., 1855, p. 96.—*MOQUIN-TANDON, Moll. Terr. et Fluv. Fr., II, 1855, p. 571, pl. XLIX, figs. 7, 8.—*DROUET, Nay. Fr., II, 1857, p. 79, pl. VI, fig. 1.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*BIELZ, Faun. Sieben, 1863, p. 193.—*BOURGUIGNAT, Mal. Alg., 1864, p. 286, pl. XIX, fig. 9; XX, figs. 1-4.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XLII, fig. 234.—*BROT, Coq. Fam. Nay. Lemau, 1867, p. 49, pl. IX, figs. 1-5.—*KOBELT, Faun. Nass. Moll., 1871, p. 242.—*LEHMAN, Die Schnecken, 1873, p. 295.—*CLESSIN, Deutsche Ex. Moll., 1876, p. 463, fig. 302.—*DROUET, Mem. Acad. Dijon, VII, 1882, p. 18 (reprint).—*CLESSIN, Moll. Oest., 1887, p. 741.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 74.—*PÆTEL, Conch. Sam., III, 1890, p. 145.—*LOCARD, Coq. de Fr., 1893, p. 167.—*WESTERLUND, Act. Soc. F. and F. F., XIII, No. 7, 1897, p. 162.
- **Margarita (Unio) batavus* LEA, Syn., 1836, p. 26; 1838, p. 20.
- **Margaron (Unio) batavus* LEA, Syn., 1852, p. 30; 1870, p. 47.
- **Unio batavi* var.? ROSSMASSLER, Icon., V and VI, 1837, p. 55, pl. XXIX, fig. 410.
- **Unio nanus* DUPUY, Hist. Moll. Fr., 1852, p. 640, pl. XXV, fig. 16.—*KOBELT, Icon., VI, 1879, p. 42, pl. CLXII, figs. 1642, 1643.—*LOCARD, Coq. de Fr., 1893, p. 154, fig. 168.
- **Unio riparia* C. PFEIFFER, Nat. L. and S. Moll., 1821, Pt. 1, p. 118, pl. V, fig. 13.—*KLEEBERG, Moll. Bor., 1828, p. 39.
- **Unio riparius* SCHOLZ, Schleis L. and W. Moll., 1843, p. 129.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 90.—*LOCARD, Coq. de Fr., 1893, p. 164.
- *? *Unio crassus* NILSSON,¹ Hist. Moll. Svec., 1822, p. 108.—*ROSSMASSLER, Icon., II, 1835, p. 19, pl. VIII, figs. 126, 127²; V and VI, 1837, p. 55, pl. XXXIX, fig. 411.—MOQUIN-TANDON, Moll. Terr. and Fluv. Fr., II, 1855, p. 570; III, pl. XLIX, figs. 3, 4.—*NORDENSKIÖLD and NYLANDER, Fin. Moll., 1856, p. 84, pl. VI, fig. 72.—*DROUET, Nay. Fr., II, 1857, p. 76, pl. IV, fig. 2.—*WESTERLUND, Faun. Sw., N. and Den., 1873, p. 569.³—*LOCARD, Coq. de Fr., 1893, p. 162, fig. 176.—*WESTERLUND, Acta Soc. F. and F. F., XIII, No. 7, 1897, p. 159.
- **Unio crassus* variety *batavus* JORDAN, Jahrb. Deuts. Mal. Ges., VI, 1879, p. 307.
- **Unio ater* NILSSON, Hist. Moll. Svec., 1822, p. 107.—*ROSSMASSLER, Icon., II, 1835, p. 23, pl. IX, fig. 133; VII and VIII, 1838, p. 41, XL, fig. 543.—*SCHOLZ, Schleis. L. and F. W. Moll., 1843, p. 131.—*KUSTER, Conch. Cab. Unio, 1854, p. 114, pl. XXI, figs. 1, 2, 6; XXXII, figs. 1-4.—*MOQUIN-TANDON, Moll. Terr. et Fluv. Fr., II, 1855, p. 570, pl. XLIX, figs. 5, 6.—*DROUET, Nay. Fr., II, 1857, p. 72, pl. IV, fig. 1; Mem. Acad. Dijon, VII, 1882, p. 14 (reprint).—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 65.—*PÆTEL, Conch. Sam., III, 1890, p. 145.—*LOCARD, Coq. de Fr., 1893, p. 176.—*WESTERLUND, Act. Soc. F. and F. F., XIII, No. 7, 1897, p. 160.
- **Unio atra* DESHAYES, Encyc. Meth., II, 1830, p. 582.
- Unio rugatus* MENKE, Syn. Moll., 1828, p. 90.—*ROSSMASSLER, Icon., V and VI, 1837, p. 65, pl. XXIX, fig. 415.
- **Unio elongata* MICHAUD, Comp. Hist. Moll. Fr., 1831, p. 113, pl. XVI, fig. 29.
- **Unio labacensis* ROSSMASSLER, Icon., II, 1835, p. 21.

¹ Nilsson claims that this is Retzius' species, and that it is found in the rivers of Sweden. His Latin description is so brief that nothing can be made out of it. I have no doubt that he had *Unio batavus* before him when he wrote it.

² I believe that this is a rather large *batavus* and the figures are almost exactly like those he gives of that species.

³ Claimed to be *crassus* of Retzius, but he gives *U. ater* of Nilsson as one variety and *batavus* Lamarek as another.

- * *Unio decurratus* ROSSMASSLER, Icon., II, 1835, p. 22, pl. IX, fig. 131; V and VI, 1837, p. 21, pl. XXIV, fig. 339.—* KUSTER, Conch. Cab. Unio, 1856, p. 108, pl. XXX, figs. 1, 2.—* MUSGRAVE, Phot. Conch., 1863, pl. II, fig. 4.—* SOWERBY, Conch. Icon., XVI, 1867, pl. LVI, fig. 284.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 92.—* PÆTEL, Conch. Sam., III, 1890, p. 150.
- * *Unio reniformis* ROSSMASSLER, Icon., III, 1836, p. 31, pl. XV, fig. 213.—* SCHOLZ, Schleis, L. and W. Moll., 1843, p. 132.—* KUSTER, Conch. Cab. Unio, 1854, p. 110, pl. XXX, figs. 3, 4.—* BOURGUIGNAT, Rev. et Mag., 1865, pl. XXIII, figs. 4-6.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXII, fig. 371.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 80.—* LOCARD, Coq. de Fr., 1893, p. 161.
- * *Unio carinthiacus* ROSSMASSLER, Icon., III, 1836, p. 30, pl. XV, fig. 209.¹—* SOWERBY, Conch. Icon., XVI, 1856, pl. XXX, fig. 157; * PÆTEL, Conch. Sam., III, 1890, p. 147.—* LOCARD, Coq. de Fr., 1893, p. 167.
- * *Unio amicus* ROSSMASSLER, Icon., III, 1836, p. 31, pl. XV, fig. 212.—* KUSTER, Conch. Cab. Unio, 1856, p. 99, pl. XXVII, fig. 2.—* DROUET, Mem. Acad. Dijon, VIII, 1882, p. 22 (reprint).—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 89.—* LOCARD, Coq. de Fr., 1893, p. 163, fig. 177.
- * *Unio piscinalis* ROSSMASSLER, Icon., III, 1836, p. 30, pl. XV, fig. 210.—* LOCARD, Coq. de Fr., 1893, p. 160.
- * *Unio atrovirens* ROSSMASSLER, Icon., III, 1836, p. 28, pl. XV, figs. 206, 207.—* SCHMIDT, Bull. Imp. Soc. N. H. Moscow, 1840, p.
- * *Unio consentaneus* ROSSMASSLER, Icon., III, 1836, p. 29, pl. XV, fig. 208; VII, 1838, p. 25, pl. XXXV, fig. 491; p. 42, XI, fig. 544; XI, 1842, p. 14, pl. LV., fig. 742.
- * *Unio fusculus* ROSSMASSLER, Icon., III, 1836, p. 30, pl. XV, fig. 211.—* PÆTEL, Conch. Sam., III, 1890, p. 153.—* LOCARD, Coq. de Fr., 1893, p. 159, fig. 173.
- * *Unio?* ROSSMASSLER, Icon., III, 1836, p. 27, pl. XIV, fig. 201.
- * *Unio stercorarius* DROUET, Unionidæ Rnss., 1881, p. 14;² Jl. de Conch., XXIX, 1881, p. 24; Supp. Un. Serbie, 1884, pls. I, II.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 66.—* KOBELT (part), Icon., new ser., II, 1886, p. 38, pl. LII, fig. 281.³
- * *Unio bandini* KUSTER, Icon., V and VI, 1837, p. 22, pl. XXIV, fig. 341.
- * *Unio glaucinus* PORRO, Mal. Como., 1838, p. 115.—⁴ CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* STABILE, Faun. Ing., 1845, p. 61, pl. III, fig. 75.—* KOBELT, Icon., new ser., II, 1886, p. 19, pl. XL, fig. 251.—* PÆTEL, Conch. Sam., III, 1890, p. 154.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 90.
- * *Unio gargotte* ROSSMASSLER, Icon., VII, 1838, p. 26, pl. XXXV, fig. 493.—* MONTEROSATO, Nat. Sic., new ser., 1896, p. 6, fig. 1.
- ? *Unio corrugata* MANDUYT, Moll., Vienna, 1839, p. 8.
- ? *Unio rotundata* MANDUYT, Moll., Vienna, 1839, p. 9.⁴
- ? *Unio gangrenosus* SCHMIDT, Bull. Imp. N. H. Moscow, 1840, p. .—* KUSTER, Conch. Cab. Unio., 1854, p. 124, pl. XXXIV, figs. 3, 4.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 81.—* PÆTEL, Conch. Sam., III, 1890, p. 153.
- Unio pruinus* SCHMIDT, Bull. Soc. Nat. Mosc., 1840, p. 445.—* DROUET, Jl. de Conch., XXIX, 1881, p. 248; * Mem. Acad. Dijon, VII, 1882, p. 21 (reprint).—* PÆTEL, Conch. Sam., III, 1890, p. 164.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 82.—* LOCARD, Coq. de Fr., 1893, p. 160.
- * *Unio littoralis* var. *minor* ROSSMASSLER (part), Icon., XI, 1842, p. 14, pl. LV, fig. 744.

¹ Rossmassler credits this and several other species to Zeigler. So far as I am able to learn these are mere manuscript names. Neither Moquin Tandon or Locard give Zeigler as an author in their bibliographies of writers on French mollusks, and Lea refers only to his manuscript. I have not seen his Systematisches Verzeichniss.

² Generally credited to Krinické, who published the naked name in Bull. Nat. Mosc., 1837.

³ Fig. 280, said to be this, is probably *U. tumidus*.

⁴ Both these species of Manduyt are *batarus*? according to Moquin Tandon.

- * *Unio manca* MILLET, Guer. Mag., 1843, p. 4, pl. LXIV, fig. 2.
- * *Unio manca* DUPUY, Hist. M. Fr., 1852, p. 642, pl. XXVI, fig. 17.—*LOCARD, Coq. Fr., 1893, p. 156, fig. 170.
- * *Unio moquiniannus* DUPUY, Moll. Gers., 1843, p. 80, pl.—*ROSSMASSLER, Icon., XII, 1844, p. 31, pl. LIX, fig. 769.—*KUSTER, Conch. Cab. Unio, 1854, p. 100, pl. XXVII, figs. 3, 4, 5.—*DUPUY, Hist. Moll. Fr., 1852, p. 644, pl. XXVI, fig. 18.—*MOQUIN-TANDON, Moll. Terr. and Fluv. Fr., 1855, p. 573, pl. L, figs. 1, 2.—*DUPUY, Rev. et Mag., VIII, 1856, p. 75.—*DROUET, Nay. Fr., II, 1857, p. 88, pl. VI, fig. 3.—*PÆTEL, Conch. Sam., III, 1890, p. 159.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 146.—*LOCARD, Coq. de Fr., 1893, p. 179.
- * *Unio requieni* ROSSMASSLER, Icon., XII, 1844, p. 29, pl. LVII, figs. 757-761.—*KUSTER (part), Conch. Cab. Unio, 1856, p. 126, pl. XXXVI, fig. 2.¹—*MOQUIN-TANDON, Moll. Terr. et Fluv. Fr., II, 1855, p. 574, pl. L, figs. 5-7.—*KOBELT, Icon., VI, 1879, p. 43, pl. CLXIII, fig. 1647.—*LOCARD, Coq. de Fr., 1893, p. 190.
- * *Unio sandri* RASSMASSLER, Icon., XII, 1844, p. 26, pl. LVI, figs. 748-750.—*KUSTER, Conch. Cab. Unio, 1856, p. 101, pl. XXVII, figs. 6, 7.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIX, fig. 413.—*PÆTEL, Conch. Sam., III, 1890, p. 166.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 93.
- ? *Unio aleroni* COMPANYO and MASSOT, Bull. Soc. Agr. Sc. Pyr. d'Or, VI, Pt. 2, 1845, p. 234, fig. 2.—*KOBELT, Icon., IV, 1876, p. 64, pl. CXVIII, fig. 1150.²
- Unio badius* KOEHL, Mich. Comp., 1831, pl. XVI, fig. 36.—*CATLOW and REEVE, Conch. Nom., 1845, p. 56.—*KOEHL, Gallenst. Kärnt. Conch., 1852, p. ?.³
- *? *Unio wolweichii* MORELET, Moll. Port., 1845, p. 105, pl. XIII, fig. 1.
- Unio jacquemini* DUPUY, Cat. Ext. Gall. Test., 1849, No. 328.—*DUPUY, Hist. M. Fr., 1852, p. 643, pl. XXV, fig. 17.—*KOBELT, Icon., VI, 1879, p. 42, pl. CLXII, fig. 1641.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 128.—*LOCARD, Coq. Fr., 1893, p. 188.
- Unio droueti* DUPUY, Cat. Ext. Gal. Test., 1849, No. 327; Hist. Moll. Fr., 1852, p. 639, pl. XXV, fig. 14.
- Unio philippi* DUPUY, Cat. Ext. Gal. Test., 1849, No. 335; Hist. Moll. Fr., 1852, p. 654, pl. XXVIII, fig. 19.
- * *Unio ovalis* DUPUY, Hist. Moll. Fr., 1852, p. 637, pl. XXV, fig. 13.
- * *Unio spinellii* VILLA, in Moll. Bres., 1852, p. 50, fig. D.
- * *Unio moullinsiana* DUPUY, Hist. Moll. Fr., VI, 1852, p. 640, pl. XXIV, fig. 10.—*MOQUIN-TANDON, Hist. Moll. Fr., II, 1855, p. 572.—*LOCARD, Coq. de Fr., 1893, p. 152.
- *? *Unio petterianus* KUSTER, Conch. Cab., 1854, p. 97, pl. XXVII, fig. 4.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*PÆTEL, C. Sam., III, 1890, p. 163.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 115.
- * *Margaron (Unio) petterianus* LEA, Syn., 1852, p. 31, 1870, p. 49.
- * *Unio capigliolo* KUSTER (part), Conch. Cab. Unio, 1854, p. 125, pl. XXXIV, figs. 5, 6.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXV, fig. 392.—*DUPUY, Hist. Moll. Fr., 1852, p. 645, pl. XXVI, fig. 19.
- * *Unio heldi* KUSTER, Conch. Cab. Unio, 1854, p. 111, pl. XXX, figs. 5-7.—*DROUET, Jl. de Conch., XXIX, 1881, p. 26.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 80.
- * *Unio lurarians* KUSTER, Conch. Cab. Unio, 1854, p. 119, pl. XXXII, fig. 5.—*WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 94.—*PÆTEL, C. Sam., III, 1890, p. 158.

¹ Kuster gives several figures of what he supposes are *requieni*. Part of them are *turtoni*, and one is possibly *elongatulus* Pfeiffer.

² It is hard to tell just what this is. It is probably a delicate, rather compressed *batarus*.

³ According to Lea and Westerlund this = *batarus*.

- * *Unio brevirostris* KUSTER, Conch. Cab. Unio, 1854, p. 120, pl. XXXIII, figs. 1-3.—
 * WESTERLUND, Fann. Pal., II, Pt. 7, 1890, p. 96.
 * *Unio natalicus* KUSTER, Conch. Cab. Unio, 1856, p. 144, pl. XLII, fig. 4.
 * *Unio turcius* KUSTER, Conch. Cab. Unio, 1862, p. 267, pl. XC, figs. 3, 4.
 * *Unio meridiger* REEVE, Conch. Icon., XVI, 1865, pl. XXVIII, fig. 145.¹

Europe; Asia Minor; Northwest Africa.

Section LAPIDOSUS Simpson, 1900.

(Type, *Unio lapidosus* Kobelt.²)

Shell inequilateral, subtriangular ovate, large, solid, slightly inflated, with a double posterior ridge, biangulate behind; beaks high, sculpture not seen; disks strongly, irregularly sulcate; epidermis olive; three thick pseudocardinals in the right valve and two in the left; laterals strong; anterior muscle scars deep, tripartite; posterior scars deep, distinct; naere rosy white, iridescent behind. Animal unknown.

UNIO LAPIDOSUS Kobelt.

- * *Unio lapidosus* KOBELT, Nach Deuts. Mal. Ges., 1893, p. 151; * Icon., new ed., VI, 1893, p. 90, pl. CLXXVI, fig. 1120.—* DROUET, Jl. de Conch., XLIII, 1895, p. 32.

Euphrates River.

Section ELLIPTIO Rafinesque, 1819.

(Type, *Unio crassidens* Lamarck.)

Shell elongated, rhomboid or oval, usually more or less biangulate behind; beak sculpture consisting of a few rather strong ridges, which are nearly parallel to the growth lines or slightly doubly looped; the surface smooth or feebly corrugated.

(Group of *Unio coloratus*.)

Shell somewhat rhomboid, solid, slightly biangulate behind, rather compressed, more or less sculptured with concentric sulcations; beaks moderately prominent, their sculpture unknown; epidermis brownish; teeth strong; laterals rather club-shaped; naere white or purple. Animal unknown.

?† UNIO COLORATUS Charpentier.

- * *Unio coloratus* CHARPENTIER, in Kuster, Conch. Cab. Unio, 1856, p. 155, pl. XLIV, fig. 6.—* PÆTEL, Conch. Sam., III, 1890, p. 148.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 599.

Medellin River, Vera Cruz, Mexico.

¹Credited to Jay's Catalogue, in which it is not described, but is credited to Waltz.

²This striking shell differs very much from any of the circummediterranean forms and may be entitled to subgeneric rank.

UNIO CALLOSUS Lea.

- * *Unio callosus* LEA, Pr. Am. Phil. Soc. II, 1841, p. 31; *Tr. Am. Phil. Soc., VIII, 1842, p. 239, pl. XXIII, fig. 54; *Obs., III, 1842, p. 77, pl. XXIII, fig. 54.—* CONRAD, Pr. Acad. Nat. Sci. Phila., VI, 1853, p. 246.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Ill. Conch., 1858, pl. XXVI, figs. 4, 4a, 4b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.
* *Margaron (Unio) callosus* LEA, Syn., 1852, p. 33; 1870, p. 33.

Said to come from the Ohio Canal below Columbus. I am sure that the locality is wrong, and it appears to be a Mexican form. The type is not in the Lea collection.

UNIO MEXICANUS Philippi.

- * *Unio mexicanus* PHILIPPI, Zeits. für Mal., IV, 1847, p. 95.—* PHILIPPI, Abbild. und Besch., III, 1849, p. 110, pl. VI, fig. 3.¹—* KUSTER, Conch. Cab. Unio, 1862, p. 285, pl. XCV, fig. 7.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 159.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 593.
* *Margaron (Unio) mexicanus* LEA, Syn., 1870, p. 53.

Mexico.

(Group of *Unio semigranosus*.)

Shell triangular rhomboid, solid, inflated, with a distinct posterior ridge; beaks rather full, their sculpture consisting of numerous somewhat irregular corrugations which pass into the pustulous sculpture of the shell; surface of the valves generally more or less sculptured with chevron-shaped or zigzag ridges or corrugations, which often break into pustules, the posterior slope bearing curved, radiating plications which are likewise sometimes nodulous; epidermis dark, scarcely rayed; pseudocardinals strong, radial, ragged; laterals heavy, obliquely striated; beak cavities not deep, compressed; muscle scars well impressed; nacre purple, with bronzy or coppery shades.

Animal apparently not different from that of other related Unios. I have not seen any with the marsupium filled.

† UNIO PLEXUS Conrad.

- * *Margarita (Unio) carbonarius* LEA, Syn., 1836, p. 192; 1838, p. 17.²
* *Unio carbonarius* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 37, pl. XL, fig. 32; *Obs., II, 1838, p. 37, pl. XI, fig. 32.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll., 1842, p. 184; *Biv. Shells, 1843, p. 184, pl. XXII, fig. 10.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* CHENU, Ill. Conch., 1858, pl. XXIII, figs. 1, 1a, 1b.—* PÆTEL, Conch. Sam., III, 1890, p. 147.
* *Margarita (Unio) pliciferus* LEA, Syn., 1836, p. 13; 1838, p. 14.
* *Unio pliciferus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 61, pl. XVII, fig. 53; *Obs., II, 1838, p. 61, pl. XVII, fig. 53.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p.

¹ A miserable figure of some rhomboidal, rather compressed form, probably grouping with *callosus*.

² The names *carbonarius* and *pliciferus* were published two years before *Unio plexus*, but were not accompanied by a description. Part X of the Monography appeared in May, 1838, and the transactions containing Dr. Lea's description of *carbonarius* June 15, according to Scudder. Dr. Lea places his *carbonarius* in the synonymy of *pliciferus*, though the former comes first in his paper.

256.—* HANLEY, Test. Moll., 1842, p. 176; * Biv. Shells, 1843, p. 176, pl. XX, fig. 32.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* KUSTER, Conch. Cab., 1848, p. 142, pl. XLII, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. XXII, figs. 5, 5a, 5b; Manual, 1859, II, p. 142, fig. 702.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXV, fig. 387.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., II, Pt. 7, 1894, p. 580, pl. LXV, fig. 2; LXX, figs. 2, 2a.

Margaron (Unio) pliciferus LEA, Syn., 1852, p. 20; 1870, p. 31.

* *Unio plexus* CONRAD, Monog., X, 1838, p. 89, pl. XLIX, figs. 1, 2; * Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 255.

Vera Cruz, Mexico.

† UNIO CROCODILARUM Morelet.

* *Unio crocodilarum* MORELET, Test. Nov., I, 1849, p. 28.—* REEVE, Conch. Icon., XVI, 1864, pl. X, fig. 37.—* PÆTEL, Conch. Sam., III, 1890, p. 149.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 577, pl. LX, fig. 3; LXVII, fig. 3.

* ? *Unio rusticus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIV, fig. 324.

Rio Usumacinta, Guatemala.

UNIO MORINI Morelet.

* *Unio morini* MORELET, Test. Nov., II, 1851, p. 24.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 576, pl. LX, fig. 2; LXVII, fig. 4.

Rio Usumacinta, Guatemala.

UNIO SEMIGRANOSUS von dem Busch.

* *Unio semigranosus* VON DEM BUSCH (in Philippi), Abbild. und Besch., I, 1845, p. 19, pl. I, figs. 1-3.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 257.—* HANLEY, Biv. Shells, 1856, p. 381, pl. XX, fig. 33.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* KUSTER, Conch. Cab. Unio, 1861, p. 252, pl. LXXXV, fig. 1.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 569.

* *Margaron (Unio) semigranosus* LEA, Syn., 1852, p. 20; 1870, p. 34.

* *Unio carbonarius* var. *semigranosus* PÆTEL, Conch. Sam., III, 1890, p. 147.

Mexico, Vera Cruz to Tampico.

† UNIO CORIUM Reeve.¹

* *Unio corium* REEVE, Conch. Icon., XVI, 1864, pl. X, fig. 39.—* PÆTEL, Conch. Sam., III, 1890, p. 149.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 570.

State of Chiapas, Mexico.

UNIO TESTUDINEUS Morelet.

* *Unio testudineus* MORELET, Test. Nov., I, 1849, p. 28.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 571, pl. LXII, fig. 3; LXX, fig. 3.

* *Unio semigranosus* REEVE, Conch. Icon., XVI, 1864, pl. X, fig. 36.

Rio Usumacinta, Guatemala.

¹ Probably a mere variety of *semigranosus*. It is quite likely that when a sufficient amount of material is examined this and some other species of this group will have to be placed in the synonymy.

² Fischer and Crosse think that *testudineus* is perhaps only a local race of *semigranosus*. I think it is quite likely they are right.

† UNIO PSORICUS Morelet.

* *Unio psoricus* MORELET, Test. Nov., Pt. 2, 1851, p. 25.¹—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 572, pl. LXI, fig. 2.

Rio Usumacinta, Guatemala.

(Group of *Unio gibbosus*.)

Shell solid, compressed or inflated, triangular ovate to elongate ovate, arcuate when old, gibbous above, pointed or slightly biangulate behind, with a moderate posterior ridge; beaks low, the sculpture consisting of a few very strong ridges which run parallel with the growth lines; epidermis dull and clothlike; pseudocardinals strong, rough; laterals granular or vertically striated, club-shaped; beak cavities very shallow; one or more slight furrows or ridges occur in the cavity of the shell which run nearly parallel with the laterals; muscle scars very deep and distinct.

Marsupium occupying the entire outer gills; branchiæ large, curved below, inner the wider except at the posterior end, free from the abdominal sac only part of their length; mantle very thin, with thickened edges; branchial opening generally large.

† UNIO GIBBOSUS Barnes.

* *Unio nasuta* LAMARCK,² An. sans Vert., VI, 1819, p. 75.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 538; 3d ed., II, 1839, p. 669.

* *Unio nasutus* AGASSIZ, Arch. für Nat., I, 1852, p. 50.

* *Unio gibbosus* BARNES, Am. Jl. Sci., VI, 1823, p. 262, pl. XI, fig. 12.³—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 286.—SHORT and EATON, Transylvania Jl., 1831, p. 78.—* HANLEY, Test. Moll., 1842, p. 207; Biv. Shells, 1843, p. 207, pl. XX, fig. 54.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* KUSTER, Conch. Cab. Unio, 1852, p. 28, pl. IV, figs. 3, 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* SOWERBY, Conch. Icon, XVI, 1868, pl. LXXIII, fig. 379.—* CALKINS, Pt. Ottawa Ac. Sci., 1874, p. 42.—* LATCHFORD, Tr. Ottawa F. N. Club, 1882, p. 50.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL, Conch. Sam., III, 1890, p. 153.—* BAKER, Moll. Chicago, 1898, p. 70, pl. XIV, figs. 3, 4; XV, figs. 1-4.

Margarita Unio gibbosus LEA, Syn., 1836, p. 38; 1838, p. 25.

* *Margaron (Unio) gibbosus* LEA, Syn. 1852, p. 38; 1870, p. 61.

* *Mya gibbosa* EATON, Zool. Text-Book, 1826, p. 220.

* *Unio mucronatus* BARNES, Am. Jl. Sci., VI, 1823, p. 266, pl. XIII, fig. 13 (outline).—* AGASSIZ, Arch. für Naturg., I, 1852, p. 50.

* *Mya mucronata* EATON, Zool. Text-Book, 1826, p. 221.

¹ Probably another variety of *semigranosus*.

² This name was given by Lamarck to the species under consideration before that of Barnes, but Say had already used the name *nasutus* for a *Unio*, hence *gibbosus* must be used.

³ In 1820 Rafinesque bestowed the name *Amblyma gibbosa* on some unionoid mollusk which I can not determine. Since then Conrad in 1836, and others after him, have used the specific name as of Rafinesque and applied it to a *Unio*, which they have figured and described. Barnes applied the name in 1823, properly characterizing it, and it must stand, because at that time it had not been used in the genus *Unio*.

- * *Unio dilalatus* SAY,¹ Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Monog., V, 1836, p. 42, pl. XXI.—* KÜSTER, Conch. Cab. Unio, 1852, p. 38, pl. VI, fig. 4.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.
- * *Unio torulosus* FERUSSAC, Guer. Mag., 1835, p. 28.
- * *Unio arcatus* FERUSSAC, Guer. Mag., 1835, p. 29.
- *† *Unio aretior* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 10, pl. IV, fig. 10;² Obs., II, 1838, p. 10, pl. IV, fig. 10.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—* HANLEY, Test. Moll., 1842, p. 208; * Biv. Shells, 1843, p. 208, pl. XXII, fig. 46.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* KÜSTER, Conch. Cab. Unio, 1861, p. 179, pl. LVI, fig. 6.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, III. Conch., 1858, pl. XXI, figs. 2, 2a, 2b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXV, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.
- * *Margarita (Unio) aretior* LEA Syn., 1836, p. 39; 1838, p. 25.
- * *Margaron (Unio) aretior* LEA, Syn., 1852, p. 38; 1870, p. 71.

† UNIO GIBBOSUS var. ARCUS Conrad.

- * *Unio arcus* CONRAD, Am. Jl. Sci., XXV, 1834, p. 340, pl. L, fig. 8; * New F. W. Shells, 1834, p. 67.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÜLLER, Syn. Nov. Gen., 1836, p. 1898.—* HANLEY, Test. Moll., 1842, p. 207; * Biv. Shells, 1843, p. 207, pl. XXIII, fig. 46.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.
- * *Margarita (Unio) arcus* LEA, Syn., 1836, p. 38; 1838, p. 25.
- * *Margaron (Unio) arcus* LEA, Syn., 1852, p. 38; 1870, p. 61.

† UNIO GIBBOSUS var. SUBGIBBOSUS Lea.

- * *Unio subgibbosus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 169; Jl. Ac. N. Sci. Phila., IV, 1858, p. 53, pl. VI, fig. 36; Obs., VI, 1858, p. 53, pl. VI, fig. 36.—* B. H. WRIGHT, Check List, 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 432, pl. LXXVIII, fig. 5.
- * *Margaron (Unio) subgibbosus* LEA, Syn., 1870, p. 61.
- * *Unio lazarus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXVIII, fig. 348.
- *† *Unio rufus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 171; Jl. Ac. N. Sci. Phila., IV, 1858, p. 85, pl. XVII, fig. 65; Obs., VI, 1858, p. 85, pl. XVII, fig. 65.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) rufus* LEA, Syn., 1870, p. 61.

† UNIO GIBBOSUS var. ARMATHWAITENSIS B. H. Wright.

- * *Unio gibbosus* var. *armathwaitensis* B. H. WRIGHT, Naut., XI, 1898, p. 123.³

† UNIO GIBBOSUS var. DELICATUS Simpson.⁴

Entire Mississippi drainage; St. Lawrence and its tributaries; Alabama River system; southeast into Florida; southwest to the Guadalupe River, Texas.

¹ As of Rafinesque. I am unable to make out Rafinesque's species.

² Merely a form with white nacre.

³ These three are dwarf varieties of *gibbosus*. All are often more or less humped, and there are many intermediate and connecting specimens.

⁴ A greatly compressed, thin variety, with an evenly elliptical outline and very dark nacre may bear this name.

† UNIO STONENSIS Lea.

* *Unio stonensis* LEA, Pr. Am. Phil. Soc., I, 1840, p. 286; * Tr. Am. Phil. Soc., VIII, 1841, p. 195, pl. VIII, fig. 5; Obs., III, 1842, p. 33, pl. VIII, fig. 5.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XXIX, figs. 7, 7a, 7b.—* SOWERBY, Conch. Icon., XVII, 1868, pl. LXXXVI, fig. 462.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

* *Margaron (Unio) stonensis* LEA, Syn., 1852; 1870, p. 43.

Stone River, Tennessee.

† UNIO LURIDUS Lea.

* *Unio luridus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 273, pl. XX, fig. 29; Obs., V, 1852, p. 29, pl. XX, fig. 29.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251; * H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

* *Margaron (Unio) luridus* LEA, Syn., 1852, p. 30; 1870, p. 48.

Yadkin River, North Carolina; Georgia; Florida.

(Group of *Unio discus*.)

Shell large, solid, compressed, subtriangular; biangulate behind; beak sculpture not seen; beaks high, but not swollen; epidermis dark, rough; teeth heavy; laterals remote, club-shaped; nacre white, yellow or purple.

Animal unknown.

† UNIO DISCUS Lea.

* *Uniodiscus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 74, pl. XVIII, fig. 57; * Obs., II, 1838, p. 74, pl. XVIII, fig. 51.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 237.—* HANLEY, Test. Moll., 1842, p. 197; * Biv. Shells, 1843, p. 197, pl. XXII, fig. 12.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XIX, figs. 6, 6a, 6b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXII, fig. 310.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 151.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 567.

* *Margaron (Unio) discus* LEA, Syn., 1852, p. 31; 1870, p. 50.

* *Unio panacoensis*, VON DEM BUSCH in Philippi, Abbild. und Besch., I, 1843, p. 75, pl. II.—* KUSTER, Conch. Cab. Unio, 1861, pl. LXXXI, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Unio mexicanus* SOWERBY, Conch. Icon., XVI, 1867, pl. LV, fig. 281.

Mexico; Central America.

(Group of *Unio sloatianus*.)

Shell rhomboid, solid, inflated, with a well-defined posterior ridge and a smaller, fainter one above, the posterior end being distinctly biangulate, nearly straight or slightly incurved on the base, rounded in front; beaks only slightly elevated; beak sculpture not observed; surface of the valves covered with somewhat radiately plicate, nodulous corrugations which become less pronounced in front; posterior

slope radially plicate; epidermis dark; pseudocardinals stumpy, radial, granularly striate; laterals double in the left valve, single in the right, with a faint, secondary ridge below; anterior muscle scars deep, nearly smooth; cavity of the beaks moderate, slightly compressed.

Animal unknown.

† UNIO SLOATIANUS Lea.

- * *Unio sloatianus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 287; Tr. Am. Phil. Soc., VIII, 1842, p. 217, pl. XVI, fig. 33; Obs., III, 1842, p. 55, pl. XVI, fig. 33.—
 * H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, III. Conch. 1858, pl. XXXII, figs. 7, 7a, 7b.—* KUSTER, Conch. Cab., 1862, p. 286, pl. XCVI, fig. 3.—
 * B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 167.
 * *Margaron (Unio) sloatianus* LEA, Syn., 1852, p. 21; 1870, p. 31.
 * *Plectomerus sloatianus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 261.
 * *Unio atromarginatus* LEA,¹ Pr. Am. Phil. Soc., I, 1840, p. 288; Tr. Am. Phil. Soc., VIII, 1842, p. 207, pl. XIII, fig. 21; Obs., III, 1842, p. 45, pl. XIII, fig. 21.—
 * H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 488.—* CHENU, III. Conch., 1858, pl. XXVIII, figs. 6, 6a, 6b.—* KUSTER, Conch. Cab. Unio, 1861, p. 250, pl. LXXXIV, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 145.
 * *Margaron (Unio) atromarginatus* LEA, Syn., 1852, p. 19; 1870, p. 29.
 * *Plectomerus atromarginatus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 260.
 * *Unio aratus* CONRAD, Ann. and Mag., IV, 1849, p. 302; * Pr. Ac. N. Sci. Phila. IV, 1849, p. 154.
 * *Unio plectophorus* CONRAD, Jl. Ac. N. Sci. Phila., I, 1850, p. 277, pl. XXXVIII, fig. 7.
 * *Plectomerus plectophorus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 2.

Chattahoochee and Flint rivers, Georgia.

(Group of *Unio crassidens*.)

Shell generally solid, rather inflated, rhomboid oval, with a sharp, well-developed posterior ridge; beaks prominent, the sculpture consisting of a few coarse ridges running nearly parallel with the growth lines and swollen at the posterior ridge; surface of the valves nearly smooth or only marked by growth lines; posterior slope bearing wrinkled, corrugate, radiate ridges; epidermis often faintly rayed.

Animal having the branchiæ very large, rounded below, inner the larger, free nearly or quite their entire length from the abdominal sac; branchial and anal openings large, with many small papillæ; marsupium occupying the entire outer gills.

† UNIO CRASSIDENS Lamarck.

- * *Unio crassidens* LAMARCK, An. sans Vert., VI, 1819, p. 71.—* LEA, Obs., I, 1834, p. 199.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 532; 3d ed., II, 1839, p. 667.—* HANLEY, Test. Moll., 1842, p. 184; * Biv. Shells, 1843, p. 184, pl. XX, fig. 46.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* H. and A. ADAMS,

¹Lea's type of *sloatianus* is an old, arcuate shell, while the type of *atromarginatus* is young and quite different looking. But the young plicate *atromarginatus* gradually changes into the smoother *sloatianus* as it grows older, and specimens of both show the dark bordered nacre, though it is more pronounced in the young shells.

Gen. Rec. Moll., II, 1857, p. 495.—* CALKINS, Pr. Ot. Ac. Sci., 1874, p. 42.—

* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 149.—

* CALL, Tr. Ac. Sci., St. Louis, VII, 1895, p. 12, pl. II.

* *Margarita (Unio) crassidens* LEA, Syn., 1836, p. 19; 1838, p. 17.

* *Margaron (Unio) crassidens* LEA, Syn., 1852, p. 24; 1870, p. 37.

*? *Unio nigra* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 291, pl. LXXX, figs. 1-4.

* *Unio niger* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 70.—

* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Monog., VI, 1836, p. 49, pl.

XXVI.—* KUSTER, Conch. Cab. Unio, 1852, p. 25, pl. IV, fig. 1.—* AGASSIZ, Arch.

für Naturg., I, 1852, p. 50.—* CONRAD, Pr. Acad. N. Sci., Phila., VI, 1853, p.

253.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVIII, fig. 408.

*? *Unio cuneatus* BARNES, Am. Jl. Sci., VI, 1823, p. 263.—* HILDRETH, Am. Jl.

Sci., XIV, 1828, p. 279, fig. 3.—* SHORT and EATON, Transylvania Jl., 1831,

p. 78.

* *Mya cuneata* EATON, Zool. Text Book, 1826, p. 220.

*? *Unio discus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXII, fig. 310.

* *Unio crassus* SOWERBY, Conch. Icon., XVI, 1868, pl. XCV, fig. 520.

Mississippi drainage generally; Alabama and Tombigbee rivers; southeast to the Chattahoochee River. In the southeastern part of its range this species seems to merge into *U. incrassatus*.

† UNIO INCRASSATUS LEA.¹

* *Unio incrassatus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 286; * Tr. Am. Phil. Soc., VIII,

1840, p. 217, pl. XVI, fig. 34; * Obs., III, 1842, p. 55, pl. XVI, fig. 34.—* H. and

A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl.

XXX, figs. 5, 5a, 5b.—* KUSTER, Conch. Cab. Unio, 1861, p. 192, pl. LX, fig. 5.—

* REEVE, Conch. Icon., XVI, 1865, pl. XXVI, fig. 127.—* B. H. WRIGHT,

Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.

* *Margaron (Unio) incrassatus* LEA, Syn., 1852, p. 24; 1870, p. 37.

Coosa River system; Chattahoochee and rivers of north Florida; east to Savannah?

† UNIO POLYMORPHUS B. H. WRIGHT.

* *Unio polymorphus* B. H. WRIGHT, Naut., XIII, 1899, p. 42.

Spanish Creek, Charlton County, Georgia.

† UNIO FORBESIANUS LEA.

* *Unio forbesianus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 251; * Tr. Am. Phil. Soc.,

X, 1852, p. 264, pl. XVI, fig. 17; * Obs., V, 1852, p. 20, pl. XVI, fig. 17.—* CONRAD,

Pr. Acad. Nat. Sci. Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec.

Moll., II, 1857, p. 495.—* KUSTER, Conch. Cab. Unio, 1861, p. 310, pl. LXIX,

fig. 6.—* MUSGRAVE, Phot. Conch., 1863, pl. II, fig. 2.—* SOWERBY, Conch.

Icon., XVI, 1868, pl. LXXI, fig. 361.—* B. H. WRIGHT, Check List, 1888.—

* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 410, pl. XLIX, fig. 3; L, figs. 2, 3.

* *Margaron (Unio) forbesianus* LEA, Syn., 1852, p. 24; 1870, p. 37.

*† *Unio moussonianus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 268, pl. XVIII, fig. 22;

* Obs., V, 1852, p. 24, pl. XVIII, fig. 22.—* CONRAD, Pr. Acad. N. Sci. Phila.,

VI, 1853, p. 252.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—

* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 160.

* *Margaron (Unio) moussonianus* LEA, Syn., 1852, p. 29; 1870, p. 46.

¹ I am doubtful whether this is more than a small, rhomboid, southeastern variety of *crassidens*, bearing the same relation to it that *U. subgibbosus* does to *U. gibbosus*.

*† *Unio corvus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 112; *Jl. Acad. N. Sci., Phila., IV, 1859, p. 217, pl. XXVII, fig. 97; Obs., VII, 1859, p. 35, pl. XXVII, fig. 97.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVIII, fig. 411.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

* *Margaron (Unio) corvus* LEA, Syn., 1870, p. 37.

* *Unio vestitus* LEA, Pr. Ac. N. Sci., Phila., V, 1861, p. 393; *Jl. Ac. N. Sci., Phila., V, 1862, p. 189, pl. XXV, fig. 259; *Obs., IX, 1863, p. 11, pl. XXV, fig. 259.—* B. H. WRIGHT, Check List, 1888.

Margaron (Unio) vestitus LEA, Syn., 1870, p. 50.

Streams from the Congaree River, South Carolina, south to northern Florida.

† UNIO DANIELSII B. H. Wright.

* *Unio danielsii* B. H. WRIGHT, Naut., XIII, 1899, p. 31.

Spring Creek, Decatur County, Georgia.

† UNIO PUSILLUS Lea.¹

* *Unio pusillus* LEA, Pr. Ac. N. Sci. Phila., I, 1840, p. 286; *Tr. Am. Phil. Soc., VIII, 1842, p. 220, pl. XVIII, fig. 36; *Obs., III, 1842, p. 58, pl. XVIII, fig. 36.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XXXII, figs. 5, 5a, 5b.—* KUSTER, Conch. Cab., 1861, p. 197, pl. LXIII, figs. 3, 4.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 411, pl. LI, figs. 2, 6.

* *Margaron (Unio) pusillus* LEA, Syn., 1852, p. 31; 1870, p. 48.

*† *Unio buceus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 261, pl. XV, fig. 13; *Obs., V, 1852, p. 17, pl. XV, fig. 13.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.

* *Margaron (Unio) buceus* LEA, Syn., 1852, p. 29; 1870, p. 46.

*† *Unio anthonyi* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 41; *Jl. Ac. N. Sci. Phila., V, 1862, p. 197, pl. XXVII, fig. 266; *Obs., IX, 1863, p. 19, pl. XXVII, fig. 266.—* B. H. WRIGHT, Check List, 1888.

Margaron (Unio) anthonyi. LEA, Syn., 1870, p. 43.

Abbeville district, South Carolina; south to northern Florida.

† UNIO MERUS Lea.

* *Unio merus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 260, pl. XV, fig. 10; *Obs., V, 1852, p. 16, pl. XV, fig. 10.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 252.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 159.

* *Margaron (Unio) merus* LEA, Syn., 1870, p. 54.

*† *Unio castus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 306; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 349, pl. LVII, fig. 174; *Obs., VIII, 1860, p. 31, pl. LVII, fig. 174.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) castus* LEA, Syn., 1870, p. 40.

South Carolina.

¹ The type is a young shell identical with one of Lea's *U. anthonyi*. The type of the latter is a little larger, lighter colored, and less rayed.

UNIO MASONI Conrad.¹

- * *Unio masoni* CONRAD, New F. W. Shells, 1834, p. 34, pl. v, fig. 2, p. 70.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* CONRAD, Monog., III, 1836, p. 28, pl. XII, fig. 2.—* MÖLLER, Syn. Nov. Gen., 1836, p. 204.—* HANLEY, Test. Moll., 1842, p. 201; * Bi. Shells, 1843, p. 201, pl. XXIII, fig. 18.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 18, pl. II, fig. 1.—* KUSTER, Conch. Cab. Unio, 1852, p. 34, pl. v, fig. 6.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 158.
- * *Margarita (Unio) masoni* LEA, Syn., 1836, p. 33; 1838, p. 23.
- * *Margaron (Unio) masoni* LEA, Syn., 1852, p. 34; 1870, p. 55.

Savannah River, Georgia.

† UNIO FRATERNUS Lea.

- * *Unio fraternus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 263, pl. XVI, fig. 15; * Obs., V, 1852, p. 19, pl. XVI, fig. 15.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* KUSTER, Conch. Cab. Unio, 1861, p. 201, pl. LXVII, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.
- * *Margaron (Unio) fraternus* LEA, Syn., 1852, p. 32; 1870, p. 51.

Abbeville district, South Carolina, to Columbus, Georgia.

† UNIO CONGARÆUS Lea.

- * *Unio congaræus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 72, pl. VI, fig. 4; Obs., I, 1834, p. 82, pl. VI, fig. 4.—* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* CONRAD, Monog., III, 1836, p. 27, pl. XII, fig. 1.—* HANLEY, Test. Moll., 1842, p. 200; * Biv. Shells, 1843, p. 200, pl. XXII, fig. 31.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* CHENU, Ill. Conch., 1858, pl. III, figs. 5, 5a, 5b.—* SOWERBY, Conch. Icon., XVI, 1867, pl. LIX, fig. 296.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.
- * *Margarita (Unio) congaræus* LEA, Syn., 1836, p. 32; 1838, p. 22.
- * *Margaron (Unio) congaræus* LEA, Syn., 1852, p. 33; 1870, p. 54.
- * † *Unio fulvus* LEA,² Tr. Am. Phil. Soc., V, p. 96, pl. XIII, fig. 39; * Obs., I, 1834, p. 208, pl. XIII, fig. 39.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 200; * Biv. Shells, 1843, p. 200, pl. XXIII, fig. 32.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1858, pl. LXXXIX, fig. 483.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.
- * *Margarita (Unio) fulvus* LEA, Syn., 1836, p. 32; 1838, p. 22.
- * *Margaron (Unio) fulvus* LEA, Syn., 1852, p. 33; 1870, p. 54.

Cape Fear River, North Carolina; south to Savannah, Georgia.

¹I have never seen this species, but should judge from the figure that it groups with *U. crassidens*.

²The type is a young shell, and is not the same as adult shells which are in the Lea collection under that name.

† UNIO DARIENSIS Lea.

* *Unio dariensis* LEA, Tr. Am. Phil. Soc., VIII, 1842, p. 246, pl. XXVI, fig. 61; * Tr. Am. Phil. Soc., II, 1843, p. 225; * Obs., III, 1842, p. 84, pl. XXVI, fig. 61.—* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* CHENU, Ill. Conch., 1858, pl. XXXIII, figs. 6, 6a, 6b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCI, fig. 494.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 150.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 413, pl. LIII, fig. 2; LIV, fig. 1.

* *Margaron (Unio) dariensis* LEA, Syn., 1852, p. 33; 1870, p. 54.

Southeast Georgia to north Florida.

† UNIO MONROENSIS Lea.

Unio monroensis LEA,¹ Desc. of 12 sp. of Uniones, 1843, no pagination; * Tr. Am. Phil. Soc., IX, 1845?, p. 279, pl. XLI, fig. 8; * Obs., IV, 1848, p. 37, pl. XLI, fig. 8.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 159.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 410, pl. LI, fig. 1.

* *Margaron (Unio) monroensis* LEA, Syn., 1852, p. 29; 1870, p. 46.

Florida.

† UNIO HARTWRIGHTI² B. H. Wright.

† *Unio hartwrighti* B. H. WRIGHT, Naut., IX, 1896, p. 121, pl. II, figs. 4-6.

Lake Beresford, Florida.

UNIO HINKLEYI B. H. Wright.

* *Unio hinkleyi* B. H. WRIGHT, Pr. Ac. N. Sci. Phila., 1888, p. 117, pl. IV, fig. 3³;
* Check List, 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 423, pl. LXV,
fig. 4.

Florida.

¹A puzzling form. The type, the only shell in the Lea collection, is rather solid, and the posterior ridge is curved slightly upward in the middle. Other specimens in the museum are less solid, the posterior ridge is sharper, and straight or curved down in the middle, and there seems to be almost a connection with the very different *U. hartwrighti*.

²This name was applied to another species by Newcomb, and was used by Wright in the Check List, by Pætel and others, but the form to which it was given was believed to be a synonym of something else, and it was never described. Mr. Wright has again used the name for what is probably a valid species.

³The figure of this shell is not at all accurate, being considerably more blunt posteriorly and inflated below than the specimen sent as the type. It approaches *U. monroensis*, but is more elongated, and a series of specimens sent by Mr. Wright almost connects it with *U. dorei*.

† UNIO WEBSTERI B. H. Wright.

- * *Unio websteri* B. H. WRIGHT, Pr. Ac. N. Sci. Phila., 1888, p. 113, pl. II, fig. 2¹;
* Check List, 1888.

Florida.

† UNIO DORSATUS Lea.

- * *Unio dorsatus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 160; * JI. Ac. N. Sci. Phila., VI, 1868, p. 300, pl. XLV, fig. 112; * Obs., XII, 1869, p. 60, pl. XLV, fig. 112.—
* B. H. WRIGHT, Check List, 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 411, pl. LI, fig. 7; LII, figs. 1, 2.
* *Margaron (Unio) dorsatus* LEA, Syn., 1870, p. 37.

Catawba River, North Carolina; Florida.

† UNIO WACCAMAWENSIS Lea.²

- * *Unio waccamawensis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 193; * JI. Acad. N. Sci. Phila., VI, 1866, p. 16, pl. v, fig. 14; * Obs., XI, 1867, p. 20, pl. v, fig. 14.—* B. H. WRIGHT, Check List, 1888.
* *Margaron (Unio) waccamawensis* LEA, Syn., 1870, p. 36.

Waccamaw Lake, North Carolina.

(Group of *Unio pigerrimus*.)

Shell rather solid, elliptic rhomboid, somewhat inflated, with a low, rounded posterior ridge, sometimes a little arcuate below, biangulate behind; beaks full, their sculpture a few coarse ridges which are curved upward and swollen where they cross the posterior ridge; surface concentrically striate and often sculptured with curved, subradiating or zigzag corrugations which have a tendency to break into nodules; epidermis brownish; hinge rather heavy; pseudocardinals stumpy, granular; laterals club shaped; muscle scars well marked.

Animal unknown.

UNIO PIGERRIMUS Crosse and Fischer.

- * *Unio pigerrimus* CROSSE and FISCHER, JI. de Conch. XLI, 1893, p. 293.—
* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 582, pl. LXV, figs. 1, 1a.

Mexico.

† UNIO MITCHELLI Simpson.

- * *Unio mitchelli* SIMPSON (in Dall.), Pr. U. S. Nat. Mus., XVIII, 1896, p. 5; Pr. U. S. Nat. Mus., XIX, 1896, p. 371, pl. XXXII, figs. 1-3.³

Southern Texas to New Leon, Mexico.

¹Mr. Wright has sent to the Museum under the above name two quite different forms, neither of which is like the figure. From an examination of the first one sent, an old, worn shell, and the figure, I believed it to be a form of *U. obesus* (see Proc. U. S. Nat. Mus., XV, 1892, p. 428). Specimens sent since by Mr. Wright and said to be typical approach *U. hartwrighti*, but are more compressed and elongated. These forms are exceedingly puzzling.

²An aberrant species. The shell is inflated, thin, and has a strong posterior ridge. It has characters of both the *Buckleyi* and *Crassidens* groups.

³Close to *pigerrimus* apparently, and may be but a variety of it; it is a lighter, longer shell, is less sculptured, and does not have a rose-colored nacre.

† UNIO IHERINGI B. H. Wright.

* *Unio iheringi* B. H. WRIGHT, Naut., XII, 1898, p. 93. — * SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 79, pl. IV, fig. 5.

Southern Texas.

† UNIO SPHENORHYNCHUS Fischer and Crosse.

* *Unio sphenorhynchus* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 617, pl. LXVI, figs. 2, 2a.

Mexico.

(Group of *Unio liebmanni*.)

Shell rather solid, inflated, ovate rhomboid or trapezoidal, with a well-developed posterior ridge, pointed at or near the base behind, but not biangulate, nearly straight or slightly incurved below; beaks full, sculpture not seen; surface smooth or concentrically striate; epidermis dark, scarcely rayed; hinge rather strong; pseudocardinals heavy, compressed; muscle scars distinct; nacre livid to whitish.

Animal unknown.¹

† UNIO LIEBMANNI Philippi.

* *Unio liebmanni* PHILIPPI, Zeits. für Mal., IV, 1847, p. 96; * Abbild. und Besch., III, 1849, p. 109, pl. VI, fig. 1. — * KUSTER, Conch. Cab. Unio, 1862, p. 281, pl. XCIV, fig. 7. — * PÆTEL, Conch. Sam., III, 1890, p. 157. — * FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 616.

* *Margaron (Unio liebmanni)* LEA, Syn., 1870, p. 48.

* *Unio liebmanni* B. H. WRIGHT, Check List, 1888.

Mexico.

† UNIO OPACATUS Crosse and Fischer.

* *Unio opacatus* CROSSE and FISCHER, Jl. de Conch., XLI, 1893, p. 295. — * FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 592, pl. LXVI, figs. 1, 1a.

Mexico.

(Group of *Unio buckleyi*.)

Shell oval, obovate, subtrapezoidal, or elliptical, with a more or less developed posterior ridge, often biangulate behind, compressed or inflated, thin or somewhat solid; beaks generally full, sculptured with several rather strong concentric ridges, which are either nearly parallel with the growth lines or slightly doubly looped; posterior slope often faintly wrinkled; epidermis usually smooth and shining in the younger shells, often rough when old, becoming darker with age, rayed when young. Hinge teeth solid or compressed; nacre mostly brilliant,

¹ This group is exceedingly close to that of *U. buckleyi*, according to the shell characters, and some specimens of *U. liebmanni* are so near others of *U. buckleyi* as to deceive even experts.

of many shades. Animal not differing especially from that of closely related groups.¹

† UNIO BUCKLEYI Lea.

* *Unio buckleyi*, LEA, Desc. of 12 Uniones, 1843 (no pagination); * Tr. Am. Phil. Soc., IX, 1845 ?, p. 276, pl. XXXIX, fig. 2; * Obs., IV, 1848, p. 34, pl. XXXIX, fig. 2.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* KUSTER, Conch. Cab. Unio, 1861, p. 177, pl. LVI, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIV, fig. 175.—* B. H. WRIGHT, Check List, 1888.—* B. H. and S. H. WRIGHT, Conch. Ex., II, 1888, p. 95.—* PÆTEL, Conch. Sam., III, 1890, p. 146.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 417, pl. LVIII, figs. 6, 7; LIX, figs. 1, 2; LX, fig. 2.

* *Margaron (Unio) buckleyi* LEA, Syn., 1852, p. 30; 1870, p. 48.

* † *Unio buddianus* LEA,² Desc. of 12 Uniones, 1843; Tr. Am. Phil. Soc., IX, 1845, ? p. 277, pl. XL, fig. 5; * Obs., IV, 1848, p. 35, pl. XL, fig. 5.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* KUSTER, Conch. Cab. Unio, 1861, p. 249, pl. LXXXIV, fig. 1.—* REEVE, Conch. Icon., XVI, 1865, pl. XX, fig. 88.—* B. H. and S. H. WRIGHT, Conch. Ex., II, 1888, p. 95.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Margaron (Unio) buddianus* LEA, Syn., 1852, p. 32; 1870, p. 52.

* † *Unio dalli* B. H. WRIGHT,³ Pr. Ac. N. Sci. Phila., 1888, p. 119, pl. VI, fig. 1.—* B. H. WRIGHT, Check List, 1888.

† UNIO BUCKLEYI var. ORCUTTII S. H. Wright.

* *Unio orcuttii* S. H. WRIGHT, West. Am. Sci., IV, 1888, p. 60, 3 figs.⁴

Florida.

† UNIO JAYENSIS Lea.

* *Unio jayensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 28, pl. IX, fig. 23;⁵ * Obs., II, 1838, p. 28, pl. IX, fig. 23.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 235.—* HANLEY, Test. Moll., 1842, p. 206; * Biv. Shells, 1843, p. 206, pl. XXII, fig. 53.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, Ill. Conch., 1858, pl. XXII, figs. 4, 4a, 4b.—* SOWERBY, Conch.

¹The relationship between the *Buckleyi*, *Crassideus*, *Complanatus*, *Downiei* and *Fisherianus* groups is very close. That of *Crassideus* is characterized by inflated shells with a strong posterior ridge, and wrinkles on the posterior slope; of *Buckleyi* by a less developed ridge, the absence of strong wrinkles, and a rich, warm texture of shell; of *Complanatus* by trapezoidal, not greatly inflated shells of dull texture. The species of the *Fisherianus* group have elongated, generally compressed, thin shells, pointed behind, and of the *Downiei* assemblage solid, inflated shells. But there are many species that are quite negative in characters, and others that combine the features of two or more groups, that can not be satisfactorily placed.

²The type is a large, badly eroded shell, apparently a little injured at the upper, anterior part, and is truncated a little there.

³The type is a small, old shell, which has become rough and arcuate.

⁴Credited to Manatee River, Florida, Simpson and Miakka Lake, Florida, Newcomb, by Mr. Wright. I have never found it in the Manatee River, but obtained it in abundance in Miakka Lake.

⁵Although the type is very different from that of *U. buckleyi* the two species approach so closely that there are specimens which I can not name.

Icon., XVI, 1867, pl. LX, fig. 301; LXVII, fig. 343. ?—* PÆTEL, Conch. Sam., III, 1890, p. 155.

* *Margarita (Unio) jayensis* LEA, Syn., 1836, p. 37; 1838, p. 24.

* *Margaron (Unio) jayensis* LEA, Syn., 1852, p. 37.

* † *Unio prasinatus* CONRAD, Am. Jl. Conch., II, 1866, p. 279, pl. xv, fig. 14.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) jayanus* LEA, Syn., 1870, p. 60.

* *Unio jayanus* B. H. WRIGHT, Check List, 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 419, pl. LXI, fig. 4.

* † *Unio simpsoni* B. H. WRIGHT¹; Check List, 1888.

* † *Unio marshii* B. H. WRIGHT, Pr. Ac. N. Sci. Phila., 1888, p. 118, pl. v, fig. 2; Check List, 1888.

* † *Unio tryoni* B. H. WRIGHT, Pr. Ac. N. Sci. Phila., 1888, p. 120, pl. vi, fig. 2; Check List, 1888.

Florida.

† UNIO CORUSCUS Gould.

* *Unio coruscus* GOULD, Pr. Bost. Soc. Nat. Hist., I, 1856, p. 15; * *Otia* Conch., 1862, p. 222.—* B. H. and S. H. WRIGHT, Conch. Ex., II, 1888, p. 95.—

* B. H. WRIGHT, Check List, 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 419, pl. LXIII, figs. 1, 7.

* *Margaron (Unio) coruscus* LEA, Syn., 1870, p. 48.

† UNIO CORUSCUS var. FRYANUS B. H. Wright.²

Unio fryanus B. H. WRIGHT, Pr. Acad. N. Sci. Phila., 1888, p. 113, pl. II, fig. 1; Check List, 1888.

* † *Unio diazensis* S. H. WRIGHT,³ Naut., X, 1897, p. 5.

Florida.

† UNIO CUNNINGHAMI B. H. Wright.

* *Unio cunninghami* B. H. WRIGHT, Pr. Ac. N. Sci. Phila., XIII, 1883, p. 58, pl. I, figs. 1-4.—* A. F. GRAY, Am. Nat., XVII, 1883, p. 1184.—* S. H. and B. H. WRIGHT, Conch. Ex., II, 1888, p. 105.—* B. H. WRIGHT, Check List, 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 422, pl. LXV, fig. 6.

Florida.

† UNIO MICANS Lea.

* *Unio micans* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 85; * *Jl. Ac. N. Sci. Phila.*, V, 1862, p. 59, pl. III, fig. 207; * *Obs.*, VIII, 1862, p. 63, pl. III, fig. 207.—* SOWERBY, Conch. Icon., XVI, 1866, pl. xxxv, fig. 182.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 159.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 423, pl. LXV, fig. 3.

* *Margaron (Unio) micans* LEA, Syn., 1870, p. 45.

* *Unio perlucens* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 193; * *Jl. Ac. N. Sci. Phila.*,

¹From an examination of specimens sent to the U. S. National Museum by Mr. Wright I referred this to *U. buckleyi*, in Pr. U. S. Nat. Mus., XV, p. 417. The type is now in the U. S. National Museum, and I believe it to be a rather compressed, bright young *U. jayensis*.

²A form of *coruscus* a little less solid and inflated than the type, and quite brilliant.

³This name occurs in B. H. Wright's Check List, but the species was not described until 1897. It scarcely differs from *U. fryanus*.

VI, 1866, p. 18, pl. v, fig. 16; Obs., XI, 1867, p. 22, pl. v, fig. 16.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) perlucens* LEA, Syn., 1870, p. 45.

North Carolina to South Georgia and Florida.

† UNIO PYGMÆUS Lea.¹

* *Unio pygmaeus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 252; * Tr. Am. Phil. Soc., X, 1852, p. 262, pl. xv, fig. 14; * Obs., V, 1852, p. 18, pl. xv, fig. 14; * CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) pygmaeus* LEA, Syn., 1870, p. 48.

Abbeville District, South Carolina.

† UNIO LEHMANII, S. H. Wright.

* *Unio lehmanii*, S. H. WRIGHT, Naut., X, 1897, p. 138.—* SIMPSON, Pr. Acad. N. Sci. Phila., 1900, p. 80, pl. iv, fig. 9.

St. Marys River, Florida.

† UNIO BURTCHIANUS S. H. Wright.

* *Unio burtchianus* S. H. WRIGHT, Naut., X, 1897, p. 137.—* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 80, pl. iv, fig. 8.

St. Mary's River, Florida.

† UNIO CONFERTUS Lea.²

* *Unio lugubris* LEA, Tr. Am. Phil. Soc., VI, 1834, p. 30, pl. ix, fig. 25; * Obs., II, 1838, p. 30, pl. ix, fig. 25.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 235.—* HANLEY, Test. Moll., 1842, p. 206; * Biv. Shells, 1843, p. 206, pl. xxii, fig. 9.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 53, pl. xv, figs. 1, 1a.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, Ill. Conch., 1858, pl. xx, figs. 3, 3a, 3b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. lxxx, fig. 423.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 158.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 424, pl. lxvi, fig. 4; LXVII, fig. 1.

* *Margarita (Unio) lugubris* LEA, Syn., 1836, p. 37; 1838, p. 24.

* *Margaron (Unio) lugubris* LEA, Syn., 1852, p. 38; 1870, p. 53.

* † *Unio confertus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 103, pl. xvi, fig. 47; * Obs., I, p. 215, pl. xvi, fig. 47.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 200; * Biv. Shells, 1843, p. 200, pl. xxiii, fig. 34.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1866, pl. xxxv, fig. 185.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margarita (Unio) confertus* LEA, Syn., 1836, p. 31; 1838, p. 22.

* *Margaron (Unio) confertus* LEA, Syn., 1852, p. 33; 1870, p. 53.

* † *Unio geddingsianus* LEA, Pr. Am. Phil. Soc. I, 1840, p. 285; * Tr. Am. Phil. Soc., VIII, 1842, p. 202, pl. xi, fig. 15; * Obs., III, 1842, p. 40, pl. xi, fig. 15.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* CHENU, Ill. Conch., 1858, pl. xxxi, figs. 3, 3a, 3b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.

* *Margaron (Unio) geddingsianus* LEA, Syn., 1852, p. 33; 1870, p. 53.

¹ Only a single broken right valve of this is in the Lea collection.

² The name *lugubris* applied first to this species will have to give way to *confertus* because Say used *lugubris* at an earlier date for a *Unio*.

- * *Unio limatulus* CONRAD, Pr. Ac. N. Sci. Phila., IV, 1849, p. 154; * Ann. and Mag., IV, 1849, p. 301; * Jl. Ac. N. Sci. Phila., I, 1850, p. 276, pl. XXXVII, fig. 9; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 157.
- * *Margaron (Unio) limatulus* LEA, Syn., 1852, p. 32; 1870, p. 52.
- * † *Unio whiteianus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 258, pl. XIV, fig. 8.—* Obs., V, 1852, p. 14, pl. XIV, fig. 8.—* H. and A. ADAMS, Gen., Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 172.
- * *Margaron (Unio) whiteianus* LEA, Syn., 1852, p. 33; 1870, p. 53.
- * *Unio vibex* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 260.¹
- * † *Unio similis* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 169; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 91, pl. XIX, fig. 71; * Obs., VI, 1858, p. 91, pl. XIX, fig. 71.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 167.
- * *Margaron (Unio) similis* LEA, Syn., 1852, p. 52; 1870, p. 53.
- * † *Unio protensus* LEA, Pr. Ac. N. Sci. Phila., IX, 1865, p. 88; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 256, pl. XXXI, fig. 71; * Obs., XII, 1869, p. 16, pl. XXXI, fig. 71.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) protensus* LEA, Syn., 1870, p. 60.
- * † *Unio radiolus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 192; * Jl. Ac. N. Sci. Phila., VIII, 1874, p. 21, pl. VI, fig. 18; * Obs., XIII, 1874, p. 25, pl. VI, fig. 18.—* B. H. WRIGHT, Check List, 1888.

North Carolina to Florida.

† UNIO INSULSUS LEA.

- * *Unio insulsus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 86; * Jl. Ac. N. Sci. Phila., IX, 1862, p. 53, pl. I, fig. 199; * Obs., VIII, 1862, p. 57, pl. I, fig. 199.—* B. H. WRIGHT, Check List, 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 422, pl. LXV, figs. 1, 5.
- * *Margaron (Unio) insulsus* LEA, Syn., 1870, p. 53.
- * †? *Unio lucidus* LEA,² Pr. Ac. N. Sci. Phila., VII, 1863, p. 192; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 9, pl. II, fig. 6; * Obs., XI, 1867, p. 13, pl. II, fig. 6.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) lucidus* LEA, Syn., 1870, p. 48.
- * † *Unio cistelliformis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 192; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 19, pl. VI, fig. 17; * Obs., XI, 1867, p. 23, pl. VI, fig. 17.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) cistelliformis* LEA, Syn., 1870, p. 52.

North Carolina to Florida.

† UNIO OBNUBILUS LEA.

- * *Unio obnubilus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 169; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 84, pl. XVII, fig. 64; * Obs., VI, 1858, p. 84, pl. XVII, fig. 64.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 424, pl. LXVI, fig. 3.
- * *Margaron (Unio) obnubilus* LEA, Syn., 1870, p. 53.
- * † *Unio opacus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 169; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 86, pl. XVIII, fig. 66; * Obs., VI, 1858, p. 86, pl. XVIII, fig. 66.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 161.

¹ Conrad here states that his *ribex* = first *whiteianus* of Lea, and then *zeiglerianus* of Lea. The latter is totally different from *whiteianus*.

² Very near *U. confertus*. It is probably a delicate, light-colored, rayed *insulsus*.

* *Margaron (Unio) opacus* LEA, Syn., 1870, p. 52.

* † *Unio aquatus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 170; * Jl. Ac. N. Sci. Phila., 1858, p. 89, pl. XIX, fig. 69; * Obs., VI, 1858, p. 89, pl. XIX, fig. 69.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) aquatus* LEA, Syn., 1870, p. 52.

* † *Unio viridicatus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 170; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 87, pl. XVIII, fig. 67; * Obs., VI, 1858, pl. XVIII, fig. 67.

* *Margaron (Unio) viridicatus* LEA, Syn., 1870, p. 52.

* † *Unio hepaticus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 154; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 348, pl. LVII, fig. 173; * Obs., VIII, p. 30, pl. LVII, fig. 173.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

* *Margaron (Unio) hepaticus* LEA, Syn., 1870, p. 52.

* † *Unio santeensis* LEA, Pr. Ac. N. Sci. Phila., I 1871, p. 193.—* Jl. Ac. N. Sci. Phila., VIII, 1874, p. 20, pl. VI, fig. 17; * Obs., XIII, 1874, p. 24, pl. VI, fig. 17.—* B. H. WRIGHT, Check List, 1888.

* † *Unio nolani* B. H. WRIGHT, Pr. Ac. N. Sci. Phila., 1888, p. 116, pl. IV, fig. 11; Check List, 1888.

South Carolina to Florida.

† UNIO FUSCATUS Lea.

* *Unio fuscatus* LEA, Desc. 12 Uniones, 1843 (no pagination).—* Tr. Am. Phil. Soc., IX, 1845?, p. 277, pl. XL, fig. 4; Obs., IV, 1848, p. 35, pl. XL, fig. 4.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab. Unio, 1848, p. 203, pl. LXVIII, fig. 2.—* REEVE, Conch. Icon., XVI, 1865, pl. XXI, fig. 95.—* PÆTEL, Conch. Sam., III, 1890, p. 153.—* SIMPSON, Pr. U. S. Nat. Mus., XVI, 1892, p. 420, pl. LXIII, figs. 2, 4.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) fuscatus* LEA, Syn., 1852, p. 30; 1870, p. 48.

Florida.

† UNIO OCCULTUS Lea.

* *Unio occultus* LEA, Desc. 12 Uniones, 1843 (no pagination).—Tr. Am. Phil. Soc., IX, 1845?, p. 279, pl. XLI, fig. 7; * Obs., IV, 1848, p. 37, pl. XLI, fig. 7.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* KUSTER, Conch. Cab. Unio, 1861, p. 223, pl. LXXV, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 161.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 420, pl. LXIII, figs. 5, 6.

* *Margaron (Unio) occultus* LEA, Syn., 1852, p. 48; 1870, p. 48.

Florida.

† UNIO ARCTATUS Conrad.

* *Unio arctatus* CONRAD, Am. Jl. Sci., XXV, 1834, p. 340, pl. I, fig. 9; * New F. W. Shells, 1834, p. 36, pl. v, fig. 4, p. 67.—* MÖLLER, Syn. Nov. Gen., 1836, p. 200.—* HANLEY, Test. Moll., 1842, p. 207; * Biv. Shells, 1843, p. 207, pl. XXIII, fig. 47.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 19, pl. III, fig. 10.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* KUSTER, Conch. Cab. Unio, 1861, p. 195, pl. LXII, fig. 3.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Margarita (Unio) arctatus* LEA, Syn., 1836, p. 38; 1838, p. 25.

* *Margaron (Unio) arctatus* LEA, Syn., 1852, p. 33; 1870, p. 62.

†UNIO ARCTATUS var. TORTIVUS Lea.

- *† *Unio tortivus* LEA,¹ Pr. Am. Phil. Soc., I, 1840, p. 287; Tr. Am. Phil. Soc., VIII, 1842, p. 204, pl. XII, fig. 17; Obs., III, 1842, p. 42, pl. XII, fig. 17.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*CHENU, Ill. Conch., 1858, pl. XXIX, figs. 6, 6a, 6b.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 193.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 169.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 421, pl. LXIII, fig. 8; LXIV, figs. 1, 3, 4.
- **Margaron (Unio) tortivus* LEA, Syn., 1852, p. 33; 1870, p. 53.
- *† *Unio tetricus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 170; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 195, pl. XXII, fig. 78; *Obs., VII, 1859, p. 13, pl. XXII, fig. 78.—*KUSTER, Conch. Cab. Unio, 1862, p. 276, pl. XCI, fig. 7; XCII, fig. 3.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 169.
- **Margaron (Unio) tetricus* LEA, Syn., 1870, p. 53.
- *† *Unio purpurellus* LEA,² Pr. Ac. N. Sci. Phila., IX, 1857, p. 171; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 19, pl. XXIII, fig. 81; *Obs., VII, 1859, p. 16, pl. XXIII, fig. 81.—*B. H. WRIGHT, Check List, 1888.
- **Margaron (Unio) purpurellus* LEA, Syn., 1870, p. 53.
- *† *Unio merceri* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 169; *Jl. Ac. N. Sci. Phila., V, 1862, p. 209, pl. XXXI, fig. 278; *Obs., IX, 1863, p. 31, pl. XXXI, fig. 278.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 159.
- **Margaron (Unio) merceri* LEA, Syn., 1870, p. 61.

Florida; South Georgia; the type west to the Black Warrior River, Alabama.

†UNIO NIGELLUS Lea.

- * *Unio nigellus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 251; *Tr. Am. Phil. Soc., X, 1852, p. 283, pl. XXIV, fig. 42; *Obs., V, 1852, p. 39, pl. XXIV, fig. 42.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 161.
- **Margaron (Unio) nigellus* LEA, Syn., 1852, p. 30; 1870, p. 53.
- *† *Unio denigratus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 171; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 200, pl. XXIII, fig. 83; *Obs., VII, 1859, p. 18, pl. XXIII, fig. 83.—*B. H. WRIGHT, Check List, 1888.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 422, pl. LXV, fig. 1.
- **Margaron (Unio) denigratus* LEA, Syn., 1870, p. 52.

Chattahoochee River system; south into Florida.

†UNIO PINEI B. H. Wright.

- **Unio pinei* B. H. WRIGHT, Naut., XI, 1897, p. 40.—*SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 80, pl. III, fig. 1.

North Florida.

¹ *Unio arctatus* is a widely distributed, abundant, and variable species, ranging from the Black Warrior River to southern Florida. I have examined a great amount of material from the Black Warrior and Cahawba rivers (collected by Call), from the Flint and Chattahoochee rivers from the Lea and other collections, and I feel reasonably sure that all the species I have united should go together.

² I believe this to be a small, somewhat inflated form of *arctatus*.

† UNIO OSCARI B. H. Wright.

* *Unio oscari* B. H. WRIGHT, Naut., V, 1892, p. 124; IX, 1896, p. 122, pl. II, figs. 1-3.

Florida.

† UNIO HAZELHURSTIANUS Lea.

† *Unio hazelhurstianus* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 166; * J¹. Ac. N. Sci. Phila., IV, 1859, p. 211, pl. XXVI, fig. 92; * Obs., VII, 1859, p. 29, pl. XXVI, fig. 92.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXV, fig. 188.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

* *Margaron (Unio) hazelhurstianus* LEA, Syn., 1870, p. 60.

Southern Georgia.

† UNIO BUXTONI B. H. Wright.

* *Unio buxtoni* B. H. WRIGHT, Naut., XI, 1897, p. 55.—* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 80, pl. I, fig. 6.

Marion County, Florida.

† UNIO FERRISSII Marsh.

* *Unio ferrissii* MARSH, Naut., V, 1891, p. 30.¹—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 423, pl. LXVI, figs. 1, 2.

Small creek near Palatka, Florida.

† UNIO DOREI B. H. Wright.

* *Unio dorei* B. H. WRIGHT,² Pr. Ac. N. Sci. Phila., 1888, p. 115, pl. III, fig. 1.

Lake Monroe, Florida.

(Group of *Unio striatulus*.)

Shell subsolid, rhomboid oval, with a well-developed post ridge ending in a point below; beaks full, with numerous subparallel, slightly corrugated, strong ridges; epidermis rayless or faintly rayed, with a few wrinkles on the posterior slope; pseudocardinals stumpy; laterals straight. Animal unknown.

† UNIO STRIATULUS Lea.

* *Unio striatulus* LEA, Pr. Acad. N. Sci. Phila., I, 1857, p. 86; * J¹. Acad. N. Sci. Phila., V, 1862, p. 55, pl. II, fig. 202.—* Obs., VIII, 1862, p. 59, pl. II, fig. 202.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXII, fig. 367.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

* *Margaron (Unio) striatulus*, LEA, Syn., 1870, p. 37.

Roanoke River; Welden and Salem, North Carolina.

¹ This was first published in the Joliet Weekly News, a newspaper, May 1, 1891. It is a puzzling form, having something the shape of the variety *orculti* of *U. buckleyi*, but has plications on the posterior slope such as are found in the *Crassidens* group.

² I do not know where to place this form, of which I have only seen the type. The figure is not very accurate, and I formerly thought it a variety of *U. buckleyi*, but on seeing the type I believe it is not that. It seems to combine characters of the *Buckleyi* and *Crassidens* groups.

† UNIO AMABILIS Lea.

* *Unio amabilis* LEA, Pr. Acad. N. Sci. Phila., IX, 1865, p. 89; * JI. Acad. N. Sci. Phila., VI, 1869, p. 257, pl. XXXI, fig. 72; * Obs., XII, 1869, p. 17, pl. XXXI, fig. 72.—* B. H. Wright, Check List, 1888.

* *Margaron (Unio) amabilis* LEA, Syn., 1870, p. 37.

Butler, Taylor County, Georgia; North Carolina?

UNIO SUBPLANUS Conrad.

Unio subplanus CONRAD, Monog., IX, 1837, p. 73, pl. XLI, fig. 1; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* HANLEY, Biv. Shells, Supp., 1856, p. 383, pl. XXI, fig. 16.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* KUSTER, Conch. Cab. Unio, 1862, p. 272, pl. XCI, fig. 5.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

* *Margaron (Unio) subplanus* LEA, Syn., 1852, p. 33; 1870, p. 54.

* *Unio subplanum* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVII, fig. 252.

North Carolina and Virginia.

UNIO BRIMLEYI S. H. Wright.

* *Unio brimleyi* S. H. WRIGHT, Naut., X, 1897, p. 138; * SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 80, pl. IV, fig. 6.

Neuse River and Irwin's Creek, North Carolina.

(Group of *Unio complanatus*.)

Shell elongate trapezoidal, moderately solid, but little inflated, nearly straight below, with a posterior ridge, usually biangulate behind; beaks not prominent, sculptured with several coarse, parallel ridges which follow the growth lines or are nearly straight. Epidermis sometimes shining and feebly rayed, becoming rough and rayless with age; laterals straight or slightly curved; beak cavities shallow.

Animal with the marsupium occupying all or nearly all of the outer branchiæ; gills long, rounded below, inner much the larger, free nearly or quite their whole length from the abdominal sac.

† UNIO COMPLANATUS (Solander) Dillwyn.¹

Mya complanata SOLANDER, manuscript (no date).—* PORTLAND catalogue, 1786, p. 100, Lot 2190.—* DILLWYN, Cat., I, 1817, p. 51.

* *Unio complanata* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 559; 3d ed., II, 1839, p. 676.

¹ This species was described by Solander in Latin, but the manuscript was never published and is now in the British Museum. Mr. Edgar A. Smith kindly examined it for me and informed me that Dillwyn's description in the catalogue is a translation from Solander. The name *Mya complanata* was used by Lister in Hist. Sive. Conch. (1770, p. 150), but Lister was not a binomial author. The Portland catalogue is anonymous, and a mere sale list. I have done my best to straighten out the synonymy of this variable and exceedingly puzzling group, and have examined nearly all the types and a great amount of material. In some cases, as in the *Buckleyi* group, there seem to be no specific lines whatever.

- * *Unio complanatus* FERUSSAC, Guer. Mag., 1835, p. 26.—* GOULD, Inv. of Mass., 1841, p. 107, figs. 68-70.—* BINNEY, 2d ed., Inv. of Mass., 1870, p. 167, fig. 472.—* C. B. ADAMS, Thompson's Hist. Vt., 1842, p. 167.—* HANLEY, Test. Moll., 1842, p. 199; * Biv. Shells, 1843, p. 199, pl. XXI, fig. 20.—* DE KAY, Zool. of N. Y., Pt. 5, 1843, p. 188, pl. XXII, fig. 246.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* STIMPSON, Shells of N. Eng., 1851, p. 13.—* AGASSIZ, Arch. für Nat., I, 1852, p. 50.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—* KUSTER, Conch. Cab. Unio, 1856, p. 137, pl. XLI, fig. 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 86, fig. 181.—* LATCHFORD, Tr. Ottawa Field Nat. Cl., 1882, p. 49.—* B. H. WRIGHT, Check List, 1888.—* H. CARPENTER, Naut., III, 1889, p. 93.—* PÆTEL, Conch. Sam., III, 1890, p. 148.
- * *Margarita (Unio) complanatus* LEA, Syn., 1836, p. 30; 1838, p. 22.
- * *Margaron (Unio) complanatus* LEA, Syn., 1852, p. 32; 1870, p. 51.
- * ? *Unio violaceus* SPENGLER, Skriv. Nat. Selsk. III, 1793, p. 55.
- * ? *Unio purpureus* SAY, Nich. Enc., II, 1816, pl. III, fig. 1; N. Harm. Diss., II, No. 21, 1829, p. 324.—* CONRAD, New F. W. Shells, 1834, p. 71.—* SOWERBY, Rich. Faun. Boreali Am., III, 1836, p. 316.—* L. W. SAY, Terr. and Fluv. Shells, 1840, p. 7.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXVIII, fig. 346.
- * *Mya purpurea* EATON, Zool. Text-Book, 1826, p. 2.
- * ? *Unio purpurea* DESHAYES, Encyc. Méth. II, 1827, p. 151, pl. 249, fig. 5.
- * *Unio rarisulcata* LAMARCK, An. sans Vert., VI, 1819, p. 72.—* LEA, Obs., I, 1834, p. 200.—DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 534.
- * *Unio coarctata* LAMARCK, An. sans Vert., VI, 1819, p. 73.—* LEA, Obs., I, 1834, p. 200.—DESHAYES, Encyc. Méth., II, 1830, p. 581; * An. sans Vert., 2d ed., VI, 1835, p. 535; 3d ed., II, 1839, p. 668.—* ? SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIV, fig. 178.
- * *Unio purpurascens* LAMARCK, An. sans Vert., VI, 1819, p. 73.—DESHAYES, Enc. Méth., II, 1830, p. 581.—* LEA, Obs., I, 1834, p. 200.—DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 535; 3d ed., II, 1839, p. 668.
- * *Unio georgiana* LAMARCK, An. sans Vert., VI, 1819, p. 74.—* LEA, Obs., I, 1834, p. 201.—DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 536; 3d ed., II, 1839, p. 668.
- * *Unio rhombula* LAMARCK, An. sans Vert., VI, 1819, p. 74.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 536; 3d ed., II, 1839, p. 668.
- * *Unio rhombula* LAMARCK, An. sans Vert., VI, 1819, p. 74.—* LEA, Obs., I, 1834, p. 200.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 536; 3d ed., II, 1839, p. 668.—* ? DELESSERT, Rec. Coq. Sam., 1841, pl. XII, fig. 8.
- * *Unio carinifera* LAMARCK, An. sans Vert., VI, 1819, p. 74.—* LEA, Obs., I, 1834, p. 201.—DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 536; 3d ed., II, 1839, p. 668.—* KUSTER, Conch. Cab. Unio, 1861, p. 176, pl. LVI, fig. 1.
- * *Unio glabrata* LAMARCK, An. sans Vert., VI, 1819, p. 75.—* LEA, Obs., I, 1834, p. 201.—DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 537; 3d ed., II, 1839, p. 669.
- * *Unio sulcidens* LAMARCK, An. sans Vert., VI, 1819, p. 77.—* LEA, Obs., I, 1834, p. 202.—DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 539; 3d ed., II, 1839, p. 670.—* ? DELESSERT, Rec. Coq. Sam., 1841, pl. XII, fig. 3.—* CHENU, Ill. Conch., 1858, pl. XII, figs. 5, 5a.
- * *Unio virginiana* LAMARCK, An. sans Vert., VI, 1819, p. 79.—DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 544; 3d ed., II, 1839, p. 671.
- Unio fluviatilis* GREEN, Jl. Mac. Lyceum, 1827, p. 41.
- * ? *Unio raveneli* CONRAD, New F. W. Shells, 1834, p. 39, pl. VI, fig. 4, p. 71.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 206.—

¹ It is hard to say what this is. The figure is like *complanatus*, but the shell, which is labeled *raveneli* Conrad and is in the Philadelphia Academy of Natural Sciences, is like *lugubris*.

- * CHENU, Bib. Conch., 1st ser., III, p. 9, pl. III, fig. 8.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) watereensis* LEA, Syn., 1836, p. 31; 1838, p. 22.
- * *Margaron (Unio) watereensis*, LEA, Syn., 1852, p. 33; 1870, p. 53.
- * *Unio watereensis*, H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—PÆTEL, Conch. Sam., III, 1890, p. 172.
- *† *Unio griffithianus*, LEA, Tr. Am. Phil. Soc., V, 1834, p. 103, pl. XV, fig. 46; Obs., I, 1834, p. 215, pl. XV, fig. 46.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 199; * Biv. Shells, 1843, p. 199, pl. XXIII, fig. 28.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* KUSTER, Conch. Cab. Unio, 1861, p. 208, pl. LXIX, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIX, fig. 449.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.
- * *Margarita (Unio) griffithianus*, LEA, Syn., 1836, p. 31; 1838, p. 22.
- * *Margaron (Unio) griffithianus*, LEA, Syn., 1852, p. 33; 1870, p. 52.
- *† *Unio planilaterus*, CONRAD, Monog., XII (no date after 1838), p. 103, pl. LVII, fig. 1; Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 163.
- * *Margaron (Unio) planilaterus*, LEA, Syn., 1870, p. 51.
- *† *Unio fuliginosus*, LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; Tr. Am. Phil. Soc., X, 1848, p. 78, pl. VII, fig. 19.
- *† *Unio rufusculus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 252; * Tr. Am. Phil. Soc., X, 1852, p. 258, pl. XIV, fig. 7; * Obs., V, 1852, p. 14, pl. XIV, fig. 7.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIII, fig. 377.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.
- * *Margaron (Unio) rufusculus* LEA, Syn., 1852, p. 33; 1870, p. 54.
- * *Mya rigida* WOOD, Ind. Test. Rev., 1856, p. 200, pl. I, supp. fig. 10.
- *† *Unio abbevillensis* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 84; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 51, pl. VI, fig. 34; * Obs., VI, 1858, p. 51, pl. VI, fig. 34.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 143.
- * *Margaron (Unio) abbevillensis* LEA, Syn., 1870, p. 52.
- *† *Unio contractus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 86; * Jl. Ac. N. Sci. Phila., V, 1862, p. 203, pl. XXIX, fig. 272; * Obs., IX, p. 25, pl. XXIX, fig. 272.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) contractus* LEA, Syn., 1870, p. 61.
- *† *Unio rivens* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 169; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 80, pl. XVI, fig. 60; * Obs., VI, 1858, p. 80, pl. XVI, fig. 60.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) rivens* LEA, Syn., 1870, p. 52.
- *† *Unio savannahensis* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 169; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 81, pl. XVI, fig. 61; * Obs., VI, 1858, p. 81, pl. XVI, fig. 61.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) savannahensis* LEA, Syn., 1870, p. 51.
- *† *Unio subflavus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 170; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 90, pl. XIX, fig. 70; * Obs., VI, 1858, p. 90, pl. XIX, fig. 70.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) subflavus* LEA, Syn., 1870, p. 52.
- *† *Unio neusensis* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 41; * Jl. Ac. N. Sci. Phila., V, 1859, p. 60, pl. IV, fig. 208; * Obs., VIII, 1860, p. 64, pl. IV, fig. 208.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) neusensis* LEA, Syn., 1870, p. 51.

¹ Lea changed the name *raveneli* to *watereensis*, because the name *ravenelianus* had been applied by him to a *Unio*.

- *† *Unio cractus* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 41; *Jl. Ac. N. Sci. Phila., V, 1862, p. 62; *Obs., VIII, 1860, p. 66, pl. iv, fig. 210.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) exactus* LEA, Syn., 1870, p. 43.
- *† *Unio roswellensis* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 165; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 205, pl. XXIV, fig. 87; *Obs., VII, 1859, p. 23, pl. XXIV, fig. 87.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) roswellensis* LEA, Syn., 1870, p. 51.
- *† *Unio postellii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 165; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 214, pl. XXVI, fig. 94; *Obs., VII, 1859, p. 32, pl. XXVI, fig. 94.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVII, p. 255.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) postellii* LEA, Syn., 1870, p. 51.
- *† *Unio baldwinensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 170; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 330, pl. LI, fig. 155; *Obs., VIII, 1860, p. 12, pl. LI, fig. 155.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) baldwinensis* LEA, Syn., 1870, p. 51.
- *† *Unio raeensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 171; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 331, pl. LII, fig. 156; *Obs., VIII, 1860, p. 13, pl. LII, fig. 156.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) raeensis* LEA, Syn., 1870, p. 52.
- *† *Unio quadratus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 172; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 338, pl. LIV, fig. 163; *Obs., VIII, 1860, p. 20, pl. LIV, fig. 163.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) quadratus* LEA, Syn., 1870, p. 54.
- *† *Unio squameus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 391; *Jl. Ac. N. Sci. Phila., V, 1862, p. 200, pl. XXVIII, fig. 269; *Obs., IX, 1863, p. 22, pl. XXVIII, fig. 269.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) squameus* LEA, Syn., 1870, p. 51.
- * *Unio lugubris* KUSTER, Conch. Cab. Unio, 1861, p. 234, pl. LXXXIX, fig. 1.
- *† *Unio weldonensis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 191; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 11, pl. III, fig. 8; *Obs., XI, 1867, p. 15, pl. III, fig. 8.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) weldonensis* LEA, Syn., 1870, p. 51.
- *† *Unio gastonensis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 191; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 20, pl. VI, fig. 18; *Obs., XI, 1867, p. 24, pl. VI, fig. 18.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) gastonensis* LEA, Syn., 1870, p. 51.
- *† *Unio aberrans* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 191; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 7, pl. I, fig. 3; *Obs., XI, 1867, p. 11, pl. I, fig. 3.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) aberrans* LEA, Syn., 1870, p. 52.
- *† *Unio mecklenbergensis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 191; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 17, pl. V, fig. 15; *Obs., XI, 1867, p. 21, pl. V, fig. 15.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) mecklenbergensis* LEA, Syn., 1870, p. 51.
- *† *Unio raleighensis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 191; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 6, pl. I, fig. 2; *Obs., XI, 1867, p. 10, pl. I, fig. 2.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) raleighensis* LEA, Syn., 1870, p. 52.
- *† *Unio medioeris* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 192; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 24, pl. VII, fig. 22; *Obs., XI, 1867, p. 28, pl. VII, fig. 22.
- * *Margaron (Unio) medioeris* LEA, Syn., 1870, p. 52.
- *† *Unio indefinitus* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 192; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 15, pl. IV, fig. 12; *Obs., XI, 1867, p. 12, pl. IV, fig. 112.—* B. H. WRIGHT, Check List, 1888.

- * *Margaron (Unio) indefinitus* LEA, Syn., 1870, p. 51.
- *† *Unio humerosus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 161; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 301, pl. XLV, fig. 113; *Obs., XII, 1869, p. 61, pl. XLV, fig. 113.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) humerosus* LEA, Syn., 1870, p. 51.
- *† *Unio beaverensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 161; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 297, pl. XLIV, fig. 109.—* Obs., XII, 1869, p. 57, pl. XLIV, fig. 109.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) beaverensis* LEA, Syn., 1870, p. 52.
- * *Unio bleaverensis* PÆTEL, Conch. Sam., III, 1890, p. 146.
- * ? *Unio neglectus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXV, fig. 329.
- * *Unio tortuosus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXV, fig. 330.—* PÆTEL, Conch. Sam., III, 1890, p. 169.
- * *Unio uharcensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 145; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 304, pl. XLVI, fig. 116; *Obs., XII, 1869, p. 63, pl. XLVI, fig. 116.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) uharcensis* LEA, Syn., 1870, p. 52.
- *† *Unio nubilus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 161; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 298, pl. XLIV, fig. 110; *Obs., XII, p. 58, pl. XLIV, fig. 110.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) nubilus* LEA, Syn., 1870, p. 51.
- *† *Unio yadkinensis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 156; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 32, pl. x, fig. 29; *Obs., XIII, 1874, p. 36, pl. x, fig. 29.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
- *† *Unio amplus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 157; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 39, pl. XIII, fig. 36; *Obs., XIII, 1874, p. 43, pl. XIII, fig. 36.—* B. H. WRIGHT, Check List, 1888.
- *† *Unio ligatus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 157; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 49, pl. XVII, fig. 47; *Obs., XIII, 1874, p. 53, pl. XVII, fig. 47; * B. H. WRIGHT, Check List, 1888.
- *† *Unio subparallelus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 158; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 46, pl. XVI, fig. 44; Obs., XIII, 1874, p. 50, pl. XVI, fig. 44.—* B. H. WRIGHT, Check List, 1888.
- *† *Unio ircinensis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 159; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 44, pl. xv, fig. 42; *Obs., XIII, 1874, p. 48, pl. xv, fig. 42.—* B. H. WRIGHT, Check List, 1888.
- *† *Unio curvatus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 159; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 38, pl. XIII, fig. 35; *Obs., XIII, 1874, p. 42, pl. XIII, fig. 35.
- *† *Unio subsquamosus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 160; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 47, pl. XVI, fig. 45; *Obs., XIII, 1874, p. 51, pl. XVI, fig. 45.—* B. H. WRIGHT, Check List, 1888.
- *† *Unio infuscus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 160; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 51, pl. XVII, fig. 49; *Obs., XIII, 1874, p. 55, pl. XVII, fig. 49.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
- *† *Unio ratus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 160; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 52, pl. XVIII, fig. 51; *Obs., XIII, 1874, p. 56, pl. XVIII, fig. 51; * B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 165.
- *† *Unio basalis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 161; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 48, pl. XVI, fig. 46; *Obs., XIII, 1874, p. 52, pl. XVI, fig. 46.—* B. H. WRIGHT, Check List, 1888.
- *† *Unio subolivaceus* LEA, Pr. Ac. N. Sci. Phila., III, 1873, p. 422; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 57, pl. XX, fig. 56; *Obs., XIII, 1874, p. 61, pl. XX, fig. 56.—* B. H. WRIGHT, Check List, 1888.
- *† *Unio infulgens* LEA, Pr. Ac. N. Sci. Phila., III, 1873, p. 422; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 60, pl. XXI, fig. 59; *Obs., XIII, 1874, p. 64, pl. XXI, fig. 59.—* B. H. WRIGHT, Check List, 1888.

- *† *Unio cirratus* LEA, Pr. Ac. N. Sci. Phila., III, 1873, p. 422; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 55, pl. XIX, fig. 53; *Obs., XIII, 1874, p. 59, pl. XIX, fig. 53.—*B. H. WRIGHT, Check List, 1888.
- *† *Unio corueus* LEA, Pr. Ac. N. Sci. Phila., III, 1873, p. 423; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 59, pl. XX, fig. 58; *Obs., XIII, 1874, p. 63, pl. XX, fig. 58.—*B. H. WRIGHT, Check List, 1888.
- *† *Unio invenustus* LEA, Pr. Ac. N. Sci. Phila., III, 1873, p. 424; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 66, pl. XXII, fig. 62; *Obs., XIII, 1874, p. 70, pl. XXII, fig. 62.—*B. H. WRIGHT, Check List, 1888.
- *† *Arconaita provancheriana* PILSBRY, Nat. Canadienne, XX, 1890, p. 171; *Pr. Ac. N. Sci. Phila., 1892, p. 132, pl. VII, figs. 4-6.¹

† UNIO COMPLANATUS var. JEJUNUS Lea.

- * *Unio jejunos* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 9, pl. IV, fig. 9; *Obs., II, 1838, p. 9, pl. IV, fig. 9.—*TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 234.—*HANLEY, Test. Moll., 1842, p. 199; *Biv. Shells, 1843, p. 199, pl. XXII, fig. 47.—*CATLOW and REEVE, Conch. Nom., 1845, p. 60.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*KUSTER, Conch. Cab. Unio, 1862, p. 265, pl. XC, fig. 1.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXVIII, fig. 347.²—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 155.
- * *Margarita (Unio) jejunos* LEA, Syn., 1836, p. 30; 1838, p. 22.
- * *Margaron (Unio) jejunos* LEA, Syn., 1852, p. 32; 1870, p. 51.
- *† *Unio percoarctatus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 85; *Jl. Ac. N. Sci. Phila., V, 1862, p. 59, pl. III, fig. 206; *Obs., VIII, 1862, p. 63, pl. III, fig. 206.—*SOWERBY, Conch. Icon., XVI, 1866, pl. LIV, fig. 277.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 163.
- * *Margaron (Unio) percoarctatus* LEA, Syn., 1870, p. 51.

† UNIO COMPLANATUS var. QUADRILATERUS Lea.

- * *Unio squalidus* LEA, in part, Pr. Ac. N. Sci. Phila., VII, 1863, p. 192; Jl. Ac. N. Sci. Phila., VI, 1866, p. 22, pl. VII, fig. 20; Obs., XI, 1867, p. 26, pl. VII, fig. 20.—*B. H. WRIGHT, Check List, 1888.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 429, pl. LXXI, fig. 14.
- * *Margaron (Unio) squalidus* LEA, Syn., 1870, p. 51.
- *† *Unio quadrilaterus* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 192; Jl. Ac. N. Sci. Phila., VI, 1866, p. 5, pl. I, fig. 1; Obs., XI, 1867, p. 9, pl. I, fig. 1.—*B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) quadrilaterus* LEA, Syn., 1870, p. 51.

Atlantic drainage from the St. Lawrence to Georgia; west in the British possessions to Manitoba?

† UNIO CATAWBENSIS Lea.

- * *Unio wheatleyi* LEA, Pr. Ac. N. Sci. Phila., 1857, I, p. 85;³ *Jl. Ac. N. Sci. Phila., V, 1861, p. 54, pl. I, fig. 200; Obs., VIII, p. 58, pl. I, fig. 200.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 147.
- * *Margaron (Unio) catawbensis* LEA, Syn., 1870, p. 52.

¹ Said to come from Yamaska River, China. The type is a twisted *Unio complanatus*, probably from Canada.

² In errata he says this is *depressus* of d'Orbigny, not Lamarek. It is hard to say what it is.

³ Preoccupied by Lea and changed by him to *catawbensis*.

* *Unio rostrum* LEA, Pr. Ac. N. Sci. Phila., VIII, 1861, p. 391; * JI. Ac. N. Sci. Phila., V, 1862, p. 201, pl. XXIX, fig. 270; Obs., IX, 1863, p. 23, pl. XXIX, fig. 270.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) rostrum* LEA, Syn., 1870, p. 52.

† * *Unio oblongus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 158; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 52, pl. XVIII, fig. 50; Obs., XIII, 1874, p. 56, pl. XVIII, fig. 50.

North Carolina.

† UNIO TUOMEYI Lea.

* *Unio tuomeyi* LEA, Tr. Am. Phil. Soc., X, 1852, p. 256, pl. XIII, fig. 4; * Obs., V, 1852, p. 12, pl. XIII, fig. 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 170.

* *Margaron (Unio) tuomeyi* LEA, Syn., 1852, p. 33; 1870, p. 53.

† * *Unio barrattii* LEA, Tr. Am. Phil. Soc., X, 1852, p. 256, pl. XIII, fig. 5; * Obs., V, 1852, p. 12, pl. XIII, fig. 5.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) barrattii* LEA, Syn., 1852, p. 37; 1870, p. 245.

* *Unio barratti* PÆTEL, Conch. Sam., III, 1890, p. 145.

† * *Unio pullatus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 262; * JI. Ac. N. Sci. Phila., IV, 1858, p. 57, pl. VIII, fig. 39; * Obs., VI, 1858, p. 57, pl. VIII, fig. 39.—* KUSTER, Conch. Cab. Unio, 1871, p. 247, pl. LXXXIII, fig. 3.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXVI, fig. 335.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

* *Margaron (Unio) pullatus* LEA, Syn., 1870, p. 60.

† * *Unio sublatus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 169; * JI. Ac. N. Sci. Phila., IV, 1858, p. 82, pl. XVI, fig. 62; * Obs., VI, 1858, p. 82, pl. XVI, fig. 62.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) sublatus* LEA, Syn., 1870, p. 57.

† * *Unio fumatus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 171; * JI. Ac. N. Sci. Phila., IV, 1858, p. 88, pl. XVIII, fig. 68; * Obs., VI, 1858, p. 88, pl. XVIII, fig. 68.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) fumatus* LEA, Syn., 1870, p. 52.

† * *Unio viridiradiatus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 154; * JI. Ac. N. Sci. Phila., IV, 1860, p. 336, pl. LIII, fig. 161; * Obs., VIII, p. 18, pl. LIII, fig. 161.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) viridiradiatus* LEA, Syn., 1870, p. 46.

† * *Unio viridans* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 170; * JI. Ac. N. Sci. Phila., IV, 1860, p. 337, pl. LIV, fig. 162; * Obs., VIII, 1860, p. 19, pl. LIV, fig. 162.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) viridans* LEA, Syn., 1870, p. 52.

† * *Unio hallenbeckii* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 170; * JI. Ac. N. Sci. Phila., IV, 1860, p. 328, pl. LI, fig. 154;¹ * Obs., VIII, 1860, p. 10, pl. LI, fig. 154.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) hallenbeckii* LEA, Syn., 1870, p. 52.

† * *Unio salebrosus* LEA, Pr. Ac. N. Sci. Phila., XI, 1859, p. 170; * JI. Ac. N. Sci. Phila., IV, 1860, p. 332, pl. LII, fig. 157; * Obs., VIII, 1860, p. 14, pl. LII, fig. 157.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.

* *Margaron (Unio) salebrosus* LEA, Syn., 1870, p. 52.

† * *Unio verutus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 171; * JI. Ac. N. Sci.

¹ Extra copies of the paper containing this species were published in December, 1858.

Phila., IV, 1860, pl. LIII, fig. 160; *Obs., VIII, 1860, p. 17, pl. LIII, fig. 160.—
* B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 171.

**Margaron (Unio) verutus* LEA, Syn., 1870, p. 57.

*†*Unio chathamensis* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 191; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 21, pl. VI, fig. 19; *Obs., XI, 1867, p. 25, pl. VI, fig. 19.—
* B. H. WRIGHT, Check List, 1888.

Margaron (Unio) chathamensis LEA, Syn., 1870, p. 53.

*†*Unio hastatus* LEA, Pr. Ac. N. Sci. Phila., III, 1873, p. 423; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 56, pl. XIX, fig. 54; *Obs., XIII, 1874, p. 60, pl. XIX, fig. 54.—* B. H. WRIGHT, Check List, 1888.

*†*Unio dooleyensis* LEA, Pr. Ac. N. Sci. Phila., III, 1873, p. 424; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 64, pl. XXII, fig. 60; *Obs., XIII, 1874, p. 68, pl. XXII, fig. 60.—* B. H. WRIGHT, Check List, 1888.

*†*Unio gesnerii* LEA, Pr. Ac. N. Sci. Phila., III, 1874, p. 424; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 65, pl. XXII, fig. 61; *Obs., XIII, 1874, p. 69, pl. XXII, fig. 61.—
* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIV, fig. 446.—* B. H. WRIGHT, Check List, 1888.

North Carolina to Alabama.

† UNIO OCMULGEENSIS LEA.

**Unio ocmulgeensis* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 38; *Jl. Ac. N. Sci. Phila., V, 1862, p. 95, pl. XIV, fig. 243; *Obs., VIII, 1862, p. 99, pl. XIV, fig. 243.—
* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 424, pl. LXVII, fig. 5.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) ocmulgeensis* LEA, Syn., 1870, p. 57.

Georgia.

† UNIO AQUILUS LEA.

**Unio aquilus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 172; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 92, pl. XX, fig. 72; *Obs., VI, 1858, p. 92, pl. XX, fig. 72.—* B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 144.

**Margaron (Unio) aquilus* LEA, Syn., 1870, p. 60.

South Georgia and northern Florida.

† UNIO ICTERINUS CONRAD.

**Unio icterinus* CONRAD, New F. W. Shells, 1834, pl. VI, fig. 5, p. 69.—*FERUSSAC, Guer. Mag., 1835, p. 29.—* CONRAD, Monog., IV, 1836, p. 39, pl. XVIII, fig. 2.—
* MÖLLER, Syn. Nov. Gen., 1836, p. 206.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 20, pl. I, fig. 5.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—
* B. H. WRIGHT, Check List, 1888.

*†*Unio fuliginosus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; * Tr. Am. Phil. Soc., X, 1848, p. 78, pl. VII, fig. 19; *Obs., IV., 1848, p. 52, pl. VII, fig. 19.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 153.

**Margaron (Unio) fuliginosus* LEA, Syn., 1852, p. 33; 1870, p. 53.

*†*Unio curvierianus* LEA, Tr. Am. Phil. Soc., IX, 1852, p. 263, pl. XVI, fig. 16; Obs., V, 1852, p. 19, pl. XVI, fig. 16.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 150.

**Margaron (Unio) curvierianus* LEA, Syn., 1852, p. 32; 1870, p. 51.

*†*Unio curvatus* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 193; *Jl. Ac. N. Sci. Phila.,

- VI, 1866, p. 23, pl. VII, fig. 21; Obs., XI, 1867, p. 27, pl. VII, fig. 21.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 149.
- **Margaron (Unio) curatus* LEA, Syn., 1870, p. 46.
- *†*Unio datus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 161; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 299, pl. XLIV, fig. 3; *Obs., XII, 1869, p. 59, pl. XLIV, fig. 3.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 150.
- **Margaron (Unio) datus* LEA, Syn., 1870, p. 45.
- **Unio vatus* PÆTEL, Conch. Sam., III, 1890, p. 172.
- *†*Unio cuspidatus*, LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 159; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 43, pl. XIV, fig. 50; *Obs., XIII, 1874, p. 47, pl. XIV, fig. 40.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 150.

North Carolina to Georgia.

†UNIO ROANOKENSIS Lea.

- **Margarita (Unio) roanokensis* LEA, Syn., 1836, p. 30; 1838, p. 21.
- **Unio roanokensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 27, pl. VIII, fig. 21; Obs., II, 1838, p. 27, pl. VIII, fig. 21.—*TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 235.—*HANLEY, Test. Moll., 1842, p. 199; *Biv. Shells, 1843, p. 199.—*CATLOW and REEVE, Conch. Nom., 1845, p. 63.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 275.—*CHENU, Ill. Conch., 1858, pl. XX, figs. 6, 6a, 6b.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXVI, fig. 341.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam. III, 1890, p. 165.
- **Margaron (Unio) Lea*, Syn., 1852, p. 32; 1870, p. 51.
- *†*Unio macer* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 86; *Jl. Ac. N. Sci. Phila., VI, 1862, p. 202, pl. XXIX, fig. 271; *Obs., IX, 1863, p. 24, pl. XXIX, fig. 271.
- **Margaron (Unio) macer* LEA, Syn., 1870, p. 51.
- *†*Unio latus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 171; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 334, pl. LIII, fig. 159; *Obs., VIII, 1860, p. 16, pl. LIII, fig. 159.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 157.
- **Margaron (Unio) latus* LEA, Syn., 1870, p. 57.

†UNIO ROANOKENSIS var. NORTHAMPTONENSIS Lea.

- **Unio northamptonensis* LEA,¹ Pr. Ac. N. Sci. Phila., V, 1861, p. 392; *Jl. Ac. N. Sci. Phila., V, 1862, p. 190, pl. XXV, fig. 260; *Obs., IX, 1863, p. 12, pl. XXV, fig. 260.—*B. H. WRIGHT, Check List, 1888.
- **Margaron (Unio) northamptonensis* LEA, Syn., 1870, p. 51.

Connecticut River at Northampton, Massachusetts; south to the Savannah River, Georgia.

†UNIO HOPETONENSIS Lea.

- **Unio hopetonensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 29, pl. IX, fig. 24; *Obs., II, 1838, p. 29, pl. IX, fig. 24.—*TROSCHER, Arch. für Nat., VI, 1839, Pt. 2, p. 235.—*HANLEY, Test. Moll., 1842, p. 198; *Biv. Shells, 1843, p. 198, pl. XX, fig. 21.—*CATLOW and REEVE, Conch. Nom., 1845, p. 60.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*CHENU, Ill. Conch., 1858, pl. XX, figs. 5, 5a, 5b.—*KUSTER, Conch. Cab. Unio, 1861, p. 196, pl. LXIII, fig. 1.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXVII, fig. 349.—*B. H. WRIGHT, Check List,

¹ A large, compressed form, biangulate behind, the posterior point elevated above the base line. Certain specimens are considerably inflated in the post basal region. This is generally taken for *U. complanatus*, but it differs in the characters given above, and seems to be merely a northern variety of *roanokensis*.

1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 412, pl. LII, fig. 3; LIII, fig. 1.

**Margarita (Unio) hopetoneusis* LEA, Syn., 1836, p. 30; 1838, p. 21.

**Margaron (Unio) hopetonensis* LEA, Syn., 1852, p. 32; 1870, p. 51.

Georgia, in streams flowing into the Atlantic; Santee Canal, South Carolina; northern Florida.

† UNIO LIVINGSTONENSIS LeA.

**Unio livingstonensis* LEA, Pr. Ac. N. Sci. Phila., VII, p. 192; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 14, pl. IV, fig. 11; *Obs., XI, 1867, p. 18, pl. IV, fig. 11.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) livingstonensis* LEA, Syn., 1870, p. 52.

North Carolina to Georgia.

† UNIO INUSITATIS LeA.

**Unio inusitatis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 171; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 333, pl. LII, fig. 158; *Obs., VIII, 1860, p. 15, pl. LII, fig. 158.

**Margaron (Unio) inusitatus* LEA, Syn., 1870, p. 51.

**Unio inusitatus* B. H. WRIGHT, Check List, 1888.

Georgia.

† UNIO DIFFERTUS LeA.

**Unio differtus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 158; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 42, pl. XIV, fig. 39; *Obs., XIII, 1874, p. 46, pl. XIV, fig. 39.—* B. H. WRIGHT, Check List, 1888.

Georgia.

† UNIO PLANTII LeA.

**Unio plantii* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 171; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 192, pl. XXI, fig. 76; *Obs., VII, 1859, p. 10, pl. XXI, fig. 76.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVII, fig. 473.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., 1888.

**Margaron (Unio) plantii* LEA, Syn., 1870, p. 43.

Flint River, near Macon, Georgia.

† UNIO STRUMOSUS LeA.

**Unio strumosus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 158; III, 1873, p. 423; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 57, pl. XIX, fig. 55; *Obs., XIII, 1874, p. 61, pl. XIX, fig. 55.—*B. H. WRIGHT, Check List, 1888.

Yadkin River, North Carolina.

† UNIO PURUS LeA.

**Unio purus* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 41; *Jl. Ac. N. Sci. Phila., V, 1862, p. 61, pl. IV, fig. 209; *Obs., VIII, 1862, p. 65, pl. IV, fig. 209.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) purus* LEA, Syn., 1870, p. 43.

Neuse River, near Raleigh, North Carolina.

† UNIO SUBNIGER Lea.

* *Unio subniger* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 172; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 196, pl. XXII, fig. 79; *Obs., VII, 1859, p. 14, pl. XXII, fig. 79.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) subniger* LEA, Syn., 1870, p. 52.

Georgia.

† UNIO BURKENSIS Lea.

* *Unio burkensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 112; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 215, pl. XXVII, fig. 95; *Obs., VII, 1859, p. 33, pl. XXVII, fig. 99.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) burkensis* LEA, Syn., 1870, p. 60.

*† *Unio dissimilis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 161; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 53, pl. XVIII, fig. 52; *Obs., XIII, 1874, p. 57, pl. XVIII fig. 52.—*B. H. WRIGHT, Check List, 1888.

North Carolina; south to Georgia.

† UNIO OBLATUS Lea.

* *Unio ablatus* LEA,¹ Pr. Ac. N. Sci. Phila., VII, 1863, p. 193.

* *Unio oblatus* LEA, Jl. Ac. N. Sci. Phila., VI, 1866, p. 13, pl. IV, fig. 10; *Obs. XI, 1867, p. 17, pl. IV, fig. 10.

**Margaron (Unio) oblatus* LEA, Syn., 1870, p. 60.

Long Creek, Gaston County, North Carolina.

† UNIO ERRANS Lea.

† *Unio paliatus* RAVENEL, letter.²—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.

**Margarita (Unio) paliatus* LEA, Syn., 1836, p. 31; 1838, p. 22.

**Margaron (Unio) paliatus* LEA, Syn., 1852, p. 33; 1870, p. 53.

* *Unio palliatus* RAVENEL, Cat., 1875, p. 57.³—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Unio errans* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 262; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 60, pl. IX, fig. 42; *Obs., VI, 1858, p. 60, pl. IX, fig. 42.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) errans* LEA, Syn., 1870, p. 52.

*† *Unio ricinus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 262; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 61, pl. IX, fig. 43; *Obs., VI, 1858, p. 61, pl. IX, fig. 43.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) ricinus* LEA, Syn., 1870, p. 52.

Near Macon, Georgia; South Carolina.

¹ So written in first description. A typographical error, probably. Dr. Lea afterwards changed the name to *oblatus*.

² Dr. Lea credits this to Ravenel's letter, but neither he nor Ravenel ever described it so far as I know.

³ Ravenel here credits this species to Lea. Lea's specimens, received from Ravenel, are marked Santee Canal and South Carolina. They are rather thin and delicate, of a peculiar texture, and have a shining brownish green epidermis.

† UNIO SAGITTIFORMIS Lea.¹

- * *Unio sagittiformis* LEA, Tr. Am. Phil. Soc., X, 1852, p. 277, pl. XXII, fig. 35; * Obs., V, 1852, p. 33, pl. XXII, fig. 35.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCII, fig. 499.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.
- * *Margaron (Unio) sagittiformis* LEA, Syn., 1852, p. 37; 1870, p. 60.

Oconee River, Georgia; Abbeville, South Carolina.

† UNIO ANGUSTATUS Lea.

- * *Unio angustatus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 114, pl. XVII, fig. 43; * Obs., I, 1834, p. 124, pl. XVII, fig. 43.—* CONRAD, New F. W. Shells, 1834, p. 67.—* FERUS-SAC, Guer. Mag., 1835, p. 26.—* CONRAD, Monog., XI, 1838, p. 98, pl. LIV, fig. 2.—* HANLEY, Test. Moll., 1842, p. 204; * Biv. Shells, 1843, p. 204, pl. XXII, fig. 25.—* CATLOW and REEVE, Conch. Nom., 1845, p. 55.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, Ill. Conch. 1858, pl. XIV, figs. 1, 1a, 1b.—* KUSTER, Conch. Cab. Unio, 1861, p. 178, pl. LVI, fig. 4.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXII, fig. 372.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.
- * *Margarita (Unio) angustatus* LEA, Syn., 1836, p. 35; 1838, p. 23.
- * *Margaron (Unio) angustatus* LEA, Syn., 1852, p. 36; 1870, p. 57.
- *† *Unio extensus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 31; * JI. Ac. N. Sci. Phila., IV, 1858, p. 68, pl. XII, fig. 49; * Obs., VI, 1868, p. 67, pl. XII, fig. 49.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron extensus* LEA, Syn., 1870, p. 60.
- *† *Unio subcylindraceus* LEA, Pr. Ac. N. Sci. Phila., III, 1873, p. 422; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 58, pl. XX, fig. 57; * Obs., XIII, 1874, p. 62, pl. XX, fig. 57.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* B. H. WRIGHT, Check List, 1888.

South Carolina to western Georgia.

† UNIO PERSTRIATUS Lea.

- * *Unio perstriatus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 255, pl. XII, fig. 3; * Obs., V, 1852, p. 11, pl. XII, fig. 3.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCII, fig. 500.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 163.
- * *Margaron (Unio) perstriatus* LEA, Syn., 1852, p. 36; 1870, p. 57.
- *† *Unio gracilentus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 85; * JI. Ac. N. Sci. Phila., V, 1862, p. 58, pl. III, fig. 205; * Obs., VIII, 1862, p. 62, pl. III, fig. 205.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) gracilentus* LEA, Syn., 1870, p. 60.
- *† *Unio perlatus* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 193; * JI. Ac. N. Sci., VI, 1866, p. 15, pl. IV, fig. 13; * Obs., XI, 1867, p. 19, pl. IV, fig. 12.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) perlatus* LEA, Syn., 1870, p. 60.

North and South Carolina.

¹ A very singular shell, much cut away at the anterior base, and, perhaps, abnormal.

† UNIO NAVICULOIDES Lea.

* *Unio naviculoides* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 170; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 94, pl. XX, fig. 74; *Obs., VI, 1858, p. 94, pl. XX, fig. 74.—B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) naviculoides* LEA, Syn., 1870, p. 60.

Georgia.

† UNIO SORDIDUS Lea.

* *Unio sordidus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 254, pl. XII, fig. 1; *Obs., V, 1852, p. 10, pl. XII, fig. 1.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 1853, p. 257.—

* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

* *Margaron (Unio) sordidus* LEA, Syn., 1852, p. 33; 1870, p. 54.

*† *Unio gibbesianus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 254, pl. XII, fig. 2; *Obs., V, 1852, p. 10, pl. XII, fig. 2.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) gibbesianus* LEA, Syn., 1852, p. 33; 1870, p. 54.

Abbeville, South Carolina.

† UNIO SPADICEUS Lea.

* *Unio spadiceus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 86; *Jl. Ac. N. Sci. Phila., V, 1862, p. 55, pl. I, fig. 202; *Obs., VIII, 1862, pl. I, fig. 201.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) spadiceus* LEA, Syn., 1870, p. 48.

North Carolina.

† UNIO STRIGOSUS Lea.

* *Unio strigosus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 287; *Tr. Am. Phil. Soc., VIII, 1843, p. 198, pl. IX, fig. 9; *Obs., III, 1842, p. 36 pl. IX, fig. 9.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857.—* CHENU, Ill. Conch., 1858, pl. XXX, figs. 6, 6a, 6b.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) strigosus* LEA, Syn., 1852, p. 36; 1870, p. 57.

Southwest Georgia; southeast Alabama.

† UNIO LAZARUS Lea.¹

* *Unio lazarus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 251; *Tr. Am. Phil. Soc., XI, 1852, p. 259, pl. XIV, fig. 9; *Obs., V, 1852, p. 15, pl. XIV, fig. 9.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* B. H. WRIGHT, Check List, 1888.—PÆTEL, Conch. Sam., III, 1890, p. 157.

* *Margaron (Unio) lazarus* LEA, Syn., 1852, p. 39; 1870, p. 62.

Abbeville district, South Carolina.

(Group of *Unio downiei*.)

Shell subtrapezoidal, inflated, solid, truncate and more or less triangular behind, sometimes swollen in the postbasal region, with a well-

¹A peculiarly compressed, arcuate form. Some specimens of *U. arcatus* approach it closely.

developed posterior ridge; beaks full, their sculpture not observed; epidermis smooth and shining in the young shell, becoming duller and roughened when old; hinge moderately strong; pseudocardinals radial, roughened; laterals heavy, somewhat remote, curved; there is a more or less developed secondary lateral in the right valve; dorsal scars few, in a row just behind the pseudocardinals and fully exhibited on the inner edge of the shallow beak cavity; naere dull; muscle scars distinct, smooth.

Animal with the marsupium occupying the whole of the outer gills; inner gills free from the abdominal sac a part of their length; palpi rather small; mantle line thick on the border.

† UNIO DOWNIEI Lea.

- * *Unio downiei* LEA, Pr. Ac. Nat. Sci. Phila., II, 1858, p. 166; Jl. Ac. Nat. Sci. Phila., IV, 1859, p. 210, pl. XXV, fig. 91; Obs., VII, 1859, p. 28, pl. XXV, fig. 91.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXVIII, fig. 350.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL, Conch. Sam., III, 1890, p. 151.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 413, pl. LV, figs. 1-3; LVI, fig. 5.
* *Margaron (Unio) downiei* LEA, Syn., 1870, p. 41.

Southern Georgia; north Florida.

† UNIO GEMINUS Lea.

- * *Unio geminus* LEA, Pr. Ac. Nat. Sci. Phila., VIII, 1856, p. 262; * Jl. Ac. Nat. Sci. Phila., 1858, p. 63, pl. X, fig. 45; * Obs., VI, 1858, p. 63, pl. X, fig. 45.—* B. H. WRIGHT, Check List, 1888.
* *Margaron (Unio) geminus* LEA, Syn., 1870, p. 41.
* † *Unio satillaensis* LEA, Pr. Ac. Nat. Sci. Phila., II, 1858, p. 166; * Jl. Ac. Nat. Sci. Phila., IV, 1859, p. 216, pl. XXVII, fig. 96; Obs., VII, 1859, p. 34, pl. XXVII, fig. 96.—* B. H. WRIGHT, Check List, 1888.
* *Margaron (Unio) satillaensis* LEA, Syn., 1870, p. 41.

Georgia.

† UNIO LECONTIANUS Lea.

- * *Margarita (Unio) lecontianus* LEA, Syn., 1836, p. 23; 1838, p. 18.
* *Unio lecontianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 40, pl. XII, fig. 35; * Obs., II, 1838, fig. 40, pl. XII, fig. 35.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll., 1842, p. 188; * Biv. Shells, 1843, p. 188, pl. XXII, figs. 11, 51.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 251.—* CHENU, Ill. Conch., 1858, pl. XXIV, figs. 6, 6a, 6b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIII, fig. 173.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL, Conch. Sam., III, 1890, p. 157.
* *Margaron (Unio) lecontianus* LEA, Syn., 1852, p. 26; 1870, p. 41.
* *Unio contrarius* CONRAD, Pr. Ac. Nat. Sci. Phila., IV, 1849, p. 153; * Ann. and Mag., IV, 1849, p. 301; * Jl. Ac. Nat. Sci. Phila., 1850, p. 276, pl. XXXVII, fig. 7; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.

Georgia.

†UNIO SPISSUS Lea,

- * *Unio spissus* LEA, Pr. Ac. Nat. Sci. Phila., III, 1859, p. 112; * JI. Ac. Nat. Sci. Phila., IV, 1859, p. 208, pl. XXV, fig. 89; * Obs., VII, 1859, p. 26, pl. XXXV, fig. 89.—
 * SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVIII, fig. 476.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.
 * *Margaron (Unio) spissus* LEA, Syn., 1870, p. 41.

Georgia.

(Group of *Unio fisherianus*.)

Shell elongated, rather thin, subcompressed, pointed behind and sometimes slightly biangulate; posterior ridge generally well developed; beaks low, the sculpture consisting of a few coarse, slightly irregular ridges which run nearly parallel with the growth lines, generally heavier where they cross the posterior ridge; epidermis sometimes rayed, shining; pseudocardinals usually compressed; laterals long, straight, and lamellar; beak cavities very shallow and containing two or three dorsal scars at some distance behind the beaks; muscle scars well marked, the posterior ones elongated; nacre generally dull. Animal with the gills greatly elongated, inner the larger, more or less free from the abdominal sac; marsupium occupying nearly or quite the whole length of the outer branchiæ; palpi elongated; mantle thin, thicker on the edge.

†UNIO LANCEOLATUS Lea.

- * *Unio lanceolatus* LEA, Tr. Am. Phil. Soc., 1828, p. 266, pl. III, fig. 2; * Obs., I, 1834, p. 8, pl. III, fig. 2.—* CONRAD, New F. W. Shells, 1834, p. 70.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* CONRAD, Monog. III, 1836, p. 32, pl. XIV., fig. 2.—
 * HANLEY, Test. Moll., 1842, p. 204; * Biv. Shells., 1843, p. 204, pl. XX, fig. 60; XXII, fig. 26.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 251.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, Ill., Conch. 1858, pl. VIII, fig. 1, 1a, 1b.—* KUSTER, Conch. Cab. Unio., 1861, p. 204, pl. LXVIII, fig. 4.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIII, fig. 236.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 156.
 * *Margarita (Unio) lanceolatus* LEA, Syn., 1836, p. 35; 1838, p. 24.
 * *Margaron (Unio) lanceolatus* LEA, Syn., 1852, p. 36; 1870, p. 57.
 * *Unio lanceolata* DESHAYES, Enc. Méth., II, 1830, p. 585; *An. sans Vert., 2d ed., VI, 1835, p. 547; 3d ed., II, 1839, p. 672.

North Carolina; Virginia.

†UNIO VIRIDULUS Lea.¹

- * *Unio viridulus* LEA, Pr. Ac. Nat. Sci. Phila., VII, 1863, p. 193; * JI. Ac. Nat. Sci. Phila., VI, 1866, p. 10, pl. III, fig. 17; * Obs., XI, 1867, p. 14, pl. III, fig. 17.—
 * B. H. WRIGHT, Check List, 1888.
 * *Margaron (Unio) viridulus* LEA, Syn., 1870, p. 58.

Neuse River, near Raleigh, North Carolina.

¹ A young shell, no doubt, which in texture and appearance is much like *U. lanceolatus*, but is bright green and not so pointed behind.

† UNIO PRODUCTUS Conrad.¹

Unio productus CONRAD, Monog., III, 1836, p. 31, pl. XIV, fig. 1.—* HANLEY, Test. Moll., 1842, p. 205; * Biv. Shells, 1843, p. 205, pl. XXIII, fig. 17.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* KUSTER, Conch. Cab. Unio, 1852, p. 66, pl. XVI, fig. 2.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

* *Margarita (Unio) productus* LEA, Syn., 1836, p. 37; 1838, p. 24.

* *Margaron (Unio) productus*, LEA, Syn., 1852, p. 37; 1870, p. 60.

* *Unio barrotti* KUSTER, Conch. Cab. Unio, 1861, p. 189, pl. LIX, fig. 6.

North Carolina; Virginia; Maryland.

† UNIO NASUTULUS Lea. (Emend.)

* *Unio nasutilus* ² LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 192.

* *Unio nasutulus* LEA, Jl. Ac. N. Sci. Phila., VI, 1866, p. 12, pl. III, fig. 9; * Obs., XI, 1867, p. 16, pl. III, fig. 9.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) nasutulus* LEA, Syn., 1870, p. 60.³

Livingston's Creek, Brunswick County, North Carolina.

† UNIO FISHERIANUS Lea.

* *Unio fisherianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 8, pl. IV, fig. 8; * Obs., II, 1838, p. 8, pl. IV, fig. 8.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—* HANLEY, Test. Moll., 1842, p. 206; * Biv. Shells, 1843, p. 206, pl. XXII, fig. 52.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, Ill. Conch., 1858, pl. XX, figs. 4, 4a, 4b.—* KUSTER, Conch. Cab. Unio., 1861, p. 205, pl. LXVIII, fig. 6.—* REEVE, Conch. Icon., XVI, 1865, pl. XXIV, fig. 113.—* HARTMAN and MICHENER, Conch. Cest., 1874, p. 90, fig. 187.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

* *Margarita (Unio) fisherianus* LEA, Syn., 1836, p. 37; 1838, p. 24.

* *Margaron (Unio) fisherianus* LEA, Syn., 1852, p. 37; 1870, p. 60.

* *Unio nasutus* CONRAD (part),⁴ Monog., II, 1838, pl. XVIII, fig. 1.

Virginia; Maryland; Pennsylvania, in the Atlantic drainage.

† UNIO EMMONSII Lea.

* *Unio emmonsii* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 86; * Jl. Ac. N. Sci. Phila., V, 1862, p. 56, pl. II, fig. 203; * Obs., VIII, 1862, p. 60, pl. II, fig. 203.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) emmonsii* LEA, Syn., 1870, p. 60.

North Carolina.

¹ I have seen a large number of specimens of what I suppose is this, none of which exactly agree with Conrad's figure and description, but which I can not refer to anything else.

² So written; no doubt a typographical error.

³ Probably only a variety of *U. productus* Conrad.

⁴ Conrad's first two figures (under fig. 1) are certainly *U. fisherianus*, the third is a female *nasutus*.

† UNIO DISPALANS B. H. Wright.

* *Unio dispalans* B. H. WRIGHT, Nautilus, 1899, p. 50.

† UNIO SUBINFLATUS Conrad.

* *Unio subinflatus* CONRAD, Monog., XI, 1838, p. 97, pl. LIV, fig. 1; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

* *Margaron (Unio) subinflatus* LEA, Syn., 1870, p. 52.

South Georgia; Florida.

† UNIO AHENEUS Lea.

* *Unio aheneus* LEA, Desc. 12 Uniones, 1843 (no paging); * Tr. Am. Phil. Soc., IX, 1846, p. 280, pl. XLI, fig. 9; * Obs., IV, 1848, p. 38, pl. XLI, fig. 9.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 194.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 431, pl. LXXII, fig. 6.

* *Margaron (Unio) aheneus* LEA, Syn., 1852, p. 37; 1870, p. 60.

Florida.

† UNIO WALTONI B. H. Wright.

* *Unio waltoni* B. H. WRIGHT, Pr. Ac. N. Sci. Phila., 1888, p. 114, pl. II, fig. 3; * Check List, 1888.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 431, pl. LXXIII, fig. 7.

Florida.

† UNIO ATTENUATUS Lea.

* *Unio attenuatus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 157; * Jl. Ac. N. Sci. Phila., VIII, 1874, p. 41, pl. XIV, fig. 38; * Obs., XIII, 1874, p. 45, pl. XIV, fig. 38.—* B. H. WRIGHT, Check List, 1888.

Georgia.

† UNIO ROSTRÆFORMIS Lea.

* *Unio rostræformis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 262.

* *Unio rostriformis* LEA, Jl. Ac. N. Sci. Phila., IV, 1858, p. 64, pl. X, fig. 46; * Obs., VI, 1858, p. 64, pl. X, fig. 46.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) rostriformis* LEA, Syn., 1870, p. 60.

* † *Unio maconensis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1857, p. 172; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 93, pl. XX, fig. 73; Obs., VI, 1858, p. 93, pl. XX, fig. 73.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) maconensis* LEA, Syn., 1870, p. 60.

Georgia.

UNIO DUTTONIANUS Lea.

* *Unio duttonianus* LEA, Pr. Ac. N. Sci. Phila., II, 1841, p. 31; * Jl. Ac. N. Sci. Phila., VIII, 1842, p. 236, pl. XXII, fig. 50; * Obs., III, 1842, p. 74, pl. XXII, fig. 50.—

* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, Ill. Conch., 1858, pl. XXXII, figs. 4, 4a, 4b.—SOWERBY, Conch. Icon., XVI, 1868, pl. XCI, fig. 492.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) duttonianus* LEA, Syn., 1852, p. 35; 1870, p. 57.

* *Unio duttonianus* PÆTEL, C. Sam., III, 1890, p. 151.

Ogeechee Canal, Savannah, Georgia.

† UNIO FOLLICULATUS Lea.

- * *Unio folliculatus* LEA, Tr. Am. Phil. Soc., VI, 1858, p. 38, pl. XI, fig. 33; * Obs., II, 1838, p. 33, pl. XI, fig. 33.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll., 1842, p. 204; * Biv. Shells, 1843, p. 204, pl. XXII, fig. 55.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* CHENU, III. Conch., 1858, pl. XXIII, figs. 4, 4a, 4b.—* KUSTER, Conch. Cab. Unio, 1861, p. 202, pl. LXVII, fig. 4.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCI, fig. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.
- * *Margarita (Unio) folliculatus* LEA, Syn., 1836, p. 34; 1838, p. 23.
- * *Margaron (Unio) folliculatus* LEA, Syn., 1852, p. 35; 1870, p. 57.
- * † *Unio eracutus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 159; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 45, pl. XV, fig. 43; * Obs., XIII, 1874, p. 49, pl. XV, fig. 49.—* B. H. WRIGHT, Check List, 1888.
- * † *Unio rostellum* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 160; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 44, pl. XV, fig. 41; * Obs., XIII, 1874, p. 48, pl. XV, fig. 41.—* B. H. WRIGHT, Check List, 1888.

Georgia.

† UNIO SHEPARDIANUS Lea.

- * *Unio shepardianus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 95, pl. XIII, fig. 38; * Obs., I, 1834, p. 207, pl. XIII, fig. 38.—* CONRAD, Monog., VIII, 1837, p. 70, pl. XXXIX.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 203; * Biv. Shells, 1843, p. 203, pl. XXIII, fig. 25.—* KUSTER, Conch. Cab. Unio, 1852, p. 65, pl. XVI, fig. 1.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* ?CHENU, Man., 1859, II, p. 139, fig. 647.—* REEVE, Conch. Icon., XVI, 1865, pl. XIX, fig. 90.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 167.
- * *Margarita (Unio) shepardianus* LEA, Syn., 1836, p. 34; 1838, p. 23.
- * *Margaron (Unio) shepardianus* LEA, Syn., 1852, p. 35; 1870, p. 57.
- * *Unio sheppardianus* CATLOW and REEVE, Conch. Nom., 1845, p. 64.

Altamaha River, Georgia.

(Group of *Unio popeii*.)

Shell elongated, narrowed in front, and biangulate behind, with the base slightly sinuate, feebly sulcate; beaks not prominent, sculptured with rather fine, somewhat broken, often faint ridges, which have a tendency to fall into two rounded loops; pseudocardinals compressed, high, sharp, ragged; laterals long, slightly curved; cavity of the beaks shallow; cicatrices not deep. The shell is only a little thickened in front, and that of the female is slightly swollen at the posterior base.

Animal with the marsupium occupying the whole length of the outer gills; ovisacs not separated by a sulcus; gills long, inner a little the larger throughout, generally free their whole length from the abdominal sac; palpi enormous, wide, oval, slightly pointed behind, united two-thirds of their length to the mantle; mantle double on its edge; branchial opening large.

† UNIO POPEII Lea.

- * *Unio popeii* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 102; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 372, pl. LXVI, fig. 197; * Obs., VIII, 1860, p. 54, pl. LXVI, fig. 197.
 * *Unio popei* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXI, fig. 430.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 605.
 * *Margaron (Unio) popeii* LEA, Syn., 1870, p. 57.

South Texas; northeast Mexico.

† UNIO POEYANUS Lea.

- * *Unio poeyanus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 85; * Obs., VI, 1857, p. 35, pl. XXXII, fig. 30; * Jl. Ac. N. Sci. Phila., III, 1858, p. 315, pl. XXXII, fig. 30.—* SOWERBY, Conch. Icon., XVI, 1868, pl. xc, fig. 486.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 606.
 * *Margaron (Unio) poeyanus* LEA, Syn., 1870, p. 57.

Río de las Balsas, near Coyucan, Mexico.

UNIO VERÆ-PACIS Tristram.

- * *Unio veræ-pacis* TRISTRAM, Proc. Zool. Soc. Lond., 1863, Pt. 3, p. 414.¹—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 171.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 620.

Guatemala, Department of Vera Paz.

Section CANTHYRIA Swainson, 1840.

Shell inflated, suboval, spinose, with a high, rather sharp posterior ridge, above which it is somewhat truncated, the posterior slope being sometimes slightly wrinkled; beaks rather compressed, the sculpture not seen; epidermis smooth and shining, variegated with angular blotches; hinge sharply curved at the center; pseudocardinals rather compressed; laterals short, remote, the hinge plate narrowed; beak cavities rather deep. Animal with the marsupium occupying the whole of the outer gills, forming a smooth pad; branchiæ very large, round below, inner the larger, free nearly their whole length from the abdominal sac; palpi large; mantle double on its edge, sometimes with a few papillæ in front of the branchial opening; branchial opening small; supranal opening colored inside.²

- † *Unio spinosus* LEA, Desc. of New Sp. Unio, 1836, colored figs.; * Tr. Am. Phil. Soc., VI, 1838, p. 57, pl. XVI, fig. 50; * Obs., II, 1838, p. 57, pl. XVI, fig. 50.—* JAY, Cat., 1839, p. 113, pl. v, figs. 1, 2.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll., 1842, p. 182; * Biv. Shells, 1843, p. 182, pl.

¹Only a Latin description was given by Tristram, and the species is not identifiable. It is probably close to *U. popeii*, and may possibly be that.

²Notwithstanding the remarkable character of well-developed spines on the only species of this group, *U. spinosus*, the animal even when gravid does not present any striking peculiarities, and is certainly a *Unio*. I have seen one or two specimens of the *spinosus* with only one spine on one valve and none on the other, and one in the Lea collection *without spines*.

XXIII, fig. 56.—*CATLOW and REEVE, *Conch. Nom.*, 1845, p. 64.—*CONRAD, *Pr. Ac. N. Sci. Phila.*, VI, 1853, p. 257.—*KUSTER, *Conch. Cab. Unio*, 1856, p. 167, pl. XLIX, fig. 1.—*CHENU, *Ill. Conch.*, 1858, pl. XXII, figs. 6, 6a, 6b.—*SOWERBY, *Conch. Icon.*, XVI, 1866, pl. XLIX, fig. 261.—*B. H. WRIGHT, *Check List*, 1888.—*PÆTEL, *Conch. Sam.*, III, 1890, p. 168.

**Margarita (Unio) spinosus* LEA, *Syn.*, 1836, p. 17, colored plate; 1838, p. 16.

**Margaron (Unio) spinosus* LEA, *Syn.*, 1852, p. 23; 1870, p. 35.

**Canthyria spinosa* SWAINSON, *Tr. on Mal.*, 1840, pp. 276, 378.—*AGASSIZ, *Arch. für Nat.*, I, 1852, p. 44.

**Unio spinosa* GOODRICH, *Ill. Nat. Hist.*, II, 1859, p. 523, fig.

Altamaha River, Georgia.

Section **UNIOMERUS** Conrad, 1853.

(Type, *Unio tetralasmus* Say.)

Shell trapezoid, with a rounded posterior ridge, and pointed or feebly biangulate behind; beaks not prominent, sculptured with 10 to 15 curved, rather strong, concentric ridges, which sweep decidedly upward behind, where they are drawn somewhat closely together; epidermis generally rayless, often clothlike; pseudocardinals usually compressed; laterals delicate, slightly curved; muscle scars large, shallow, nacre generally lurid.

Animal with the marsupium occupying the whole length of the outer branchiæ, pad-like; gills large, inner the larger, free nearly or quite the length of the abdominal sac; mantle generally rather thick, thicker and double on the edge.

† **UNIO TETRALASMUS** Say.

**Unio tetralasmus* SAY, *Am. Conch.*, III, 1830, pl. XXIII.¹—*FERUSSAC, *Guer. Mag.*, 1835, p. 26.—*DESHAYES, *An. sans. Vert.*, 2d ed., VI, 1835, p. 555; 3d ed., II, 1839, p. 674.—*HANLEY, *Test. Moll.*, 1842, p. 198; **Biv. Shells*, 1843, p. 198, pl. XXIII, fig. 49.—*CATLOW and REEVE, *Conch. Nom.*, 1845, p. 64.—*CHENU, *Bib. Conch.*, 1st ser., III, 1845, p. 52, pl. x, figs. 1-3.—*CONRAD, *Pr. Ac. N. Sci. Phila.*, VI, 1853, p. 258.—*H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 493.—*B. H. WRIGHT, *Check List*, 1888.—*PÆTEL, *Conch. Sam.*, III, 1890, p. 169.

¹ An abundant, widespread, and very variable species, and if there were no connecting links it would be easy to make a half dozen species out of it. The first described is the *Unio tetralasmus* Say, an elongated, rather smooth, more or less shining form, of which *excultus*, *jamesianus*, *parallelus*, *suberoceus*, and *symmetricus* seem to be synonymous, varying a little in form, color, and smoothness. The variety *camp-todon* of Say is quite rhomboid, and is a rather rough, dark shell, and *U. symmetricus* is practically synonymous. Variety *declivis* is peculiarly drawn out at the post basal point. Variety *manubius* is a large, rather smooth form, rounded on the basal line. All these are Southern and Southwestern forms. Variety *sayi* is a yellowish shell, with very distinct rest marks, and has a more northern distribution than the rest, but it absolutely blends into them. Ward sent a description of his *U. sayi* to Tappan, who published it in the *American Journal of Science and Arts* under date of 1839. In Part XI of the Monography, dated November, 1838, Conrad describes *Unio sayanus* (changed to *sayi* in his notes) and refers it to Ward in the *American Journal of Science and Arts* of 1839. There is some mistake in these dates. In giving the synonymy it is hard to tell in all cases just what authors have meant.

- * *Margarita (Unio) tetralasmus* LEA, Syn., 1836, p. 30; 1838, p. 21.
 * *Margarca (Unio) tetralasmus* LEA, Syn., 1852, p. 32; 1870, p. 50.
 * *Unio excultus* CONRAD, Monog., XI, 1838, p. 99, pl. LIV, fig. 1; Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* PÆTEL, Conch. Sam., III, 1890, p. 152.
 * † *Unio parallelus* CONRAD, Pr. Ac. N. Sci. Phila., I, 1841, p. 20; * JI. Ac. Phila., VIII, 1842, p. 179.¹
 * † *Unio symmetricus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; * Tr. Am. Phil. Soc., X, 1853, p. 73, pl. IV, fig. 11; * Obs., IV, 1848, p. 47, pl. IV, fig. 11.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 169.
 * *Margarca (Unio) symmetricus* LEA, Syn., 1852, p. 32; 1870, p. 52.
 * † *Unio porrectus* CONRAD, JI. Ac. N. Sci. Phila., 1854, p. 296, pl. XXVI, fig. 7.—* B. H. WRIGHT, Check List, 1888.
 * † *Unio suberoceus* CONRAD, JI. Ac. N. Sci. Phila., VII, 1854, p. 297, pl. XXVII, fig. 1.
 * *Unio jamesianus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 84; * JI. Ac. N. Sci. Phila., IV, 1853, p. 53, pl. VI, fig. 35; * Obs., VI, 1858, p. 52, pl. VI, fig. 35.—* B. H. WRIGHT, Check List, 1888.
Margarca (Unio) jamesianus LEA, Syn., 1870, p. 50.

† UNIO TETRALASMUS var. CAMPTODON Say.

- * *Unio camptodon* SAY, Am. Conch., V, 1832, pl. XIII.—* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* HANLEY, Test. Moll., 1842, p. 198; * Biv. Shells, 1843, p. 198, pl. XXI, fig. 17.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 53, pl. XIV, figs. 2, 2a, 2b.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXX, fig. 356.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.—* STEARNS, Pr. U. S. Nat. Mus., XIV, 1891, p. 105.
 * *Margarita (Unio) camptodon* LEA, Syn., 1836, p. 30; 1838, p. 21.
 * *Margarca (Unio) camptodon* LEA, Syn., 1852, p. 32; 1870, p. 50.
 * † *Unio geometricus* LEA, Tr. Am. Phil. Soc., V, 1832, p. 38, pl. IV, fig. 10; * Obs., I, 1834, p. 150, pl. IV, fig. 10.

† UNIO TETRALASMUS var. MANUBIUS Gould.

- * *Unio manubius* GOULD, Pr. Bost. Soc. Nat. Hist., V, 1856, p. 229; * Otia Conch., 1862, p. 218.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 592.
 * *Margarca (Unio) manubius* GOULD, Syn., 1870, p. 54.
 * *Unio manubius* PÆTEL, Conch. Sam., III, 1890, p. 158.

† UNIO TETRALASMUS var. DECLIVIS Say.

- Unio declivis* SAY, Transylvania JI. IV, 1831, p. 527; * Am. Conch., III, 1832, pl. XXXV.—* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 26.—* DESHAYES, An. sans. Vert., 2d ed., VI, 1835, p. 556; 3d ed., II, 1839, p. 675.—* HANLEY, Test. Moll., 1842, p. 200; * Biv. Shells, 1843, p. 200, pl. XXIII, fig. 50.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 46, pl. XIII, figs. 1, 1a, 1b.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* KUSTER, Conch. Cab. Unio, 1852, p. 60, pl. XIV, fig. 1.—* CONRAD, Pr. Ac. N. Sci.

¹ This name had been used by Sowerby for a fossil *Unio*, and Conrad subsequently changed it to *porrectus* on that account, but Sowerby had also used that name for a *Unio*.

Phila., VI, 1853, p. 248.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 150.

**Margarita (Unio) declivis* LEA, Syn., 1836, p. 32; 1838, p. 22.

**Margaron (Unio) declivis* LEA, Syn., 1852, p. 33; 1870, p. 54.

UNIO TETRALASMUS var. SAYI Ward.

**Unio sayi* WARD (in Tappan), Am. Jl. Sci., XXXV, 1839, p. 268, pl. III, fig. 1.—*CONRAD, Monog., XI, 1838?, p. 102, pl. LV, fig. 2.¹—*KUSTER, Conch. Cab. Unio, 1861, p. 246, pl. LXXXIII, fig. 1.—*PÆTEL, Conch. Sam., III, 1890, p. 166.

**Unio sayanus* B. H. WRIGHT, Check List, 1888.

**Unio electrinus* REEVE, Conch. Icon., XVI, 1865, pl. XXV, fig. 121.—*PÆTEL, Conch. Sam., III, 1890, p. 151.

Lower Mississippi drainage north to about latitude 40°; Ohio River system; Alabama River system and southwest through Texas into northern Mexico. Not reported, so far as I know, from the Tennessee and Cumberland rivers.

†UNIO COLUMBENSIS Lea.²

**Unio columbensis* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 31; *Jl. Ac. N. Sci. Phila., IV, 1858, p. 75, pl. XIV, fig. 55; *Obs., VI, 1858, p. 75, pl. XIV, fig. 55.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) columbensis* LEA, Syn., 1870, p. 50.

**Unio columbiensis* PÆTEL, Conch. Sam., III, 1890, p. 148.

Chattahoochee River, Georgia, west to Little Patsaliga Creek, Alabama.

†UNIO OBESUS Lea.

*?*Unio carolinensis* BOSCH, Hist. Nat. de Coq., 1824, III, p. 139, pl. XXIII, fig. 2.—*FERUSSAC, Guer. Mag., 1835, p. 26.—*CHENU, Ill. Conch., 1843, pl. XVIII, fig. 4.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.

*†*Unio obesus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 96, pl. XIII, fig. 26; *Obs., I, 1834, p. 106, pl. XIII, fig. 26.—*CONRAD, N. F. W. Shells, 1834, p. 70.—*HANLEY, Test. Moll., 1842, p. 198; *Biv. Shells, 1843, p. 198, pl. XXII, fig. 34.—*CATLOW and REEVE, Conch. Nom., 1845, p. 61.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—*CHENU, Ill. Conch., 1858, pl. XVIII, figs. 4, 4a, 4b.—*KUSTER, Conch. Cab. Unio, 1861, p. 196, pl. LXIII, fig. 2.—*REEVE, Conch. Icon., XVI, 1864, pl. XVIII, fig. 84.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVIII, fig. 212.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 161.—*SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 428, pl. LXVIII, fig. 6; LXIX, figs. 1, 2, 4; LXXI, fig. 3.

**Margarita (Unio) obesus* LEA, Syn., 1836, p. 30; 1838, p. 21.

**Margaron (Unio) obesus* LEA, Syn., 1852, p. 32; 1870, p. 50.

¹*Unio sayanus* on plate, *U. sayi* in note.

²This species almost merges into *obesus* on the one hand and the southern forms of *tetralasmus* on the other. The distribution of *obesus* is eastern, that of *tetralasmus* western, while *columbensis* occupies a central position in streams of the Gulf drainage.

³It is impossible to tell from the very poor figure what this is. Lea thinks it is *Margaritana margaritifera*, but Bosch did not visit any region where that species is found, and the figure seems to show lateral teeth. It is quite probably *U. obesus*. I think Lea's name had better be used.

- * *Unio declivis* CONRAD, Monog., V, 1836, p. 45, pl. XXIII, fig. 1.
- * † *Unio ineptus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 261, pl. xv, fig. 12; * Obs., V, 1852, p. 17, pl. xv, fig. 12.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
- * *Margaron (Unio) ineptus* LEA, Syn., 1852, p. 31; 1870, p. 50.
- * † *Unio hebes* LEA, Tr. Am. Phil. Soc., X, 1852, p. 267, pl. XVIII, fig. 21; * Obs., V, 1852, p. 23, pl. XVIII, fig. 21.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.
- * *Margaron (Unio) hebes* LEA, Syn., 1852, p. 26; 1870, p. 51.
- * † *Unio rivularis* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* CONRAD, Jl. Ac. N. Sci. Phila., 1854, p. 296.
- * † *Unio cicur* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 39; * Jl. Ac. N. Sci. Phila., V, 1862, p. 93, pl. XIII, fig. 241.—* Obs., VIII, 1862, p. 96, pl. XIII, fig. 241.—B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) cicur* LEA, Syn., 1870, p. 52.
- * *Unio squalidus* LEA, (part) ¹ Pr. Ac. N. Sci. Phila., XV, 1863, p. 192.—* Jl. Ac. N. Sci. Phila., VI, 1866, p. 22, pl. VII, fig. 20; * Obs., XI, 1867, p. 26, pl. VII, fig. 20.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) squalidus* LEA, Syn., 1870, p. 51.
- * † *Unio jewettii* LEA, Pr. Ac. N. Sci. Phila., XI, 1867, p. 81; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 276, pl. XXXVII, fig. 89; * Obs., XII, 1869, p. 36, pl. XXVII, fig. 89.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) jewettii* LEA, Syn., 1870, p. 51.
- * † *Unio pawensis* LEA, ² Pr. Ac. N. Sci. Phila., XII, 1868, p. 161; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 302, pl. XLV, fig. 114; * Obs., XII, 1869, p. 62, pl. XLV, fig. 114.—* B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) pawensis* LEA, Syn., 1870, p. 51.
- * † *Unio rivicolus* CONRAD, Am. Jl. Conch., IV, 1868, p. 280, pl. XVIII, fig. 4.—* B. H. WRIGHT, Check List, 1888.

* † UNIO OBESUS var. BLANDINGIANUS Lea.

- * *Unio blandingianus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 101, pl. xv, fig. 44;³ * Obs., I, 1834, p. 213, pl. xv, fig. 44.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* CONRAD, Monog., V, 1836, p. 46, pl. XXIII, fig. 2.—* HANLEY, Test. Moll., 1842, p. 200; * Biv. Shells, 1843, p. 200, pl. XXII, fig. 1.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* KUSTER, Conch. Cab. Unio, 1852, p. 36, pl. VI, fig. 2.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXV, fig. 187.—* B. H. WRIGHT, Check List, 1888.—* S. H. WRIGHT, Conch. Ex., II, 1888, p. 95.—* PÆTEL, Conch. Sam., III, 1890, p. 146.
- * *Margarita (Unio) blandingianus* LEA, Syn., 1836, p. 32; 1838, p. 22.
- * *Margaron (Unio) blandingianus* LEA, Syn., 1852, p. 33; 1870, p. 54.

¹ Under this name Dr. Lea has certainly described two species, a heavy quadrate, form biangulate behind, with purple nacre—a variety of *complanatus*—and another which is, no doubt, *U. obesus*, and is the shell figured.

² A rough, apparently diseased *obesus*.

³ A decidedly trapezoidal form with cloth-like, dark epidermis, possibly worthy of a varietal name. The transition to the typical state is, however, very complete.

* † **UNIO OBESUS** var. **PALUDICOLUS** Gould.

* *Unio paludicolus* GOULD, Pr. Bost. Soc. Nat. Hist., II, 1845, p. 53.—* GOULD, Otia. Conch., 1852, p. 197.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) paludicolus* LEA, Syn., 1852, p. 33; 1870, p. 54.

* *Unio paludicolor* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

Southern Virginia southward in streams draining into the Atlantic, and throughout the peninsula of Florida.

† **UNIO BISSELLIANUS** Lea.

* *Unio bissealianus* LEA, Pr. Ac. N. Sci. Phila., XI, 1867, p. 81; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 277, pl. XXXVII, fig. 90; * Obs., XII, 1869, p. 37, pl. XXXVII, fig. 90.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Margaron (Unio) bissealianus* LEA, Syn., 1890, p. 50.

Bissell's Pond, Charlotte, North Carolina.

† **UNIO SUBLURIDUS** Simpson.

* *Unio subluridus* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 432, pl. LXXIII, figs. 3, 4.

Orange Springs, Marion County, Florida. I can not be certain as to the relationship of this species, as the beaks are eroded in the only shells I have seen.

Section **MICRONAIAS** Simpson, 1900.

(Type, *Unio aratus* Lea.)

Shell small, oval, a little produced near the posterior base, with a moderate posterior ridge and pointed near the base behind; beaks rather prominent, the sculpture being apparently rather fine, irregularly concentric ridges, having a tendency to fall into two loops; the whole surface strongly and closely concentrically ridged; pseudocardinals compressed, high, slightly curved upward; laterals compressed, curved; beak cavities moderately deep; nacre whitish; anterior muscle scars deep, rough; posterior well marked.

Animal with the marsupium pad-like, occupying all but the extreme posterior part of the outer gills; branchiæ elongated, wider behind, inner the larger throughout, free from the abdominal sac or united to it;¹ palpi large, rounded behind; mantle with thickened border; anal opening crenulate.

¹ In some specimens free throughout; in others entirely united.

† UNIO ARATUS Lea.

* *Unio aratus* LEA, Disc. 12 Uniones, 1843; *Tr. Am. Phil. Soc., IX, 1845, p. 282, pl. XLII, fig. 12; *Obs., IV, 1848, p. 40, pl. XLII, fig. 12.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIV, fig. 320.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Margaron (Unio) aratus* LEA, Syn., 1852, p. 28; 1870, p. 35.

Central America.

† UNIO GRANADENSIS Lea.

* *Unio granadensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 95; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 293, pl. XLII, fig. 103; *Obs., XII, 1869, p. 53, pl. XLII, fig. 103.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) granadensis* LEA, Syn., 1870, p. 35.

Lake Nicaragua.

The following species are of Rafinesque, but I am utterly unable to make anything out of them:

Unio dilatata, elliptica, fasciata, fragilis, levigata, nervosa, viridis, zonata, all in Monograph, 1820; also *Unio bicolor, calendis, castaneus, chloris, diaphanus, fontinalis, fulvus, lasmabrachys, montanus, pallens, platiolus, rivularis, rimosus, teneltus, venus*, all in Continuation of Monograph, 1831.

Other indeterminate *Unionide* of Rafinesque are: *Amblema antrosa, costata, gibbosa, olivaria, rubra, torulosa; Lasmonos fragilis; Obovaria obovalis, pachostea; Obliquaria triangularis, attenuata, atroviolacea, bullata, cliffordiana, cuprea, cyphia, ellipsaria, fasciolaris, flava, flexuosa, lateralis, lineolata, nodulata, obliquata, pusilla, quadrula, sintoxia, sinuata, subrotunda*, all in Monograph, 1820. *Bariosta diploderma, ponderosus, vittatis; Epilobasma biloba; Toxolasma cinerescens, cyclips, flexus*, in Continuation of Monograph, 1831.

The following are also indeterminate and spurious Unios:

Unio tahetianus CATLOW and REEVE, Conch. Nom., 1845, p. 64. Is probably *U. taitianus* Lea.

Unio largillierti PHILIPPI, Menke's Zeits., 1847, p. 94.

Unio musicus SPENGLER, Skriv. Nat. Selsk., III, 1793, p. 67.

Unio radula SAY, N. Harm. Diss., 1829, p. 323.

Unio plombarius VILLA, Disp. Conch. Terr. Fluv., 1841, p. 62.

Unio pequotianus LINSLEY, Am. Jl. Sci., 1845, p. 277.

Unio iridescens CONRAD, Cov. of Monog. No. 11.

Unio angusta LAMARCK, An. sans. Vert., VI, 1819, p. 80.

Unio conus SPENGLER, Skriv. Nat. Selsk., 1792.

Unio delphinus SPENGLER, Skriv. Nat. Selsk., 1793, p. 63.

Unio doumeti LETOURNEUX and BOURGNIGNAT, Prod. Mal. Tunis., p. 163.

Unio distortus BEAN, Ann. and Mag., 1836, p. 376, fig. 53.

Unio uber CONRAD, Am. Jl. Conch., II, p. 279.

Mya obovata SOLANDER, Portland Cat., p. 100.

Genus PLEUROBEMA (Rafinesque, 1820) Agassiz.

(Type, *Unio clava* Lamarck.¹)*Pleurobema* RAFINESQUE, Ann. Gen. Sci. Phys., Brux, 1820, p. 313.

Shell solid, triangular to rhomboid, usually with a prominent umbonal region; beaks at or near the anterior end of the shell, incurved and pointed forward over a small but well developed lunule; beak sculpture coarse, consisting of a few irregular, often broken ridges, which curve upward posteriorly; posterior ridge present, but low and rounded; epidermis showing the rest periods plainly, tawny to olive, often ornamented with rays which show a tendency to break into square spots; hinge rather strong, the plate generally narrow; pseudocardinals triangular, ragged; laterals reaching nearly or quite to the pseudocardinals, double in both valves, in the right valve the inner being smaller; muscle scars deep, the posterior rounded; cavity of the beaks shallow; nacre silvery; male and female shells essentially alike.

Animal having the inner gills much the larger, rounded below, free from the abdominal sac for a part or all of their length; marsupium occupying the entire outer gills, the ovisacs in some cases seeming to be arranged in pairs; animal generally yellowish to salmon red, sometimes more or less brown or blackish.

(Group of *Pleurobema clava*.)

Shell solid, triangular; beaks high, generally anterior; beak sculpture consisting of three or four broken, coarse, irregular ridges; epidermis yellowish or tawny, marked with broken green rays which show a tendency to form square spots; pseudocardinals often somewhat lengthened and more or less parallel with the laterals.

Animal having the inner gills the larger except at the extreme posterior end, free nearly or quite their whole length from the abdominal sac; marsupium occupying the entire outer gills; branchial opening rather large, with small papillæ; anal opening with minute papillæ or crenulations. Animal dirty whitish to salmon.

† PLEUROBEMA CLAVA Lamarck.

¹*Unio clava* LAMARCK, An. sans Vert., VI, 1819, p. 74.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 537; 3d ed., II, 1839, p. 669.—* CONRAD, Monog., I, 1835, p. 5, pl. III, fig. 1.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* CONRAD, Pt. Ac.

¹ I regret that I have not been able to examine more of the animals of this group, especially those of the gravid females. The shells on the one hand approach very close to those of *Quadrula* in appearance, and to *Unio* on the other hand. But all of them have shallow beak cavities, while those of *Quadrula* are deep, and the embryos of *Pleurobema* are contained in the outer gills only. The shells are generally more solid and more triangular than those of *Unio*, and the pattern of coloring is different from that of either genus. It stands between the two genera. I place *Unio asopus* and *varicosus* in *Pleurobema* with some hesitation, though in a specimen of the former containing comparatively few embryos there were none in the inner gills, and their beak cavities are shallow.

- N. Sci. Phila., VI, 1853, p. 246.—* KUSTER, Conch. Cab. Unio, 1852, p. 39, pl. VII, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIX, fig. 354.
- * *Pleurobema clava* AGASSIZ, Arch. für Naturg., I, 1852, p. 49.
- * *Unio clarus* REEVE, Conch. Syst., I, 1841, p. 117, pl. LXXXVIII, fig. 3.—* HANLEY, Test. Moll., 1842, p. 187; * Biv. Shells, 1843, p. 187, pl. XX, fig. 52.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.—* CALL, Tr. Acad. Sci. St. Louis, VII, 1895, p. 9, pl. I.
- * *Margarita (Unio) clava* LEA, Syn., 1836, p. 22; 1838, p. 18.
- * *Margaron (Unio) clava* LEA, Syn., 1852, p. 26; 1870, p. 40.
- * † *Unio patulus* LEA,¹ Tr. Am. Phil. Soc., III, 1829, p. 44, pl. XII, fig. 20; * Obs., I, 1834, p. 55, pl. XII, fig. 20.—* CONRAD, Monog., X, 1838, p. 92, pl. I, fig. 2.—* HANLEY, Test. Moll., 1842, p. 187; * Biv. Shells, 1843, p. 187, pl. XXII, fig. 27.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XVI, figs. 6, 6a, 6b.—* KUSTER, Conch. Cab. Unio, 1861, p. 259, pl. LXXXVII, fig. 5.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 162.
- * *Margarita (Unio) patulus* LEA, Syn., 1836, p. 22; 1838, p. 18.
- * *Margaron (Unio) patulus* LEA, Syn., 1852, p. 26; 1870, p. 40.
- * *Unio cuneatus* SAY, Am. Conch., VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 28.

Ohio, Cumberland, and Tennessee river systems. Reported from Iowa City, Iowa; St. Peter's River, Minnesota, and from Nebraska.

† PLEUROBEMA MACULATA Conrad.

- * *Unio maculatus* CONRAD, New F. W. Shells, 1834, p. 30, pl. IV, fig. 4, p. 70.—* FERUSSAC, Guer. Mag., 1835, p. 29.—MÖLLER, Syn. Nov. Gen., 1836, p. 202.—* HANLEY, Test. Moll., 1842, p. 203; * Biv. Shells, 1843, p. 203.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 17, pl. III, fig. 7.—* CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 252.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* KUSTER, Conch. Cab. Unio, 1861, p. 216, pl. LXXII, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 158.
- * *Margarita (Unio) maculatus* LEA, Syn., 1836, p. 34; 1838, p. 23.
- * *Margaron (Unio) maculatus* LEA, Syn., 1852, p. 24; 1870, p. 38.²

Tennessee River system.

† PLEUROBEMA HOLSTONENSIS Lea.³

- * *Unio holstonensis* LEA, Pr. Am. Phil. Soc., I, 1840, p. 288; * Tr. Am. Phil. Soc., VIII, 1842, p. 212, pl. XV, fig. 27; * Obs., III, 1842, p. 50, pl. XV, fig. 27.—* HAN-

¹No specimen in the Lea collection exactly agrees with the figure of this species and Lea gives no exact locality for the type; but from a careful study of his shells and the figure and description I am convinced that it is a somewhat compressed form of the very variable *clava*, which has rather low beaks, that are not placed as far forward as usual. There seems to be a complete set of intermediates.

²Dr. Lea is inclined to believe (see above citation) that Conrad's *Unio maculatus* is the same as his own *ravenelianus*, and if this were the case Lea's name should have precedence. From an examination of specimens in the Philadelphia Academy of Natural Sciences and Conrad's figure and description, I am forced to differ from Dr. Lea, as I consider the species close to Lamarck's *clava*.

³The type, a young shell, is certainly the same as *Unio lawii*, and there does not seem to be any material difference between it and the types of *U. bellulus* and *wundus*. The figure is hardly accurate.

LEY, Test. Moll., 1842, p. 213.—*CONRAD, Pr. Ac. N. Sci., Phila., VI, 1853, p. 250.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CHENU, Ill. Conch., 1858, pl. XXXII, figs. 1, 1a, 1b.—*KUSTER, Conch. Cab. Unio, 1862, p. 287, pl. XCVI, fig. 4.—*B. H. WRIGHT, Check List, 1888.

**Margarou (Unio) holstonensis* LEA, Syn., 1852, p. 25; 1870, p. 38.

**Unio mundus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 83; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 40, pl. XIV, fig. 38; *Obs., XI, 1867, p. 44, pl. XIV, fig. 38.—*REEVE, Conch. Icon., XVI, 1864, pl. XVI, fig. 72.¹—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 160.

**Margarou (Unio) mundus* LEA, Syn., 1870, p. 40.

†**Unio lawi* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 189; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 8, pl. II, fig. 4; *Obs., XIII, 1874, p. 12, pl. II, fig. 4.—*B. H. WRIGHT, Check List, 1888.

†**Unio pattinoides* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 193; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 16, pl. IV, fig. 12; *Obs., XIII, 1874, p. 20, pl. IV, fig. 12.—*B. H. WRIGHT, Check List, 1888.

†**Unio bellulus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 161; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 50, pl. XVII, fig. 48; *Obs., XIII, 1874, p. 54, pl. XVII, fig. 48.—B. H. WRIGHT, Check List, 1888.

Tennessee River system.

† PLEUROBEMA BOURNIANUS Lea.

**Unio bournianus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 288; *Tr. Am. Phil. Soc., VIII, 1842, p. 213, pl. XV, fig. 28; *Obs., III, p. 51, pl. XV, fig. 28.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CHENU, Ill. Conch., 1858, pl. XXVIII, figs. 2, 2a, 2b.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 146.

**Margarou (Unio) bournianus* LEA, Syn., 1852, p. 25; 1870, p. 39.

Sciota River, near Chillicothe, Ohio.

† PLEUROBEMA EDGARIANUS Lea.

**Unio edgarianus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 288; *Tr. Am. Phil. Soc., VIII, 1842, p. 214, pl. XV, fig. 30; Obs., III, 1842, p. 52, pl. XV, fig. 30.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CHENU, Ill. Conch., 1858, pl. XXIX, figs. 5, 5a, 5b.—*KUSTER, Conch. Cab., 1861, p. 213, pl. LXX, fig. 5.—*MUSGRAVE, Phot. Conch., 1863, pl. II, fig. 6.—*REEVE, Conch. Icon., XVI, 1864, pl. XV, fig. 65.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 151.

**Margarou (Unio) edgarianus* LEA, Syn., 1852, p. 25; 1870, p. 39.

†**Unio obuncus* LEA, Pr. Ac. N. Sci., I, 1871, p. 192; *Jl. Ac. N. Sci., VIII, 1874, p. 9, pl. II, fig. 5; *Obs., XIII, 1874, p. 13, pl. II, fig. 5.—*B. H. WRIGHT, Check List, 1888.

†**Unio andersonensis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 155; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 36, pl. XII, fig. 33; *Obs., XIII, 1874, p. 40, pl. XII, fig. 33.—*B. H. WRIGHT, Check List, 1888.

Tennessee River system.

¹In the errata Reeve says this is not *mundus*, but that it is nearer *cuneolus* and *moeresianus*. I have compared it with authentic specimens, and it is certainly nearer *mundus* than either of the other mentioned species.

†PLEUROBEMA CUNEOLUS Lea.

* *Unio cuneolus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 286; * Tr. Am. Phil. Soc., VIII, 1842, p. 193, pl. VII, fig. 3; * Obs., III, 1842, p. 31, pl. VII, fig. 3.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XXX, figs. 2, 2a, 2b.—* KUSTER, Conch. Cab. Unio, 1861, p. 182, pl. LXVII, fig. 4.—* REEVE, Conch. Icon., XVI, 1865, pl. XXIII, fig. 107.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

* *Margaron (Unio) cuneolus* LEA, Syn., 1852, p. 24; 1870, p. 38.

†* *Unio clinchensis* LEA, Pr. Ac. N. Sci. Phila., XI, 1867, p. 81; * JI. Ac. N. Sci. Phila., VI, 1868, p. 278, pl. XXXVII, fig. 91; * Obs., XII, 1869, p. 38, pl. XXXVII, fig. 91.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margaron (Unio) clinchensis* LEA, Syn., 1870, p. 38.

Tennessee River system.

†PLEUROBEMA LESLEYI Lea.

* *Unio lesleyi* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 306; * JI. Ac. N. Sci. Phila., IV, 1860, p. 352, pl. LVIII, fig. 177; * Obs., VIII, 1860, p. 34, pl. LVIII, fig. 177.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) lesleyi* LEA, Syn., 1870, p. 40.

Kentucky; Tennessee.

†PLEUROBEMA RAVENELIANA Lea.

* *Unio ravenelianus* LEA,¹ Tr. Am. Phil. Soc., V, 1834, p. 32, pl. III, fig. 5; * Obs., I, 1834, p. 144, pl. III, fig. 5.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 187; * Biv. Shells, 1843, p. 187, pl. XX, fig. 59.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* KUSTER, Conch. Cab. Unio, 1862, p. 269, pl. XCI, fig. 1.—* REEVE, Conch. Icon., XVI, 1864, pl. XVI, fig. 70.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) ravenelianus* LEA, Syn., 1836, p. 22; 1838, p. 18.

* *Margaron (Unio) ravenelianus*, LEA, Syn., 1852, p. 26; 1870, p. 40.

* *Unio rudis* CONRAD, Monog., IX, 1837, p. 76, pl. XLIII, fig. 1.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 257.

* *Unio decisus* KUSTER. (part) Conch. Cab. Unio, 1852, p. 41, pl. VIII, fig. 1.

Kentucky; Tennessee; western North Carolina.

†PLEUROBEMA OVIFORMIS Conrad.

* *Unio oviformis* CONRAD, New F. W. Shells, 1834, p. 46, pl. III, fig. 6; p. 70.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 208.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 22, pl. II, fig. 7.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Margaron (Unio) oviformis* LEA, Syn., 1852, p. 26; 1870, p. 40.

Tennessee.

¹ In May, 1834, Conrad published a *Unio raveneli* in New Fresh Water Shells (p. 39) which belongs to the *complanatus* group. Lea's name, *ravenelianus*, appeared in August or September of the same year. Conrad, claiming priority for his name, substituted that of *Unio rudis* for Lea's species. As the names are really different, that of Lea had better stand.

† PLEUROBEMA ACUENS Lea.

- * *Unio acuens* LEA, Pr. Ac. Nat. Sci. Phila., I, 1871, p. 190; * JI. Ac. Nat. Sci. Phila., VIII, 1874, p. 27, pl. VIII, fig. 24; * Obs., XIII, 1874, p. 31, pl. VIII, fig. 24.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 143.

Tennessee River system.

† PLEUROBEMA ORNATA Lea.

- * *Unio ornatus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 4; * JI. Ac. N. Sci. Phila., V, 1862, p. 85, pl. XI, fig. 234; * Obs., VIII, 1862, p. 89, pl. XI, fig. 234.—* PÆTEL, Conch. Sam., III, 1890, p. 162.
* *Margaron (Unio) ornatus* LEA, Syn., 1870, p. 57.¹

Alabama.

† PLEUROBEMA APPRESSA Lea.

- * *Unio appressus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 189; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 12, pl. III, fig. 8.—* Obs., III, 1874, pl. III, fig. 8.—* B. H. WRIGHT, Check List, 1888.
* *Unio argenteus* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVII, fig. 204.
† *Unio tuscumbiensis* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 191; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 11, pl. III, fig. 7; * Obs., XIII, 1874, p. 15, pl. III, fig. 7.—* B. H. WRIGHT, Check List, 1888.
* *Unio flavidus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 156; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 28, pl. IX, fig. 25; * Obs., XIII, 1874, p. 32, pl. IX, fig. 25.—* B. H. WRIGHT, Check List, 1888.

Tennessee River system.

† PLEUROBEMA TESSERULÆ Lea.

- * *Unio tesserulæ* LEA, Pr. Ac. N. Sci. Phila., VI, 1861, p. 392; * JI. Ac. N. Sci. Phila., VI, 1866, p. 40, pl. XV, fig. 39; * Obs., XI, 1867, p. 44, pl. XIV, fig. 38.—* B. H. WRIGHT, Check List, 1888.
* *Margaron (Unio) tesserulæ* LEA, Syn., 1870, p. 36.

Nolachucky River, Tennessee.

† PLEUROBEMA VALIDA Lea.

- * *Unio validus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 189; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 6, pl. I, fig. 2; * Obs., III, 1874, p. 10, pl. I, fig. 2.—* B. H. WRIGHT, Check List, 1888.

Tennessee.

† PLEUROBEMA ABACUS Haldeman.²

- * *Unio abacus* HALDEMAN, JI. Ac. N. Sci. Phila., VIII, 1842, p. 202.—* CONRAD, Pr. Ac. N. Sci. Phila., VI., 1853, p. 244.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 143.
* *Margaron (Unio) abacus* LEA, Syn., 1852, p. 24; 1870, p. 38

Tennessee and southwest Virginia.

¹ The only specimen I have seen (the type) is a young shell, which I can not refer with certainty to any other species.

² As this species was not figured and I have not seen the type, I am unable to be absolutely certain what it is. In the Lea collection are four specimens labeled "*Unio abacus* Hald.," which are close to *appressus*.

† PLEUROBEMA SWORDIANA S. H. Wright.

* *Unio swordianus* S. H. WRIGHT, Naut., XI, 1897, p. 4.¹

* *Pleurobema swordiana*, SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 81, pl. iv, fig. 4.

Head waters of the Tennessee River.

† PLEUROBEMA TUMESCENS Lea.

* *Unio tumescens* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; Tr. Am. Phil. Soc., X, 1848, p. 71, pl. III, fig. 7; Obs., IV, 1848, p. 45, pl. III, fig. 7.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 170.

* *Margaron (Unio) tumescens* LEA, Syn., 1852, p. 25; 1870, p. 38.

† * *Unio radiosus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 192; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 13, pl. III, fig. 9; * Obs., XIII, 1874, p. 17, pl. III, fig. 9.—* B. H. WRIGHT, Check List, 1888.

Tennessee. The localities, Alexandria, Louisiana, of Lea, for the type, and Ouachita River, Arkansas, given by Call, are open to doubt.

† PLEUROBEMA DOLABELLOIDES Lea.

* *Unio dolabelloides* LEA, Pr. Am. Phil. Soc., I, 1840, p. 288; * Tr. Am. Phil. Soc., VIII, 1842, p. 215, pl. XV, fig. 31; * Obs., III, 1842, p. 53, pl. XV, fig. 51.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Ill. Conch., 1858, pl. XXIX, figs. 4, 4a, 4b.—* KUSTER, Conch. Cab., 1861, p. 214, pl. LXXI, fig. 3.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVII, fig. 205.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

* *Margaron (Unio) dolabelloides* LEA, Syn., 1852, p. 35; 1870, p. 56.

† * *Unio thorntonii*, LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 83; * JI. Ac. N. Sci. Phila., VI, 1866, p. 38, pl. XIV, fig. 36; * Obs., XI, 1867, p. 42, pl. XIV, fig. 36.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

* *Margaron (Unio) thorntonii* LEA, Syn., 1870, p. 56.

† * *Unio mooresianus* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 83; * JI. Ac. N. Sci. Phila., VI, 1866, p. 39, pl. XIV, fig. 37; * Obs., XI, 1867, p. 43, pl. XIV, fig. 37.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) mooresianus* LEA, Syn., 1870, p. 39.

* *Unio moorenianus* PÆTEL, Conch. Sam., III, 1890, p. 159.

† * *Unio recurvatus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 192; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 10, pl. II, fig. 6; * Obs., XIII, 1874, p. 14, pl. II, fig. 6.—* B. H. WRIGHT, Check List, 1888.

† * *Unio circumactus* LEA,² Pr. Ac. N. Sci. Phila., I, 1871, p. 192; * JI. Ac. N. Sci. Phila., VIII, 1874, pl. IV, fig. 11; Obs., XIII, 1874, p. 19, pl. IV, fig. 11.—* B. H. WRIGHT, Check List, 1888.

Tennessee River drainage.

¹ I am a little in doubt as to the validity of this species.

² The figured type is certainly an adult, and that of *dolabelloides* the young of the same species.

† PLEUROBEMA SUBGLOBATA Lea.

- * *Unio subglobatus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 191; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 7, pl. I, fig. 3; *Obs., XIII, 1874, p. 11, pl. I, fig. 3.—*B. H. WRIGHT, Check List, 1888.

Cumberland and Tennessee rivers.

† PLEUROBEMA CRUDA Lea.

- * *Unio crudus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 190; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 14, pl. IV, fig. 10; *Obs., XIII, 1874, p. 18, pl. IV, fig. 10.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 149.

Cumberland, French Broad, and Holston rivers, Tennessee; Swamp Creek, Murray County, Georgia.

† PLEUROBEMA BARNESIANA Lea.

- * *Unio barnesianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 31, pl. x, fig. 26; *Obs., II, 1838, p. 31, pl. x, fig. 26.—*TROSCHEL, Arch. für. Naturg., V, 1839, Pt. 2, p. 235.—*HANLEY, Test. Moll., 1842, p. 185; *Biv. Shells, 1843, p. 185, pl. XXIII, fig. 14.—*CATLOW and REEVE, Conch. Nom., 1845, p. 56.—*CONRAD Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CHENU, Ill. Conch., 1858, pl. XIX, figs. 2, 2a, 2b.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIV, fig. 180.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 145.
- **Margarita (Unio) barnesianus* LEA, Syn., 1836, p. 20; 1838, p. 17.
- **Margaron (Unio) barnesianus* LEA, Syn., 1852, p. 24; 1870, p. 38.
- **Unio ravenelianus* REEVE, Conch. Icon., XVI, 1864, pl. XVI, fig. 70.
- †* *Unio tellicoensis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 155; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 31, pl. x, fig. 28; *Obs., XIII, 1874, p. 35, pl. x, fig. 28.—*B. H. WRIGHT, Check List, 1888.

Cumberland and Tennessee river systems.

PLEUROBEMA LYONII Lea.

- * *Unio lyonii* LEA, Pr. Ac. N. Sci. Phila., IX, 1865, p. 89; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 259, XXXII, fig. 74; *Obs., XII, 1869, p. 19, pl. XXXII, fig. 74.—*B. H. WRIGHT, Check List, 1888.

Margaron (Unio) lyonii LEA, Syn., 1870, p. 56.

Tennessee River system.

PLEUROBEMA PUDICA Lea.

- * *Unio pudicus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 92; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 346, pl. LVI, fig. 171; *Obs., VIII, 1860, p. 28, pl. LVI, fig. 171.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXI, fig. 427.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 164.
- **Margaron (Unio) pudicus* LEA, Syn., 1870, p. 37.
- **Unio subrotundus* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVII, fig. 201.

Tennessee River system.

† PLEUROBEMA BIGBYENSIS Lea.

- * *Unio bigbyensis* LEA, Pr. Am. Phil. Soc., II, 1841, p. 30; *Tr. Am. Phil. Soc., VIII, 1843, p. 237, pl. XXII, fig. 51; *Obs., III, 1842, p. 75, pl. XXII, fig. 51.—

* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XXII, figs. 5, 5a, 5b.—* KUSTER, Conch. Cab. Unio, 1862, p. 279, pl. XCIV, fig. 3.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLI, fig. 227.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Margaron (Unio) bigbyensis* LEA, Syn., 1852, p. 24, 1870, p. 38.

Tennessee River drainage; Indian Territory? Texas? The two last localities very doubtful.

(Group of *Pleurobema decisa*.)

Shell solid, inflated, ovate to elliptical, very inequilateral, somewhat truncated in front and rounded or bluntly pointed behind, wedge-shaped when looked at from above; base slightly angled in front, then nearly straight for two-thirds of its length, from whence it curves to the posterior point; beaks high, curved inward and forward; beak sculpture consisting of a few coarse, irregularly concentric ridges which curve slightly upward behind; epidermis tawny to brownish, rayless, the rest periods very distinctly marked by dark bands; pseudo-cardinals stumpy, ragged, often showing a tendency to elongation in the direction of the axis of the shell.

Animal having the branchiæ rather small, inner the larger, free nearly or quite the entire length of the abdominal sac, marsupium occupying all but the extreme posterior end of the outer gills; branchiæ and anal openings papillose.

† PLEUROBEMA DECISA Lea.

* *Unio decisa* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 92, pl. XII, fig. 23; * Obs., I, 1834, p. 102, pl. XII, fig. 23.—* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSAC, Guer. Mag., 1835, p. 28.—* CONRAD, Monog., I, 1835, p. 6, pl. III, fig. 2.—* HANLEY, Test. Moll., 1842, p. 187; Biv. Shells, 1843, p. 187, pl. XXII, fig. 21.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* KUSTER, Conch. Cab. Unio, 1852, p. 41, pl. VII, fig. 3.¹—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XVIII, figs. 3, 3a, 3b.—* REEVE, Conch. Icon., XVI, 1864, pl. XVI, fig. 71.—B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 150.

* *Margarita (Unio) decisa* LEA, Syn., 1836, p. 21; 1838, p. 18.

* *Margaron (Unio) decisa* LEA, Syn., 1852, p. 26; 1870, p. 40.

* *Unio scalenius* SAY, Am. Conch., VI, 1834.

†* *Unio anaticulus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 40; * Jl. Ac. N. Sci. Phila., 1862, p. 92, pl. XIII, fig. 240; * Obs., VIII, 1862, p. 96, pl. XIII, fig. 240.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVII, fig. 199.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Margaron (Unio) anaticulus* LEA, Syn., 1870, p. 40.

* *Unio consanguineus* LEA, Pr. Ac. N. Sci. Phila., VI, 1861, p. 60; * Jl. Ac. N. Sci. Phila., V, 1862, p. 67, pl. VII, fig. 217; * Obs., VIII, 1862, p. 71, pl. VII, fig. 217.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LXXVIII, fig. 409.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margaron (Unio) consanguineus* LEA, Syn., 1870, p. 40.

¹ This figure is probably that of *U. decisa*. That on plate VIII, which he refers to that species, is most likely Lea's *ravenelianus*.

- †* *Unio crebrivittatus* LEA, Pr. Ac. N. Sci. Phila., VI, 1861, p. 60; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 43, pl. xv, fig. 41; *Obs., XI, 1867, p. 47, pl. xv, fig. 41.—*B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) crebrivittatus* LEA, Syn., 1870, p. 40.
- *? *Unio medius* REEVE, Conch. Icon., XVI, 1864, pl. xvii, fig. 77.

Alabama and Tombigbee river systems.

† PLEUROBEMA CHATTANOOGAENSIS Lea.

- * *Unio chattanoogaensis* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 166; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 209, pl. xxv, fig. 90; *Obs., VII, 1859, p. 27, pl. xxv, fig. 90.—*REEVE, Conch. Icon., XVI, 1864, pl. xvi, fig. 69.—B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 148.
- * *Margaron (Unio) chattanoogaensis* LEA, Syn., 1870, p. 40.¹

Alabama River system.

† PLEUROBEMA INTERVENTUS Lea.

- * *Unio interventus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 60; *Jl. Ac. N. Sci. Phila., V, 1862, p. 84, pl. xi, fig. 233; *Obs., VIII, 1862, p. 88, pl. xi, fig. 233.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 156.
- * *Margaron (Unio) interventus* LEA, Syn., 1879, p. 40.
- †* *Unio pallidofulvus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 60; *Jl. Ac. N. Sci. Phila., V, 1862, p. 83, pl. xi, fig. 332; *Obs., VIII, 1862, p. 87, pl. xi, fig. 232.—*B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) pallidofulvus* LEA, Syn., 1870, p. 40.

Cahawba River, Alabama.

† PLEUROBEMA MURRAYENSIS Lea.

- * *Unio murrayensis* LEA, Pr. Ac. N. Sci. Phila., II, 1868, p. 143; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 303, pl. xlvi, fig. 115; *Obs., XII, 1869, p. 62, pl. xlvi, fig. 115.—*B. H. WRIGHT, Check List, 1888.
- * *Margaron (Unio) murrayensis* LEA, Syn., 1870, p. 40.

Coosa River system; Columbus, Georgia?

(Group of *Pleurobema curta*.)

Shell elongate triangular, truncated in front, rounded on the base where it is quite full behind the middle, with a low posterior ridge, the space between the middle of the disk and the ridge flattened or sometimes slightly excavated, rather sharply pointed behind; umbonal region very prominent; beaks well forward; beak sculpture not observed; epidermis rather smooth, brownish olive; pseudocardinals distinct, triangular, radiate; laterals heavy, slightly curved; cicatrices small and deep; nacre iridescent posteriorly. Animal with the gills large, semicircular, the outer slightly larger than the inner, which are free nearly their whole length from the abdominal sac; marsupium occupying the entire length of the outer gills.

¹ Probably did not come from Chattanooga, Tennessee, as Dr. Lea believes, but from some of the streams of northern Georgia or Alabama, which drain southward. According to Hon. T. H. Aldrich, the animal of this and allied species is a brilliant scarlet.

†PLEUROBEMA CURTA Lea.

- * *Unio curtus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 112; * JI. Ac. N. Sci. Phila., V, 1862, p. 103, pl. XVII, fig. 253; * Obs., VIII, 1862, p. 107, pl. XVII, fig. 256.—
* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) curtus* LEA, Syn., 1870, p. 40.

Tombigbee River, Columbus, Mississippi.

(Group of *Pleurobema troscheliana*.)

Shell rather small, solid, rounded-triangular, inflated, somewhat inequilateral, slightly pointed near the posterior base, and rounded angular at the hinder end of the ligament; base of the shell almost evenly rounded; posterior ridge low; beaks high and slightly curved inward and forward over a well-defined lunule; epidermis dull tawny, showing the rest periods and occasionally marked with a radiating row of dark green, squarish spots in front of the posterior ridge; hinge plate wide and flat; pseudocardinals small, triangular, rough; laterals short, curved; muscle scars small, rather deep. Animal with semicircular gills, the inner the larger and free from the abdominal sac half to nearly their whole length; ovisacs of outer gills apparently in pairs.

†PLEUROBEMA TAITIANA Lea.

- * *Unio taitianus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 39, pl. IV, fig. 11; * Obs., I, 1834, p. 151, pl. IV, fig. 11.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 186; * Biv. Shells, 1843, p. 186, pl. XXIII, fig. 26.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

* *Margarita (Unio) taitianus* LEA, Syn., 1836, p. 21; 1838, p. 18.

* *Margaron (Unio) taitianus* LEA, Syn., 1852, p. 25; 1870, p. 38.

Alabama River.

†PLEUROBEMA COR Conrad.

* *Unio mytilloides* CONRAD, Am. JI. Sci., XXV, 1834, p. 343, pl. I, fig. 7.¹

* *Unio cor* CONRAD, New F. W. Shells, 1834, p. 28, pl. III, fig. 3, p. 68.—* FERUSSAC, Gueriu Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 202.—* HANLEY, Test. Moll., 1842, p. 187; * Biv. Shells, 1843, p. 187.—* CHENU, Bib. Conch., 1st

¹ Conrad says this is between *Unio ellipsis* Lea and *mytilloides* Rafinesque, but that he has no doubt that it is the latter. It is certainly very different from the shell Rafinesque figures and describes as *Pleurobema mytilloides*. (Ann. Gen. Sci. Phys. Brux., XIII, 1820, p. 313, pl. LXXXII, figs. 8-10.) Conrad's *Unio cor* was published in May, 1834, and his *mytilloides* in January of the same year, so that the latter has priority, but as Rafinesque's name was placed under the genus *Pleurobema*, and as I place Conrad's species, which is an entirely different thing, in the same genus, the name *mytilloides* can not be used for it, and it must therefore take the next name proposed, which is Conrad's *cor*.

Dr. Lea admits Rafinesque's *mytilloides* with doubt, and in his collection places under that name specimens which I regard as a rather elongated *Quadrula pyramidata*. Rafinesque's figure represents an elongated shell, almost absolutely straight on the dorsal line, and with the beaks carried far in front of the rest of the shell. I have never seen any thing which at all agrees with it.

ser., III, 1845, p. 16, pl. III, fig. 2.—*CATLOW and REEVE, Conch. Nom., 1845, p. 57.—*CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 247.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 149.

**Margarita (Unio) cor* LEA, Syn., 1836, p. 21; 1838, p. 18.

**Margaron (Unio) cor* LEA, Syn., 1852, p. 26; 1870, p. 39.

†**Unio crapulus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 39; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 42, pl. xv, fig. 40; *Obs., XI, 1867, p. 46, pl. xv, fig. 40.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) crapulus* LEA, Syn., 1870, p. 41.

†**Unio lewisii* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 40; *Jl. Ac. N. Sci. Phila., V, 1862, p. 71, pl. VIII, fig. 220; *Obs., VIII, 1862, p. 75, pl. VIII, fig. 220.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) lewisii* LEA, Syn., 1870, p. 56.

Alabama River system; Flint River, Georgia.

† PLEUROBEMA PEROVATA Conrad.

**Unio perovatus* CONRAD, Am. Jl. of Sci., XXV, 1834, p. 338, pl. L, fig. 3; *?New F. W. Shells, 1834, p. 47, pl. II, fig. 3.¹—FERUSSAC, Guer. Mag., 1835, p. 29—*MÖLLER, Syn. Nov. Gen., 1836, p. 199; *Test. Moll., 1842, p. 190.—*HANLEY, Biv. Shells, 1843, p. 190.—*CHENU, Bib. Conch., 1st ser., III, 1845, p. 22, pl. I, fig. 3.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*B. H. WRIGHT, Check List, 1888.

**Margarita (Unio) perovatus* LEA, Syn., 1836, p. 23; 1838, p. 19.

**Margaron (Unio) perovatus* LEA, Syn., 1852, p. 27; 1870, p. 42.

Prairie Creek (tributary of the Tombigbee), Marengo County, Alabama.

† PLEUROBEMA NUCLEOPSIS Conrad.

Unio nucleopsis CONRAD, Ann. and Mag. Nat. Hist., IV, 1849, p. 301;² *Pr. Ac. N. Sci. Phila., IV, 1849, p. 154; *Jl. Ac. N. Sci. Phila., I, 1850, p. 276, pl. XXXVII, fig. 81.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—*KUSTER, Conch. Cab. Unio, 1861, p. 217, pl. LXXIII, fig. 3.—*REEVE, Conch. Icon., XVI, 1864, pl. XVI, fig. 68.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 161.

**Margarita (Unio) nucleopsis* LEA, Syn., 1852, p. 35; 1870, p. 56.

Coosa River system.

† PLEUROBEMA STABILIS Lea.

**Unio stabilis* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 59; *Jl. Ac. N. Sci. Phila., V, 1862, p. 71, pl. VIII, fig. 221; *Obs., VIII, 1862, p. 75, pl. VIII, fig. 221.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) stabilis* LEA, Syn., 1870, p. 38.

†*Unio medius* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 40; *Jl. Ac. N. Sci. Phila., V, 1861, p. 78, pl. x, fig. 227; *Obs., VIII, 1862, p. 82, pl. x, fig. 227.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIII, fig. 375.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 158.

**Margaron (Unio) medius* LEA, Syn., 1870, p. 40.

Coosa River, Alabama.

¹This figure differs a good deal from that in the American Journal of Science, and it may be taken from a younger, less inflated shell.

²Very close to *P. irrasa*, and it may be that when a sufficient amount of material is examined the two will have to be placed together.

† PLEUROBEMA TROSCHELIANA Lea.

* *Unio troschelianus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 280, pl. XXIII, fig. 39; * Obs., V, 1852, p. 36, pl. XXIII, fig. 39.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 170.

* *Margaron (Unio) troschelianus* LEA, Syn., 1852, p. 26; 1870, p. 40.

Alabama River system.

PLEUROBEMA IRRASA Lea.

* *Unio irrasus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 38; * JI. Ac. N. Sci. Phila., V, 1862, p. 91, pl. XIII, fig. 239; * Obs., VIII, 1862, p. 95, pl. XIII, fig. 239.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) irrasus* LEA, Syn., 1870, p. 38.

Coosa River system.

† PLEUROBEMA ALTA Conrad.

* *Unio altus* CONRAD, JI. Ac. N. Sci. Phila., II, 1854, p. 298, pl. XXVII, fig. 5.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) altus* LEA, Syn., 1870, p. 42.

† * *Unio fibuloides* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 154; JI. Ac. N. Sci. Phila., IV, 1859, p. 219, pl. XXVIII, fig. 100; * Obs., VII, 1859, p. 37, pl. XXVIII, fig. 100.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XII, fig. 223.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

Margaron (Unio) fibuloides LEA, Syn., 1870, p. 56.

Connasanga River, Georgia.

† PLEUROBEMA HARTMANIANA Lea.

* *Unio hartmanianus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 307; * JI. Ac. N. Sci. Phila., V, 1862, p. 73, pl. VIII, fig. 222; * Obs., VIII, 1862, p. 77, pl. VIII, fig. 222.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) hartmaniannus* LEA, Syn., 1870, p. 38.

Coosa River, Alabama.

Dr. Lea has shells in his collection from the Clinch River which he places with this species, which I am certain belong to the *Clava* group.

† PLEUROBEMA INSTRUCTA Lea.

* *Unio instructus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 59; * JI. Ac. N. Sci. Phila., V, 1862, p. 82, pl. x, fig. 230; * Obs., VIII, 1862, p. 86, pl. x, fig. 230.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) instructus* LEA, Syn., 1870, p. 38.

Cahawba River, Alabama.

(Group of *Pleurobema showalterii*.)

Shell small, rounded triangular, inflated, slightly truncated anteriorly, posterior end arched and ending in a bluntly rounded point at the post base, posterior ridge well defined; umbonal region full; beaks rather prominent, the sculpture not observed; epidermis brown, not rayed; hinge plate rather wide; pseudocardinals small, triangular,

radial, roughened; laterals short, heavy, nacre white, brilliantly iridescent posteriorly; beak cavities shallow.

Animal apparently having ovisacs in pairs which are slightly wavy and lirate at the base; gills rather large, semicircular, inner much the larger, partly free from the abdominal sac; mantle thin, thickened at edge, and bordered with a dark line.¹

† PLEUROBEMA SHOWALTERII Lea.

* *Unio showalterii* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 307; *Jl. Ac. N. Sci. Phila., V, 1862, p. 73, pl. VIII, fig. 223; Obs., VIII, 1862, p. 77, pl. VIII, fig. 223.—

* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXI, fig. 426.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

* *Margaron (Unio) showalterii* LEA, Syn., 1870, p. 55.

Coosa River, Alabama.

(Group of *Pleurobema nux.*)

Shell oval, inflated, moderately solid, with a low posterior ridge, swollen at the post-basal part; posterior end pointed at the termination of the posterior ridge; beaks full, rather high, considerably removed from the anterior end; epidermis pale to dark brown, rest lines very distinct; pseudocardinals small, stumpy, radiate, rough, laterals straight; nacre brilliantly iridescent posteriorly; front part of shell heavy, suddenly becoming thinner behind.

Animal unknown.

† PLEUROBEMA VERA Lea.

* *Unio verus* LEA, Pr. Ac. N. Sci. Phila., V, 1860, p. 140; *Jl. Ac. N. Sci. Phila., V, 1862, p. 83, pl. XI, fig. 231; *Obs., VIII, 1862, p. 87, pl. XI, fig. 231.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) verus* LEA, Syn., 1870, p. 38.

Black Warrior and Cahawba rivers, Alabama.

† PLEUROBEMA HAGLERI Frierson.

* *Unio (Pleurobema) hagleri* FRIERSON, Nautilus, XIII, 1900, p. 109, pl. II.

North River, Alabama, near Tyner.

† PLEUROBEMA RUBELLA Conrad.

* *Unio rubellus* CONRAD, New F. W. Shells, 1834, p. 38, pl. VI, fig. 2, p. 71.—* FERUSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 205.—* HANLEY, Test. Moll., 1842, p. 201; *Biv. Shells, 1843, p. 201.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 20, pl. II, fig. 2.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.

¹ The single species which I place in this group is quite variable. Some specimens approach *Quadrula solida* and *trigona* in general shape, while others are more like *leurobema irrasa* and *trosceliana*. I judge from the character of the gills that the marsupium is confined to the outer pair.

**Margarita (Unio) rubellus* LEA, Syn., 1836, p. 33; 1838, p. 28.

**Margaron (Unio) rubellus* LEA, Syn., 1852, p. 34; 1870, p. 55.

†**Unio rudis* CONRAD,¹ Monog., No. 9, 1837, p. 76, pl. XLIII, fig. 1.—*B. H. WRIGHT, Check List, 1888.

†**Unio pulvinulus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; *Tr. Am. Phil. Soc., X, 1848, p. 81, pl. VIII, fig. 24; *Obs., IV, 1848, p. 55, pl. VIII, fig. 24.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 164.

**Margaron (Unio) pulvinulus* LEA, Syn., 1852, p. 26; 1870, p. 41.

Black Warrior and Cahawba rivers, Alabama.

† PLEUROBEMA FURVA Conrad.²

**Unio furvus* CONRAD, New F. W. Shells, 1834, p. 39, pl. VI, fig. 3, page 69.—

*FERUSSAC, Guer. Mag., 1835, p. 29.—*MÖLLER, Syn. Nov. Gen., 1836, p. 205.—

*CHENU, Bib. Conch., 1st ser., III, 1845, p. 20, pl. II, fig. 4.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—*B. H. WRIGHT, Check List, 1888.

Black Warrior River, Alabama.

† PLEUROBEMA AVELLANA Simpson.

**Pleurobema avellana* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 81, pl. II, figs. 6, 7.

Cahawba River, Alabama.

† PLEUROBEMA NUX Lea.

**Unio nux* LEA, Tr. Am. Phil. Soc., X, 1852, p. 283, pl. XXIV, fig. 43; *Obs. V, 1852, p. 39, pl. XXIV, fig. 43.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—

*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 161.

**Margaron (Unio) nux* LEA, Syn., 1852, p. 31; 1870, p. 49.

†*Unio cinnamomicus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 39; *Jl. Ac. N. Sci. Phila., V, 1862, p. 100, pl. XVI, fig. 248; *Obs., VIII, 1862, p. 104, pl. XVI, fig. 248.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIII, fig. 438.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) cinnamomicus* LEA, Syn., 1870, p. 49.

Alabama River system.

† PLEUROBEMA PINKSTONI S. H. Wright.

**Unio pinkstoni* S. H. WRIGHT, Nautilus, X, 1897, p. 136.

**Pleurobema pinkstoni* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 81, pl. I, fig. 8.

Alabama River system.

¹Conrad says that *U. ravenelianus* of Lea is the same as his *U. rudis*, which, according to Ravenel, is found in the French Broad River, though Conrad obtained his species in the Black Warrior. The species of Conrad is, however, quite distinct from that of Lea, the two never occurring in the same drainage system.

²I have seen what I believe are specimens of this species from the collections of the Hon. T. H. Aldrich and Mr. Bryant Walker, taken from the Black Warrior River, Alabama, but I think it not improbable that it may run into *P. rubella*.

† PLEUROBEMA JOHANNIS Lea.

* *Unio johannis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 171; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 340, pl. LV, fig. 168; * Obs., VIII, 1860, p. 25, pl. LV, fig. 168.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) johannis* LEA, Syn., 1870, p. 41.

Alabama River system.

† PLEUROBEMA HANLEYANA Lea.

* *Unio hanleyanus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 279, pl. XXIII, fig. 37; * Obs., V, 1852, p. 35, pl. XXIII, fig. 37.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* REEVE, Conch. Icon., XVI, 1864, pl. XVII, fig. 76.¹—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVI, fig. 249.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

* *Margaron (Unio) hanleyanus* LEA, Syn., 1852, p. 26; 1870, p. 40.

Coosa River drainage, Georgia and Alabama.

† PLEUROBEMA FLAVIDULUS Lea.

* *Unio flavidulus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 39; * Jl. Ac. N. Sci. Phila., V, 1862, p. 97, pl. XV, fig. 245; * Obs., VIII, 1862, p. 101, pl. XV, fig. 245.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) flavidulus* LEA, Syn., 1870, p. 40.

Columbus, Mississippi.

(Group of *Pleurobema bulbosa*.)

Shell elongate oval, solid, inflated, with a high posterior ridge, ending in a point behind, above which it is feebly wrinkled; beaks full, sculpture not seen; epidermis smooth, dark, rayless; hinge strong; pseudocardinals heavy, torn, sometimes a small third one in the left valve; laterals heavy, club-shaped, granulate, two in the left valve and one and a small secondary lateral in the right. Animal unknown.

† PLEUROBEMA BULBOSA Lea.

* *Unio bulbosus* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 172; * Jl. Ac. N. Sci. Phila., IV, 1859, p. 191, pl. XXI, fig. 75; * Obs., VII, 1859, p. 9, pl. XXI, fig. 75.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) bulbosus* LEA, Syn., 1870, p. 40.

Ocmulgee and Flint rivers, Georgia.

† PLEUROBEMA HARPERI B. H. Wright.

* *Unio harperi* B. H. WRIGHT, Naut., XIII, 1899, p. 6.

* *Pleurobema harperi* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 81, pl. 1, fig. 10.

Altamaha and Flint rivers, Georgia; Suwanee River, Florida.²

¹ Reeve states in his errata that this is not *Unio hanleyanus*. The figure agrees fairly well with the type of that species.

² This may prove to be a variety of *P. bulbosa*.

†PLEUROBEMA RECLUSA B. H. Wright.

* *Unio reclusus* B. H. WRIGHT, Naut., XI, 1898, p. 3.

* *Pleurobema reclusa* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 82, pl. i, fig. 2.

Ocklocknee River, Leon County, Florida.

(Group of *Pleurobema brumbyana*.)

Shell oval, inflated, moderately solid, faintly swollen at post basal region; beaks rather prominent, somewhat distant from the anterior end; beak sculpture not seen; disks irregularly, concentrically sculptured; epidermis dark olive to blackish, striate; pseudocardinals subradiate, slightly compressed; beak cavities shallow; nacre iridescent posteriorly, somewhat thickened in front.

†PLEUROBEMA BRUMBYANA Lea.

* *Unio brumleyanus* LEA,¹ Proc. Am. Phil. Soc., II, 1841, p. 82.

* *Unio brumbyanus* LEA, Tr. Am. Phil. Soc., VIII, 1842, p. 245, pl. xxvi, fig. 62; * Obs., III, 1842, p. 83, pl. xxvi, fig. 62.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Margaron (Unio) brumbyanus* LEA, Syn., 1852, p. 31; 1870, p. 49.

† * *Unio concolor* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 40; * JI. Ac. N. Sci. Phila., V, 1862, p. 89, pl. xii, fig. 237; * Obs., VIII, 1862, p. 93, pl. xii, fig. 237.—* SOWERBY, Conch. Icon, XVI, 1868, pl. lxxxiii, fig. 440.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1870, p. 148.

* *Margaron (Unio) concolor* LEA, Syn., 1870, p. 49.

Alabama River system.

(Group of *Pleurobema argentea*.)

Shell solid, oval to rhomboid, generally compressed, beaks high but not inflated, well removed from the anterior end, with strong, irregular sculpture, which is curved up and swollen behind where the bars are slightly looped; epidermis brownish to straw color, sometimes having a few broken, blotched rays; teeth strong; cicatrices deep and distinct. Animal unknown.²

†PLEUROBEMA SIMULANS Lea.

* *Unio simulans* LEA, Pr. Acad. N. Sci. Phila., I, 1871, p. 190; * JI. Acad. N. Sci. Phila., VIII, 1874, p. 18, pl. v, fig. 15; * Obs., XIII, 1874, p. 22, pl. v, fig. 15.—

* B. H. WRIGHT, Check List, 1888.

Black Warrior and Cahawba rivers, Alabama; Pine Barren Creek, Escambia County, Florida.

¹So written in Proceedings; no doubt a typographical error, as the species was named after Brumby.

²The species placed here are puzzling and seem to stand between *Unio* and *Pleurobema*. The color and the beak sculpture incline me to place them with the latter, and some of the species seem to show relationship with such forms as *P. pudica* and *bigbyana*.

† PLEUROBEMA STRODEANA B. H. Wright.

* *Unio strodeanus* B. H. WRIGHT, Nautilus, XII, 1898, p. 5.

* *Pleurobema strodeana* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 81, pl. 1, fig. 3.

Escambia River, Florida; Flint River, Rhoadsville, Georgia.

† PLEUROBEMA PATSALIGENSIS Simpson

* *Pleurobema patsaligensis* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 82, pl. 11, fig. 1.

Little Patsaliga Creek, southeast Alabama.

† PLEUROBEMA FAVOSA Lea.

* *Unio favosus* LEA, Proc. Acad. N. Sci. Phila., VIII, 1856, p. 262; * JI. Acad. N. Sci. Phila., IV, 1858, p. 58, pl. VIII, fig. 40; * Obs., VI, p. 58, pl. VIII, fig. 40.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XC, fig. 488.—* B. H. WRIGHT, Check List, 1888.—* P.ETEL, Conch. Sam., III, 1890, p. 151.

* *Margaron (Unio) favosus* LEA, Syn., 1870, p. 38.

Alabama River system.

† UNIO LENTICULARIS Lea.

* *Unio lenticularis* LEA, Pr. Acad. N. Sci. Phila., II, 1872, p. 155; * JI. Acad. N. Sci. Phila., VIII, 1874, p. 30, pl. IX, fig. 27; * Obs., XIII, 1874, p. 34, pl. IX, fig. 27.—* B. H. WRIGHT, Check List, 1888.

Tellico River, Monroe County, Tennessee; East Tennessee.

† PLEUROBEMA MEREDITHII Lea.

* *Unio meredithii* LEA, Pr. Acad. N. Sci. Phila., II, 1858, p. 40; * JI. Acad. N. Sci. Phila., V, 1862, p. 65, pl. VI, fig. 214; * Obs., VIII, 1862, p. 69, pl. V, fig. 214.—* B. H. WRIGHT, Check List, 1888.—* P.ETEL, Conch. Sam., III, 1890, p. 159.

* *Margaron (Unio) meredithii* LEA, Syn., 1870, p. 35.

Tennessee River system; Black Warrior River, Alabama.

† PLEUROBEMA LITA Lea.

* *Unio litus* LEA, Pr. Acad. N. Sci. Phila., I, 1871, p. 189; * JI. Acad. N. Sci. Phila., VIII, 1874, p. 17, pl. V, fig. 13; * Obs., XIII, 1874, p. 21, pl. V, fig. 13.—* B. H. WRIGHT, Check List, 1888.

Cahawba and Black Warrior rivers, Alabama.

PLEUROBEMA GEORGIANA Lea.

* *Unio georgianus* LEA, Pr. Am. Phil. Soc., II, 1841, p. 31; ¹ * Tr. Am. Phil. Soc., VIII, 1842, p. 235, pl. XXI, fig. 49; * Obs., III, 1842, p. 73, pl. XXI, fig. 49.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Il. Conch., 1858, pl. XXXII, figs. 3, 3a, 3b.—* B. H. WRIGHT, Check List, 1888.—* P.ETEL, Conch. Sam., III, 1890, p. 153.

* *Margaron (Unio) georgianus* LEA, Syn., 1852, p. 27; 1870, p. 42.

Stump Creek, northwest Georgia.

¹ I have only seen a single specimen of this, the type, in bad condition, and I can not be certain where it belongs.

† PLEUROBEMA PYRIFORMIS Lea.

* *Unio pyriformis* LEA, Pr. Ac. N. Sci. Phila., IX, 1857, p. 31; * Jl. Ac. N. Sci. Phila., IV, 1858, p. 69, pl. XII, fig. 50; * Obs., VI, 1858, p. 69, pl. XII, fig. 50.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) pyriformis* LEA, Syn., 1870, p. 40.

Near Columbus, Georgia.

† PLEUROBEMA MODICA Lea.

* *Unio modicus* LEA, Pr. Acad. N. Sci. Phila., IX, 1857, p. 171; * Jl. Acad. N. Sci. Phila., IV, 1859, p. 204, pl. XXIV, fig. 86; * Obs., VII, 1860, p. 22, pl. XXIV, fig. 86.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) modicus* LEA, Syn., 1870, p. 40.

Chattahoochee River, Georgia.

† PLEUROBEMA STRIATA Lea.

* *Unio striatus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 287; * Tr. Am. Phil. Soc., VIII, 1843, p. 203, pl. XII, fig. 16; * Obs., III, 1842, p. 41, pl. XII, fig. 16.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CHENU, Ill. Conch., 1858, pl. XXIX, figs. 1, 1a, 1b.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) striatus* LEA, Syn., 1852, p. 26; 1870, p. 40.

Chattahoochee River, Georgia.

† PLEUROBEMA GIBBER Lea.

* *Unio gibber* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 34, pl. x, fig. 30; * Obs., II, 1838, p. 35, pl. x, fig. 30.—* TROSCHER, Arch. fur Naturg., V, 1839, Pt. 2, p. 236.—* HANLEY, Test. Moll., 1842, p. 185; * Biv. Shells, 1843, p. 185, pl. XXI, fig. 46.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* CONRAD, Pr. Acad. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XXIII, figs. 2, 2a, 2b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XL, fig. 219.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) gibber* LEA, Syn., 1836, p. 20; 1838, p. 17.

* *Margaron (Unio) gibber* LEA, Syn., 1852, p. 24; 1870, p. 37.

Caney Fork, Tennessee.

† PLEUROBEMA FASSINANS Lea.

* *Unio fassinans* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 143; * Jl. Ac. N. Sci. Phila., VI, 1869, p. 305, pl. XLVII, fig. 118; * Obs., XII, p. 65, pl. XLVII, fig. 118.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) fassinans* LEA, Syn., 1870, p. 42.

† PLEUROBEMA FASSINANS var. RHOMBOIDEA Simpson.¹

Upper Tennessee River drainage.

¹A form of what I consider *fassinans* is abundant in the Clinch River, in western Virginia, which is considerably more rhomboid than the type and may be called var. *rhomboidea*.

† PLEUROBEMA ARGENTEA Lea.

* *Unio argenteus* LEA, Pr. Am. Phil. Soc., II, 1841, p. 82; *Tr. Am. Phil. Soc., VIII, 1843, p. 242, pl. XXV, fig. 57; *Obs., III, 1842, p. 80, pl. XXV, fig. 57.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* CHENU, Ill. Conch., 1858, pl. XXXII, figs. 2, 2a, 2b.—H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* KUSTER, Conch. Cab. Unio, 1861, p. 188, pl. LIX, fig. 4; 1861, p. 225, pl. LXXVI, fig. 3.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XXXVII, fig. 204.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 145.

* *Margaron (Unio) argenteus* LEA, Syn., 1852, p. 26; 1870, p. 40.

Upper Tennessee River drainage.

† PLEUROBEMA ARGENTEA var. PANNOSA Simpson.

* *Pleurobema argentea pannosa* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 82.

A solid, somewhat inflated, roughened form from Hot Springs, Arkansas, may be designated as above. Probably a valid species.

† PLEUROBEMA CONASAUGÆNSIS Lea.

* *Unio conasaugensis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 155.—*Jl. Ac. N. Sci. Phila., VIII, 1874, p. 33, pl. X, fig. 30; *Obs., XIII, 1874, p. 37, pl. X, fig. 30.—* B. H. WRIGHT, Check List, 1888.

Upper Tennessee River drainage.

† PLEUROBEMA BREVIS Lea.

* *Unio brevis* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 157; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 35, pl. XII, fig. 32; *Obs., XIII, 1874, p. 39, pl. XII, fig. 32.—* B. H. WRIGHT, Check List, 1888.

Tennessee River system; Hardy, Arkansas.

† PLEUROBEMA BREVIS var. SUBILLIPTICA Simpson.

* *Pleurobema brevis subilliptica* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 80.

A solid, inflated form from Hardy, Arkansas, may bear this name. It is probably a distinct species.

† PLEUROBEMA PLANIOR Lea.

* *Unio planior* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 145; *Jl. Ac. N. Sci. Phila., VI, 1869, p. 316, pl. I, fig. 129; *Obs., XII, 1869, p. 76, pl. I, fig. 129.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) planior* LEA, Syn., 1870, p. 35.

Upper Tennessee River drainage.

† PLEUROBEMA ESTABROOKIANA Lea.

* *Unio estabrookianus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; *Tr. Am. Phil. Soc., X, 1853, p. 77, pl. VI, fig. 17; *Obs., IV, 1848, p. 51, pl. VI, fig. 77.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) estabrookianus* LEA, Syn., 1852, p. 24; 1870, p. 35.

* *Unio estabrookianus* PÆTEL, Conch. Sam., III, 1890, p. 152.

- * *Unio striatissimus* ANTHONY, Am. Jl. Conch., I, p. 156, 1865, pl. XII, fig. 1.—
 *SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVI, fig. 460.—*PÆTEL, Conch.
 Sam., III, 1890, p. 168.

Upper Tennessee River drainage.

Section PLETHOBASUS Simpson, 1900.

(Type, *Unio æsopus* Green.)

Shell large, irregularly oval, inflated, solid, somewhat suddenly swollen at the posterior base; posterior ridge low and rounded; beaks rather high near the anterior end, having a few strong ridges which are curved upward behind; a row of low, irregular tubercles extends from near the beaks to the post basal part of the valves; epidermis tawny brown in the younger shell, becoming darker with age; hinge plate solid, not flattened; pseudocardinals triangular, rough; cavity of the beaks not deep; front part of the shell very heavy; hinder part much thinner.

Animal having the mantle somewhat toothed posteriorly; branchial and anal openings large, the latter smooth or with very faint papillæ; inner gills the larger, rounded below, free nearly or quite their whole length from the abdominal sac; marsupium occupying the entire outer gills.¹

† PLEUROBEMA ÆSOPUS Green.

- * *Unio æsopus* GREEN, Cont. Mac. Lyceum, I, No. 2, 1827, p. 46, fig. 3.—* HANLEY, Test. Moll., 1842, p. 181; * Biv. Shells, 1843, p. 181, pl. XXIV, fig. 7.—* CATLOW and REEVE, Conch. Nom., 1845, p. 551.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CALKINS, Proc. Ottawa Acad. N. Sci., 1874, p. 41.—* CALL, Jl. Cinti. Soc. N. H., XVIII, 1896, p. 157, pl. VI.
 * *Margarita (Unio) æsopus* LEA, Syn., 1836, p. 17; 1838, p. 16.
 * *Margaron (Unio) æsopus* LEA, Syn., 1852, p. 23; 1870, p. 34.
 * *Unio cyphia* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 27.
 * *Unio cyphius* SAY, Am. Conch., VI, 1834.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* REEVE, Conch. Icon., XVI, 1864, pl. VIII, fig. 28.
 * *Unio cyphias* var. *æsopus* PÆTEL, Conch. Sam., III, 1890, p. 150.
 * *Unio scyphius* KUSTER, Conch. Cab. Unio, 1861, p. 181, pl. LVII, fig. 2.

Ohio, Cumberland, and Tennessee river systems; west to Missouri and Minnesota; Alabama River, according to Call.

¹ I am not positive as to the generic position of the two following species, but I am inclined to place them in *Pleurobema*. No other living species of this genus has any development of tubercles, but a great number of fossil forms from the Tertiary of eastern Europe which seem to be most like *Pleurobema* are decidedly pustulous. The heavy, inflated, high beaks and the comparatively shallow beak cavities are characters found in all the species of this genus. In the single gravid specimen I examined (one out of a large number from different localities) the outer gills were not filled very full of ova, though they were found throughout their extent, while the most careful search did not disclose any in the inner gills.

† PLEUROBEMA CICATRICOSA Say.

* *Unio varicosus* LEA, Tr. Am. Phil. Soc., IV, 1829, p. 90, pl. XI, fig. 20;¹ * Obs., I, 1834, p. 100, pl. XI, fig. 20.—* HANLEY, Test. Moll., 1842, p. 181; * Biv. Shells, 1843, p. 181, pl. XXI, fig. 14.—* CATLAW and REEVE, Conch. Nom., 1845, p. 65.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CHENU, Ill. Conch., 1858, pl. XI, figs. 6, 6a, 6b.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) varicosus* LEA, Syn., 1836, p. 17; 1838, p. 16.

* *Margaron (Unio) varicosus* LEA, Syn., 1852, p. 23; 1870, p. 34.

* *Unio cicatricosus* SAY, N. Harmony Diss., II, No. 19, 1829, p. 292.—* SAY, Am. Conch., VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* L. W. SAY, Terr. and Fluv. Shells, 1840, p. 5.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—* KUSTER, Conch. Cab. Unio, 1861, p. 185, pl. LVIII, fig. 2.—* REEVE, Conch. Icon., XVI, 1864, pl. VIII, fig. 31; XIII, fig. 50.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Unio cicatricosus* var. *varicosus* PÆTEL, Conch. Sam., III, 1890, p. 148.

Ohio River; Tennessee; Claiborne, Alabama. The last locality I consider doubtful. Lea gives St. Paul, Minnesota, as a habitat, but I do not think it possibly can be.

The following species are described by Rafinesque, but I am unable to make them out.

* *Pleurobema mytiloides* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 313, pl. LXXXII, figs. 8-10.

* *Pleurobema cuneata* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 313.

TETRAGENEÆ.

Male and female shells alike, solid; beak sculpture consisting of coarse, subparallel ridges; beak cavities deep; marsupium filling all four gills, smooth, pad-like.

Genus QUADRULA (Rafinesque, 1820) Agassiz.

(Type, *Quadrula metanevra* Rafinesque.)

Quadrula RAFINESQUE, Ann. Gen. Sci. Phys. Brux., 1820, p. 305.

Rotundaria AGASSIZ, Arch. für Naturg., 1852, p. 48.

Orthonymus AGASSIZ, Arch. für Naturg., 1852, p. 48.

Shell triangular, quadrate or rhomboid, solid, inflated, with rather prominent beaks, which are generally sculptured with a few coarse, irregular, subparallel ridges that are inflated where they cross the posterior ridge; posterior ridge ordinarily well developed; base often incurved in old specimens; disks sculptured or smooth; epidermis usually dull colored, dark and rayless, or feebly rayed; hinge plate

¹ I change Lea's name because Lamarck previously applied the name *Unio varicosa* to what is, no doubt, *Alasmidonta marginata*. Mr. T. G. Lea, of Cincinnati, took many specimens of this species, the shells of which he sent to Dr. Lea, and in several of them he has written in pencil "not charged" or "ovaries charged," with the date, but neither of them seems to have described the animal. I am somewhat at a loss to know where to place this curious form. The young are much like those of *Quadrula solida*, and do not show the swellings until the third or fourth year, and occasionally the adult shell is nearly smooth.

heavy, wide, flattened; pseudocardinals solid, direct, ragged; laterals double in the left and single in the right valve, often with a small secondary lateral below the large one in the right valve; cavity of the beaks deep and compressed; dorsal scars under the hinge plate; male and female shells alike.

Animal having the inner gills the larger, generally free from the abdominal sac the greater part or all of their length; marsupium occupying all four of the gills throughout, the whole smooth and pad-like.

Section CRENODONTA Schlüter.¹

(Type, *Unio plicatus* Say.)

Shell more or less alate; beaks prominent; the surface of the valves usually sculptured with oblique folds; posterior slope generally having smaller radial plications which curve upward behind; epidermis brownish or blackish; anterior muscle scars large, distinct, very shallow, the anterior edge smooth, the rest apparently filled with roughened shelly matter; posterior scars large, shallow, indistinct; escutcheon large and dark.

Animal with the gills generally large, rounded below; inner the larger, usually free nearly or quite the entire length of the abdominal sac,² the two pairs united to the mantle nearly but not quite to the posterior end, having a small portion free; marsupium occupying all the four branchiæ, forming very heavy, thick pads; labial palpi usually large.

(Group of *Quadrula plicata*.)

Shell rounded to subrhomboid; plications usually strong, oblique, though in occasional specimens the surface may be perfectly plane or slightly concentrically sculptured.

¹ Schlüter applied the name *Crenodonta* (Verz. meiner Conch., 1836, p. 33) to a group of Unionidæ, the first species of which was the *Unio plicatus* of Say, but he gave no description of his group and did not designate a type. In 1853 Mörch (Yoldi catalogue, p. 45) used this name without a description or a type, and it has been applied to the plicate Uniones by von Martens (Biologia Centrali-Americana, Mollusca, 1900, p. 479).

² Dr. Lea found in *Quadrula multiplicata* the inner gills generally nearly or entirely free, but in certain specimens they were wholly united. My own experience in examining the animals of this species exactly coincides with his, thus showing that the character of the union of the inner gills with the abdominal sac, or their separation from it, is not a generic character, as Agassiz believed, nor is it even of specific value. Although I have examined thousands of animals belonging to the *Plicata* group of the genus *Quadrula*, taken at various seasons and throughout almost the entire range of the assemblage and of nearly all the species, I have never seen a specimen with ova or embryos in the gills save one in the alcoholic collection of Dr. Lea in the Academy of Natural Sciences at Philadelphia. Other students of the Unionidæ have found these species equally barren. It is probable that they breed only at long intervals but in enormous numbers, a supposition strengthened by the fact that Dr. Lea found about 6,000,000 young in the gills of a single *Unio multiplicatus*.

†QUADRULA PPLICATA Say.

* *Unio plicata* SAY,¹ Nich. Encyc., II, 1816, pl. III, fig. 1.

* *Unio (Theliderma) plicata* SWAINSON, Tr. on Mal., 1840, p. 271, fig. 54e.

* *Mya plicata* EATON, Zool. Text-Book, 1826, p. 219.

* *Quadrula plicata* BAKER, Moll. Chicago, Pt. I, 1898, pl. XXV, fig. 1.

* *Unio plicatus* HILDRETH (?), Am. Jl. Sci., XIV, 1828, p. 280.²—SHORT and EATON, Transylvania Jl., 1831, p. 74.—* CONRAD, New F. W. Shells, 1834, p. 71.—* SAY, Am. Conch., VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* HANLEY, Test. Moll., 1842, p. 175; * Biv. Shells, 1843, p. 175, pl. XXI, fig. 21.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* KUSTER, Conch. Cab. Unio, 1856, p. 137, pl. XI, fig. 3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* REEVE, Conch. Icon., XVI, 1864, pl. II, fig. 5.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL, Conch. Sam., III, 1890, p. 163.

* *Margarita (Unio) plicatus* LEA, Syn., 1836, p. 12; 1838, p. 14.

* *Margaron (Unio) plicatus* LEA, Syn., 1852, p. 20; 1870, p. 30.

* *Plectomerus plicatus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 261.

* *Unio peruviana* LAMARCK, An. sans Vert., VI, 1819, p. 71.³—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 533; 3d ed., II, 1839, p. 667.

* *Unio crassus* BARNES, Am. Jl. Sci., VI, 1823, p. 118.

* *Unio rariplicata* DESHAYES, Enc. Méth., II, 1830, p. 578; * An. sans Vert., 2d ed., VI, 1835, p. 533; 3d ed., II, 1839, p. 667.

* *Unio giganteus* LEA, Obs., II, 1838, p. 35.⁴

* *Unio heros* KUSTER, Conch. Cab. Unio, 1856, p. 136, pl. XI, figs. 1, 2.

† UNIO PPLICATA var. HIPPOPÆA Lea.

* *Unio hippopæus* LEA,⁵ Pr. Am. Phil. Soc., IV, 1845, p. 163; * Tr. Am. Phil. Soc., X, 1848, p. 67, pl. I, fig. 1; * Obs., IV, 1848, p. 41, pl. I, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* KUSTER, Conch. Cab., 1861, p. 251, pl. LXXXIV, fig. 3.—* REEVE, Conch. Icon., XVI, 1864, pl. XI, fig. 40.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) hippopæus* LEA, Syn., 1852, p. 21; 1870, p. 31.

* *Unio hippopæus* P. ETEL, Conch. Sam., III, 1890, p. 155.

Upper Mississippi drainage area south to the Tennessee and Arkansas rivers; Red River of the North; Saskatchewan River; Lake Wiunipeg; western Michigan. The variety in eastern Michigan and Lake Erie.

†QUADRULA PERPLICATA Conrad.

* *Unio perplicatus* CONRAD, Pr. Ac. N. Sci. Phila., I, 1841, p. 19; * Jl. Ac. N. Sci. Phila., VIII, 1842, p. 178; * I, 1850, p. 276, pl. XXXVIII, fig. 2.—* H. and A.

¹ Say says: "It was found by Mr. Lesueur in Lake Erie, and was communicated by him under the above name." As there is no evidence that Lesueur described the species, and as Say was the one to first properly characterize it, I believe that he must be credited with it.

² Referred to figure 5, but this with a number of other figures in this paper were left out by the editor.

³ Lea, who examined Lamarck's types and collection, states that this is the same as Say's *plicata*.

⁴ Dr. Lea does not describe this, but only states that it is in Dr. Mitchell's collection. Probably it has never been described.

⁵ Apparently a stunted variety of *Quadrula plicata*. Dr. Lea's specimens show a great diversity of characters.

ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* REEVE, Conch. Icon., XVI, 1864, pl. IX, fig. 35.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

**Margaron (Unio) perplicatus* LEA, Syn., 1852, p. 20; 1870, p. 29.

**Plectomerus perplicatus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 261.

†**Unio atrocostatus* LEA, Tr. Am. Phil. Soc., X, 1848, p. 70, pl. II, fig. 5;¹ * Obs., IV, 1848, p. 44, pl. II, fig. 5.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 145.

**Margaron (Unio) atrocostatus* LEA, Syn., 1852, p. 20; 1870, p. 29.

†**Unio pearlensis* CONRAD, Tr. Am. Phil. Soc., VII, 1855, p. 256.²—* REEVE, Conch. Icon., XVI, 1864, pl. XI, fig. 42.

**Unio perlensis* PÆTEL, Conch. Sam., III, 1890, p. 163.

†**Unio brazosensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 144;³ * JI. Ac. N. Sci. Phila., VI, 1869, p. 309, pl. XLVIII, fig. 122; * Obs., XII, 1869, p. 69, pl. XLVIII, fig. 122.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) brazosensis* LEA, Syn., 1870, p. 31.

†**Unio lincecumii* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 144; * JI. Ac. N. Sci. Phila., VI, 1869, p. 312, pl. XLIX, fig. 125; * Obs., XII, 1869, p. 72, pl. XLIX, fig. 125.—* B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) lincecumii* LEA, Syn., 1870, p. 31.

**Unio lincecarii* PÆTEL, Conch. Sam., III, 1890, p. 157.⁴

†**Unio pauciplicatus* LEA, Pr. Ac. N. Sci. Phila., II, 1872, p. 156; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 29, pl. IX, fig. 26; * Obs., XIII, 1874, p. 33, pl. IX, fig. 26.—* B. H. WRIGHT, Check List, 1888.

†QUADRULA PERPLICATA var. QUINTARDII Cragin.⁵

**Unio quintardii* CRAGIN, Bull. Washb. College, II, 1887, p. 6.—* PILSBRY, Pr. Ac. N. Sci. Phila., 1892, p. 131, pl. VII, figs. 1-3.—* B. H. WRIGHT, Check List, 1888.

Alabama River drainage and streams flowing into the Gulf of Mexico west to central Texas, north to southern Kansas.

†QUADRULA ELLIOTTII Lea.⁶

**Unio elliottii* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 262; * JI. Ac. N. Sci. Phila., IV, 1858, p. 54, pl. VII, fig. 37; * Obs., VI, 1858, p. 54, pl. VII, fig.

¹This seems to be merely a form of *perplicata*, with a rather rude growth and roughened epidermis.

²A comparatively smooth form of *perplicatus*, according to the type.

³Another smooth form of *perplicatus*.

⁴The above is a fair sample of Pætel's orthography throughout his work.

⁵A right valve of the type was kindly loaned to the writer by Mr. Quintard. It is a rather light brown, glossy shell, and is sculptured with a series of A-shaped markings on the disk. Otherwise it is generally like *Q. perplicatus*. I have seen the *Q. undulata* and one or two other species of this group break from the ordinary oblique bars into these peculiar markings, and I am quite sure that in this case the same thing has happened to *Q. perplicata*.

⁶Dr. Lea first called this *Unio atrocostatus*, and then wrote in one of his duplicates *Unio elliottii*. He says that it is very near to *U. perplicatus* Conrad, but that the young of his species have a yellow stain on the posterior part of the naere not found on any other species. I have, however, found it on young *atrocostatus* in his collection. I am strongly inclined to believe that the *elliottii* is only a peculiar, vigorous variety of *perplicata*, but do not feel quite certain of it, and so let it go as a species with doubt.

37.—*REEVE, *Conch. Icon.*, XVI, 1864, pl. v, fig. 20.—*B. H. WRIGHT, *Check List*, 1888.

**Margaron (Unio) elliotii* LEA, *Syn.*, 1870, p. 29.

Southern Georgia to Texas.

† QUADRULA UNDULATA Barnes.

**Unio undulatus* BARNES, *Am. Jl. Sci.*, VI, 1823, p. 120, pl. II.—*HILDRETH, *Am. Jl. Sci.*, XIV, 1828, p. 279.—*HANLEY, *Test. Moll.*, 1842, p. 175; **Biv. Shells*, 1843, p. 175, pl. XX, fig. 26.—*CATLOW and REEVE, *Conch. Nom.*, 1845, p. 65.—*CHENU, *Bib. Conch.*, 1st ser., III, 1845, p. 24, pl. v, figs. 1, 1a.—*H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 495.—*CHENU, *Manual*, 1859, II, p. 143, fig. 704.—*SOWERBY, *Conch. Icon.*, XVI, 1868, pl. LXXXVI, fig. 399.—*CALKINS, *Pr. Ottawa Acad. Sci.*, 1874, p. 45.—*B. H. WRIGHT, *Check List*, 1888.

**Margarita (Unio) undulatus* LEA, *Syn.*, 1836, p. 12; 1838, p. 14.

**Margaron (Unio) undulatus* LEA, *Syn.*, 1852, p. 20; 1870, p. 29.

**Mya undulata* EATON, *Zool. Text-Book*, 1826, p. 219.

**Unio undulata* VALENCIENNES, *Rec. Obs. Zool. Anat.*, II, 1833, p. 229, pl. LIV, figs. 3, 3a, 3b.—*DESHAYES, *Tr. Elem. Conch.*, 1839, p. 19, pl. XXX, figs. 8, 9.

**Quadrula undulata* BAKER, *Moll. Chicago*, Pt. I, 1898, p. 82, pl. XXII, figs. 1, 2; XII, fig. 1.

**Unio costatus* SAY, *Am. Conch.*, VI, 1834.—*CONRAD, *New F. W. Shells*, 1834, p. 68.—*FERUSSAC, *Guer. Mag.*, 1835, p. 27.—*CONRAD, *Monog.*, II, 1836, p. 17, pl. VII.—*KUSTER, *Conch. Cab.*, 1852, p. 54, pl. XI, fig. 4.—*REEVE, *Conch. Icon.*, XVI, 1864, pl. IV, fig. 16.

**Plectomerus costatus* CONRAD, *Pr. Acad. N. Sci. Phila.*, VI, 1853, p. 260.

**Unio plicatus* KUSTER, *Conch. Cab.*, 1856, p. 137, pl. XL, fig. 3.—*CHENU, *Manual*, 1859, II, p. 143, fig. 706.

**Unio atrocostatus* SOWERBY, *Conch. Icon.*, XVI, 1868, pl. LXXVII, fig. 404.

† QUADRULA UNDULATA var. LATECOSTATA Lea.

**Unio latecostatus* LEA, *Pr. Am. Phil. Soc.*, IV, 1845, p. 163;¹ **Tr. Am. Phil. Soc.*, X, 1848, p. 68, pl. I, fig. 2; **Obs.*, IV, 1848, p. 42, pl. I, fig. 2.—*KUSTER, *Conch. Cab.*, 1861, p. 251, pl. LXXXIV, fig. 4.—*B. H. WRIGHT, *Check List*, 1888.

**Margaron (Unio) laticostatus* LEA, *Syn.*, 1852, p. 21.

**Margaron (Unio) laticostatus* LEA, *Syn.*, 1870, p. 31.

**Unio laticostatus* H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 497.—*PÄTEL, *Conch. Sam.*, III, 1890, p. 156.

† QUADRULA UNDULATA var. PILSBRYI Marsh.

**Unio pilsbryi* MARSH, *Nautilus*, V, 1891, p. 1.²—*PILSBRY, *Pr. Ac. N. Sci. Phila.*, 1892, p. 131, pl. VIII, figs. 7, 8; **Nautilus*, VII, 1893, pl. I, figs. 7, 8.³

¹ More compressed and having finer, more delicate plications than the type. I have traced it northward into Kansas, where it gradually assumes the ordinary form of *undulata*. Occasional specimens are found in the Northern States which agree very well with the typical *latecostata*.

² I feel quite sure that this is only a peculiar variety of *undulata*.

³ A peculiar shell belonging to Mr. J. H. Ferriss, of Joliet, Illinois, from Lake Winipeg, has been examined by the writer. It has unusually strong growth lines and is quite full in the ventral region, and has only the very faintest vestiges of plications below the lower part of the posterior ridge. I regard it as a smooth form of *Q. undulata*, and if any considerable number of such specimens were found it might be worthy of a varietal name.

Mississippi basin generally; St. Lawrence drainage; Red River of the North; Lake Winnipeg; Alabama River system; southwest to western Texas, the varieties in the southwestern area.

QUADRULA DIGITATA Morelet.

- * *Unio digitatus* MORELET, Test. Noviss., Pt. 2, 1851, p. 24.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 563, pl. LX, fig. 1.

Rio Usumacinta, Guatemala.

† QUADRULA TRIUMPHANS B. H. Wright.

- * *Unio triumphans* B. H. WRIGHT, Nautilus, XI, 1898, p. 101.
* *Quadrula triumphans* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 83, pl. III, fig. 3.

Coosa River, St. Clair County, Alabama.

† QUADRULA BOYKINIANA Lea.

- * *Unio boykinianus* LEA, Pt. Am. Phil. Soc., I, 1840, p. 288; * Tr. Am. Phil. Soc., VIII, 1842, p. 208, pl. XIII, fig. 22; * Obs., III, 1842, p. 46, pl. XIII, fig. 22.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* CHENU, Ill. Conch., 1858, pl. XXVII, figs. 2, 2a, 2b.—* KUSTER, Conch. Cab., 1861, p. 181, pl. LVII, fig. 1.—* SOWERBY, Conch. Icon., XVI, 1868, pl. I, fig. 1.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 146.
* *Margaron (Unio) boykinianus* LEA, Syn., 1852, p. 19; 1870, p. 28.
* *Plectomerus boykinianus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 260.
* *Unio baykinianus* PÆTEL, Conch. Sam., III, 1890, p. 145.

Chattahoochee River system; Claiborne, Alabama; Pine Barren Creek, Escambia County, Florida.

† QUADRULA HEROS Say.¹

- Unio heros* SAY, New Harm. Diss., II, No. 19, 1829, p. 291; * Am. Conch., VI, 1834, (part).—* CONRAD, New F. W. Shells, 1834, p. 69.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Monog., XII, 1840, p. 107, pl. LIX.—* HANLEY, Test. Moll., 1842, p. 175; * Biv. Shells, 1843, p. 175, pl. XXII, fig. 28.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
* *Unio heros* var. *multiplicatus* PÆTEL, Conch. Sam., III, 1890, p. 155.
* *Unio undulatus* SAY, Am. Conch., I, 1831, pl. XVI (April).
† * *Unio multiplicatus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 70, pl. IV, fig. 2 (latter part of the year); * Obs., I, 1834, p. 80, pl. IV, fig. 2.—* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 155, pl. LIX, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* CHENU, Ill. Conch., 1858, pl. IX, figs. 2, 2a, 2b; * Manual, 1859, II, p. 143, fig. 703.—* CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 43.—* B. H. WRIGHT, Check List, 1888.

¹ There has been some dispute as to what name should be applied to the above species. In 1829 Say fully described in the New Harmony Disseminator a species which he called *Unio heros*, but did not figure it. Later in the American Conchology he placed it in the synonymy of *Unio undulatus* Barnes, though the figure which he gives as *undulatus* in that work and to which his description refers is plainly not Barnes's species, but the *heros* described in the Disseminator. In 1831 Dr. Lea described Say's species as *Unio multiplicatus*. Notwithstanding the fact that Say placed his own species in the synonymy, it is perfectly distinct and was properly characterized in his description, and his name will have to take the place of the better known one of Dr. Lea.

† **Margarita (Unio) multiplicatus* LEA, Syn., 1836, p. 12; 1838, p. 14.

**Margaron (Unio) multiplicatus* LEA, Syn., 1852, p. 20; 1870, p. 29.

† **Unio eightsii* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 306; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 367, pl. LXIV, fig. 192; *Obs., VIII, 1860, p. 49, pl. LXIV, fig. 192.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 564.

**Margaron (Unio) eightsii* LEA, Syn., 1870, p. 29.

**Unio eightsii* PÆTEL, Conch. Sam., III, 1890, p. 151.

**Unio atrocostatus* REEVE, Conch. Icon., XVI, 1864, pl. IV, fig. 13: (Change. in Errata to *Unio heros*.)

Mississippi River system generally; Red River of the North; Tombigbee River, Alabama; southwest to New Leon, Mexico.

† QUADRULA NICKLINIANA Lea.

**Unio nicklinianus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 28, pl. I, fig. 1; *Obs., I, 1834, p. 140, pl. I, fig. 1.—* HANLEY, Test. Moll., 1842, p. 175; *Biv. Shells, 1843, p. 175, pl. XXI, fig. 52.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LIH, fig. 276.—* B. H. WRIGHT, Check List, 1888.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 565.

**Margarita (Unio) nicklinianus* LEA, Syn., 1836, p. 12; 1838, p. 14.

**Margaron (Unio) nicklinianus* LEA, Syn., 1852, p. 19; 1870, p. 28.

**Plectomerus nicklinianus* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 261.

**Unio nicklinianus* KUSTER, Conch. Cab., 1861, p. 218, pl. LXXIII, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 161.

Mexico; Guatemala.

† QUADRULA STOLLI von Martens.

† *Unio stollii* VON MARTENS, Biol. Centrali-Amer., Mollusca, 1900, p. 492, pl. XXIX, fig. 2.

Rio de las Salinas, Guatemala; Moctezuma River Central America?¹

† QUADRULA NEISLERII Lea.

**Unio neislerii* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 165; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 212, pl. XXVI, fig. 93; *Obs., VII, 1859, p. 30, pl. XXVI, fig. 93.—

* B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) neislerii* LEA, Syn., 1870, p. 29.

Flint River and Macon, Georgia.

¹ Very close to *Quadrula nickliniana* Lea. According to von Martens in the above citation the *Unio nickliniana* of Kuster (Conch. Cab. Unio, new ed., p. 218, pl. LXXIII, fig. 3) is not the *nicklinianus* of Lea, but a new species which he calls *Unio stollii*. I can not agree with him, as it seems to me that Kuster's figure represents Lea's species very well. The figure and description of *U. stollii* given by von Martens represent a more elongated and more plicate shell than the typical *nicklinianus* of Lea, but I am doubtful whether it is distinct. Lea's shells of both forms are mostly from the Moctezuma River, which is in Central America according to Lea, but the only river of that name I can find is in New Leon, Mexico. Part of von Martens' work describing the Unionidae of Central America has been received as the Synopsis is going through the press, and for the most part too late to avail myself of the large amount of valuable information it contains.

(Group of *Quadrula trapezoides*.)

Shell rhomboid, inflated, with a high posterior ridge; beak sculpture coarse, irregular corrugations swollen to nodules on the posterior ridge; surface sculptured on posterior half with oblique ridges, which are sometimes corrugated, and with strong corrugations on post slope beak cavities only moderately deep; nacre purple.

Animal with the gills slightly rounded below, inner the larger throughout, free from the abdominal sac; palpi enormous, long; branchial opening very large, finely papillose; anal opening with fine papilla or crenulations.

† QUADRULA TRAPEZOIDES Lea.¹

* *Unio crassidens* var. *a*, LAMARCK, An. sans Vert., VI, 1819, p. 71.²

* *Plectomerus crassidens* var. *a*, CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 261.

* *Unio trapezoides* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 69, pl. III, fig. 1; * Obs., I, 1834, p. 79, pl. III, fig. 1.—* CONRAD, New F. W. Shells, 1834, p. 72 —* FERUSSAC, Guer. Mag., 1835, p. 27.—* HANLEY, Test. Moll., 1842, p. 176; * Biv. Shells, 1843, p. 176, pl. XXII, fig. 29.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. X, figs. 2, 2a, 2b; Manual, 1859, II, p. 142, fig. 699.—* KUSTER, Conch. Cab., 1862, p. 274, pl. XCII, fig. 2.—* REEVE, Conch. Icon., XVI, 1864, pl. V, fig. 17.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL Conch. Sam., III, 1890, p. 169.

* *Margarita (Unio) trapezoides* LEA, Syn., 1836; p. 12; 1838, p. 14.

* *Margaron (Unio) trapezoides* LEA, Syn., 1852, p. 21; 1870, p. 31.

Unio interruptus SAY, Transylvania Journal, IV, 1831, p. 525; * Am. Conch., IV, 1832, pl. XXXIII, VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 556; 3d ed., II, 1839, p. 675.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 45, pl. XVII, figs. 1-3.

* *Unio dombeyana* VALENCIENNES, Rec. Obs. Zool., II, 1833, p. 227, pl. LIII, figs. 1, 1a, 1b.

Streams flowing into the Gulf of Mexico, from the Alabama River west to eastern Texas; northward in the Mississippi system to north-west Tennessee.

¹In 1820 Rafinesque applied the name *interrupta* to some, to me, unknown *Unio*, in Ann. Gen. Sci. Phys. Brux., but as he placed his species in the subgenus *Plagiola* of the genus *Obliquaria* and not in *Unio* at all, it does not have priority in the latter genus. In 1831 (December, according to Dr. Lea) Say described in the Transylvania Journal the species which Dr. Lea called *Unio trapezoides* as *Unio interruptus*. In the latter part of the same year (I am unable to ascertain the exact date) Dr. Lea published his name in the Transactions of the American Philosophical Society. As I have found it impossible to determine which name was actually published first I have used the better known—that of Dr. Lea.

²This is *Unio trapezoides* Lea according to Lea, who examined the Lamarckian types. See Synopsis, 4th ed., p. 37, footnote.

Section QUADRULA (Rafinesque, 1820) Agassiz.

(Type, *Unio cylindricus* Say.)

Shell rhomboid; surface pustulous, with a high, rounded, or sharp posterior ridge; epidermis generally smooth and bright.

(Group of *Quadrula metanевра*.)

Shell quadrate or rhomboid, with a wide, rounded posterior ridge, above which, on the posterior slope is a decided radial furrow; whole surface except the anterior end generally pustulous, the sculpture of the posterior slope being often wrinkled; umbonal region high; epidermis shining, usually painted with a beautiful pattern of triangular spots, and sometimes chevron-shaped lines; hinge strong, the secondary lateral in right valve rather feeble, but there is often a faint third lateral above; cavity of the beaks deep and compressed.

Animal with the marsupium filling all four leaves of the branchiæ, the ova giving it a purplish tint; inner gills free from the abdominal sac for the greater part of their length; mantle bordered with black; branchial opening opposite the lobe of the shell, extending well on to its base; anal opening without papillæ.

†QUADRULA CYLINDRICA Say.

- * *Unio cylindricus* SAY, Nich. Encyc., II, 1816, pl. IV, fig. 3.—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 283, figs. 13, 13b.—* SHORT and EATON, Transylvania Jl., 1831, p. 76.—* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 68.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* HANLEY, Test. Moll., 1842, p. 182; * Biv. Shells, 1843, p. 182, pl. XX, fig. 31.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* KUSTER, Conch. Cab. Unio, 1861, p. 194, pl. LXII, figs. 1, 2.—* SOWERBY, Conch. Icon., XVI, 1867, pl. LX, fig. 300.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 150.—* CALL, Tr. Acad. Sci. St. Louis, VII, 1895, p. 15, pl. XII.
- * *Margarita (Unio) cylindricus* LEA, Syn., 1836, p. 17; 1838, p. 16.
- * *Margaron (Unio) cylindricus* LEA, Syn., 1852, p. 23; 1870, p. 35.
- * *Orthonymus cylindricus* AGASSIZ, Arch. für. Naturg., I, 1852, p. 48.
- * *Mya cylindrica* EATON, Zool. Text-Book, 1826, p. 219.
- * *Unio (Theliderma) cylindrica* SWAINSON, Treat. on Mal., 1840, p. 271, fig. 54c.
- * *Unio (Euryntia) solenoides* var. *cylindrica* RAFINESQUE, Ann. Gen. Sci. Phys. Brux., V, 1820, p. 298.
- * *Unio nariformis* LAMARCK, An. sans Vert., VI, 1819, p. 75.—* DESHAYES, Encyc. Méth., II, 1830, p. 580.—* VALENCIENNES, Rec. Obs. Zool., II, 1833, p. 233, pl. LIII, fig. 4.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 537; 3d ed., II, 1839, p. 669.—* ANTON, Verz. der. Conch., 1839, p. 14.—* REEVE, Conch. Syst., 1841, p. 118, pl. LXXXIX, fig. 7.¹
- * *Unio rugosus* CHENU, Man., 1859, II, p. 138, fig. 668.

Entire Ohio, Cumberland, and Tennessee river systems; west to Nebraska (Aughey, doubtful); south to Arkansas and Indian Territory.

¹Mr. B. H. Wright, Nautilus, XII, 1898, p. 6, has made a var. *strigillatus* of a compressed, very rough form of *cylindrica*. There seems to me to be an absolute gradation from cylindrical, nearly smooth specimens to this form.

† QUADRULA METANEVRA Rafinesque.

- * *Obliquaria (Quadrula) metanевра* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 305, pl. LXXXI, figs. 15, 16.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 18, pl. II, figs. 15, 16.
- * *Unio (Theliderma) metanевра* SWAINSON, Treat. on Mal., 1840, p. 268, figs. 50, 54b.
- * *Unio metanerer* SHORT and EATON, Transylvania Jl., 1831, p. 76.—* CONRAD, New F. W. Shells, 1834, p. 70.—* HANLEY, Test. Moll., 1842, p. 179; * Biv. Shells, 1843, p. 179, pl. XXI, fig. 31.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* REEVE, Conch. Icon., XVI, 1864, pl. VII, fig. 25.—* PÆTEL, Conch. Sam., III, 1890, p. 159.
- * *Margarita (Unio) metanever* LEA, Syn., 1836, p. 15; 1838, p. 15.
- * *Unio metanervus* SAY, Am. Conch., VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Monog., I, 1835, p. 10, pl. v, fig. 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CALKINS, Pr. Ottawa Ac. N. Sci., 1874, p. 43.—* B. H. WRIGHT, Check List, 1888.—CALL, Tr. Acad. N. Sci. St. Louis, VII, 1895, p. 28, pl. x.
- * *Margaron (Unio) metanervus* LEA, Syn., 1852, p. 22; 1870, p. 33.
- * *Unio metaniver* CATLOW and REEVE, Conch. Nom., 1845, p. 61.
- * *Unio metanervus* KUSTER, Conch. Cab. Unio, 1852, p. 50, pl. x, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 159.
- *? *Unio nodosus* BARNES, Am. Jl. Sci. VI, 1823, p. 124, pl. vi, figs. 7, 7a, 7b.²—* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 281.—* CHENU, Manual, 1859, II, p. 138, fig. 663.
- * *Mya nodosa* EATON, Zool. Text-Book, 1826, p. 216.

† QUADRULA METANEVRA var. WARDII Lea.

- * *Unio wardii* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 392; * Jl. Ac. N. Sci. Phila., V, 1862, p. 187, pl. XXIV, fig. 257; * Obs., IX, 1863, p. 9, pl. XXIV, fig. 257.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXII, fig. 434.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 172.
- * *Margaron (Unio) wardii* LEA, Syn., 1870, p. 33.

Mississippi drainage area except its southern portion, extending to the Tennessee and Arkansas rivers.

† QUADRULA TUBEROSA Lea.

- * *Unio tuberosus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 286; * Tr. Am. Phil. Soc., VIII, 1842, p. 210, pl. XIV, fig. 25; * Obs., III, 1842, p. 48, pl. XIV, fig. 25.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. XXVIII, figs. 7, 7a, 7b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 170.
- * *Margaron Unio tuberosus* LEA, Syn., 1852, p. 22; 1870, p. 33.

Cumberland and Tennessee river systems.

¹ By common consent this species—which is a most striking one—has been allowed to stand to the credit of Rafinesque. The outlines of the figures bear some resemblance to the species.

² It is hard to tell from these figures just what Barnes had before him when he described this species. They are as much like *metanевра* as anything.

†QUADRULA SPARSA Lea.

- * *Unio sparsus* LEA, Pr. Am. Phil. Soc., II, 1841, p. 82;¹ *Tr. Am. Phil. Soc., VIII, 1842, p. 242, pl. xxv, fig. 58; *Obs., III, 1842, p. 80, pl. xxv, fig. 58.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—*CHENU, Ill. Conch., 1858, pl. xxvi, figs. 2, 2a, 2b.—*REEVE, Conch. Icon., XVI, 1864, pl. iv, fig. 14.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 168.
- * *Margaron (Unio) sparsus* LEA, Syn., 1852, p. 22; 1870, p. 33.

Holston and Clinch rivers, Tennessee.

†QUADRULA INTERMEDIA Conrad.

- * *Unio intermedius* CONRAD, Monog., VII, 1836, p. 63, pl. xxxv, fig. 2; *Pr. Ac. N. Sci. Phil., VI, 1853, p. 250.—*HANLEY, Biv. Shells, 1856, p. 381, pl. xx, fig. 28.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—*KUSTER, Conch. Cab. Unio, 1861, p. 213, pl. lxx, fig. 6.—*REEVE, Conch. Icon., XVI, 1864, pl. xiii, fig. 48.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 155.
- * *Margaron (Unio) intermedius* LEA, Syn., 1852, p. 22; 1870, p. 33.
- * *Unio kleinianus* KUSTER, Conch. Cab. Unio, 1861, p. 191, pl. lx, fig. 4.

Tennessee River system.

†QUADRULA STAPES Lea.

- * *Unio stapes* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 77, pl. vii, fig. 8.—*Obs., I, 1834, p. 87, pl. vii, fig. 8.—*CONRAD, New F. W. Shells, 1834, p. 71.—*FERUSSAC, Guer. Mag., 1835, p. 28.—*CONRAD, Monog., VII, 1836, p. 62, pl. xxxv, fig. 1.—*HANLEY, Test. Moll., 1842, p. 179; *Biv. Shells, 1843, p. 179, pl. xxii, fig. 38.—*CATLOW and REEVE, Conch. Nom., 1845, p. 64.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—*CHENU, Ill. Conch., 1858, pl. xv, figs. 5, 5a, 5b; *Manual, 1859, II, p. 142, fig. 997.—*REEVE, Conch. Icon., XVI, 1864, pl. xiii, fig. 52.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 168.
- * *Margarita (Unio) stapes* LEA, Syn., 1836, p. 15; 1838, p. 13.
- * *Margaron (Unio) stapes* LEA, Syn., 1852, p. 22; 1870, p. 33.
- * *Unio retusus* SAY, Am. Conch., VI, 1834.
- * *Unio stegarius* KUSTER, Conch. Cab. Unio, 1861, p. 211, pl. lxx, fig. 3.

Alabama and Tombigbee rivers.

Section THELIDERMA (Swainson, 1840) Simpson.²

(Type, *Unio lachrymosus* Lea.)

Shell rounded, quadrate to rhomboid, solid, pustulous; beaks rather prominent; beak sculpture consisting of a few rather coarse, subparallel ridges; anterior end rounded or slightly subtruncate above; base often arcuate; posterior end truncate, high and angled behind the ligament; epidermis scarcely rayed, never pointed; beak cavities rather deep.

¹ It is likely that this is only a small, rather smooth variety of *tuberosus*.

² Swainson's first species of this group in the text of the Treatise is *Unio irroratus*, and after this *metanevrus* and *cylindricus*. In the final classification in the same work he includes in the group *lachrymosus* and *pustulosus*, and by the process of elimination I use the name in order to save coining a new one.

(Group of *Quadrula lachrymosa*.)

Shell quadrate or rhomboid, generally with a sharp, well-developed posterior ridge, in front of which is a wide, shallow, radial excavation; base incurved, posterior end sharply truncate, generally slightly bingular below, high and distinctly angled behind the ligament; posterior tubercles often in somewhat radiating rows; earlier beak sculpture consisting of ridges nearly parallel with the growth lines, but later on becoming doubly looped and blending into the general sculpture of the shell; epidermis smooth; pseudocardinals strong; laterals straight; nacre white.

Animal with all four gills used as a marsupium throughout, inner much the larger, free from the abdominal sac nearly or quite their whole length; palpi very large; branchial opening generally having clustered, often branching papillæ; anal opening smooth; superanal opening closed below.

†QUADRULA ASPER Lea.

* *Unio asper* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 85, pl. IX, fig. 15; * Obs., I, 1834, p. 95, pl. IX, fig. 15.—* CONRAD, New F. W. Shells, 1834, p. 67.—* HANLEY, Test. Moll., 1842, p. 179; * Biv. Shells, 1843, p. 179, pl. XXII, fig. 37.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. XV, figs. 4, 4a, 4b; * Manual, 1859, II, p. 142, fig. 695.—* REEVE, Conch. Icon., XVI, 1864, pl. V, fig. 18.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) asper* LEA, Syn., 1836, p. 15; 1838, p. 15.

* *Margaron (Unio) asper* LEA, Syn., 1852, p. 22; 1870, p. 33.

* *Unio nobilis* CONRAD, Jl. Ac. N. Sci. Phila., II, 1854, p. 297, pl. XXVII, figs. 2, 3.

* *Unio iurgidus* REEVE, Conch. Icon., XVI, 1864, pl. III, fig. 10.

* *Unio apiculatus* var. *asper* PÆTEL, Conch. Sam., III, 1890, p. 144.

Streams flowing into the Gulf of Mexico from Alabama west to central Texas, and northward to the Verdigris River, Kansas.

†QUADRULA LACHRYMOSA Lea.

Unio lachrymosus LEA, Tr. Am. Phil. Soc., III, 1828, p. 272, pl. VI, fig. 8;¹ Obs., I, 1834, p. 14, pl. VI, fig. 8.—* SHORT and EATON, Transylvania Jl., 1831, p. 76.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* HANLEY, Test. Moll., 1842, p. 177; * Biv. Shells, 1843, p. 177, pl. XX, fig. 38.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. XV, figs. 6, 6a, 6b; Manual, 1849, II, p. 142, fig. 6:8.—* REEVE, Conch. Icon., XVI, 1864, pl. IX, fig. 33.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 156.

* *Margarita (Unio) lachrymosus* LEA, Syn., 1836, p. 14; 1838, p. 15.

* *Margaron (Unio) lachrymosus* LEA, Syn., 1852, p. 21; 1870, p. 32.

* *Unio lachrymosus* KUSTER, Conch. Cab., 1854, p. 70, pl. XVII, fig. 3.

¹Published as a separate in 1827. I have not seen this. Title from Sabin's Bibliotheca America.

* *Quadrula lachrymosa* BAKER, Moll. Chicago, Pt. I, 1898, p. 83, pl. XXV, fig. 1; XII, fig. 2.

† * *Unio asperimus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 71, pl. v, fig. 3;¹ * Obs., I, 1834, p. 81, pl. v, fig. 3.—* HANLEY, Test. Moll., 1842, p. 178; * Biv. Shells, 1843, p. 178, pl. XXI, fig. 12.—* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 156, pl. LIX, figs. 2, 3.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. IX, figs. 1, 1a, 1b.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) asperimus* LEA, Syn., 1836, p. 14; 1838, p. 15.

* *Margaron (Unio) asperimus* LEA, Syn., 1852, p. 21; 1870, p. 33.

* *Unio quadrulus* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 71.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 256.—* KUSTER, Conch. Cab. Unio, 1861, p. 184, pl. LVIII, fig. 1.

* *Unio quadratus* REEVE, Conch. Icon., XVI, 1864, pl. VI, fig. 24.

† QUADRULA LACHRYMOSA var. LUNULATA Pratt.

* *Unio lunulatus* PRATT, Proc. Dav. Acad. Nat. Sci., I, 1876, p. 167, pl. XXXI, fig. 1.²

Entire Mississippi River drainage; various localities in the St. Lawrence basin; Red River of the North; southwest into eastern Texas.

† QUADRULA COUCHIANA Lea.

* *Unio couchianus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 305; Jl. Ac. N. Sci. Phila., IV, 1860, p. 371, pl. LXVI, fig. 196; * Obs., VIII, 1860, p. 53, pl. LXVI, fig. 196.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXI, fig. 429.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 149.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 566.—* SIMPSON, Proc. U. S. Nat. Mus., XIX, 1896, p. 370.

* *Margaron (Unio) couchianus* LEA, Syn., 1870, p. 54.

Rio Salado, Mexico; southwestern Texas.

† QUADRULA FRAGOSA Conrad.

* *Unio fragosus* CONRAD, Monog., II, 1836, p. 12, pl. VI, fig. 2; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* KUSTER, Conch. Cab. Unio., 1861, p. 173, pl. LV, fig. 1.—* REEVE, Conch. Icon., XVI, 1864, pl. I, fig. 2; VII, fig. 27.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.

* *Margarita (Unio) fragosus* LEA, Syn., 1836, p. 14; 1838, p. 15.

* *Margaron (Unio) fragosus* LEA, Syn., 1852, p. 22; 1870, p. 33.

* *Unio fragosa* CATLOW and REEVE, Conch. Nom., 1845, p. 59.

¹Dr. Lea separated this from his *lachrymosus* because the latter had tearlike nodules, while those of *asperimus* were simply elevated. The two forms absolutely run together, and specimens may be found in which both varieties of nodules occur. There are forms which are almost smooth, and there is great diversity in the matter of inflation. Dr. Lea finally came to doubt whether the *asperimus* was valid.

²I think that this is a solid, inflated variety of *lachrymosus*. From the figure, Pratt's specimens seem to have few tubercles; but I have seen quite a number of shells from the Ohio River north to Minnesota which resemble it in shape, but are strongly pustulous throughout. I was at first inclined to believe these were varieties of *asper*, but I now regard them as a form of *lachrymosus*, and they may perhaps be referred to Pratt's variety. He describes his species as having a large lunule, but individuals vary greatly in this character.

- * *Unio tragosus* HANLEY, Test. Moll., 1842, p. 178; * Biv. Shells, 1843, p. 178, pl. XX, fig. 40.¹—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.

Ohio, Cumberland, and Tennessee river systems; westward probably to Minnesota, Nebraska, and Kansas.

† QUADRULA FORSHEYI Lea.

- * *Unio forsheyi* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 155; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 357, pl. LX, fig. 182; * Obs., VIII, 1860, p. 39, pl. LX, fig. 182.—* REEVE, Conch. Icon., XVI, 1864, pl. VI, fig. 21.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 153.
* *Margaron (Unio) forsheyi* LEA, Syn., 1870, p. 32.

Alabama to Texas, in streams flowing into the Gulf of Mexico.

† QUADRULA SPECIOSA Lea.

- * *Unio speciosus* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 168; * Jl. Ac. N. Sci. Phila., V, 1862, p. 207, pl. XXXI, fig. 276; * Obs., IX, 1863, p. 29, pl. XXXI, fig. 276.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIV, fig. 447.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.
* *Margaron (Unio) speciosus* LEA, Syn., 1870, p. 33.

Kansas, south to Texas.

† QUADRULA APICULATA Say.

- * *Unio apiculatus* SAY, New Harm. Diss., II, No. 2, 1829, p. 309; * Am. Conch., VI, 1834, pl. LII.²—* CONRAD, New F. W. Shells, 1834, p. 67.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Monog., IX, 1837, p. 78, pl. XLIV, fig. 1.—* HANLEY, Test. Moll., 1842, p. 178; * Biv. Shells, 1843, p. 178, pl. XXIII, fig. 51.—* CATLOW and REEVE, Conch. Nom., 1845, p. 55.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Manual, 1859, II, p. 142, fig. 696.—* REEVE, Conch. Icon., XVI, 1864, pl. III, fig. 11.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 144.
* *Margarita (Unio) apiculatus* LEA, Syn., 1836, p. 15; 1838, p. 15.
* *Margaron (Unio) apiculatus* LEA, Syn., 1852, p. 22; 1870, p. 33.
* *Unio nobilis* CONRAD (part), Jl. Ac. N. Sci. Phila., 1854, p. 297, pl. XXVII, figs. 2, 3.³

Louisiana to Texas.

† QUADRULA RUMPHIANA Lea.

- * *Unio rumphianus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 276, pl. XXII, fig. 34; Obs., V, 1852, p. 32, pl. XXII, fig. 34.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 166.
* *Margaron (Unio) rumphianus* LEA, Syn., 1852, p. 21; 1870, p. 33.
† * *Unio blandianus* LEA,⁴ Pr. Ac. N. Sci. Phila., VIII, 1856, p. 263; * Jl. Ac. N. Sci.

¹ Written *tragosus* in text, no doubt a typographical error, as it is written correctly in the explanation of the plate.

² Say says that *U. asper* Lea is the same as his *apiculatus*. I think he is wrong.

³ One specimen figured (fig. 2) is *Q. apiculata*. The other (fig. 3) is a nondescript, possibly *Q. asper*, or it may be the form of *Q. lachrymosus* which I have placed under var. *lunulatus* Pratt.

⁴ Certain forms of *rumphianus* are very different from *blandianus*, being more inflated, and showing a high, biangulate posterior ridge and a deep radial sinus in front of it, while specimens of the latter are much less inflated and have a low, somewhat rounded, posterior ridge. But the difference between the two seems to be absolutely bridged by intermediate specimens.

Phila., IV, 1858, p. 65, pl. XI, fig. 47; * Obs., VI, 1858, p. 65, pl. XI, fig. 47.—
 * SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVIII, fig. 405.—* B. H. WRIGHT,
 Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 46.

† *Margaron (Unio) blandianus* LEA, Syn., 1870, p. 33.

Western Georgia; Alabama in the Gulf drainage.

(Group of *Quadrula pustulosa*.)

Shell round quadrate, truncated behind, full and angled back of the ligament; beaks high; beak sculpture a few coarse ridges which are swollen at the somewhat rounded posterior ridge; surface generally more or less pustulous but sometimes entirely smooth and in some cases slightly corrugated; epidermis often having a broad, faint, green ray; hinge strong; naere white or purple.

Animal with the marsupium occupying all four gills throughout; inner gills the larger, free the whole or the greater part of their length from the abdominal sac; branchial opening having clustered, often branching, papillæ.

† QUADRULA PUSTULOSA Lea.

* *Unio pustulosus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 76, pl. VII, fig. 7; * Obs., I, 1834, p. 86, pl. VII, fig. 7.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* HANLEY, Test. Moll., 1842, p. 180; * Biv. Shells, 1843, p. 180, pl. XXI, fig. 34.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CHENU, Ill. Conch., 1858, pl. XXIII, figs. 2, 2a, 2b.—* CALKINS, Pr. Ottawa Acad. N. Sci., 1874, p. 44.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) pustulosus* LEA, Syn., 1836, p. 15; 1838, p. 15.

* *Margaron (Unio) pustulosus* LEA, Syn., 1852, p. 22; 1870, p. 33.

* *Quadrula pustulosa* BAKER, Moll. Chicago, Pt. 1, 1898, p. 86, pl. XXV, fig. 2; XXVIII, fig. 13.

* *Unio verrucosa* VALENCIENNES, Rec. Obs. Zool. Anat., II, 1833, p. 231, pl. LIII, fig. 2.

* *Unio nodulosus* SAY, Am. Conch., VI, 1834.

* *Unio prasinus* CONRAD, New F. W. Shells, 1834, p. 44, pl. III, fig. 1, p. 71.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* MÖLLER, Syn. Nov. Gen., 1836, p. 208.—* CONRAD, Monog., IX, 1837, p. 79, pl. XLIV, fig. 2.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 22, pl. III, fig. 1.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* REEVE, Conch. Icon., XVI, 1864, pl. VII, figs. 26, 26a, 26b.—* B. H. WRIGHT, Check List, 1888.

* *Unio bullatus* var. *prasinus* PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Unio bullatus* CONRAD, New F. W. Shells, 1834, p. 68; Monog., X, 1838, p. 82, pl. XLV, fig. 2.—* KUSTER, Conch. Cab. Unio, 1852, p. 47, pl. IX, fig. 3.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* REEVE, Conch. Icon., XVI, 1864, pl. XII, fig. 43.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Unio dorfeuillianus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 73, pl. XVII, fig. 54; * Obs., II, 1838, p. 73, pl. XVII, fig. 54.—* TROSCHEL, Arch. für Naturg., V, 1839, II, p. 237.—* HANLEY, Test. Moll., 1842, p. 179; * Biv. Shells, 1843, p. 179, pl. XXIII, fig. 10.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 248.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. XXV, figs. 5, 5a, 5b.—* REEVE, Conch. Icon., XVI, 1864, pl. X, fig. 38.—* B. H. WRIGHT, Check List,

1A smooth form of *pustulosus*, according to the type in Philadelphia Academy.

1888.—* CALL (part), Tr. Ac. N. Sci. St. Louis, VII, 1895, p. 40, pls. XII, XIII, XIV, XV, figs. 1, 2.

**Margarita (Unio) dorfeullianus* LEA, Syn., 1838, p. 15.

**Margaron (Unio) dorfeullianus* LEA, Syn., 1852, p. 22; 1870, p. 33.

*? *Unio uber* CONRAD, Am. Jl. Conch., II, 1866, p. 279, pl. xv, fig. 16.¹

†* *Unio schoolcraftensis* LEA, Tr. Am. Phil. Soc., V, 1834, p. 37, pl. III, fig. 9;² *Obs., I, 1834, p. 149, pl. III, fig. 9.—*FERUSSAC, Guer. Mag., 1835, p. 29.—*HANLEY, Test. Moll., 1842, p. 178; *Biv. Shells, 1843, p. 178.—*CATLOW and REEVE, Conch. Nom., 1845, p. 63.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—*SOWERBY, Conch. Icon., XVI, 1868, pl. I, fig. 3; XIII, fig. 47.

**Margarita (Unio) schoolcraftensis* LEA, Syn., 1836, p. 15; 1838, p. 15.

**Margaron (Unio) schoolcraftensis* LEA, Syn., 1852, p. 22.

**Unio bullatus* var. *schoolcraftensis* PÆTEL, Conch. Sam., III, 1890, p. 146.

**Margaron (Unio) schoolcraftii* LEA, Syn., 1870, p. 33.

**Unio schoolcraftii*, B. H. WRIGHT, Check List, 1888.

†QUADRULA PUSTULOSA var. PERNODOSA Lea.

**Unio pernodosus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 163; *Tr. Am. Phil. Soc., X, 1848, p. 71, pl. III, fig. 8; *Obs., IV, 1848, p. 45, pl. III, fig. 8.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 254.—*REEVE, Conch. Icon., XVI, 1864, pl. XII, fig. 46.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 163.

**Margaron (Unio) pernodosus* LEA, Syn., 1870, p. 34.

†* *Unio asperatus* LEA,³ Pr. Ac. N. Sci. Phila., V, 1861, p. 41; *Jl. Ac. N. Sci. Phila., V, 1862, p. 68, pl. VII, fig. 218; *Obs., VIII, 1862, p. 72, pl. VII, fig. 218.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXV, fig. 450.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 145.

**Margaron (Unio) asperatus* LEA, Syn., 1870, p. 33.

†QUADRULA PUSTULOSA var. KEINERIANA Lea.

**Unio keinerianus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 251; *Tr. Am. Phil. Soc., X, 1852, p. 281, pl. XXIII, fig. 40; *Obs., V, 1852, p. 37, pl. XXIII, fig. 40.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 156.

**Margaron (Unio) keinerianus* LEA, Syn., 1852, p. 22; 1870, p. 34.

Entire Mississippi drainage; Michigan; Lake Erie;? Alabama River system; westward to central Texas; the varieties in streams draining into the Gulf of Mexico.

¹ Probably a smooth form of *pustulosus*.

² The type is a nearly smooth, compressed form of *pustulosus*, I am sure. Lea includes with it in his collection a number of strongly *pustulosus*, compressed shells. *Quadrula pustulosa* is a very widespread, abundant, and variable species. A large, solid, inflated, and somewhat quadrate form has been called *Unio dorfeullianus* by Dr. Lea, and various smooth races have received names, but they so completely blend into the typical form that it does not seem to me they are worthy of varietal names. A somewhat triangular variety, often having a broad, faint ray, is found in the Ohio River and southward which probably equals the variety *pernodosa*.

³ Seems to be about the same as *U. pernodosus*, only a little smoother. These two are more rounded posteriorly, and are doubtfully worthy of a varietal name.

† QUADRULA COOPERIANA Lea.

† *Unio cooperianus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 61, pl. VIII, fig. 21; *Obs., I, 1834, p. 173, pl. VIII, fig. 21.—* HANLEY, Test. Moll., 1842, p. 180; *Biv. Shells, 1843, p. 180, pl. XXI, fig. 1.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* KUSTER, Conch. Cab. Unio, 1861, p. 183, pl. LVII, fig. 5.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

* *Margarita (Unio) cooperianus* LEA, Syn., 1836, p. 16; 1838, p. 15.

* *Margaron (Unio) cooperianus* LEA, Syn., 1852, p. 22; 1870, p. 34.

* *Unio striatus* REEVE, Conch. Icon., XVI, 1864, pl. VIII, fig. 30.¹

Ohio, Cumberland, and Tennessee river systems. Reported by Keyes at Muscatine, Iowa, but this is probably an error.

† QUADRULA MORTONI Conrad.

* *Unio mortoni* CONRAD, Monog. II, 1836, p. 11, pl. VI, fig. 1.—* KUSTER, Conch. Cab. Unio, 1852, p. 51, pl. XI, fig. 1.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 252.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 160.

† * *Unio turgidus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 11, pl. V, fig. 11; *Obs., II, 1838, p. 11, pl. V, fig. 11.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—* HANLEY, Test. Moll., 1842, p. 180; *Biv. Shells, 1843, p. 180, pl. XXI, fig. 51.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CHENU, Ill. Conch., 1858, pl. XXV, figs. 1, 1a, 1b.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 170.

* *Margarita (Unio) turgidus* LEA, Syn., 1836, p. 16; 1838, p. 15.

* *Margaron (Unio) turgidus* LEA, Syn., 1852, p. 22; 1870, p. 34.

Lower Mississippi River drainage as far north as western Tennessee and Indian Territory; west into eastern Texas.

† QUADRULA SPHÆRICA Lea.

* *Unio sphericus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 145; *Jl. Ac. N. Sci. Phila., 1869, p. 319, pl. LI, fig. 132; *Obs., XII, 1869, p. 78, pl. LI, fig. 131.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

* *Margaron (Unio) sphericus* LEA, Syn., 1870, p. 33.

Streams of Alabama and Mississippi flowing into the Gulf of Mexico.

† QUADRULA PUSTULATA Lea.

* *Unio pustulatus* LEA, Tr. Am. Phil. Soc., 1834, p. 79, pl. VII, fig. 9; *Obs., I, 1834, p. 89, pl. VII, fig. 9.—* HANLEY, Test. Moll., 1842, p. 178; *Biv. Shells, 1843, p. 178, pl. XXII, fig. 36.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. XV, figs. 8, 8a, 8b.—* CALKINS, Pr. Ottawa Ac. N. Sci., 1874, p. 44.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) pustulatus* LEA, Syn., 1836, p. 15; 1838, p. 15.

* *Margaron (Unio) pustulatus* LEA, Syn., 1852, p. 22; 1870, p. 33.

¹ Changed in errata to *cooperianus*.

- * *Unio (Theliderma) pustulata* SWAINSON, Treat. on Mal., 1840, p. 271, fig. 54d.
 * *Unio nodulatus* SAY, Am. Conch., VI, 1834.—* CONRAD, New F. W. Shells, 1834, p. 70.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* CONRAD, Monog., 1837, p. 80, pl. XLV, fig. 1.—* KUSTER, Conch. Cab., 1861, p. 254, pl. LXXXVI, fig. 1.—* REEVE, Conch. Icon., XVI, 1864, pl. XIII, fig. 51.
 * *Unionodulatus* RAFINESQUE var. *pustulatus* PETEL, Conch. Sam., III, 1890, p. 161.

Ohio, Cumberland, and Tennessee river systems; Mississippi River and tributaries from eastern Iowa south to Louisiana; southern Michigan.

† QUADRULA NODIFERA Conrad.¹

- * *Unio nodiferus* CONRAD, Pr. Ac. N. Sci. Phila., I, 1841, p. 19; * JI. Ac. N. Sci. Phila., VIII, 1842, p. 179; I, 1850, p. 277, pl. XXXVIII, figs. 4, 8; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.

Louisiana and eastern Texas.

† QUADRULA CAHABENSIS Lea.

- * *Unio cahabensis* LEA, Pr. Ac. N. Sci. Phila., XXIII, 1871, p. 190; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 17, pl. v, fig. 14; * Obs., XIII, 1874, p. 21, pl. v, fig. 14.—* B. H. WRIGHT, Check List, 1888.

Cahawba River, Alabama.

† QUADRULA VALLATA Lea.

- * *Unio vallatus* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 145; * JI. Ac. N. Sci. Phila., 1869, p. 315, pl. I, fig. 128; * Obs., XII, 1869, p. 75, pl. I, fig. 128.—* B. H. WRIGHT, Check List, 1888.

- * *Margaron (Unio) vallatus* LEA, Syn., 1870, p. 34.

Alabama and Black Warrior rivers, Alabama.

† QUADRULA REFULGENS Lea.

- * *Unio refulgens* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 145; * JI. Ac. N. Sci. Phila., VI, 1869, p. 317, pl. LI, fig. 130; * Obs., XII, 1869, p. 77, pl. LI, fig. 130.—* B. H. WRIGHT, Check List, 1888.

- * *Margaron (Unio) refulgens* LEA, Syn., 1870, p. 34.

- * *Unio pustulosus* CALL (part), Tr. Ac. Sci. St. Louis, VII, 1895, p. 42, pl. xv, figs. 3, 4.

Mississippi and probably Alabama.

† QUADRULA HOUSTONENSIS Lea.

- * *Unio houstonensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 155; * JI. Ac. N. Sci. Phila., IV, 1860, p. 358, pl. LX, fig. 183; * Obs., VIII, p. 40, pl. LX, fig. 183.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXI, fig. 425.—* B. H. WRIGHT, Check List, 1888.

- * *Margaron (Unio) houstonensis* LEA, Syn., 1870, p. 55.

Texas, Louisiana, and southern Arkansas. Verdigris River, Kansas?

¹ There are six shells bearing the name *Unio nodiferus* Conrad in the Philadelphia Academy of Natural Sciences. Part of them are the same as figured in the Journal, and the rest are probably *mortoni*.

† QUADRULA PETRINA Gould.

- * *Unio petrinus* GOULD, Pr. Bost. Soc. N. Hist., V, 1855, p. 228; * *Otia* Conch., 1862, p. 218.—* B. H. WRIGHT, Check List, 1888.
 * *Margaron (Unio) petrinus* LEA, Syn., 1870, p. 55.

Texas. Cragin's localities, Verdigris and Neosho rivers, Kansas, are probably erroneous.

† QUADRULA AUREA Lea.

- * *Unio aureus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 112; * *Jl. Ac. N. Sci. Phila.*, V, 1862, p. 195, pl. xxvi, fig. 264; * *Obs.*, IX, 1863, p. 17, pl. xxvi, fig. 264.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIII, fig. 438.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 145.
 * *Margaron (Unio) aureus* LEA, Syn., 1870, p. 37.
 * *Unio bolli* CALL, Am. Naturalist, XV, 1881, p. 390.¹

Texas.

† QUADRULA PAUPERCULA Lea.

- * *Unio pauperculus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 39; * *Jl. Ac. N. Sci. Phila.*, V, 1862, p. 99, pl. xv, fig. 247; * *Obs.*, VIII, 1862, p. 103, pl. xv, fig. 247.—* B. H. WRIGHT, Check List, 1888.
 * *Margaron (Unio) pauperculus* LEA, Syn., 1870, p. 55.²

Texas.

(Group of *Quadrula infucata*.)

Shell small, rounded rhomboid, with a low, distinct posterior ridge, truncated behind and angled back of the ligament; beaks moderately elevated, subcentral; beak sculpture, four or five coarse, subparallel ridges which curve upward behind, with fine, radial ridges between them and the ligament; surface blackish, sculptured with zigzag or chevron-shaped corrugations which often become pustulous below; posterior slope having radial, broken wrinkles; pseudocardinals small, stumpy; secondary lateral of the right valve present; beak cavities moderately deep, slightly compressed; anterior scars small, smooth; nacre rather dull, purplish.

Animal with the marsupium occupying all four leaves of the gills; inner gills the larger, free from the abdominal sac only part of their length; anal opening without papillæ.³

¹ An inflated form.

² Usually entirely free from sculpture excepting faint corrugations on the posterior slope. A specimen belonging to Mr. William A. Marsh, from Village Creek, Texas, shows slight tuberculation on the disks.

³ I have been puzzled as to the relationship of this group and have been strongly inclined to place it near *chickasawhensis*, but I now believe it is more closely allied to the *Pustulosa* group. Its posterior truncation, the prominent angle behind the ligament, and beak sculpture lead me to place it here. The general sculpture of *Q. petrina* approaches that of these species.

† QUADRULA INFUCATA Conrad.

- * *Unio infucatus* CONRAD, New F. W. Shells, 1834, p. 45, pl. III, fig. 2, p. 70.—* MÖLLER, Syn. Nov. Gen., 1836, p. 208.—* FERUSSAC, Guer. Mag., 1835, p. 29.—* HANLEY, Test. Moll., 1842, p. 203; * Biv. Shells, 1843, p. 203.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 22, pl. II, fig. 6.—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* KUSTER, Conch. Cab. Unio, 1861, p. 176, pl. LV, fig. 5.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XL, fig. 221.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 155.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 409, pl. XLIX, figs. 1-3, 6.
- * *Margarita (Unio) infucatus* LEA, Syn., 1836, p. 34; 1838, p. 23.
- * *Margaron (Unio) infucatus* LEA, Syn., 1852, p. 20; 1870, p. 30.
- * *Unio securiformis* CONRAD, 1 Ann. and Mag., IV, 1849, p. 300; Pr. Ac. N. Sci. Phila., * I, 1850, p. 275 pl. XXXVII, fig. 1; * IV, 1849, p. 152; * VI, 1852, p. 257—* PÆTEL, Conch. Sam., III, 1890, p. 167.

Chattahoochee and Flint rivers, Georgia.

† QUADRULA KLEINIANA Lea.²

- * *Unio kleinianus* LEA, Pr. Am. Phil. Soc., V, 1852, p. 251; * Tr. Am. Phil. Soc., X, 1852, p. 265, pl. XVII, fig. 18; * Obs., V, 1852, p. 21, pl. XVII, fig. 18.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* REEVE, Conch. Icon., XVI, 1864, pl. II, fig. 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 156.
- * *Margaron (Unio) kleinianus* LEA, Syn., 1852, p. 20; 1870, p. 30.
- * *Unio sparsus* KUSTER, Conch. Cab. Unio, 1861, p. 252, pl. LXXXV, fig. 2.

Southern Georgia; northern Florida.

Section FUSCONAIA Simpson, 1900.

(Type, *Unio trigonus* Lea.)

Shell round, rhomboid, triangular, or short elliptical, with a moderate posterior ridge; beaks high and full, curved inward and forward, sculptured with a few coarse, parallel ridges which curve upward behind; epidermis dark; surface not sculptured; hinge plate of moderate width; pseudocardinals strong; naere white, salmon, or purple.

Animal having all four gills occupied throughout as a marsupium, filled with pink or purplish ova when gravid; inner gills much the wider in front, free generally from the abdominal sac; outer gills cut away slopingly in front.

(Group of *Quadrula beadleiana*.)

Shell moderately solid, somewhat triangularly rounded, bluntly pointed and sometimes slightly biangular at post base, with a more or less developed posterior ridge, in front of which it is full; beaks not

¹ A rather smooth *infucatus*.

² In the Proceedings of the U. S. National Museum, XV, 1892, p. 404, I united this species with *Unio infucatus* Conrad. Further study of additional material and of the animals which show some differences has induced me to separate the two.

very high; beak sculpture very coarse, concentric ridges;¹ disks irregularly concentrically striate; epidermis rich, dark chestnut; hinge plate rather narrow; pseudocardinals radial, stumpy; cavity of the beaks only moderately deep.

No gravid specimens have been seen, but those examined do not seem to differ from others of the genus.

† *QUADRULA CHICKASAWHENSIS* Lea.

* *Unio chickasawhensis* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 39; *Jl. Ac. N. Sci. Phila., V, 1862, p. 101, pl. XVI, fig. 250; *Obs., VIII, 1862, p. 105, pl. XVI, fig. 250.—* B. H. WRIGHT, Check List, 1888.

Margaron (Unio) chickasawhensis LEA, Syn., 1870, p. 55.

Mississippi and Louisiana.

† *QUADRULA SUCCISSA* Lea.

* *Unio succissus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 275, pl. XXI, fig. 32; *Obs., V, 1852, p. 31, pl. XXI, fig. 32.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIII, fig. 174.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 169.—* SIMPSON, Pr. U. S. Nat. Mus., XV, 1892, p. 29, pl. LXXI, fig. 5.

* *Margaron (Unio) succissus* LEA, Syn., 1852, p. 24; 1870, p. 38.

† * *Unio cacao* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 154; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 344, pl. LVI, fig. 169; *Obs., VIII, 1860, p. 26, pl. LVI, fig. 169.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) cacao* LEA, Syn., 1870, p. 54.

West Florida; southern Alabama.

† *QUADRULA PUMILA* Lea.

* *Unio pumilus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 23, pl. VII, fig. 17; *Obs., II, 1838, p. 23, pl. VII, fig. 17.—* TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—* HANLEY, Test. Moll., 1842, p. 185; *Biv. Shells, 1843, p. 185, pl. XXIII, fig. 13.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XIX, figs. 1, 1a, 1b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 198.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

* *Margarita (Unio) pumilus* LEA, Syn., 1836, p. 20; 1838, p. 17.

* *Margaron (Unio) pumilus* LEA, Syn., 1852, p. 24; 1870, p. 37.

Black River, North Carolina. Only the type shell, a small specimen, not in very good condition, has been seen by me.

† ? *QUADRULA UTRICULUS* Lea.

* *Unio utriculus* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 164; *Tr. Am. Phil. Soc., X, 1848, p. 69, pl. I, fig. 3; Obs., IV, 1848, p. 43, pl. I, fig. 3.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 259.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) utriculus* LEA, Syn., 1870, p. 46.

North Carolina. The specimen in the Lea collection which came from Arkansas is not this species at all.

¹ According to Marsh, who has examined the beak sculpture of *Q. askewi*. I have never seen a specimen of the group in which it was not all eroded away.

†QUADRULA BEADLEIANA Lea.

* *Unio beadleianus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 39; * JI. Ac. N. Sci. Phila., V, 1862, p. 94, pl. XIV, fig. 242; * Obs., VIII, 1862, p. 98, pl. XIV, fig. 242.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) beadleianus* LEA, Syn., 1870, p. 55.

Mississippi to eastern Texas.

†QUADRULA ASKEWI Marsh.

* *Unio askewi* MARSH, Nautilus, X, 1896, p. 91; X, 1897, pl. 1, figs. 3, 4.

Western Louisiana; eastern Texas.

(Group of *Quadrula trigona*.)

Shell triangular, generally inflated, with high, full beaks which are incurved and turned forward over a well-developed lunule; anterior end obliquely truncate above, often with a curved, shallow depression in each valve running from the beaks to midway down the anterior end, and forming a sort of secondary lunule; posterior base usually incurved; the posterior ridge ending in a rather sharp point; beak sculpture, a few coarse, concentric ridges turned upward behind and often swollen on the posterior ridge, sometimes becoming finer and broken or irregular on the upper disk; hinge solid but not very wide; pseudocardinals triangular and radial, torn; there is a secondary lateral in the right valve; cavity of the beaks generally deep and compressed; muscle scars small, deep.

Animal with the marsupium occupying the whole of all four branchiæ; inner gills generally free from the abdominal sac, much wider than the outer in front; outer nearly or quite equaling them in width behind; anal opening distinctly crenulate or papillose.

†QUADRULA RUBIGINOSA Lea.

* *Unio rubiginosus* LEA, Tr. Am. Phil. Soc., III, 1829, p. 427, pl. VIII, fig. 10; * Obs., I, 1834, p. 41, pl. VIII, fig. 10.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 548.—* HANLEY, Test. Moll., 1842, p. 185; * Biv. Shells, 1843, p. 185, pl. XXI, fig. 43.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XIII, figs. 4, 4a, 4b.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVII, fig. 136.—* CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 44.—* B. H. WRIGHT, Check List, 1888.—* WALTON, Moll. Monroe Co., 1892, p. 16, pl. VIII, fig. 1.

* *Margarita (Unio) rubiginosus* LEA, Syn., 1836, p. 20; 1838, p. 17.

* *Margaron (Unio) rubiginosus* LEA, Syn., 1852, p. 24; 1870, p. 37.

* *Unio rubiginosa* DESHAYES, An. sans Vert., 3d ed., II, 1839, p. 672.

* *Quadrula rubiginosa* BAKER, Moll. Chicago, Pt. 1, 1898, p. 77, pl. XIX, fig. 2; XX, fig. 1.

* *Unio flavus* CONRAD, New F. W. Shells, 1834, p. 69.—* SAY, Am. Conch., VI, 1834, p. 27.—* FERUSSAC, Guer. Mag., 1835, p. 27.—* CONRAD, Monog., IX, 1837, p. 74, pl. XLI, fig. 2.—* KUSTER, Conch. Cab., 1852, p. 61, pl. XIV, fig. 2; p. 265, pl. LXXXIX, fig. 5.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.

* *Unio flavus* var. *rubiginosus* PETEL, Conch. Sam., III, 1890, p. 152.

* *Unio trigonus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIV, p. 322.

Entire Mississippi drainage; eastern Texas; St. Lawrence River system; Nelson River and its tributaries.

† QUADRULA CERINA Conrad.

- * *Unio cerinus* CONRAD, Monog., XI, 1838, p. 95, pl. LI; * Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVII, fig. 468.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 147.

Louisiana; eastern Texas; Mississippi; Alabama; north to Arkansas.

† QUADRULA HEBETATA Conrad.

- * *Unio hebetatus* CONRAD, * JI. Ac. N. Sci. Phila., II, 1854, p. 296, pl. XXVI, fig. 5.—* B. H. WRIGHT, Check List, 1888.
* *Margaron (Unio) hebetatus* LEA, Syn., 1870, p. 38.

Missouri; Tuscaloosa River, Alabama.

† QUADRULA RUBIDA Lea.

- * *Unio rubidus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 40; * JI. Ac. N. Sci. Phila., V, 1862, p. 95, pl. XIV, fig. 244; * Obs., VIII, 1862, p. 99, pl. XIV, fig. 244.—* B. H. WRIGHT, Check List, 1888.
* *Margaron (Unio) rubidus* LEA, Syn., 1870, p. 35.
† * *Unio negatus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 59; * JI. Ac. N. Sci. Phila., V, 1862, p. 76, pl. IX, fig. 225; Obs., VIII, 1862, p. 80, pl. IX, fig. 225.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXII, fig. 165.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 160.
* *Margaron (Unio) negatus* LEA, Syn., 1870, p. 35.

Streams flowing into the Gulf of Mexico from Alabama to Louisiana. The shell reported under the name *Unio negatus*, from Kansas, is probably a somewhat sulcate *rubiginosus*.

† QUADRULA CHUNII Lea.

- Unio chunii* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 392; * JI. Ac. N. Sci. Phila., V, 1862, p. 196, pl. XXVII, p. 265; * Obs., IX, 1863, p. 18, pl. XXVII, fig. 265.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, III, 1890, p. 148.
* *Margaron (Unio) chunii* LEA, Syn., 1870, p. 38.

Mississippi; west to central Texas north to Arkansas.

† QUADRULA RIDDELLII Lea.

- * *Unio riddellii* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 392; * JI. Ac. N. Sci. Phila., V, 1862, p. 198, pl. XXVII, fig. 267; * Obs., IX, 1863, p. 20, pl. XXVII, fig. 267.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIII, fig. 442.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 165.
* *Margaron (Unio) riddellii* LEA, Syn., 1870, p. 38.

Dallas, Texas.

† QUADRULA FRIERSONI B. H. Wright.

- * *Unio friersoni* B. H. WRIGHT, Nautilus, IX, 1896, p. 134, pl. III.

Louisiana; eastern Texas.

† QUADRULA TRIGONA Lea.

- * *Unio trigonus*, LEA, Tr. Am. Phil. Soc., IV, 1831, p. 110, pl. XVI, fig. 40; * Obs., I, 1834, p. 120, pl. XVI, fig. 40.—* HANLEY, Test. Moll., 1842, p. 185; * Biv. Shells, 1843, p. 185, pl. XXI, fig. 6.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 258.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CHENU, Ill. Conch., 1858, pl. XVI, figs. 7, 7a, 7b.—

- *SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVI, fig. 459.—*CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 45.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 170.
- **Margarita (Unio) trigonus* LEA, Syn., 1836, p. 18; 1838, p. 17.
- **Margaron (Unio) trigonus* LEA, Syn., 1852, p. 25; 1870, p. 38.
- **Quadrula trigona* BAKER, Moll. Chicago, Pt. 1, 1898, p. 76, pl. xv, fig. 5.
- **Unio undatus* CONRAD, New F. W. Shells, 1834, p. 72.—*SAY, Am. Conch., VI, 1834.
- **Unio triangularis* KUSTER, Conch. Cab. Unio, 1852, p. 56, pl. XII, fig. 3.
- **Unio pilaris* REEVE, Conch. Icon., XVI, 1865, pl. XXVII, fig. 138.

Entire Mississippi drainage; Coosa River, Alabama; Michigan and the Upper St. Lawrence drainage.

† QUADRULA OBLIQUA Lamarck.

- **Unio obliqua* LAMARCK, An. sans Vert., VI, 1819, p. 72.—*FERUSSAC, Guer. Mag., 1835, p. 28.—*DESHAYES, An. sans Vert, 2d ed., 1835, p. 534; 3d ed., II, 1839, p. 668.
- **Margarita (Unio) obliqua* LEA, Syn., 1836, p. 20.
- **Unio obliquus* HANLEY, Test. Moll., 1842, p. 186; *Biv. 1843, p. 186, pl. XX, fig. 24.—*CATLOW and REEVE, Conch. Nom., 1845, p. 61.—*KUSTER, Conch. Cab. Unio, 1852, p. 63, pl. xv, fig. 1.—*CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 253.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 44.—*PÆTEL, Conch. Sam., III, 1890, p. 161.—*CALL, Tr. Ac. Sci. St. Louis, VII, 1895, p. 31, pl. IV.
- **Margarita (Unio) obliquus* LEA, Syn., 1838, p. 17.
- **Margaron (Unio) obliquus* LEA, Syn., 1852, p. 25; 1870, p. 38.
- **Unio undatus* BARNES, Am. Jl. Sci., VI, 1823, p. 121, pl. IV, fig. 4.—*HILDRETH, Am. Jl. Sci., XIV, 1828, p. 280.¹—*CONRAD, Pr. Ac. Nat. Sci. Phila., VI, 1853, p. 259.
- **Mya undata* EATON, Zool. Text-Book, 1826, p. 219.
- **Unio mytiloides* SHORT and EATON, Transylvania Jl., 1831, p. 74.
- **Unio cordatus* CONRAD, Monog., V, 1836, p. 48, pl. XXV.—*KUSTER, Conch. Cab., 1852, p. 57, pl. XIII, fig. 1.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIII, 376.—*B. H. WRIGHT, Check List, 1888.

Ohio, Cumberland, and Tennessee river systems; west in Illinois to the Mississippi; Claiborne, Alabama.

† QUADRULA COCCINEA Conrad.

- **Unio coccineus* CONRAD,² Monog., III, 1836, p. 29, pl. XIII, fig. 1.—LEA, Tr. Am. Phil. Soc., VI, 1838, p. 12, pl. v, fig. 12; *Obs., II, 1838, p. 12, pl. v, fig. 12.—*TROSCHIEL, Arch. für. Naturg., V, 1839, Pt. 2, p. 234.—*HANLEY, Test. Moll. 1842, p. 203; *Biv. Shells, 1843, p. 203, pl. XXII, fig. 54.—*CATLOW and REEVE,

¹This was figured by Hildreth, but the figures of this species and a number of others were left out by the editor.

²In the Transactions of the American Philosophical Society, VI, 1838, p. 12, pl. v, fig. 12, Lea described this species, and stated that about eighteen months previous Dr. Hildreth had sent him a single specimen under the name *Unio coccineus*; but there is nothing to show that Hildreth had described it. In the Monography in 1836, III, p. 29, pl. XIII, fig. 1, Conrad describes this species under the same name, and also credits it to Hildreth, stating that it was in the collection of the Philadelphia Academy of Natural Sciences under that name. The species must be credited to Conrad, who first described it, though Lea read his description in 1834.

Conch. Nom., 1845, p. 57.—*KUSTER, Conch. Cab., 1852, p. 49, pl. X, fig. 2.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 247.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—*CHENU, Ill. Conch., 1858, pl. XXV, figs. 4, 4a, 4b.—*SOWERBY, Conch. Icon., XVI, 1868, pl. XCIV, fig. 512.—*CALKINS, Pr. Ottawa Acad. Sci., I, 1874, p. 42.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 148.

**Margarita (Unio) coccineus* LEA, Syn., 1836, p. 34; 1838, p. 23.

**Margaron (Unio) coccineus* LEA, Syn., 1852, p. 35; 1870, p. 56.

**Quadrula coccinea* BAKER, Moll. Chicago, Pt. 1, 1898, p. 79, pl. XIV, fig. 1; XIX, fig. 3.

**Unio rubens* MENKE, Syn., Meth. Moll., 1828, p. 90.

**Unio catillus* CONRAD, Monog., III, 1836, p. 30, pl. XIII, fig. 2.—*KUSTER, Conch. Cab., 1852, p. 64, pl. XV, fig. 2.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 246.—*PÆTEL, Conch. Sam., III, 1890, p. 147.

**Unio catilus* B. H. WRIGHT, Check List, 1888.

**Unio gouldianus* WARD, ¹Jay's Catalogue, 3d ed., 1839, p. 24.

**Unio cuneus* CALL, Tr. Ac. Sci. St. Louis, VII, p. 14.

†*QUADRULA COCCIENEA* var. *PAUPERCULA* Simpson.²

Entire Upper Mississippi drainage; St. Lawrence basin in various localities. The peculiar dwarf variety which is found in this latter area seems almost entitled to specific rank.

†*QUADRULA SOLIDA* Lea.

Unio solidus LEA, Tr. Am. Phil. Soc., VI, 1838, p. 13, pl. v, fig. 13; *Obs., II, 1838, p. 13, pl. v, fig. 13.—*TROSCHEL, Arch. für Naturg., V, 1839, Pt. 2, p. 234.—*HANLEY, Test. Moll., 1842, p. 186; *Biv. Shells, 1843, p. 186, pl. XXIII, fig. 15.—*CATLOW and REEVE, Conch. Nom., 1845, p. 64.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—*CHENU, Ill. Conch., 1858, pl. XXV, figs. 2, 2a, 2b.—*KUSTER, Conch. Cab., 1861, p. 258, pl. LXXXVII, fig. 4.—*REEVE, Conch. Icon., XVI, 1865, pl. XXVII, fig. 133.—*CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 45.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 168.

**Margarita (Unio) solidus* LEA, Syn., 1836, p. 20; 1838, p. 17.

**Margaron (Unio) solidus* LEA, Syn., 1852, p. 25; 1870, p. 38.

*? *Unio cardiacea* DESHAYES, Tr. Elem. de Conch., 1839, p. 19, pl. XXXI, figs. 1, 2.

**Unio fulgidus* LEA,³ Pr. Am. Phil. Soc., IV, 1845, p. 164; *Tr. Am. Phil. Soc., X, 1848, p. 73, pl. IV, fig. 10; *Obs., IV, 1848, p. 47, pl. IV, fig. 10.—*CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 253.

**Margaron (Unio) fulgidus* LEA, Syn., 1852, p. 25; 1870, p. 38.

**Unio obovalis* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 253.

Ohio, Cumberland, and Tennessee river systems; south to Louisiana; west to Arkansas and Kansas; north to Minnesota; east, through Wisconsin, Illinois, and Indiana, to Ohio.

¹ Adopted by Dr. Jay and used in his catalogue, but never described. It is a white nacreid *coccinea*.

² There is a dwarf form, greatly inflated and having the rest periods very plainly marked, found in the St. Lawrence and its tributaries near the Niagara Falls, which may bear the above varietal name.

³ There is only the type, a young shell, in Lea's collection, and I have no hesitation in referring it to *solidus*.

† *QUADRULA PLENA* Lea.

- * *Unio plenus* LEA, Tr. Am. Phil. Soc., I, 1840, p. 286; *Tr. Am. Phil. Soc., VIII, 1843, p. 211, pl. XIV, fig. 26; *Obs., III, 1842, p. 49, pl. XIV, fig. 26.—* CONRAD, Proc. Ac. N. Sci. Phila., VI, 1853, p. 255.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* KUSTER, Conch. Cab., 1861, p. 264, pl. LXXXIX, fig. 3.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXI, fig. 305.—* B. H. WRIGHT, Check List, 1888.—* P. ETEL, Conch. Sam., III, 1890, p. 163.
- * *Margaron (Unio) plenus* LEA, Syn., 1852, p. 25; 1870, p. 39.

Ohio, Cumberland, and Tennessee river systems; southwest to Kansas and Arkansas.

QUADRULA FLEXUOSA Simpson.

Holston River, Tennessee.

Quadrula flexuosa SIMPSON, Proc. Ac. N. Sci. Phila., 1900, p. 83, pl. II, fig. 8.

† *QUADRULA PYRAMIDATA* Lea.

- * *Unio pyramidatus* LEA, Tr. Am. Phil. Soc., IV, 1834, p. 109, pl. XVI, fig. 39; * Obs., I, 1834, p. 119, pl. XVI, fig. 39.—* HANLEY, Test. Moll., 1842, p. 186; * Biv. Shells, 1843, p. 186, pl. XX, fig. 45.—* DESHAYES, Traite Elem. de Conch., II, 1850?, p. 216, pl. XXXI, figs. 1, 2.—* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* CHENU, Ill. Conch., 1858, pl. XVI, figs. 5, 5a, 5b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIV, p. 323.—* B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) pyramidatus* LEA, Syn., 1836, p. 21; 1838, p. 17.
- * *Margaron (Unio) pyramidatus* LEA, Syn., 1852, p. 25; 1870, p. 39.
- * *Unio mytiloides* DESHAYES, Enc. Meth., II, 1830, p. 586, pl. CCXLIX, fig. 4.—* SAY, Am. Conch., Pt. 6, 1834.—* FERUSSAC, 1835, p. 28.—* MÖLLER, Syn. Nov. Gen., 1836, p. 209.—* CONRAD, Monog., IV, 1836, p. 41, pl. XX.—* SWAINSON, Treatise on Mal., 1840, p. 267, figs. 52-53.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* KUSTER, Conch. Cab., 1852, p. 59, pl. XIII, fig. 3; 1861, p. 265, pl. LXXXIX, fig. 4.—* B. H. WRIGHT, Check List, 1888.
- * *Margarita (Unio) mytiloides* LEA, Syn., 1836, p. 21; 1838, p. 17.
- * *Margaron (Unio) mytiloides* LEA, Syn., 1852, p. 25; 1870, p. 39.
- * *Unio mytiloides* Rafinesque var. *pyramidatus* P. ETEL, Conch. Sam., III, 1890, p. 160.¹
- * *Unio cardiacea* GUERIN, Icon. Regne Animal, 1829?, II, pl. XXVIII, fig. 7.
- * *Unio ruber* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 257.
- * *Unio obliqua* WOOD, Ind. Test. rev., 1856, p. 200, pl. I, fig. 8.

Ohio, Cumberland, and Tennessee river systems; southwest to Arkansas; west to Nebraska?; north in the Mississippi to Wisconsin.

(Group of *Quadrula subrotunda*.)

Shell solid, rounded, elliptical or ovate, with high beaks curved inward and forward over a distinct lunule; beak sculpture a few coarse

¹Most of the authors who use the name *mytiloides* believe it to be Rafinesque's species, though they figure and describe the *pyramidatus* of Lea. The specimens in the Lea collection which Dr. Lea calls *mytiloides* Rafinesque, are evidently a form of his *pyramidatus*. Rafinesque's figure represents a shell very long and almost straight on the posterior dorsal line, with astonishingly high beaks, and four distinct, equally separated rays on the disk, and he says there are some oblique, black, longitudinal bands on the shell. The Rafinesquian shell seems as near to the *Unio clava* of Lamarck as anything, but it does not agree with that.

ridges curved up behind; posterior ridge feebly developed; epidermis brownish or blackish, and often painted with a few faint rays on the earlier shell which are disposed to break into squarish spots; hinge and teeth strong; secondary lateral in right valve well developed; beak cavities deep, compressed; muscle scars deep. Animal with all four gills used as a marsupium throughout, filled with pink ova; gills large, inner only slightly the larger, free the greater part of their length; anal opening crenulate or papillose.

* † *QUADRULA BURSA-PASTORIS* B. H. Wright.

* *Unio bursa-pastoris* B. H. WRIGHT, *Nautilus.*, IX, 1896, p. 133, pl. III.

Clinch and Powell rivers; Virginia and Tennessee.

† *QUADRULA KIRTLANDIANA* Lea.

* *Unio kirtlandianus* LEA, *Tr. Am. Phil. Soc.*, V, 1834, p. 98, pl. XIV, fig. 41; * *Obs.*, I, 1834, p. 210, pl. XIV, fig. 41.—* FERUSSAC, *Guer. Mag.*, 1835, p. 29.—* HANLEY, *Biv. Shells*, 1843, p. 203, pl. XXII, fig. 27.—* CATLOW and REEVE, *Conch. Nom.*, 1845, p. 60.—* CONRAD, *Pr. Ac. N. Sci. Phila.*, VI, 1853, p. 251.—* KUSTER, *Conch. Cab.*, 1856, p. 168, pl. XLIX, figs. 2, 3; 1861, p. 214, pl. LXXI, fig. 1.—* H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 492.—* SOWERBY, *Conch. Icon.*, XVI, 1868, pl. LXXVII, fig. 402.—* B. H. WRIGHT, *Check List*, 1888.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 156.

* *Margarita (Unio) kirtlandianus* LEA, *Syn.*, 1836, p. 34; 1838, p. 23.

* *Margaron (Unio) kirtlandianus* LEA, *Syn.*, 1852, p. 35; 1870, p. 56.

* *Unio kirklandianus* HANLEY, *Test. Moll.*, 1842, p. 203.¹

† *QUADRULA KIRTLANDIANA* var. *MINOR* Simpson.²

Ohio, Cumberland, and Tennessee river systems; southwest to Arkansas; north to Wisconsin?; east through southern Michigan.

† *QUADRULA SUBROTUNDA* Lea.³

* *Unio subrotundus* LEA, *Tr. Am. Phil. Soc.*, IV, 1831, p. 117, pl. XVIII, fig. 45; * *Obs.*, I, 1834, p. 127, pl. XVIII, fig. 45.—* HANLEY, *Test. Moll.*, 1842, p. 203; * *Biv. Shells*, 1843, p. 203, pl. XX, fig. 58.—* CATLOW and REEVE, *Conch. Nom.*, 1845, p. 64.—* H. and A. ADAMS, *Gen. Rec. Moll.*, II, 1857, p. 492.—* ?CHENU, III.

¹ A typographical error no doubt. There is a *Unio kirklandianus* recently named by Wright.

² A form is found in the Tennessee drainage which comes nearest, it seems to me, to the *kirtlandianus* of Lea, but is much smaller and more delicate, and is not so strongly colored. Mr. Wetherby believes this to be a form of the nearly allied *subrotundus*, but it seems to me too much compressed for that. Dr. Sterki is of the opinion that the two species should be united. While there are specimens which can hardly be determined, it seems to me that in the main the two are distinct. The small form may be called variety *minor*.

³ The name *subrotunda* was used by Rafinesque in 1820 for some species of *Naiad*, probably a member of the *Circulus* group which I can not determine, and placed in the genus *Obliquaria* by him. Conrad afterwards, in 1834, placed what he supposed was this species in the genus *Unio*. Lea applied the name *subrotundus* to his species in 1831, and being the first to use it for that genus, I think it will have to stand, and Conrad's name become a synonym.

Conch., 1858, pl. XV, figs. 1, 1a, 1b.—* KUSTER, Conch. Cab., 1861, p. 190, pl. LX, fig. 3.—* B. H. WRIGHT, Check List, 1888.

* *Margarita (Unio) subrotundus* LEA, Syn., 1836, p. 34; 1838, p. 23.

* *Margaron (Unio) subrotundus* LEA, Syn., 1852, p. 35; 1870, p. 56.

* ? *Unio brevialis* CROUCH, Ill. Int. to Lamarck, 1827, p. 16, pl. IX, fig. 3.¹—? CATLOW and REEVE, Conch. Nom., 1845, p. 56.

* *Unio personatus* CONRAD, New F. W. Shells, 1834, p. 71.

* *Unio politus* SAY, Am. Conch., VI, 1834.²—* FERUSSAC, Guer. Mag., 1835, p. 28.—

* CONRAD, Monog., VIII, 1837, p. 67, pl. XXXVII, fig. 2.—* KUSTER, Conch. Cab. Unio, 1852, p. 62, pl. XIV, fig. 4.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXII, p. 168.—

* PÆTEL, Conch. Sam., III, 1890, p. 164.³

Ohio, Cumberland, and Tennessee river systems. Reported from Michigan and the Grand River, Ontario, but it is probable that the material from these localities is not *subrotundus*.

† QUADRULA PILARIS Lea.

* *Unio pilaris* LEA, Pr. Am. Phil. Soc., I, 1840, p. 285; Tr. Am. Phil. Soc., VIII, 1842, p. 209, pl. XIV, fig. 24; Obs., III, 1842, p. 47, pl. XIV, fig. 24.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 255.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Ill. Conch., 1858, pl. XXIX, figs. 3, 3a, 3b.—* KUSTER, Conch. Cab., 1861, p. 255, pl. LXXXVI, fig. 3.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVII, fig. 138.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Margaron (Unio) pilaris* LEA, Syn., 1852, p. 35; 1870, p. 56.

† * *Unio lesueurianus* LEA, Pr. Am. Phil. Soc. I, 1840, p. 286; * Tr. Am. Phil. Soc., VIII, 1842, p. 195, pl. VIII, fig. 6; * Obs., III, 1842, p. 33, pl. VIII, fig. 6.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 251.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Ill. Conch., 1858, pl. XXX, figs. 4, 4a, 4b.—* KUSTER, Conch. Cab. Unio, 1861, p. 215, pl. LXXII, fig. 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 157.

* *Margaron (Unio) lesueurianus* LEA, Syn., 1852, p. 35; 1870, p. 56.

Tennessee and Cumberland river systems; Green River, Kentucky; reported from the Ohio River.

† QUADRULA CUNEUS Conrad.⁴

* *Unio cuneus* CONRAD, Monog., XII, 1840, p. 105; pl. LVIII, fig. 1.—* B. H. WRIGHT, Check List, 1888.

Arkansas; Louisiana; Sabine River, Texas.

¹The figure looks something like *subrotunda*, or it may possibly be *cuneus*. I can not make out Lamarck's *brevialis* (An. sans Vert., VI, 1819, p. 75), which he says came from the Isle de France. Sganzin was told by the people of the island that no *Unio* was found there (Mem. Hist. Nat. Strasb., III, 1846, p. 8).

²Merely listed by Say, but neither Lea nor I have been able to find that it was ever described by him.

³Kirtland states that an oblique sulcation below the superior posterior angle distinguishes the female of this species, as it does the *retusus*, from the male. I have not noticed it.

⁴Mr. Conrad states in the Monography that his shells came from the Little Red River, Arkansas. Our shells in the U. S. National Museum collection are from the same stream, but are not quite so solid, nor are they just the shape of the figure, yet I have no doubt that they are *cuneus*.

†QUADRULA EBENUS Lea.

**Unio ebenus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 84, pl. IX, fig. 14; *Obs., I, 1834, p. 94, pl. IX, fig. 14.—*CONRAD, New F. W. Shells, 1834, p. 69.—*HANLEY, Test. Moll., 1842, p. 202; *Biv. Shells, 1843, p. 202, pl. XX, fig. 47.—*CATLOW and REEVE, Conch. Nom., 1845, p. 58.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—*CHENU, Ill. Conch., 1858, pl. XV, figs. 7, 7a, 7b.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXVI, fig. 334.—*CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 42.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 151.

**Margarita (Unio) ebenus* LEA, Syn., 1836, p. 34; 1838, p. 23.

**Margaron (Unio) ebenus* LEA, Syn., 1852, p. 35; 1870, p. 56.

**Unio obovalis* SAY, Am. Conch., VI, 1834.

**Unio obliquus* CONRAD, Monog., IX, 1837, p. 77, pl. XLIII, fig. 2.—*KUSTER, Conch. Cab. Unio, 1861, p. 215, pl. LXXI, fig. 4.

**Unio mytiloides* SWAINSON, Treatise on Mal., 1840, p. 270, figs. 52, 53.

Mississippi drainage generally except its western portion; Alabama and Tombigbee rivers; northeast Texas?

†QUADRULA GLOBATA Lea.

**Unio globatus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 191; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 5, pl. I, fig. 1; *Obs., XIII, 1874, p. 9, pl. I, fig. 1.—*B. H. WRIGHT, Check List, 1888.

Holston and Tennessee rivers, Tennessee; Etowah River, Georgia.

(Group of *Quadrula glandacea*.¹)

Shell rhomboid-oval, nearly straight below and slightly biangulate behind, with a well-defined double posterior ridge; beaks probably full; surface slightly and irregularly sulcate; epidermis wrinkled, tawny; hinge strong, the plate somewhat flattened; pseudocardinals triangular; laterals strong, secondary lateral of right valve well developed; beak cavities deep, compressed; muscle scars very deep, smooth; nacre dirty straw color.

†QUADRULA GLANDACEA Lea.

**Unio glandaceus* LEA, Pr. Ac. N. Sci. Phila., V, 1861, p. 59; *Jl. Ac. N. Sci. Phila., V, 1862, p. 77, pl. IX, fig. 226; *Obs., VIII, p. 81, pl. IX, fig. 226.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Unio) glandaceus* LEA, Syn., 1870, p. 38.

Coosa and Cahawba rivers, Alabama.

¹I am somewhat at a loss to know where to place this group. The very limited amount of material I have seen is in a badly eroded condition. I can form no idea of the beak sculpture, and I have never seen the soft parts. The texture and coloring of all the shells I have seen are like those of *Pleurobema*, but the very deep beak cavities and the general form are like *Quadrula*.

Section PACHYNAIAS Crosse and Fischer, 1893.

(Type, *Unio spheniopsis* Morelet.)

Shell elongate-triangular, inflated, truncated above and rounded below in front, straight on the base, with a high, sharp posterior ridge; the post base slightly biangulate; beaks full, the sculpture consisting of apparently faint ridges which run parallel with the growth lines; whole surface distinctly concentrically ridged; epidermis without rays; pseudocardinals solid, stumpy, somewhat radiate, roughened; beak cavities rather deep; muscle scars deep, smooth; nacre bluish white, thicker in front.

Animal unknown.

† QUADRULA SPHENIOPSIS Morelet.

* *Unio spheniopsis* MORELET, Test. Nov., I, 1849, p. 29.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 583, pl. LXI, figs. 2, 2a, 2b.

Rio Usumacinta, Guatemala.

† QUADRULA RUGOSOSULCATA Lea.

* *Unio rugososulcatus* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 33; * JI. Ac. N. Sci. Phila., VI, 1868, p. 266, pl. XXXIV, fig. 81; * Obs., XII, 1869, p. 26, pl. XXXIV, fig. 81.—* B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) rugososulcatus* LEA, Syn., 1870, p. 35.

Central America.

Subgenus ROTUNDARIA (Rafinesque, 1822) Simpson.

(Type, *Obliquaria tuberculata* Rafinesque.)

Shell rounded or quadrate, slightly truncate above in front; posterior ridge low; beaks prominent, curved inward and forward over a strongly marked lunule; beak sculpture consisting of numerous (20 to 30) fine, irregular, broken, somewhat concentric corrugations which extend well on to the second year's growth and gradually blend with the regular sculpture; posterior three-fifths of the shell tuberculate; epidermis brown; beak cavities very deep, compressed; nacre violet.

Animal having the gills very large, inner very much wider in front, free the whole length from the abdominal sac; branchial opening immense, with many small papillae; anal opening very large, smooth; superanal opening not at all closed below.¹

(Group of *Quadrula tuberculata*.)

Shell rounded, truncated behind, with a wide depression down the post slope.

¹ I regret that I have never been able to see gravid specimens of either of the species placed here. They are generally placed with the *pustulosus* group, but the strongly developed sulcus on the posterior slope and the very remarkable beak sculpture, which is not at all like that of any of our species, are good distinguishing characters. The enormous anal and branchial openings, and the open superanal opening are characters of some value.

†QUADRULA TUBERCULATA Rafinesque.¹

- * *Obliquaria (Rotundaria) tuberculata* RAFINESQUE, Ann. Gen. Sci. Brux., V, 1820, p. 103.—* CHENU, Bib. Conch., 1st ser., III, 1845, p. 20.
- * *Rotundaria tuberculata* AGASSIZ, Arch. für Naturg., I, 1852, p. 48.
- * *Unio tuberculatus* CONRAD, New F. W. Shells, 1834, p. 72.—* SAY, Am. Conch., VI, 1834.—* FERUSSAC, Guer. Mag., 1835, p. 28.—* CONRAD, Monog., V, 1836, p. 43, pl. XXII.—* KUSTER, Conch. Cab. Unio, 1852, p. 45, pl. IX, fig. 1.—* REEVE, Conch. Icon., XVI, 1864, pl. III, figs. 9, 12.
- * *Unio verrucosus* BARNES, Am. Jl. Sci., VI, 1823, p. 123, pl. v, fig. 6.—* SHORT and EATON, Transylvania Jl., 1831, p. 75.—* HANLEY, Test. Moll., 1842, p. 180; Biv. Shells, 1843, p. 180, pl. XXI, fig. 24.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CALKINS, Pr. Ottawa Acad. Sci., 1874, p. 46.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam., III, 1890, p. 171.
- * *Margarita (Unio) verrucosus* LEA, Syn., 1836, p. 16; 1838, p. 15.
- * *Margaron (Unio) verrucosus* LEA, Syn., 1852, p. 22; 1870, p. 34.
- * *Unio verrucosus purpureus* HILDRETH, Am. Jl. Sci., XIV, 1828, p. 281.
- * *Mya verrucosa* EATON, Zool. Text Book, 1826, p. 216.
- * *Quadrula verrucosa* BAKER, Moll. Chicago, Pt. 1, 1898, p. 85, pl. XXIII.
- * *Unio tuberculosa* VALENCIENNES, Rec. Obs. Zool. Anat., II, 1833, p. 232.

Mississippi drainage generally; southern Michigan; San Saba County, central Texas.

†QUADRULA GRANIFERA Lea.²

- * *Unio graniferus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 69, pl. XIX, fig. 60; * Obs., II, 1838, p. 69, pl. XIX, fig. 60.—* TROSCHER, Arch. für Naturg., V, 1839, Pt. 2, p. 237.—* HANLEY, Test. Moll., 1842, p. 180; * Biv. Shells, 1843, p. 180, pl. XXIII, fig. 11.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 250.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* CHENU, Ill. Conch., 1858, pl. XXV, figs. 3, 3a, 3b.—* KUSTER, Conch. Cab. Unio, 1861, p. 212, pl. LXX, fig. 4.—* REEVE, Conch. Icon., XVI, 1864, pl. IX, fig. 34.—* B. H. WRIGHT, Check List, 1888.—* PETEL, Conch. Sam., III, 1890, p. 154.
- * *Margarita (Unio) graniferus* LEA, Syn., 1838, p. 15.
- * *Margaron (Unio) graniferus* LEA, Syn., 1852, p. 22; 1870, p. 34.

†QUADRULA GRANIFERA var. PUSILLA Simpson.³

Ohio, Cumberland, and Tennessee river systems; northwest to Iowa.

¹ Rafinesque's description is plainly that of one of the pustulous Uniones of the Ohio, and the statement that it is truncated posteriorly, wants nodules anteriorly, is three or more inches long, and has a violet nacre makes it certain that it is the *verrucosus* of Barnes.

² This form has been considered by many merely at best a variety of the *tuberculata*, and I have so regarded it. It has always a smaller and generally a more inflated shell, higher beaks, and usually a smoother, more olive-colored epidermis than the latter. Its nacre is ordinarily more copper colored than that of *tuberculata*. I believe with Mr. Wetherby that it is a valid species.

³ A greatly dwarfed inflated form from the Green River at Mammoth Cave, Kentucky, may bear the above name.

(Group of *Quadrula ostreata*.)

Shell rhomboid, incurved on the base, with a well-developed posterior ridge, somewhat biangulate behind; beak sculpture consisting of a number of fine, concentric ridges showing a tendency to be doubly looped, which gradually change, first to corrugations and then to pustules; pseudocardinals ragged, secondary lateral of right valve but slightly developed.

Animal unknown.

† QUADRULA OSTREATA Morelet.

* *Unio ostreatus* MORELET, Test. Noviss., No. 1, 1849, p. 29.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 573, pl. LXIII, fig. 3; LXX, fig. 4.

Rio Usumacinta, Guatemala.

† QUADRULA USUMASINTÆ Crosse and Fischer.

* *Unio usumasintæ* CROSSE and FISCHER, J. de Conch., XL, 1892, p. 294.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 574, pl. LXIII, fig. 4; LXVII, fig. 5.

Rio Usumacinta, Guatemala.

† QUADRULA GUATEMALENSIS Simpson.

* *Quadrula guatemalensis*, SIMPSON, Pr. Acad. N. Sci. Phila., 1900, p. 83, pl. II, fig. 4.

Rio Usumacinta, Guatemala.

(Group of *Quadrula percompressa*.)

Shell large, triangular to rhomboid, greatly compressed throughout, with a low posterior ridge and a slight secondary ridge above it, making the shell slightly biangulate posteriorly; beaks very prominent, flattened; beak sculpture not seen; surface of the disks covered with rather fine, somewhat lachrymose nodules, corrugate wrinkled on the posterior slope;¹ cavity of the beaks enormously deep and compressed; area outside the palleal line wide in front; shell thickened anteriorly.

* † QUADRULA PERCOMPRESSA von Martens.

* *Unio percompressus* VON MARTENS, Sitzungs Ber. Nat. Tr. 1887, p. 107.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 576; Biologia Cent-Am. Mollusca, 1900, p. 496, pl. XXXII, figs. 1-3.

Rio de las Salinas, Guatemala.

Subgenus LAMPROTULA Simpson, 1900.

(Type, *Chama plumbea* Chemnitz.)

Shell rounded to triangular, inflated, with high beaks; beak sculpture consisting of a few coarse, subparallel ridges which are slightly doubly

¹ Only two left valves of this remarkable species have been seen by the writer, both of which curve to the left in front and to the right behind. It is probable that others may turn to the right, and von Martens' shells are flat.

looped; surface of the shell generally covered with coarse nodules or knobs; posterior slope radially ridged; epidermis dark; two strong laterals in each valve, all vertically striated; cavity of the beaks deep and compressed; nacre mostly whitish, usually radially granularly striated outside the pallial line, having one or more peculiar calluses behind and below the laterals which are iridescent and granularly striate.

Animal unknown.¹

(Group of *Quadrula plumbea*.)

Shell rounded, slightly angulated behind the ligament, solid, moderately inflated, covered with coarse pustules, and having broken, up-curved corrugations on the posterior slope; epidermis light brownish; hinge rather strong, somewhat flattened; laterals vertically striated.²

QUADRULA PLUMBEOA Chemnitz.

**Chama plumbea* CHEMNITZ, Conch. Cab., XL, 1795, p. 237, pl. CCIII, figs. 1991, 1992.—*DILLWYN, Cat. I, 1817, p. 215.—*WOOD, Ind. Test. Rev., 1856, p. 52, pl. IX, fig. 6.

Unio plumbeus FERUSSAC, Guer. Mag., 1835, p. 28.—*KUSTER, Conch. Cab. Unio., 1862, p. 289, pl. XCVII, figs. 1, 2.

South East Asia, probably. The locality, "South Sea," given by Chemnitz is, no doubt, erroneous.

†QUADRULA COREANA von Martens.

**Unio coreanus* VON MARTENS, S. B. Nat. Fr., 1886, p. 78.—*PETEL, Conch. Sani., III, 1890, p. 149.

Söul, Korea.

(Group of *Q. nodulosa*.)

Shell very solid, oval or rounded, inflated, inequilateral, inequivalve, the valves more or less twisted on their axis or having the appearance as if one of them had been pushed forward on the other, so that a dorsal view shows the outline to be rhomboid; each valve with a posterior ridge, that on the valve pushed forward less developed; beaks high, full, apparently sculptured with a few coarse irregular ridges; posterior slope usually having strong, radiating, upcurved ridges; hinge plate generally wide and flattened; pseudocardinals heavy, somewhat radiate, often with the sockets evenly, radially grooved; laterals strong, heavily vertically ridged; secondary lateral of right valve well developed,

¹ A group of peculiar and striking species which presents a number of quite diverse forms. On account of this diversity, the fact that the beak sculpture is rarely preserved, and that nothing is known of the anatomy, the group is a difficult one to arrange.

² A single, rather young, dead, and somewhat decayed specimen of what I believe is *Q. coreana*, from Söul, Korea, belonging to the collection of F. Stearns has been examined by the writer. The *Chama plumbea* of Chemnitz seems to be near it, but is solidier and shorter.

anterior cicatrices small, deep, posterior shallow; cavity of the beaks enormously deep, compressed; dorsal cicatrices on the under side of the shelf.

Animal unknown.

†QUADRULA TORTUOSA Lea.

* *Unio tortuosus* LEA, Pr. Ac. N. Sci. Phila., IX, 1865, p. 76; * JI. Ac. N. Sci. Phila., VI, 1868, p. 286, pl. XXXIX, fig. 98; * Obs., XII, 1869, p. 46, pl. XXXIX, fig. 98.

* *Margaron (Unio) tortuosus* LEA, Syn., 1870, p. 30.

† * *Unio (Lampsilis) subtortus* BAIRD and ADAMS, Proc. Zool. Soc. Lond., 1867, p. 491, pl. XXVI, figs. 1, 1a.

* *Unio subtortus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVII, fig. 465.—* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LXI, fig. 119.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

* *Unio retortus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVII, fig. 109.—* PÆTEL, Conch. Sam., III, 1890, p. 165.

China.

†QUADRULA TIENTSINENSIS Crosse and Debeaux.

* *Unio tientsinensis* CROSSE and DEBEAUX, Jl. de Conch., III, 1863, p. 257, pl. x, fig. 1.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCI, fig. 514, 514a, 514b.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

* *Margaron (Unio) tientsinensis* LEA, Syn., 1870, p. 30.

China.

QUADRULA ZONATA Heude.

* *Unio zonatus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LXI.—* PÆTEL, Conch. Sam., III, 1890, p. 172.

* *Unio tientsinensis* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LX, fig. 118.

China.

†QUADRULA FIBROSA Heude.

* *Unio fibrosus* HEUDE, Conch. Fluv. Nank., II, 1877, pl. XL, fig. 22.¹—* PÆTEL, Conch. Sam., III, 1890, p. 152.

* † *Unio spurius* HEUDE, Conch. Fluv. Nank., II, 1877, pl. XI, fig. 22.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

China.

†QUADRULA NODULOSA Wood.

* *Mya nodulosa* WOOD (part), Gen. Conch., I, 1815, p. 106, pl. XXII, figs. 1, 2.²—* DILLWYN, Catalogue I, 1817, p. 52.—* WOOD, Index Test, 1825, p. 12, pl. II, fig. 29b; * Index Test. Rev., 1856, p. 16, pl. II fig. 29.

* *Unio nodulosus* HANLEY, Test. Moll., 1842, p. 180.—* BIV. Shells, 1843, p. 180.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* H. and A. ADAMS, Gen.

¹ Doubtfully distinct from *zonata*.

² Wood gives four figures; the first and second being a solid, nodulous, Chinese species; the third and fourth seem to be *Unio pictorum*. Lamarck used the name *nodulosa* for a *Unio* (An. sans Vert., VI, 1819, p. 78), and refers to the Encyclopedie Méthodique, 1797, pl. 248, fig. 19, and this figure is no doubt that of *Unio pictorum*. Wood seems to have confounded the two.

Rec. Moll., II, 1857, p. 496.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIII, fig. 439.—* PÆTEL, Conch. Sam., III, 1890, p. 161.

* *Margarita (Unio) nodulosus* LEA, Syn., 1836, p. 16; 1838, p. 15.

* *Margaron (Prisodon) nodulosus* LEA, Syn., 1852, p. 27; 1870, p. 27.

* *Castalia nodulosa* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 509.

† *Unio grandideus* LEA,¹ Pr. Ac. N. Sci. Phila., V, 1862, p. 168; * JI. Ac. N. Sci. Phila., V, 1862, p. 205, pl. XXX, fig. 274; * Obs., IX, 1863, p. 27, pl. XXX, fig. 274.

* *Margaron (Unio) grandideus* LEA, Syn., 1870, p. 34.

China.

QUADRULA KOUANGENSIS Simpson.²

* *Unio moreletianus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LX, fig. 117.—* PÆTEL, Conch. Sam., III, 1890, p. 160.

Kouang-te-tcheou, China.

† QUADRULA POLYSTICTO-SCRIPTUS Heude.

* *Unio polysticto-scriptus* HEUDE, Conch. Fluv. Nank., II, 1877, pl. XIII, fig. 26.—

* PÆTEL, Conch. Sam., III, 1890, p. 164.

* *Unio scripto-polystictus* HEUDE,³ Conch. Fluv. Nank., II, 1877, pl. XIII, fig. 27.

* *Unio scripto-polystictus* PÆTEL, Conch. Sam., III, 1890, p. 167.

China.

† QUADRULA POLYSTICTUS Heude.

* *Unio polystictus* HEUDE, Conch. Fluv. Nank., II, 1877, pl. XII, fig. 25.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

China.

† QUADRULA SIMILARIS Simpson.

* *Unio affinis* HEUDE, Conch. Fluv. Nank., I, 1875, pl. III, figs. 7, 7a.⁴—* PÆTEL, Conch. Sam., III, 1890, p. 144.

China.

† QUADRULA MICROSTICTIS Heude.

* *Unio microstictis*, HEUDE, Conch. Fluv. Nank., II, 1877, pl. XII, fig. 24; * Jahrb. Deutsch. Mal. Ges., VIII, 1881, p. 122.—* PÆTEL, Conch. Sam., III, 1890, p. 159.

China.

(Group of *Quadrula rochechouarti*.)

Shell rhomboid, with a strong posterior ridge, rounded before, incurved below, and somewhat biangulate on the posterior base, with very strong folds on posterior slope which begin on the posterior ridge as

¹ A single valve (the type) is in the Lea collection, and an opposing matched valve is in that of the U. S. National Museum. Dr. Lea states that they were obtained near Hot Springs, Arkansas, by Major Byrd Powell. I am certain this is a mistake, and that it is a Chinese species. It agrees exactly with Wood's figure of *nodulosa*, is slightly pushed over or twisted on its axis, and has the vertically ridged laterals characteristic of the heavy Chinese forms very strongly developed.

² Heude's name *moreletianus* has been twice preoccupied.

³ Believed by Heude to be a hybrid with *polysticto-scriptus*. I can not see that the two differ sufficiently to be separated.

⁴ The name *affinis* was used long before by Dr. Lea for a *Unio*.

knobs; surface strongly pustulous; beaks rather well forward, sculpture not seen; epidermis concentrically wrinkled, black and rough; pseudo-cardinals strong, somewhat radial, rough, striate; laterals more or less vertically striate, secondary lateral in right valve well developed; beak cavities very deep, compressed; posterior calluses faint.

Animal unknown.

† *QUADRULA ROCHECHOUARTI* Heude.

* *Unio rochechouarti* HEUDE, Conch. Fluv. Nank., I, 1875, pl. v, fig. 13; *Jahrb. Deutsch. Mal. Ges., VIII, 1881, p. 122.—*PÆTEL, Conch. Sam., III, 1890, p. 165.

China.

(Group of *Quadrula triclava*.)

Shell solid, elongate triangular, obtusely pointed at the posterior base, with a decided posterior ridge, along which runs a row of ponderous knobs; beaks high and far forward; surface strongly nodulous; posterior slope slightly corrugated; epidermis dark chestnut; pseudo-cardinals heavy, subradial, radially striate; laterals vertically striate, secondary lateral of right valve well developed; cavity of the beaks enormously deep and compressed; a granular callus behind the laterals; nacre silvery, radially granularly striate outside the pallial line.

† *QUADRULA TRICLAVA* Heude.

* *Unio triclavus* HEUDE, Conch. Fluv. Nank., II, 1877, pl. x, figs. 21, 21a.—*PÆTEL, Conch. Sam., III, 1890, p. 170.

China.

(Group of *Quadrula bazini*.)

Shell elongate-trigonal, with a fairly well developed posterior ridge, pointed behind; beaks not high, almost at extreme front of the shell; surface more or less covered with knobs and tubercles, which show a tendency to an arrangement in curved lines; epidermis chestnut to blackish; hinge strong; pseudo-cardinals radial, radiately striate; laterals granular, showing traces of vertical striation; beak cavities very deep, compressed; nacre silvery.

Animal unknown.

† *QUADRULA BAZINI* Heude.

* *Unio bazini* HEUDE, Conch. Fluv. Nank., II, 1877, pl. ix, fig. 20.—*PÆTEL, Conch. Sam., III, 1890, p. 145.

China.

(Group of *Quadrula leai*.)

Shell obovate, obtusely pointed behind; posterior ridge low; whole surface generally tuberculate or knobbed, with strong, radial, curved

ridges on the posterior slope; beaks rather low, the sculpture coarse, irregular, broken bars, somewhat doubly looped and swollen on the posterior ridge, with strong, radiating ridges behind them; pseudocardinals solid, often compressed in the direction of the axis of the shell; laterals granular; beak cavities moderately deep; one or more granular calluses behind the laterals; nacre white or lurid, slightly radially granular outside the pallial line.

Animal unknown.

† *QUADRULA LEAI* Gray.

- * *Unio leai* GRAY, Griff. Cuvier, XII, 1834, p. 600 (index), pl. XXI, fig. 1.¹—* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* BENSON, Jl. As. Soc. Calcutta, XXIV, 1855, p. 136 (p. 18, reprint).—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* KUSTER, Conch. Cab. Unio, 1861, p. 232, pl. LXXVIII, fig. 3.—* ? HEUDE, Conch. Fluv. Nank., I, 1875, pl. IV, fig. 10, pl. VI.—* GREDLER, Jahrb. Deutsch. Mal. Ges., VIII, 1881, p. 122.—* VON MARTENS, Sitzber. Nat. Fr., 1885, p. 77.—* PÆTEL, Conch. Sam., III, 1890, p. 157.
- * *Margarita (Unio) leaii* LEA, Syn., 1836, p. 17; 1838, p. 16.
- * *Margaron (Unio) leaii* LEA, Syn., 1852, p. 23; 1870, p. 34.
- * *Unio leaii* HANLEY, Biv. Shells, 1843, p. 182, pl. XXIII, fig. 55.
- * *Unio nodulosus* REEVE, Conch. Icon., XVI, 1864, pl. IX, fig. 32.

† *QUADRULA LEAI* var. *LELECI* Heude.

- * *Unio leleci* HEUDE, Conch. Fluv. Nank., I, 1875, pl. IV, fig. 12; V, fig. 14.—GREDLER, Jahrb. Deutsch. Mal. Ges., VIII, 1881, p. 122.
- * *Unio richthofeni* VON MARTENS, S. B. Nat. Fr. 1875, p. 3; Mal. Blatt, XII, 1875, p. 187; Nov. Conch., IV, 1876, p. 156, pl. CXXXVI, figs. 1-3.—* PÆTEL, Conch. Sam., III, 1890, p. 165.
- * *Unio leai* var. *leleci* PÆTEL, Conch. Sam., III, 1890, p. 157.

China; Toukin; Mekong River.

QUADRULA OVATA Simpson.

Unio vestitus var. *a* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVIII, fig. 112; LIX, fig. 116.³

QUADRULA CAVEATA Heude.

- * *Unio careatus* HEUDE, Conch. Fluv. Nank., III, 1877, pl. XXIV, fig. 53.—* PÆTEL, Conch. Sam., III, 1890, p. 147.
- * *Unio contritus* HEUDE, Conch. Fluv. Nank., VII, 1881, pl. LVI, fig. 103.—* PÆTEL, Conch. Sam., III, 1890, p. 148.
- * *Unio quadrangulosus* HEUDE, Conch. Fluv. Nank., VII, 1881, pl. LVI, fig. 104.—* PÆTEL, Conch. Fluv. Nank., III, 1890, p. 164.

China.

¹ A very brief description is given in the index.

² Von Martens, in a note at the close of Vol. IV, places his species in the synonymy of *U. leleci* Heude. I am satisfied that *leleci* is but a variety of *U. leai* Gray.

³ Heude's name is preoccupied by Lea for a *Unio*, I therefore change it as above.

† *QUADRULA CORNUUM LUNÆ* Heude.¹

- * *Unio montanus* HEUDE, Conch. Fluv. Nank., I, 1875, pl. IV, fig. 11.—* PÆTEL, Conch. Sam., III, 1890, p. 159.
- * *Unio cornuum-lunæ* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVII, fig. 105.—* PÆTEL, Conch. Sam., III, 1890, p. 149.
- * *Unio trisulcatus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVII, fig. 108.
- * *Unio paschalis* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVIII, fig. 110.—* PÆTEL, Conch. Sam., III, 1890, p. 162.
- * *Unio verruculosus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVIII, fig. 111.—* PÆTEL, Conch. Sam., III, 1890, p. 171.
- * *Unio abortivus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LXIII, fig. 124.
- * *Unio monticola* HEUDE, Jl. de Conch., XXXII, 1884, p. 19.

QUADRULA CORNUUM LUMÆ var. *CINNAMOMEUS* Gredler.

- * *Unio leai* var. *cinnamomeus* GREDLER, Jahrb. Deuts. Mal. Ges., VIII, 1881, p. 122, pl. VI, fig. 16.²—* PÆTEL, Conch. Sam., III, 1890, p. 157.

China.

QUADRULA SCRIPTA Heude.

- * *Unio scriptus* HEUDE, Conch. Fluv. Nank., I, 1875, pl. III, figs. 8, 8a.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

China.

QUADRULA DIVERGENS Benson.

- Unio divergens* BENSON, Jl. As. Soc. Beng., XXIX, 1855, p. 137.³

Chusan Island, China.

Subgenus *DISCOMYA* Simpson, 1900.

Shell subsolid, round obovate or subrhomboid, lenticular, rather compressed, widely, faintly biangulate behind, with scarcely any vestige of a posterior ridge; beaks very low, sculpture not seen; front half of the shell densely covered with fine pustules arranged in curved rows in two directions as if engine chased, over which the epidermis is wrinkled. The hinder half is covered with fine, radiating and undulating corrugations, curved upward posteriorly, which are slightly nodulous and show through on the inside of the shell; one slightly compressed pseudo-cardinal in the right valve and two in the left; one delicate, curved

¹ First called *montanus* by Heude, which was several times preoccupied in *Unio*.

² Gredler makes this a variety of *leai*, but I believe it is a rather finely sculptured form of *monticola*. The species varies much in the size of pustules and the degree of its smoothness, and Heude has exalted all these variations to the rank of species. I think it probable that when a large amount of material can be examined it will be found necessary to reduce some of the Chinese forms I have considered as species to the rank of varieties, or even to the synonymy.

³ Benson says this is not very distantly related to *Unio undulatus* Barnes. It has never been figured, so far as I know, but from all I can learn of it it belongs in this group and may be *Q. leai*.

lateral in the right valve and two in the left; beak cavities deep, compressed; naere lurid; palleal line showing a slight posterior sinus.¹

(Type, *Unio radulosus* Drouet and Chaper.)

† QUADRULA RADULOSA Drouet and Chaper.

* *Unio radulosus* DROUET and CHAPER, Mem. Soc. Zool. Fr., V, 1892, p. 150, pl. v, figs. 10-12.—* JI. de Conch., XLI, 1893, p. 41.

† QUADRULA RADULOSA var. RHOMBOIDEA Simpson.²

Borneo.

The relationship of the following is uncertain.

UNIO NEWENHUISI Schepman.

* *Unio newenhuisi* SCHEPMAN, Notes Leyd. Mus., XX, 1898, p. 92, pl. I, figs. 1, 2.—

* DROUET, JI. de Conch., 1899, p. 406.

Borneo.

May be related to *Unio radulosus* Drouet and Chaper.

Genus SHISTODESMUS Simpson, 1900.

(Type, *Unio lampreyanus* Baird and Adams.)

Shell rather solid, triangular, inflated, truncate above in front, somewhat swollen just behind the center of the base, pointed behind; beaks high; beak sculpture not seen; surface thrown up into strong, very wide, concentric ridges, one or two with each season's growth, and pinched up in the central part to form a radiate row of compressed knobs or spines; epidermis shining, greenish-yellow or brownish, having marvelously delicate, concentric, microscopic liræ, often painted with a few elegant, broken, green rays; there is one large, high, triangular pseudocardinal in the left valve under the beak, a deep, triangular pit in front of it, with an erect, radial lamellar tooth in its center, and a high, lamellar, curved tooth in front of the pit, parallel with the edge of the shell connected with the central tooth. A heavy triangular bifid or trifid pseudocardinal in the right valve stands close to the anterior edge of the shell and is separated from it by a deep, compressed pit; behind this tooth, deep down at its base, is a narrow shelf, and back of this the entire hinge plate is cut out in a deep sinus to the beak; two laterals in each valve; cavity of the beak in left valve deep, somewhat compressed; in the right entirely opened by the sinus; muscle scars small, deep, smooth; pallial line with a sinus at its posterior end; a

¹ I know nothing of the anatomy of this curious *Naiad*, which seems to show some relation to such species as *Quadrula microstictus* and related forms. I place it in *Quadrula* with doubt.

² There is a specimen in the U. S. National Museum marked *Unio radulosus* Drouet and Chaper, from Borneo, which is quite rhomboid and but slightly sculptured on the body, though it is plicate behind, which may bear the above name. It is probably a valid species.

beautiful, granularly striate callus is developed behind the laterals; nacre finely, often bifurcately radiate striate outside the parallel line.

Animal unknown.

† SHISTODESMUS LAMPREYANUS Baird and Adams.

* *Unio (Dysnomia) lampreyanus*, BAIRD and ADAMS, Proc. Zool. Soc. Lond., 1867, p. 491, pl. XXVI, figs. 2, 2a.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVII, fig. 469.—* HEUDE, Conch. Fluv. Nank., VII, 1883, pl. LIX, figs. 114, 114a, 114b.—

* PÆTEL, Conch. Sam., III, 1890, p. 156.

Margaron (Unio) lampreyanus LEA, Syn., 1870, p. 30.

SHISTODESMUS SPINOSUS Simpson.

Unio vestitus var. β , HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LIX, fig. 115.¹

Genus GIBBOSULA Simpson, 1900.

(Type, *Mya crassa* Wood.)

Shell very solid, inequilateral, triangular-elliptical, arcuate, pointed behind, with a low, well-marked posterior ridge; beaks rather high; beak sculpture not seen; posterior two-thirds of the shell covered with somewhat radiating corrugations and nodules; posterior slope having strong subradial folds; epidermis dark; hinge plate very wide; pseudo-cardinals not large, stumpy, rough; laterals very heavy, club shaped; beak cavities enormously deep and compressed; anterior cicatrices rather shallow, rough in the bottom; posterior cicatrices deep and distinct; a strong rib runs from the front part of the beak cavity toward the posterior base; nacre whitish.

Animal unknown.

† GIBBOSULA CRASSA Wood.

* *Mya crassa* WOOD, Gen. Conch., 1815, p. 106, pls. xx, XXI; * Ind. Test., 1825, p. 12, pl. II, fig. 28b; * Ind. Test. Rev., 1856, p. 16, pl. II, fig. 28.

* *Mya ponderosa* DILLWYN, Dill. Cat., I, 1817, p. 51.

* *Margarita Unio ponderosus* LEA, Syn., 1836, p. 14; 1838, p. 14.

* *Unio ponderosus* HANLEY, Test. Moll., 1842, p. 177; * Biv. Shells, 1843, p. 177.—

* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* H. and A. Adams, Gen. Rec. Moll., II, 1857, p. 497.

* *Margaron (Unio) ponderosus* LEA, Syn., 1852, p. 21; 1870, p. 32.

China.

Genus CUNEOPSIS Simpson, 1900.

(Type, *Unio celtiformis* Heude.)

Shell solid, elongated, wide and truncate or rounded in front, tapering to a point behind; often twisted on its axis and curved to the right

¹ Heude made this a variety of his *Unio vestitus* (which I have placed in *Quadrula*. I am satisfied that this is a *Shistodesmus* and distinct from *lampreyanus*, as it seems to have spines instead of knobs. His name *vestitus* is preoccupied in *Unio* by Lea.)

² The name *crassus* had been previously applied to a *Unio* by Retzius, but as Wood's species was never placed in *Unio* under the specific name *crassus*, his name may be used.

or left; beaks rather high, anterior; beak sculpture apparently a few coarse, subparallel nodular ridges curved up behind; posterior ridge low, close to the hinge line, and in front of it the shell is full; surface slightly, irregularly, concentrically striate; epidermis dark, having a peculiar, dull, silky luster; hinge rather narrow; pseudocardinals two in the left valve immediately under the beak, the anterior compressed, high and nearly parallel with the outer edge of the shell, the posterior heavy, joined to the anterior above, with a deep, triangular cavity between; right valve with one large, triangular, anterior pseudocardinal with a deep, triangular pit back of it, and often a small, low, compressed tooth behind the pit; laterals granularly striate, beak cavities rather deep; anterior muscle scars deep, rough at the bottom; posterior scars large, long and oblique; nacre silvery, sometimes radially striate at the edge; palleal line indented into a sinus at its posterior end, above which is a granular, striate callus.

Animal unknown.

† CUNEOPSIS CAPITATUS Heude.

* *Unio capitatus* HEUDE, Jl. de Conch., XXII, 1874, p. 114; ^ Conch. Fluv. Nank., I, 1875, pl. II, fig. 5.—* P.ETEL, Conch. Sam., III, 1890, p. 147.

China.

† CUNEOPSIS HEUDEI Heude.

* *Unio heudei* HEUDE (Bazin manuscript), Jl. de Conch., XXII, 1874, p. 114.—* P.ETEL, Conch. Sam., III, 1890, p. 155.

* *Unio corderii* HEUDE, Conch. Fluv. Nank., I, 1875, pl. I, fig. 3.¹—* P.ETEL, Conch., Sam., III, 1890, p. 149.

China.

† CUNEOPSIS CELTIFORMIS Heude.

* *Unio celtiformis* HEUDE, Jl. de Conch., XXII, 1874, p. 113; Conch. Fluv. Nank., I, 1875, pl. I, fig. 4.—* P.ETEL, Conch. Sam., III, 1890, p. 147.

China.

† CUNEOPSIS PISCICULUS Heude.

* *Unio pisciculus* HEUDE, Jl. de Conch., XXII, 1874, p. 115; * Conch. Fluv. Nank., I, 1875, pl. II, figs. 6, 6a.—* P.ETEL, Conch. Sam., III, 1890, p. 163.

* *Unio retortus* VON MARTENS, Sitzber. Ges. Nat. Fr., 1875, p. 4; * Mal. Blatt., XXII, 1875, p. 188; Nov. Conch., IV, 1876, p. 158, pl. CXXXVI, figs. 3, 4.²—* P.ETEL, Conch. Sam., III, 1890, p. 165.

China.

† CUNEOPSIS RUFESCENS Heude.

* *Unio rufescens* HEUDE, Jl. de Conch., XXII, 1874, p. 113; Conch. Fluv. Nank., I, 1875, pl. I, fig. 2.—* P.ETEL, Conch. Sam., III, 1890, p. 166.

China.

¹ Changed to *corderi* by Heude in above reference.

² Von Martens places this in the synonymy of *U. pisciculus* in Vol. IV of the Novitates Conchologia.

Subfamily HYRIANÆ Swainson.

(ENDOBRANCHIÆ.)

Male and female shells alike, with beak sculpture radial or zigzag-radial; marsupium occupying the inner gills only.

(ROSANORHAMPHUS.)

Beak sculpture zigzag-radial.

Genus NODULARIA Conrad, 1853.

(Type, *Unio douglasia* Gray.¹)

Nodularia CONRAD, Pr. Ac. N. Sci. Phila., 1853, p. 268.

Shell elliptical to elongated, pointed behind about midway up from the base, the post-basal part produced; beak sculpture variable, irregularly zigzag-radial, often breaking into nodules, and extending in many cases over a part or all of the disk; right valve with two usually compressed pseudocardinals, one above the other, the lower the more elevated, separated by a parallel-sided socket, and having one lateral; left valve with two compressed pseudocardinals, both in front of the beaks, and two laterals; cavity of the beaks moderate, not compressed, anterior muscle scars deep, posterior shallow, nacre white.

Animal (of *N. japonensis* and *N. equitoria*) having the inner gills alone filled throughout their entire length with ova, forming a pad-like marsupium, united to the abdominal sac or free from it.

Section LANCEOLARIA Conrad, 1853.

(Type, *Unio grayanus* Lea.)

Shell ensiform, solid, with a distinct, pinched-up posterior ridge, rounded in front, the posterior end sharp and generally turned a little to the right or left; beaks low, their sculpture nodulous, zigzag, often extending more or less over the surface; pseudocardinals rather stumpy, ragged, striate above, smooth below; anterior muscle scars distinct, the upper round, very deep, appearing as if bored out.

Animal unknown.

† NODULARIA GRAYANA Lea.

* *Unio grayanus* Lea, Tr. Am. Phil. Soc., V, 1834, p. 66, pl. IX, fig. 26; Obs., I, 1834, p. 178, pl. IX, fig. 26.—* REEVE, Conch. Syst., I, 1841, p. 118, pl. LXXXVIII, fig. 4.—* HANLEY, Test. Moll., 1842, p. 177; Biv. Shells, 1843, p. 177, pl. XXIV, fig. 5.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* KUSTER, Conch. Cab. Unio, 1856, p. 167, pl. XLVIII, fig. 5.—* H. and A.

¹ A large genus of generally rather small species, very abundant in individuals, and distributed from the Amoor River throughout the mainland of all southeastern Asia and all of Africa except the region bordering on the Mediterranean. Some of the African species are so close to Asiatic forms of the *caruleus* group that they can hardly be separated specifically.

ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Man., 1859, II, p. 142, fig. 700.—* REEVE, Conch. Icon., XVI, 1865, pl. XXV, fig. 191.—* HEUDE, Conch. Fluv. Nank., II, 1877, pl. XVI, fig. 36.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

* *Margarita (Unio) grayanus* LEA, Syn., 1838, p. 14.

* *Margaron (Unio) grayanus* LEA, Syn., 1852, p. 21; 1870, p. 32.

* *Unio grayii* GRIFFITH, Grif. Cuv., XII, 1834, pl. XXI, fig. 3.¹

China.

† NODULARIA GLADIOLUS Heude.

* *Unio gladiolus* HEUDE, C. Fluv. Nank., II, 1877, pl. XVI, fig. 35.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

China.

† NODULARIA TRIFORMIS Heude.

* *Unio triformis* HEUDE, Conch. F. Nank., II, 1877, pl. XVI, fig. 34.

* *Unio distortus* HEUDE, Conch. F. Nank., VIII, 1883, pl. LXII, figs. 122, 122b.—

* PÆTEL, C. Sam., III, 1890, p. 151.

China.

† NODULARIA OXYRHYNCHUS von Martens.

* *Unio oxyrhynchus* VON MARTENS, Mal. Blatt, VII, 1861, p. 57.—* KOBELT, Abh. Senck. Nat. Ges., XL, 1879, p. 420, pl. XIII, figs. 3, 4.—* PFEIFFER, Nov. Conch., V, 1879, p. 192, pl. CLVII, figs. 4, 6.—* PÆTEL, C. Sam., III, 1890, p. 162.—* VON IHERING, Abh. Senck. N. Ges., XVIII, 1893, p. 156.

Japan.

Section CYLINDRICA Simpson, 1900.

(Type, *Nodularia cylindrica* Simpson.)

Shell inflated, *solid, cylindrical, smooth, with a rounded posterior ridge; teeth heavy, pseudocardinals radiate, curved.

NODULARIA CYLINDRICA Simpson.

* *Unio grayanus* SCHRENCK,² Reis. und Forsch. im Am. Lande, 1867, p. 694, pl. XXVII, figs. 1-3.

Nodularia cylindrica SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 84.

Amur land.

Section NODULARIA Conrad, 1853.

(Type, *Unio douglasie* Gray.)

Characters the same as the genus.

(Group of *Nodularia douglasie*.)

Shell olive to blackish, subsolid; surface generally more or less covered with nodules arranged in subradiating or chevron-shaped patterns.

¹I have seen a curious shell in the collection of Mr. Bryant Walker shaped something like the *N. grayana*, but quite heavy and decidedly inflated in the post-basal region. It may be an old *grayana*, but is so eroded that I can not be certain.

²Schrenck supposes this to be the *Unio grayanus* of Lea, but it is very different. It is a large, heavy, cylindrical shell, apparently without sculpture, and the figure does not show plainly whether it has any posterior ridge. A large form between *grayanus* and *oxyrhynchus* is found in Korea, according to von Martens, Sitzber. Nat. Fr., 1885, p. 77.

†NODULARIA DOUGLASIÆ Gray.¹

- * *Unio douglasie* GRAY, Griff. An. King., XII, 1833, (p. 601 index, 1834), pl. XXI, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 151.
- * † *Unio murchisonianus* LEA, Tr. Am.Phil. Soc., V, 1834, p. 33, pl. III, fig. 6; * Obs., I, 1834, p. 145, pl. III, fig. 6.—* HANLEY, Test. Moll., 1842, p. 177; * Biv. Shells, 1843, p. 177, pl. XXI, fig. 53.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* KUSTER, Conch. Cab. Unio, 1856, p. 166, pl. XLVIII, figs. 3, 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Man., 1859, II, p. 142, fig. 701.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVIII, fig. 207.—* PÆTEL, Conch. Sam., III, 1890, p. 160.—* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 159.
- * *Margarita (Unio) murchisonianus* LEA, Syn., 1836, p. 14; 1838, p. 14.
- * *Margaron (Unio) murchisonianus* LEA, Syn., 1852, p. 21; 1870, p. 32.
- * *Unio osbecki* PHILIPPI, Zeits. für Mal., 1845, p. 164; * Conch., III, 1847, p. 45, pl. III, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* KUSTER, Conch. Cab. Unio, 1861, p. 236, pl. LXXIX, fig. 3.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIX, fig. 353.—* PÆTEL, Conch. Sam., III, 1890, p. 162.
- * *Margaron (Unio) osbecki* LEA, Syn., 1852, p. 21; 1870, p. 32.
- * † *Unio nux-persicus* DUNKER, Zeits. für Mal., 1848, p. 83.²—* MUSGRAVE, Phot. Conch., 1863, pl. I, fig. 10.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIII, fig. 373; * PÆTEL, Conch. Sam., III, 1890, p. 161.
- * *Margaron (Unio) nux-persicus* LEA, Syn., 1870, p. 32.
- * † *Unio wrightii* LEA, Pr. Ac. N. Sci., Phila., IX, 1865, p. 75; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 283, pl. XXXIX, fig. 97; * Obs., XII, 1869, p. 43, pl. XXXIX, fig. 97.
- * *Margaron (Unio) wrightii* LEA, Syn., 1870, p. 32.
- * *Unio sculptus* DESHAYES, Bull. Nouv. Arch. Mus., IX, 1873, p. 9, pl. I, figs. 3, 3a.—* HEUDE, Conch. F. Nank., III, 1877, pl. XXIV, fig. 51.—* PÆTEL, Conch. Sam., III, 1890, p. 167.
- * *Unio dactylinus* HEUDE, Conch. F. Nank., 1885, pl. LXV.³
- *? *Unio pictorum* var. *longirostris* WESTERLUND, Kong so. vet. Ak. Hand, XIV, No. 12, p. 74.⁴

Unio schrencki WESTERLUND. Where described?

Unio abbreviatus WESTERLUND. Where described?⁵

†NODULARIA DOUGLASIÆ var. SHANGHAIENSIS Lea.

- * † *Unio shanghaiensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 153;⁶ * Jl. Ac. N. Sci. Phila., IV, 1860, p. 242, pl. XXXVI, fig. 121; * Obs., VII, 1860, p. 60, pl. XXXVI, fig. 121.—* REEVE, Conch. Icon., XVI, 1865, pl. XXI, fig. 96.—* PÆTEL, Conch. Sam., III, 1890, p. 167.
- * *Unio pictorum* var. *amurensis* MOUSSON, Jl. de Conch., XXXV, 1887, p. 26, pl. I, fig. 8.

¹The plate in Griffith's Cuvier on which this species is figured bears date of 1833, and the names of the species are designated on it. The brief description (in the index) was published in 1834, the date of the work. Lea's *Unio murchisonianus* was not published until 1834. This species has an immense distribution and varies greatly in form and degree of sculpture.

²An author's shell in the Lea collection is certainly a young *U. douglasie*.

³This and *U. firmus* and *chloreus* with others are given as varietal names and lettered.

⁴Credited by Westerlund to Amurland. *Unio pictorum*, or varieties of it, have several times been credited to this region, but no doubt erroneously. This species is always darker when adult than the well-known European species, and has totally different beak sculpture. The two shells often resemble each other closely in form.

⁵Specimens of shells bearing the above names, labeled by Westerlund, are in the U. S. National Museum.

⁶A smooth form of *douglasie*, possibly worthy of a varietal name.

† *NODULARIA DOUGLASIÆ* var. *NIPPONENSIS* von Martens.¹

- * *Unio nipponensis* VON MARTENS, S. B. Nat. Fr., 1877, p. 119.—* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 422, pl. XII, fig. 3.—¹ PÆTEL, Conch. Sam., III, 1890, p. 161.—* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 160.

China; Amurland; Japan.

† *NODULARIA DORRI* Wattebled.

- * *Unio dorri* WATTEBLED JI. de Conch., XXXIV, 1886, p. 71, pl. V, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

Cochin China; Anam; Mekong river.

NODULARIA DIGITIFORMIS Sowerby.

- * *Unio digitiformis* SOWERBY, Conch. Icon., XVI, 1868, pl. LXV, fig. 333.—* PÆTEL, Conch. Sam., III, 1890, p. 150.²

India.

(Group of *Nodularia japonensis*.)

Shell solid, elliptical, subrhomboid or oval, biangulate, rounded or pointed behind and often produced at the posterior base; posterior ridge low or scarcely developed; beaks moderately full; sculpture zig-zag radial; surface of the valves concentrically striate or more or less covered with corrugated chevron-shaped sculpture which often becomes somewhat nodulous; epidermis greenish and sometimes rayed in young shells, becoming brown or blackish when adult.

Animal having the inner gills wider than the outer in front, equal behind, free from the abdominal sac throughout, united to the mantle to the extreme posterior point; palpi rather large, long; mantle double on the border and toothed below; branchial opening large, with well-developed, brown papillæ; anal opening large, with small tubercular papillæ on its inner edge, covered with wart-like papillæ inside; super-anal opening not closed below.³

† *NODULARIA JAPANENSIS* Lea.

- * *Unio japonensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 153; * JI. Ac. N. Sci., Phila., IV, 1860, p. 244, pl. XXXVI, fig. 123; * Obs., VII, 1860, p. 62, pl. XXXVI, fig. 123.—* VON MARTENS, Mal. Bl., VII, 1861, p. 55.—* KUSTER, Conch. Cab. Unio, 1862, p. 227, pl. XCIII, fig. 4.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXX, fig. 420.—* PÆTEL, Conch. Sam., III, 1890, p. 155.—* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 157.

- * *Margaron (Unio) japonensis* LEA, Syn., 1870, p. 31.

¹ Most of the Japanese forms of this species are smaller than those found on the mainland, though I have seen nothing that exactly agrees with Kobelt's figure. The ordinary form of *douglasie* is found also in Japan.

² This seems to stand between this group and that of *N. grayanus*.

³ The shells of some of the species of this group are very different from the normal *Nodularia*, being covered with roughish epidermis and apparently lacking sculpture. Others, however, show occasional sculpture, and the young shells have the green epidermis characteristic of the group.

NODULARIA JAPANENSIS var. JOKOHAMENSIS von Ihering.

* *Unio japonensis* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 423, pl. XII, figs. 1, 2. ¹

* *Unio yokohamensis* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 158.

Japan.

† NODULARIA HACONENSIS von Ihering.

* *Unio hacouensis* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 161, fig. 3.

Japan.

NODULARIA BRANDTII Kobelt.

* *Unio brandtii* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 426, pl. XXIII, fig. 15.—

* PÆTEL, Conch. Sam., III, 1890, p. 146.—* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 157. ²

Japan.

NODULARIA BIWÆ Kobelt.

* *Unio biwæ* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 425, pl. XXIII, figs. 2-4.—

* PÆTEL, Conch. Sam., III, 1890, p. 146.—* VON IHERING, Abh. Senck. Nat. Ges., XVII, 1893, p. 157.

Japan.

NODULARIA OMIENSIS von Heimbürg.

* *Unio omiensis* VON HEIMBURG, Nach. Deuts. Mal. Ges., XVI, 1884, p. 93; * Jahrbuch Mal. Ges., XIV, 1887, p. 2, pl. 1, figs. 2, 3.—* PÆTEL, Conch. Sam., III,

1890, p. 161.

Province of Omi, Japan.

(Group of *Nodularia reiniana*.)

Shell elliptical oval, very solid, truncated in front and somewhat biangulate behind, slightly produced at the posterior base; beak sculpture not known; pseudocardinals heavy, elongated, parallel with the dorsal line. Animal unknown. ³

NODULARIA REINIANA Kobelt.

* *Unio reinianus* KOBELT, Abh. Senck. Nat. Ges., XI, 1879, p. 424, pl. XXIII, fig.

1.—* VON IHERING, Abh. Senck. Nat. Ges., XVIII, 1893, p. 157.

Japan.

(Group of *Nodularia sagittaria*.)

Shell elongated, the hinder point above the middle of the shell, with a sharp posterior ridge and a faint ridge above it; beaks rather low,

¹ Kobelt figured this for Lea's species, and it seems to me to be an old, solid, slightly arcuate form, possibly worthy of a varietal name.

² It is quite probable that this and the preceding species are only varieties of *N. japonensis*.

³ The beaks of the specimen figured are greatly eroded. I can not be certain as to the relationship of this curious form, but it probably is a *Nodularia*.

their sculpture irregularly radial; disks finely concentrically striate, not otherwise sculptured; epidermis yellowish olive, cloth-like; pseudo-cardinals greatly elongated, compressed, sometimes dentellate under the beaks; laterals long, compressed. Animal unknown.

† NODULARIA SAGITTARIA Lea.

* *Unio sagittarius* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 93; *Jl. Ac. N. Sci. Phila., III, 1857, p. 298, pl. XXVI, fig. 12; *Obs., VI, 1857, p. 18, pl. XXVI, fig. 12.

* *Margaron (Unio) sagittarius* LEA, Syn., 1870, p. 58.

*† *Unio dugasti* MORLET, Jl. de Conch., XL, 1892, p. 86; * XLI, 1893, p. 156, pl. VI, fig. 4.¹

Siam; Cambodia.

(Group of *Nodularia carulea*.)

Shell elliptical, inflated, pointed about midway up behind, the post-basal region produced, with a well developed posterior ridge; beaks sculptured with numerous fine, radiating riblets, the central ones of which join below, the whole often more or less zigzagged and extending well over the disk; epidermis generally bluish green. Animal unknown.

† NODULARIA CÆRULEA Lea.

* *Unio caruleus* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 95, pl. XIII, fig. 25; *Obs., I, 1834, p. 105, pl. XIII, fig. 25.—*HANLEY, Test. Moll., 1842, p. 194; *Biv. Shells, 1843, p. 194, pl. XX, fig. 49.—*CATLOW and REEVE, Conch. Nom., 1845, p. 56.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*CHENU, Ill. Conch., 1858, pl. XVI, figs. 3, 3a, 3b.—*KUSTER, Conch. Cab. Unio, 1861, p. 228, pl. LXXVII, fig. 4.—*SOWERBY, Conch. Icon., XVI, 1866, pl. XLII, fig. 230.—*HANLEY and THEOBALD, Conch. Ind., 1876, p. 6, pl. XII, figs. 3, 3a.—*PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margarita (Unio) caruleus* LEA, Syn., 1836, p. 26; 1838, p. 20.

* *Margaron (Unio) caruleus* LEA, Syn., 1852, p. 30; 1870, p. 47.

* *Unio gerbidoni* EYDOUX, Guer. Mag., 1838, p. 9, pl. CXVIII, figs. 2, 2a, 2b.—*HANLEY and THEOBALD, Conch. Ind., 1876, p. 6, pl. XII, fig. 2.—*PÆTEL, Conch. Sam., III, 1890, p. 153.

*† *Unio substriatus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 93; *Obs., VI, 1857, p. 20, pl. XXVI, fig. 14; *Jl. Ac. N. Sci. Phila., III, 1858, pl. XXVI, fig. 14.

* *Margaron (Unio) substriatus* LEA, Syn., 1870, p. 47.

*† *Unio humilis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 93; *Obs., VI, 1857, p. 16, pl. XXVI, fig. 10; *Jl. Ac. N. Sci. Phila., III, 1858, p. 296, pl. XXVI, fig. 10.—*PÆTEL, Conch. Sam., III, 1890, p. 155.

* *Margaron (Unio) humilis* LEA, Syn., 1870, p. 32.

* *Unio corvianus* KUSTER, Conch. Cab. Unio, 1861, p. 229, pl. LXVII, fig. 5.

*† *Unio leioma* BENSON, Ann. and Mag., 1862, p. 192.—*HANLEY and THEOBALD, Conch. Ind., 1876, p. 6, pl. XII, fig. 6.—*PÆTEL, Conch. Sam., III, 1890, p. 157.

*† *Unio pilatus* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 133; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 281, pl. XXXVIII, fig. 95; *Obs., XII, 1869, p. 41, pl. XXXVIII, fig. 95.

* *Margaron (Unio) pilatus* LEA, Syn., 1870, p. 47.

*† *Unio exitatus* LEA, Pr. Ac. N. Sci. Phila., X, 1868, p. 133; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 279, pl. XXXVIII, fig. 92; *Obs., XII, 1869, p. 39, pl. XXXVIII, fig. 92.

¹ This group seems to stand in part between section *Lanceolaria* and *Nodularia*.

* *Margaron (Unio) evitatus* LEA, Syn., 1870, p. 47.

* *Unio tiriostriis* SOWERBY, Conch. Icon., XVI, 1868, pl. LXV, fig. 331.

? *Unio andersonianus* NEVILL, Jl. As. Soc. Beng., XLVI, 1877, p. 40; Researches Yun. Exp. 1877, p. 900, pl. LXXX, figs. 8, 12.¹

India; southeast Asia.

† NODULARIA TERETIUSCULA Philippi.

* *Margarita (Unio) cailliaudi* LEA, Syn., 1838, p. 24.

* *Margaron (Unio) cailliaudi* LEA, Syn., 1852, p. 36; 1870, p. 58.²

* *Unio teretiusculus* PHILIPPI, Conch., III, 1847, p. 45, pl. III, fig. 3.³—? KUSTER, Conch. Cab., 1856, p. 133, pl. XXXV, fig. 5.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXV, fig. 389.—* JICKEL, Faun. N. O. Af., 1874, p. 276, pl. XI, figs. 1-3.—* PÆTEL, Conch. Sam., III, 1890, p. 169.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 220.

Unio lithophagus ZIEGLER, manuscript, probably.

Upper Nile drainage.

NODULARIA LEDOULXIANA Charmes.

* *Unio ledoulxianus* CHARMES, Bull. Soc. Mal. Fr., II, 1885, p. 173.—* BOURGUIGNAT, Moll. Af. Eq., 1889, p. 194.—* VON MARTENS, Besch., 1897, p. 229.⁴

Central Africa.

NODULARIA GAUDICHAUDI Eydoux.

* *Unio gaudichaudi* EYDOUX, Guer. Mag., 1838, p. 10, pl. CXVIII, fig. 3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* PÆTEL, Conch. Sam., III, 1890, p. 153.

* *Margaron (Unio) gaudichaudi* LEA, Syn., 1850, p. 32; 1870, p. 50.

Small streams of Bengal.

NODULARIA KERAUDRENI Eydoux.

* *Unio kerandreni* EYDOUX, Guer. Mag., 1838, p. 8, pl. CXVIII, figs. 1, 1a.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* PÆTEL, Conch. Sam., III, 1890, p. 156.

* *Margaron (Unio) kerandreni* LEA, Syn., 1852, p. 30; 1870, p. 46.

Rivers and swamps of Bengal.

¹ I have not seen the figure of *andersonianus*, but Nevill states that it is near *caruleus*. The *Nodularia carulea* is an abundant and very widely distributed form, and therefore quite variable in size, form, solidity, color, and sculpture, and it is possible that other so-called species should be merged with it. Some of the above might rank as varieties, but I can hardly separate them.

² Lea credits this name to Ferussac manuscript. So far as I know neither Ferussac or anyone else has ever described it. Lea makes *U. teretiusculus* a synonym of it in his Synopsis.

³ Philippi's figure is a little more rounded posteriorly than are any of the shells I have seen from Africa bearing this name. After a critical comparison of numerous specimens, which are undoubtedly of African origin, I can only place this in the *caruleus* group (with which it agrees in every essential character) and close to *caruleus* itself. There are other undoubtedly close relations between species of *Naiades* of the Ethiopian and Oriental regions.

⁴ Unfigured. Von Martens places it in the group of *U. teretiusculus*.

† NODULARIA SHURTLEFFIANA Lea.

- * *Unio shurtleffianus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; * Obs., VI, 1857, p. 22, pl. XXVII, fig. 17; * Jl. Ac. N. Sci. Phila., III, 1858, p. 302, pl. XXVII, fig. 17.—* PÆTEL, Conch. Sam., III, 1890, p. 167.
* *Margaron (Unio) shurtleffianus* LEA, Syn., 1870, p. 32.

India; Siam.

† NODULARIA OCCATA Lea.

- * *Unio occatus*, LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 307; * Jl. Ac. N. Sci. Phila., VI, 1863, p. 398, pl. L, fig. 304; * Obs., X, 1863, p. 34, pl. L, fig. 304.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIX, fig. 412.—* PÆTEL, Conch. Sam., III, 1890, p. 161.
* *Margaron (Unio) occatus*, LEA, Syn., 1870, p. 31.
* † *Unio macilentus*, BENSON, Ann. and Mag., X, 1862, p. 187.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. X, figs. 2, 4; p. 62, pl. CLIV, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 158.
* *Unio rugosus*, HANLEY and THEOBALD, Conch. Ind., 1876, p. 62, pl. CLIV, fig. 3.

India.

NODULARIA MOSSAMBICENSIS von Martens.

- * *Unio mossambicensis* VON MARTENS (Peter's manuscript), Mal. Bl., VI, 1860, p. 218, pl. III, figs. 3-5.—* PÆTEL, Conch. Sam., III, 1890, p. 160.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 225, pl. VII, fig. 2.
* *Unio sennariensis* var. VON MARTENS, Mal. Bl., XXI, 1873, p. 43.
* *Unio parreysi* (v. d. Busch.) var. *schwinefurthi* VON MARTENS, Nov. Conch., IV, 1876, p. 140, pl. CXXXII, figs. 3-5.¹

Sennaar, northeast Africa; Mosambique, Zambezi River.

† NODULARIA INORNATA Lea.

- * *Unio inornatus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 93; * Obs., VI, 1857, p. 13, pl. XXIV, fig. 6; * Jl. Ac. N. Sci. Phila., III, 1858, p. 293, pl. XXIV, fig. 6.—* VON MARTENS, Pr. Zool. Soc. Lond., 1860, p. 15.—* MORELET, Ser. Conch., IV, 1875, p. 352.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
* *Margaron (Unio) inornatus* LEA, Syn., 1870, p. 47.

Siam; Cambodia.

† NODULARIA PACHYSOMA Benson.

- * *Unio pachysoma* BENSON, Ann. and Mag., X, 1862, p. 186.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 6, pl. XII, fig. 1.
* *Margaron (Unio) pachysoma* LEA, Syn., 1870, p. 63.
* *Unio pachystoma* PÆTEL, Conch. Sam., III, 1890, p. 152.

Assam.

† NODULARIA BONNEAUDI Eydoux.

- * *Unio bonneaudi* EYDOUX, Guer. Mag., 1838, p. 10, pl. CXIX, figs. 1, 1a.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1868,

¹This species seems to be close to *N. occata*, but is thinner and of delicate texture. I am not certain of its exact affinities. I am sure that it is not a variety of *N. mossambicensis*.

pl. xcv, fig. 515.—* HANLEY and THEOBALD, *Conch. Ind.*, 1876, p. 5, pl. x, fig. 6.—ANDERSON, *Yunnan Exp.*, 1878, p. 900, pl. LXXX, figs. 8-12.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 146.

* *Margaron (Unio) bonneaudi* LEA, *Syn.*, 1852, p. 32; 1870, p. 50.

India.

† NODULARIA TUMIDULA Lea.

* *Unio tumidulus* LEA, *Pr. Ac. N. Sci. Phila.*, VIII, 1856, p. 93; **Obs.*, VI, 1857, p. 15, pl. xxv, fig. 9; **Jl. Ac. N. Sci. Phila.*, III, 1858, p. 295, pl. xxv, fig. 9.—* VON MARTENS, *Pr. Zool. Soc. Lond.*, 1860, p. 15.—* SOWERBY, *Conch. Icon.*, XVI, 1868, pl. LXXXIX, fig. 482.—* MORELET, *Ser. Conch.*, IV, 1875, p. 351.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 170.

* *Margaron (Unio) tumidulus* LEA, *Syn.*, 1870, p. 39.

Siam, Cambodia.

† NODULARIA ASPERULA Lea.

* *Unio inornatus* REEVE, *Conch. Icon.*, XVI, 1865, pl. xxix, fig. 147.¹

* *Unio asperulus* LEA, *Pr. Ac. N. Sci. Phila.*, X, 1866, p. 133; **Jl. Ac. N. Sci. Phila.*, VI, 1868, p. 280, pl. xxxviii, fig. 94; **Obs.*, XII, 1869, p. 40, pl. xxxviii, fig. 94.

* *Margaron (Unio) asperulus* LEA, *Syn.*, 1870, p. 31.

* *Margaron (Unio) versus* LEA, *Syn.*, 1870, p. 46.

Siam; Cambodia.

NODULARIA ANCEPS Deshayes.

* *Unio anceps* DESHAYES, *Nouv. Arch. de Mus.*, X, 1874, p. 127, pl. vi, figs. 8-12.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 144.

Cambodia.

† NODULARIA PUGIO Benson.

* *Unio pugio* BENSON, *Ann. and Mag.*, X, 1862, p. 193.—* SOWERBY, *Conch. Icon.*, XVI, 1868, pl. xcv, fig. 516.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 164.²

Burma.

NODULARIA MICHELOTI L. Morlet.

* *Unio micheloti* L. MORLET, *Jl. de Conch.*, 1886, pp. 77, 291, pl. xiii, figs. 6, 6a.—* PÆTEL, *Conch. Sam.*, III, 1890, p. 159.

Tonkin.

NODULARIA FLUCTIGER Lea.

* *Unio fluctiger* LEA, *Pr. Ac. N. Sci. Phila.*, III, 1859, p. 152; **Jl. Ac. N. Sci. Phila.*, IV, 1860, p. 250, pl. xxxix, fig. 130; **Obs.*, VII, 1860, p. 68, pl. xxxix, fig. 130.—* KUSTER, *Conch. Cab. Unio*, 1861, p. 237, pl. lxxx, fig. 1.—* SOWERBY, *Conch. Icon.*, XVI, 1866, pl. xlii, fig. 299.

* *Margaron (Unio) fluctiger* LEA, *Syn.*, 1870, p. 32.

Southeast Asia, no doubt.

¹ I believe that Reeve's *U. inornatus* = Lea's *U. asperulus*. As Lea had used the name *inornatus* previous to Reeve for a *Unio*, he changed the name of the latter to *U. versus*.

² A shell labeled *Unio bourieri* Nevill in the collection of Frederick Stearns in Detroit is, I believe, the same as *U. pugio* Benson. I do not know if Nevill ever described *U. bourieri* or whether it is only a manuscript name.

† NODULARIA SCOBINATA Lea.

* *Unio scobinata* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 93; * Obs., VI, 1857, p. 19, pl. XXVI, fig. 13; * Jl. Ac. N. Sci. Phila., III, 1858, p. 299, pl. XXVI, fig. 13.—* VON MARTENS, Pr. Zool. Soc. Lond., 1860, p. 15.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIII, fig. 313.—* MORELET, Ser. Conch., IV, 1875, p. 354, pl. XVII, figs. 2-6.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

* *Margaron (Unio) scobinatus* LEA, Syn., 1870, p. 32.

* *Unio mandarinus* MORELET, Jl. de Conch., XII, 1863, p. 159.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

* *Unio pellis-lacerti* MORELET, Jl. de Conch., XIII, 1865, p. 22.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVI, fig. 457.—* MORELET, Ser. Conch., IV, 1875, p. 355, pl. XVII, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Unio venustus* MORELET, Jl. de Conch., XIV, 1866, p. 63.—* PÆTEL, Conch. Sam., III, 1890, p. 171.

* *Unio oblatulus* LEA, Syn., 1870, p. 64.¹

Siam; Cochinchina; Cambodia.

NODULARIA GRATIOSA Philippi.²

* *Unio graciosus* PHILIPPI, Conch., I, 1845, p. 20, pl. I, fig. 5.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* KÜSTER, Conch. Cab. Unio, 1861, p. 239, pl. LXXX, fig. 3.

* *Margaron (Unio) graciosus* LEA, Syn., 1870, p. 32.

India probably; Philippi's locality, New Holland, is certainly an error.

† NODULARIA CRISPATA Gould.

* *Unio crispata* GOULD, Pr. Bost. Soc. Nat. Hist., I, 1843, p. 141; * Otia Conch., 1862, p. 191.

* *Unio crispatus* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 21, pl. XLV, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

* *Margaron (Unio) crispatus* LEA, Syn., 1870, p. 32.

British Burma.

† NODULARIA NUCLEUS Lea.

* *Unio nucleus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; * Obs., VI, 1857, p. 26, pl. XXVIII, fig. 21; * Jl. Ac. N. Sci. Phila., III, 1858, p. 303, pl. XXVIII, fig. 21.

* *Margaron (Unio) nucleus* LEA, Syn., 1870, p. 30.

Siam.

† NODULARIA PHASELUS Lea.

* *Unio phaselus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; * Obs., VI, 1857, p. 17, pl. XXVI, fig. 11; * Jl. Ac. N. Sci. Phila., III, 1858, p. 297, pl. XXVI, fig. 11.

* *Margaron (Unio) phaselus* LEA, Syn., 1870, p. 32.

Siam.

¹New name for *Unio venustus* Morelet, preoccupied by Lea.

²Philippi's figure is not very distinct, and I can not be sure of what it is, only that it seems to be a member of this group that I can hardly connect with anything else. He credits it to Parreys.

NODULARIA SCOBINA Hanley.

* *Unio scobina* HANLEY, Biv. Shells, 1856, p. 382, pl. XXIII, fig. 40.¹—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 22. pl. XLVI, figs. 2, 3.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

Assam.

(Group of *Nodularia pazii*.)

Shell thin, with the hinder point long drawn out; posterior ridge double, low, and sharp, the dorsal line above it straight or incurved; beak sculpture not seen; surface of the shell smooth, dull olive colored; teeth exceedingly compressed; pseudocardinals long, lamellar.

† NODULARIA PAZII.

* *Unio pazii* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 176; * JI. Ac. N. Sci. Phila., VI, 1866, p. 61, pl. XXI, fig. 60; * Obs., XI, 1867, p. 65, pl. XXI, fig. 60.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCII, fig. 502.

* *Margaron (Unio) pazii* LEA, Syn., 1870, p. 39.

China; Siam; Cambodia.

NODULARIA JOURDYI L. Morlet.

* *Unio jourdyi* MORLET, JI. de Conch., 1886, p. 289, pl. XIII, figs. 5, 5a.

Tonkin.

† NODULARIA INGALLSIANA Lea.

* *Unio ingallsianus* LEA, Tr. Am. Phil. Soc., X, 1852, p. 282, pl. XXIV, fig. 41; * Obs., V, 1852, p. 38, pl. XXIV, fig. 41.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVI, fig. 126.—* MORELET, Ser. Conch., IV, 1875, p. 351.—* PÆTEL, Conch. Sam., III, 1890, p. 155.

* *Margaron (Unio) ingallsianus* LEA, Syn., 1852, p. 36; 1870, p. 58.

Cochin-China; Siam; Cambodia.

(Group of *Nodularia trompi*.)

Shell small, subtrapezoidal, wider behind, slightly inflated, with a rounded posterior ridge; beaks full, sculpture not seen; surface covered with very fine, nodulous, somewhat zigzag corrugations, with upcurved posterior ridges on the posterior slope; epidermis reddish brown or black; hinge teeth compressed; pseudocardinals vertically striate.

† NODULARIA TROMPI Drouet and Chaper.

* *Unio trompi* DROUET and CHAPER, Mem. Soc. Zool. Fr., V, 1892, p. 153, pl. VI, figs. 8-10; JI. de Conch., XLI, 1893, p. 45.

Borneo.

(Group of *Nodularia olivaria*.)

Shell thin, inflated, blue green or olive green, smooth, shining, with two or more faint ridges on the posterior slope; beaks and disk almost or quite destitute of sculpture; teeth greatly compressed, lamellar.

¹ Credited to Benson manuscript.

† NODULARIA OLIVARIA Lea.

- * *Unio olivarius* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 108, pl. XVI, fig. 38; * Obs., I, 1834, p. 118, pl. XVI, fig. 38.—* HANLEY, Test. Moll., 1842, p. 195; * Biv. Shells, 1843, p. 195, pl. XXII, fig. 32.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. VIII, figs. 11, 11a, 11b.—* KUSTER, Conch. Cab. Unio, 1861, p. 244, pl. LXXXII, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXVI, fig. 195.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. x, fig. 1.—PÆTEL, Conch. Sam., III, 1890, p. 161.
- * *Margarita (Unio) olivarius* LEA, Syn., 1836, p. 26; 1838, p. 20; 1852, p. 30; 1870, p. 47.
- * *Unio pumilio* KUSTER, Conch. Cab. Unio, 1862, p. 268, pl. xc, fig. 7.

India.

† NODULARIA NUTTALLIANA Lea.

- * *Unio nuttallianus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 103; * Obs., VI, 1857 p. 30, pl. XXX, fig. 25; Jl. Ac. N. Sci. Phila., III, 1858, p. 310, pl. XXX, fig. 25.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 19, pl. XLI, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 161.
- * *Margarou (Unio) nuttallianus* LEA, Syn., 1870, p. 74.

India.

NODULARIA INVOLUTA Benson.

- * *Unio involutus* BENSON, Hanley Biv. Shells, 1856, p. 385, pl. XXIII, fig. 19.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 19, pl. XLI, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 156.
- * *Margarou (Unio) involutus* LEA, Syn., 1870, p. 37.
- * *Unio involuta* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXIV, fig. 177.

Assam.

Group of *Nodularia contradens*.)

Shell inflated, obovate, rhomboid, with a slight swelling at the post base, and a well-developed posterior ridge; beaks full and high, the sculpture consisting of wavy, zigzag ridges which often extend over the shell as somewhat nodulous corrugations; pseudocardinals obliquely or vertically striate; laterals curved, cavity of the beaks rather shallow.

† NODULARIA CONTRADENS Lea.

- * *Unio contradens* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 75, pl. XVIII, fig. 58; * Obs., II, 1838, p. 75, pl. XVIII, fig. 58.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 237.—* HANLEY, Test. Moll., 1842, p. 209; Biv. Shells; 1843, p. 209, pl. XXII, fig. 8.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* CHENU, Ill. Conch., 1858, pl. XXIX, figs. 4, 4a, 4b.—* REEVE, Conch. Icon., XVI, 1865, pl. XXIX, fig. 149.—* PÆTEL, Conch. Sam., III, 1890, p. 148.
- * *Margarita (Unio) contradens* LEA, Syn., 1838, p. 25.
- * *Margarou (Unio) contradens* LEA, Syn., 1852, p. 39; 1870, p. 46.
- * † *Unio javanus* LEA, Pr. Am. Phil. Soc., I, 1840, p. 285; * Tr. Am. Phil. Soc., VIII, 1842, p. 220, pl. XVIII, fig. 37; * Obs., III, 1842, p. 58, pl. XVIII, fig. 36.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XXVIII, figs. 4, 4a, 4b.—* KUSTER, Conch. Cab. Unio, 1856, p. 138, pl. XLI, fig. 3; 1861, p. 236, pl. LXXIX, figs. 4, 6.—* SOWERBY, Conch. Icon., XVI, 1868, pl. xc, fig. 489.—* PÆTEL, Conch. Sam., III, 1890, p. 155.

**Margaron (Unio) javanus* LEA, Syn., 1852, p. 30.

**Unio exilis* DUNKER, Zeits. für Mal., III., 1846, p. 109.—MOUSSON, L. und S. W. Moll. Java, 1849, p. 92, pl. XVI, fig. 3.

**Margaron (Unio) exilis* LEA, Syn., 1852, p. 29.

**Unio mutatus* MOUSSON, L. und S. W. Moll. Java, 1849, p. 92, pl. XVI, figs. 1, 2; Zeits. für Mal., VII, 1851, p. 46; *H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—*PÆTEL, Conch. Sam., III, 1890, p. 160.

**Margaron (Unio) mutatus* LEA, Syn., 1852, p. 29.

**Unio mederianus* KUSTER,¹ Conch. Cab. Unio, 1861, p. 242, pl. LXXX, fig. 7.—*PÆTEL, Conch. Sam., III, 1890, p. 158.

Java.

† NODULARIA DIMOTA Lea.

**Unio sumatrensis*, LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 153; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 239, pl. XXXIV, fig. 118; *Obs., VII, 1860, p. 57. pl. XXXIV, fig. 118.—*PÆTEL, Conch. Sam., III, 1890, p. 169.

**Margaron (Unio) dimotus*, LEA, Syn., 1870, p. 30.—*PÆTEL, Conch. Sam., III, 1890, p. 150.³

Sumatra.

NODULARIA FISCHERIANIA L. Morlet.

**Unio fischerianus*, L. MORLET, Jl. de Conch., XXXI, 1883, p. 109, pl. IV, fig. 6.—*PÆTEL, Conch. Sam., III, 1890, p. 152.

Cambodia.

† NODULARIA ANODONTÆFORMIS Tapperone-Canefri.

**Unio (Microdonta) anodontæformis* TAPPERONE-CANEFRI, Ann. Mus. Genov., XIX, 1883, p. 295, pl. XI, figs. 3-5.

**Unio anodontæformis* PÆTEL, Conch. Sam., III, 1890, p. 144.

New Guinea.

† NODULARIA SACELLUS Drouet and Chaper.

**Unio sacellus* DROUET and CHAPER, Mem. Soc. Zool. Fr., V, 1892, p. 148, pl. V, figs. 4-6; Jl. de Conch., XLI, 1893, p. 43.

Borneo.

† NODULARIA LUGENS Drouet and Chaper.⁴

**Unio lugens* DROUET and CHAPER, Mem. Soc. Zool. Fr., V, 1892, p. 147, pl. V, figs. 1-3.—*DROUET, Jl. de Conch., XLI, 1893, p. 44.

Borneo.

¹Kuster credits this to Mousson, Conch. of Java, p. 92. I know of no such work, and the name is not found in Mousson's L. und Suss. W. Moll. von Java.

²Changed to this name by Lea because *sumatrensis* was preoccupied for a *Unio* by Dunker.

³This species varies much in sculpture, and shows the connection between the nearly smooth *contradens* and the strongly corrugated forms like *rusticus* and *dautzenbergi*. It is really very close to *contradens*.

⁴I am doubtful whether these two are more than varieties of the same thing. The *N. lugens* is darker colored and seems to lack a little tubercle on the hinge, which is sometimes present in *sacellus*.

† NODULARIA FULVASTER Drouet and Chaper.

- * *Unio fulvaster* DROUET and CHAPER, Mem. Soc. Zool. de Fr., V, 1892, p. 154, pl. VI, figs. 11-13.—*DROUET, Jl. de Conch., XLI, 1893, p. 45.

Borneo.

NODULARIA SEMIDECORATA L. Morlet.

- * *Unio semidecoratus* L. MORLET, Jl. de Conch., XXXVII, 1889, p. 192, pl. VIII, fig. 4.

River Srakeo, Siam.

† NODULARIA RUSTICA Lea.

- * *Unio rusticus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 93; *Obs., VI, 1857, p. 14, pl. XXV, fig. 7.—*Jl. Ac. N. Sci. Phila., III, 1858, p. 294, pl. XXV, fig. 7.—*VON MARTENS, Pr. Zool. Soc. Lond., 1860, p. 14.—*MORELET, Ser. Conch., IV, 1875, p. 353, pl. XVII, fig. 7.—*PÆTEL, Conch. Sam., III, 1890, p. 166.

* *Margaron (Unio) rusticus* LEA, Syn., 1870, p. 31.

* *Unio pavanus* MORELET, Jl. de Conch., XIII, 1865, p. 227.

* *Unio cambojensis* SOWERBY, Conch. Icon., XVI, 1866, pl. XLII, fig. 231.—*PÆTEL, Conch. Sam., III, 1890, p. 147.

Siam; Cambodia.

† NODULARIA DAUTZENBERGI L. Morlet.

- * *Unio dautzenbergi* MORLET, Jl. de Conch., XXXVII, 1889, p. 190, pl. VIII, fig. 5.

River Srakeo, Siam.

NODULARIA SOBOLUS Fischer.

* *Unio siamensis* MORLET, Jl. de Conch., XXXVII, 1889, p. 194, pl. VII, fig. 2.

* *Unio sobolus* FISCHER, Bull. Soc. d'Autun., 1891, p. 227.¹

Siam.

NODULARIA VERBECKI Böttger.

- * *Unio verbecki* BÖTTGER, Zool. Erg. Nied. Ost. Ind., IV, 1897, p. 89, pl. v, figs. 1, 2, 4, 5.—*PÆTEL, Conch. Sam., III, 1890, p. 171.

Sumatra.

† NODULARIA ORIENTALIS Lea.²

- * *Unio orientalis* LEA, Pr. Am. Phil. Soc., I, 1840, p. 285; *Tr. Am. Phil. Soc., VIII, 1842, p. 221, pl. XVIII, fig. 38; *Obs., III, 1842, p. 59, pl. XVIII, fig. 38.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—*CHENU, Ill. Conch, 1858, pl. XXXII, figs. 6, 6a, 6b.—*KÜSTER, Conch. Cab. Unio, 1861, p. 241, pl. LXXX, fig. 16.—*VON MARTENS, Mal. Bl., XIV, 1866, p. 15.—*SOWERBY, Conch. Icon., XVI, pl. XCI, fig. 491.—*PÆTEL, Conch. Sam., III, 1890, p. 162.

¹Changed from *siamensis* to *sobolus* because the former was preoccupied by Lea. Probably an old, smooth *rusticus*.

²I hardly know where to place this, as the only shell I have seen (the type) is evidently young, and has the beaks eroded until I can not make out the sculpture. It seems most likely to be an elongated, somewhat compressed member of the *contradens* group.

* *Margaron (Unio) orientalis* LEA, Syn., 1852, p. 38; 1870, p. 61.

* *Unio productus* MOUSSON, L. und S. W. Moll. Java, 1849, p. 93, pl. XVII, figs. 3-5; Zeits. für Mal., VII, 1851, p. 46.

* *Unio productior* LEA, Syn., 1852, p. 29.—* VON MARTENS, Mal. Bl., XIV, 1866, p. 16.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.

Java.

Section *RADIATULA*, Simpson.

(Type, *Unio crispisulcatus* Benson.)

Shell rather solid, triangular oval, with high beaks which are but little inflated, not very full at post base, bluntly pointed behind, the beaks and entire surface covered with radiating, occasionally slightly zigzag or divaricate ridges which are cut more or less into nodules or cancellations by concentric sulcations, the sculpture of the posterior slope stronger, and curving upward; pseudocardinals of the left valve 2 to 3, ragged, the anterior larger, two in the right valve, with a parallel sided socket, the larger teeth compressed but rather solid.¹

† *NODULARIA CRISPISULCATA* Benson.

* *Unio crispisulcatus* LEA, Ann. and Mag., X, 1862, p. 193.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIX, fig. 262.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 6., pl. XI, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

* *Margaron (Unio) crispisulcatus* LEA, Syn., 1870, p. 31.

Burma.

NODULARIA LIMA Simpson.

* *Unio radula* BENSON,² in Hanley, Biv. Shells, Supp., 1856, p. 382.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. X, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 165.

* *Dysnomia radula* ROCHEBRUNE, Bull. Soc. Phil., VI, 1882, p. 42.

Assam; Cambodia.

Section *CÆLATURA* Conrad, 1853.

(Type, *Unio aegyptiacus* Cailliaud.)

Shell elliptical, pointed or rounded behind, usually slightly produced at the post base; beak sculpture consisting of zigzag ridges which are generally quite pustulous, the sculpture often extending on to the usually rayed disk; teeth compressed; pseudocardinals lamellar.

Animal described under *Nodularia*. (See page 806.)

(Group of *Nodularia aegyptiaca*.)

Characters the same as of the section.

¹Notwithstanding the considerable difference between this group and all other *Nodularias* there are species such as *occatus*, which seem to stand between it and the *nodulatus* group, and show the relationship of the two.

²The name *radula* was used by Say for a *Unio* in 1823. I change Benson's name as above. I am not positive as to the relationship of this species.

† NODULARIA ÆGYPTIACA Cailliaud.

* *Unio* species nuovo SAVIGNY, Icon. Moll. Egypt, 1813, pl. VII, figs. 3-6.

Unio ægyptiaca CAILLIAUD, Voy. à Méroé, II, 1826, pl. LXI, figs. 6, 7.—* DESHAYES, An. sans Vert., 2d ed., 1835, p. 553; * Enc. Méth., II, 1830, p. 587.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.

* *Margarita* (*Unio*) *ægyptiacus* LEA, Syn., 1838, p. 21.

* *Margarita* (*Unio*) *ægyptiacus* LEA, Syn., 1852, p. 32; 1870, p. 50.

* *Unio ægyptiaca* HANLEY, Test. Moll., 1842, p. 198; * Biv. Shells, 1843, p. 198, pl. XX, fig. 56.—* KUSTER, Conch. Cab., 1856, p. 157, pl. XLV, fig. 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVI, fig. 132.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 179.—* VON MARTENS, Mal. Bl., XIII, 1866, p. 11.—* MORELET, Moll. Terr. et Fluv. 1868, p. 97.—* JICKELI (part) Faun. Moll. N. O. Af., 1874, p. 271, pl. x, figs. 1-8.—* KOBELT, Icon., new ed., 1886, p. 25, pl. XLIV, figs. 262-265.

* *Unio eueyphus* BOURGUIGNAT, Rev. et Mag., IX, 1857, p. 19, pl. III, figs. 1-3.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

* *Unio bourguignati* LANDRAN, Seance Soc. Sci. Nat. Seine, 1864, p. 5, pl. —, figs. 1-3.

* *Pharaonia bourguignati* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 113.

Nile system; High Cazamance, West Africa (Vignon); both sides of the equator in Central Africa (Dohrn).

† NODULARIA NILOTICA Cailliaud.

Unio nilotica CAILLIAUD, Voy. à Méroé, II, 1826, pl. LXI, figs. 8, 9.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 522; * Enc. Méth., II, 1830, p. 585.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* HANLEY, Test. Moll., 1842, p. 197; * Biv. Shells, 1843, p. 197, pl. XXI, fig. 39.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* VON MARTENS, Mal. Bl., XIII, 1866, p. 13.—* PÆTEL, Conch. Sam., III, 1890, p. 161.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 180.

* *Margarita* (*Unio*) *niloticus* LEA, Syn., 1836, p. 29; 1838, p. 21.

* *Margarita* (*Unio*) *niloticus* LEA, Syn., 1852, p. 31; 1870, p. 50.

Unio pumilus ZEIGLER, manuscript, and of authors.

* *Unio parreyssi* PHILIPPI, Conch., III, 1848, p. 81, pl. v, fig. 6.—* JICKELI, Faun. Moll. N. O. Af., 1874, p. 373.

* *Unio rugifer* KUSTER, Conch. Cab. Unio, 1856, p. 157, pl. XLV, figs. 3, 4.—* VON MARTENS, Mal. Bl., XIII, 1866, p. 12.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 180.

* *Unio sennaariensis* KUSTER, Conch. Cab. Unio, 1862, p. 280, pl. XCIV, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

* *Unio aeneus* JICKELI, Faun. Moll. N. O. Af., 1874, p. 274, pl. IX, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Unio charbonnieri* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 9.—* Icon. Mal. Tan., 1888, pl. XX, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 147.

* *Unio coulboisi* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 12; * Icon. Mal. Tan., 1888, pl. XX, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

* *Unio dromauxi* BOURGUIGNAT, Un. and Ir. Tan., 1886, p. 17; * Icon. Mal. Tan., 1888, pl. XXI, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

¹This species is often credited to Ferrussac, but I do not know that he ever described it. It is considered by many to be the same as *Nodularia nilotica*, but the comparison of large series of material and authentic specimens in the Lea collection from Cailliaud incline me to separate them. There is, however, great variation in their characters, but *ægyptiaca* is a thinner, more rounded shell than *niloticus*, and has lamellar pseudo-cardinals.

NODULARIA NILOTICA var. GERRARDI von Martens.

* *Unio gerrardi* VON MARTENS, Besch. Ost-Af., 1897, p. 223, pl. VII, fig. 5.

Nile system; Lake Tanganyika; Senegal and High Cazamance (Vignon).

NODULARIA BAGDADENSIS Bourguignat.¹

* *Unio bagdadensis* BOURGUIGNAT, Test. Nov. Saule., 1852, p. 30; *Cat. Rais., 1853, p. 78, pl. IV, figs. 4-6.

* *Margarou* (*Unio*) *bagdadensis* LEA, Syn., 1870, p. 46.

Bagdad, on the Tigris River.

NODULARIA RANDABELI Bourguignat.²

* *Unio randabeli* BOURGUIGNAT, Ün. and Ir. Tan., 1886, p. 22; *Icon. Mal. Tan., 1888, pl. XXI, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 165.

Lake Tanganyika.

† NODULARIA ESSOENSIS Chaper.

* *Unio essoensis* CHAPER, Bull. Soc. Zool. Fr., X, 1885, p. 481, pl. XI, figs. 8, 9.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

Assini, west coast of Africa.

NODULARIA DECAMPSIANA Wattebled.³

* *Unio decampsianus* WATTEBLED, Jl. de Conch., XXXII, 1884, p. 132, pl. VII, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 150.

* *Unio campsianus* PÆTEL, Conch. Sam., III, 1890, p. 147.

Western Soudan.

NODULARIA BELLAMYI Jousseauime.

* *Pharaonia bellamyi* JOUSSEAUIME, Bull. Soc. Zool. Fr., XI, 1886, p. 486, pl. XII, figs. 7a, 7b.

Faraba, on the Niger; High Senegal.

NODULARIA RENEA Jousseauime.

* *Renews renew* JOUSSEAUIME, Bull. Soc. Zool. Fr., XI, 1886, p. 482, pl. XII, figs. 4a, 4b.

* *Renews faidherbi* JOUSSEAUIME, Bull. Soc. Zool. Fr., XI, 1886, p. 483, pl. XII, figs. 5, 5a.

Niger at Kayon; Senegal River; High Senegal.

¹This appears from the figures and description to be a member of the *Ægyptiaca* group of *Nodularia*. It is possible that it came from Asia Minor, but more likely that it is an African species. The *Unio eucyphus* of Bourguignat, which he credits to this region, is believed by Lea to be the *U. ægyptiacus* of Cailliaud, and I agree with him. *Unio bagdadensis* may be merely a peculiar form of the same thing.

²This may possibly be distinct from *N. nilotica*, or it may only be an oddly-formed specimen.

³I can not be positive as to the systematic position of this species, but it probably belongs here.

***NODULARIA FOULADOUGOUENSIS** Jousseau.

* *Reneus fouladougouensis* JOUSSEAUME, Bull. Soc. Zool. Fr., XI, 1886, p. 485, pl. XII, figs. 6, 6a.

Fouladougou, Niger; High Senegal.

† **NODULARIA GABONENSIS** Kuster.

* *Unio gabonensis* KUSTER, Conch. Cab. Unio, 1862, p. 291, pl. xcvi, fig. 7.—

* PÆTEL, Conch. Sam., III, 1890, p. 153.

Margarou (Unio) gabonensis LEA, Syn., 1870, p. 47.

Gaboon River, West Africa.

† **NODULARIA ÆQUITORIA** Morelet.

* *Unio æquitorius* MORELET, Jl. de Conch., XV, 1885, p. 31, pl. II, fig. 9.¹—* PÆTEL, Conch. Sam., III, 1890, p. 144.

* *Unio laudanensis* SCHEPMAN, Notes Leyden Mus., VIII, 1891, p. 113, pl. VIII, figs. 3a, 3b.

Congo drainage.

NODULARIA HOREI E. A. Smith.

* *Unio horei* E. A. SMITH, Ann. and Mag., VI, 1880, p. 429; * Pr. Zool. Soc. Lond., 1881, p. 299, pl. XXXIV, fig. 37.—* CROSSE, Jl. de Conch., XXXIX, 1881, p. 133.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 235.

* *Grauidieria horei* BOURGNIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 6.

Lake Tanganyika.

NODULARIA BORELLII Ancey.

* *Unio borellii* ANCEY, Bull. Soc. Zool. Fr., VII, 1894, p. 226, fig. 2.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 227.

Lake Nyassa and vicinity.

NODULARIA EMINI von Martens.

* *Unio emini* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 224, pl. VII, fig. 14.

Victoria Nyanza.

NODULARIA BOHMI von Martens.

* *Unio bohmi* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 223, pl. VII, fig. 9.

Lake Tanganyika.

NODULARIA AMBIFARIA von Martens.

* *Unio ambifarius* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 225, pl. VII, fig. 20.

Dar-es-Ssalam, East Africa.

NODULARIA LECHAPTOISI Ancey.

* *Unio lechaptosi* ANCEY, Bull. Soc. Zool. Fr., VII, 1894, p. 228, fig. 3.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 226.

Shire River, Lake Nyassa.

¹ Doubtfully distinct from *gabonensis*.

NODULARIA LIEDERI von Martens.

* *Unio liederi* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 226, pl. VII, fig. 19.

Lake Nyassa.

NODULARIA CALATHUS Bourgnignat.¹

* *Unio calathus* BOURGNIGNAT, Esp. Ouk. et Tan., 1885, p. 23.

Tanganika.

NODULARIA BAKOYI Rochebrune.

* *Unio bakoyi* ROCHEBRUNE, Bull. Soc. Phil., 7th ser., VI, 1882, p. 33.

Bakoy, High Senegal.

NODULARIA RADIOTA Charmes.

* *Unio radiotus* CHARMES, Bull. Soc. Mal. Fr., II, 1885, p. 166.

Central Africa.

NODULARIA JULIANI Rang.

* *Unio juliani* RANG, Nouv. Ann. Mus., 1835, p. 309.

Senegal.

(Group of *Nodularia kunenensis*.)

Shell elliptical, subinflated, solid, narrowly biangulate behind, the point of the shell being about midway up the height, the post-base inflated, beaks full, eroded in the specimen figured but no doubt zigzag sculptured; whole surface of the shell covered with wavy corrugations; epidermis brownish; one rather solid, deeply incised pseudocardinal in the right valve, two in the left; nacre yellowish white; muscle scars deep. Animal unknown.

NODULARIA KUNENENSIS Mousson.

* *Unio kunenensis* MOUSSON, Jl. de Conch., XXXV, 1887, p. 300, pl. x.I, fig. 10.—

* SMITH, Ann. and Mag., VIII, 1891, p. 319.

Head of Kunene River, North Ovampo, Southwest Africa.

Section CAFFERIA Simpson, 1900.

(Type, *Unio caffer* Krauss.)

Shell elongated or elliptical, rhomboid and solid when old; beaks full, the sculpture corrugated zigzag, the ridges often extending over the disk; epidermis yellowish-brown to nearly black, dull colored, somewhat sulcate; teeth rather strong, muscle scars deep, well defined.

(Group of *Nodularia caffer*. Characters as in the section.)

¹This and the following species are unfigured, and are referred by von Martens and others to this group. I know nothing of them. I am a little in doubt as to the affinities of some of the above-figured species which I have not seen, but they are placed here on the excellent authority of von Martens.

† NODULARIA CAFFER Krauss.

- * *Unio caffer* KRAUSS, Sud. Af. Moll., 1848, p. 18, pl. I, fig. 14.—* KUSTER (part), Conch. Cab. Unio, 1856, p. 143, pl. XLII, fig. 2.—* HANLEY, Biv. Shells, 1856, p. 385, pl. XXI, fig. 40.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLI, fig. 226.—* SMITH, Ann. and Mag., VIII, 1891, p. 317.¹—* PÆTEL, Conch. Sam., III, 1890, p. 147.
- * *Margaron (Unio) caffer* LEA, Syn., 1852, p. 32; 1870, p. 48.
- * ? *Unio schwerzenbachii* BOURGUIGNAT, Rev. et Mag., 1856, p. 71.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLIV, fig. 241.
- * † *Unio verreauxianus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; Obs., VI, 1857, p. 21, pl. XXVI, fig. 16; Jl. Ac. N. Sci. Phila., III, 1858, p. 301, pl. XXVII, fig. 16.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIX, fig. 352.—* PÆTEL, Conch. Sam., III, 1890, p. 171.
- * *Margaron (Unio) verreauxianus* LEA, Syn., 1870, p. 36.
- * *Unio verreauxi* PÆTEL, Conch. Sam., III, 1890, p. 171.
- * *Unio navigoliformis* LEA, Pr. Ac. N. Sci. Phila., XI, 1859, p. 152; Jl. Ac. N. Sci. Phila., IV, 1860, p. 248, pl. XXXVII, fig. 124; * Obs., VII, 1860, p. 63, pl. XXXVII, fig. 124.—* REEVE, Conch. Icon., XVI, 1865, pl. XXIV, fig. 114.—* PÆTEL, C. Sam., III, 1890, p. 160.
- * *Margaron (Unio) navigoliformis* LEA, Syn., 1870, p. 31.
- * † *Unio natalensis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1864, p. 113; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 59, pl. XX, fig. 57; * Obs., XI, 1867, p. 63, pl. XX, fig. 57.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXI, fig. 362.—* PÆTEL, Conch. Sam., III, 1890, p. 160.
- * *Margaron (Unio) natalensis* LEA, Syn., 1870, p. 32.
- * *Unio rectilinearis* SOWERBY, Conch. Icon., XVI, 1868, pl. LXV, fig. 332.²

† NODULARIA CAFFER var. AFRICANA Lea.

- * *Unio africanus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; * Jl. Ac. N. Sci. Phila., III, 1857, p. 300, pl. XXVII, fig. 115; * Obs., VI, 1857, p. 20, pl. XXVII, fig. 15.—* REEVE, Conch. Icon., XVI, 1865, pl. XXII, fig. 100.
- * *Margaron (Unio) africanus* LEA, Syn., 1870, p. 48.
- * *Unio caffer* KUSTER (part), Conch. Cab. Unio, 1856, p. 143, pl. XLII, fig. 3.
- * *Unio nilotiensis* KUSTER, Conch. Cab. Unio, 1856, p. 158, pl. XLV, fig. 5.

† NODULARIA CAFFER var. VAALENSIS Chaper.

- * *Unio vaalensis* CHAPER, Bull. Soc. Zool. Fr., X, 1885, p. 480, pl. XI, figs. 1-3.—* PÆTEL, Conch. Sam., III, 1890, p. 171.

South Africa.

NODULARIA TRAVERSII Pollonera.³

- * *Unio traverisii* POLLONERA, Bull. Soc. Mal. It., XIII, 1888, p. 85, pl. III, figs. 14, 15.

Hawash River, Shoa, Africa.

¹According to Smith the above, *U. verreauxianus* Lea, *africanus* Lea, *natalensis* Lea, and *vaalensis* Chaper, are all one species. I think he is right, but it seems to me that one or two of these forms are worthy of varietal names. I have seen the types of most and authentic specimens of all of them.

²Said to come from the Columbia River, but it did not.

³Possibly a variety of *N. caffer*.

NODULARIA JICKELI Simpson.

* ?*Unio teretiusculus* JICKELI,¹ Faun. Moll. N. O. Af., 1874, p. 276, pl. XI, figs. 3, 3a, 3b.

Northeast Africa.

NODULARIA ACUMINATA H. Adams.

* *Unio acuminatus* H. ADAMS, Pr. Zool. Soc. Lond., 1866, p. 376.—* PÆTEL, Conch. Sam., III, 1890, p. 143.—* SMITH, Ann. and Mag., X, 1892, p. 127, pl. XII, fig. 12.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 227, pl. VII, figs. 11, 12.

Lake Albert Nyanza.

NODULARIA DEMBEÆ Reeve.

* *Unio dembeæ* REEVE, Conch. Icon., XVI, 1865, pl. XXIX, fig. 153.—* JICKELI, Faun. Moll. Af., 1874, p. 275, pl. IX, figs. 3-4.—* ROSSMASSLER, Bull. Soc. Mal. It., XIII, 1888, p. 84.—* PÆTEL, Conch. Sam., III, 1890, p. 150.

Abyssinia.

NODULARIA LOURDELLI Bourguignat.

* *Unio lourdelli* BOURGUIGNAT, Bull. Soc. Mal. Fr., IV, 1887, p. 271.—* SMITH, Ann. and Mag., X, 1892, p. 128, pl. XII, figs. 13-15.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 228.

Victoria Nyanza Lake.

NODULARIA ABYSSINICA von Martens.

* *Unio abyssinicus* VON MARTENS, Mal. Bl., XIII, 1866, p. 102; * XIV, 1867, p. 17.—* JICKELI, Faun. Moll. N. O. Af., 1874, p. 278, pl. IX, fig. 5; X, fig. 10.—* PÆTEL, Conch. Sam., III, 1890, p. 143.

Abyssinia.

NODULARIA DIMINUTA Lea.

* *Unio diminutis* LEA,² Pr. Ac. N. Sci. Phila., III, 1859 p. 151; * JI. Ac. N. Sci. Phila., 1860, p. 254, pl. XXXIX, fig. 134; * Obs., VII, 1860, p. 72, pl. XXXIX, fig. 134.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVIII, fig. 141.—* JICKELI, Faun. Moll. Af., 1874, p. 280.—* PÆTEL, Conch. Sam., III, 1890, p. 150.
* *Margaron (Unio) diminutus* LEA, Syn., 1870, p. 31.
* *Unio gratiosus* PÆTEL, Conch. Sam., III, 1890, p. 154.

East Africa.

The following unfigured species are said to belong here:

* *Unio mandingorum* ROCHEBRUNE, Bull. Soc. Phil., 7th ser., VI, 1882, p. 34.

Bakoy, High Senegal.

* *Unio zeyheri* MENKE, Zeits. für Mal., VI, 1848, p. 28.

South Africa.

¹Not *teretiusculus* Philippi, but a larger elongate solid rhomboid form, which is certainly distinct. I therefore name it in honor of Jickeli.

²So in the first published description, probably a typographical error. I am not certain as to the relationships of the species, but presume that it belongs here.

(Group of *Nodularia fissidens*.)

Shell solid, compressed, subelliptical to subrhomboid, with rather full beaks, which have radiate, corrugated sculpture extending out on the disk as wavy sulcations, and changing near the edge to plain sulcations; posterior ridge low, rounded; hinge strong; right valve with two pseudocardinals, the lower the larger, showing a tendency to split up, and having a gape in the plate behind, and having one lateral; two pseudocardinals in the left, somewhat split, and two laterals; muscle scars deep, distinct.

NODULARIA FISSIDENS Böttger.

* *Unio (Hyridella) fissidens* BÖTTGER, Ber. Senck. Ges., 1886, p. 27, pl. II, figs. 6ab, 7ab.

Kalahari Desert. Southwest Africa.

NODULARIA HYGAPANUS Böttger.

* *Unio (Hyridella) hygapanus* BÖTTGER, Ber. Senck. Ges., 1886, p. 26, pl. II, fig. 6.

Kalahari Desert. I am not certain as to the relationships of these two species.

Genus HARMANDIA Rochebrune, 1882.

(Type, *Harmandia somboriensis* Rochebrune.)

Harmandia ROCHEBRUNE, Bull. Soc. Phil., VI, 1882, p. 45.

Shell subtrapezoidal, subalate, rather thin, posteriorly compressed, with low beaks and irregularly radial sculpture, a few of the ribs converging at the center of the disk, the rest becoming divaricate and covering the shell, those of the posterior slope springing from the rib on the low, posterior ridge; epidermis gray green; left valve with two arcuate, compressed, elongate pseudocardinals in front and a triangular cardinal under the beak, the right with two pseudocardinals in front and a pit under the beak; there are two nearly straight lamellar laterals in each valve, and a small, up-curved lamella above them near their posterior ends; anterior muscle scars deep; nacre white, brilliant, showing the outside sculpture.

Animal unknown.

HARMANDIA SOMBORIENSIS Rochebrune.

* *Harmandia somboriensis* ROCHEBRUNE, Bull. Soc. Phil., VI, 1882, p. 46, pl. I, figs. 1-3..

Rapids of Sombor sombor, Mekong.

Genus GRANDIDIERIA Bourguignat, 1885.

(Type, *Unio burtoni* Woodward.)

Grandidieria BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 6.

Shell small, oval, rounded or rhomboid, solid, much inflated, generally narrowly biangulate behind, often apparently of two forms, one more

inflated in the basal and post-basal parts than the other; beaks high, and pointed, curved forward and inward, very delicately and beautifully sculptured with zigzag liræ, which become finely nodulous and sulcate on the disk, especially in front and behind; posterior ridge well developed, often slightly double; hinge line curved; two pseudocardinals in the right valve separated by a parallel-sided socket, one or two in the left, with often an irregular, triangular, ragged tooth under the beak which is frequently reflexed; one obliquely striate lateral in the right valve and two in the left; nacre of peculiarly soft, rich texture, white, coppery, or purplish, delicately radiate; beak cavities moderate; muscle scars distinct.¹

† GRANDIDIERIA BURTONI Woodward.

* *Unio burtoni* WOODWARD, Proc. Zool. Soc. Lond., 1859, p. 348, pl. XLVII, fig. 2;

* Ann. and Mag., V. 1860, p. 338.—* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVII, fig. 251.—* SMITH, Proc. Zool. Soc. Lond., 1881, p. 297, pl. XXXIV, figs. 33, 33b.—* VON MARTENS, Besch. Dents. Ost-Af., 1897, p. 237.

* *Margaron (Unio) burtoni* LEA, Syn., 1870, p. 31.

* *Grandidieria burtoni* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 6.

* *Grandidieria cyrenopsis* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 9, pl. 1, figs. 7-9; * Icon. Mal. Tan., 1888, pl. XIX, figs. 1-3.

GRANDIDIERIA BURTONI var. SERVAINIANA Bourguignat.

* *Grandidieria serrainiana* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 6.

* *Unio burtoni* var. *servainiana* VON MARTENS, Besch. Dents. Ost-Af., 1897, p. 238.

GRANDIDIERIA BURTONI var. INSIGNIS Bourguignat.

* *Grandidieria insignis* BOURGUIGNAT, Esp. Onk. Tan., 1885, p. 16.

* *Unio burtoni* var. *insignis* VON MARTENS, Besch. Dents. Ost-Af., 1897, p. 238.

GRANDIDIERIA BURTONI var. STURANYI von Martens.

Grandidieria STURANY, Banmann, Dutch Massailand, 1894, p. 6, pl. XXIV, fig. 31; XXV, fig. 35.

Unio burtoni var. *sturanyi* VON MARTENS, Besch. Dents. Ost-Af., 1897, p. 238.

Lake Tanganyika.

† GRANDIDIERIA TANGANYICENSIS Smith.

* *Unio tanganyicensis* SMITH, Proc. Zool. Soc. Lond., 1880, p. 351, pl. XXXI, p. 9, 9a;

* Proc. Zool. Soc. Lond., 1881, p. 298, pl. XXXIV, fig. 35.—* PÆTEL, Conch. Sam., III, 1890, p. 169.—* VON MARTENS, Besch. Dents. Ost-Af., 1897, p. 240.

* *Grandidieria tanganyikana* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 7.

Lake Tanganyika.

¹ Bourguignat, by a most brilliant stroke, placed this group in the *Corbiculidæ*, and stated that he knew twenty-five species, and had no doubt that there would be at least one hundred when a thorough search is made. The group is an exceedingly difficult and variable one, and, judging from the large number of species he has founded on the most trivial variations, we may consider it exceedingly fortunate that he never saw the other seventy-five. I have seen but a limited amount of material, but I am led to believe that two forms of the same species often exist, as in *Lampsilis* and allied genera, and which may be male and female shells. I know nothing of the animal and I am unable to do justice to the genus.

† GRANDIDIERIA SMITHI Bourguignat.

* *Unio burtoni* SMITH (part), Proc. Zool. Soc., 1881, pl. XXXIV, fig. 33a.

* *Grandidieria smithi* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 7.

* *Unio burtoni* var. *smithi* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 238.

Lake Tanganyika.

GRANDIDIERIA GRAVIDA Bourguignat.

* *Grandidieria gravida* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 7. pl. I, figs. 1-6; * Icon. Moll. Tan., 1888, p. 41, pl. XVIII, figs. 11-16.

* *Grandidieria rostrata* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 10, pl. I, figs. 10-12; * Icon. Moll. Tan., 1888, p. 41, pl. XVIII, figs. 17-19.

* *Unio rostralis* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 238.

Lake Tanganyika.

† GRANDIDIERIA THOMSONI Smith.

* *Unio thomsoni* SMITH, Ann. and Mag., VI, 1880, p. 430; * Proc. Zool. Soc. Lond., 1881, p. 299, pl. XXXIV, fig. 36.—* CROSSE, Jl. de Conch., XXIV, 1881, p. 133.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 240.

* *Grandidieria thomsoni* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 7; * Moll. Gir. Tan., 1885, p. 100.

* *Grandidieria corbicula* BOURGUIGNAT, Not. Prod., 1885, p. 100; * Moll. Gir. Tan., 1885, p. 100; * Icon. Moll. Tan., 1888, p. 43, pl. XIX, figs. 10-12.

* *Grandidieria granulosa* BOURGUIGNAT, Not. Prod., 1885, p. 102; * Icon. Moll. Tan., 1888, p. 43, pl. XIX, figs. 1, 2.

* *Grandidieria singularis* BOURGUIGNAT; Icon. Moll. Tan., 1888, p. 43, pl. XIX, figs. 18-20.

Lake Tanganyika.

GRANDIDIERIA RHYNCHONELLA Bourguignat.

* *Grandidieria rhynchonella* BOURGUIGNAT, Icon. Moll. Tan., 1888, p. 43, pl. XIX, figs. 16, 17.

Lake Tanganyika.

GRANDIDIERIA CALLISTA Bourguignat.

* *Grandidieria callista* BOURGUIGNAT, Icon. Moll. Tan., 1888, p. 43, pl. XIX, figs. 13-15.¹

Lake Tanganyika.

GRANDIDIERIA BOURGUIGNATI Joubert.

* *Grandidieria bourguignati* JOUBERT in Bourguignat, Icon. Moll. Tan., 1888, p. 43, pl. XIX, figs. 7-9.

Lake Tanganyika.

GRANDIDIERIA ANCEYI Bourguignat.

* *Unio burtoni* SMITH, (part) Proc. Zool. Soc. Lond., 1881, p. 297, pl. XXXIV, fig. 33a.

* *Grandidieria anceyi* BOURGUIGNAT, Esp. Ouk. et Tan., 1885, p. 15; Moll. Tan., 1888, p. 43, pl. XIX, figs. 4-6.²

Lake Tanganyika.

¹ Probably a strangely distorted form of some other species.

² I am satisfied that Smith's figure 33a is not *burtoni*, but a valid species—*G. anceyi* Bourguignat.

The following are unfigured species of *Grandidieria*:

- G. rotundata* Bourguignat, Not. Prod., 1885, p. 98.
G. mira Bourguignat, Not. Prod., 1885, p. 96.
G. locardiana Bourguignat, Esp. Ouk., 1885, p. 18.
G. incarnata Bourguignat, Moll. Gir., 1885, p. 101.
G. giraudi Bourguignat, Not. Prod., 1885, p. 95.
G. elongata Bourguignat, Moll. Gir., 1885, p. 14.

Genus *PHYSUNIO*, Simpson, 1900.

(Type, *Unio gravidus* Lea.)

Shell thin, irregularly obovate, narrowed in front, decidedly produced at post base, pointed behind and posteriorly winged, with a moderate posterior ridge and often a second or third faint ridge above it; beak sculpture zigzag radial, somewhat disposed in two sets, the one down the posterior ridge slightly nodulous; posterior slope having irregular radial corrugations, the rest of the shell smooth; epidermis often cloth-like, with one or more green rays on the posterior slope; hinge line curved; a single obliquely granularly striate pseudocardinal and generally three laterals in the left valve, and two pseudocardinals and two laterals in the right, all greatly compressed; beak cavities deep; muscle scars irregular; nacre bright, bluish, and iridescent.

Animal unknown.

Section *PHYSUNIO* Simpson, 1900.

(Type, *Unio gravidus* Lea.)

Shell inflated; beak cavities deep and rounded.

† *PHYSUNIO GRAVIDUS* Lea.

- * *Unio gravidus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 93; Obs., VI, 1857, p. 12, pl. XXIV, fig. 5; Jl. Ac. N. Sci. Phila., III, 1858, p. 292, pl. XXIV, fig. 5.—
 * VON MARTENS, Pr. Zool. Soc. Lond., 1860, p. 14.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LII, fig. 271.—* MORELET, Ser. Conch., IV, 1875, p. 347.—
 * PÆTEL, Conch. Sam., III, 1890, p. 154.
 * Margaron (*Unio gravidus* LEA, Syn., 1870, p. 28.
 * *Lampsilis gravidus* ROCHEBRUNE, Bull. Soc. Phil., VI, 1882, p. 43.
 * *Unio abnormis* MORELET, Rev. et Mag., XIV, 1862, p. 480.
 * *Unio superbus* SOWERBY, Conch. Icon., XVI, 1867, p. LIX, fig. 295.

Siam; Cambodia; Cochin China.

† *PHYSUNIO SUPERBUS* Lea.

- * *Unio superbus* LEA, Desc. 12 New Uniones. 1843 (no pagination); Tr. Am. Phil. Soc., IX, 1845, p. 281, pl. XLII, fig. 11; Obs., IV, 1848, p. 39, pl. XLII, fig. 11.—
 H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* VON MARTENS, Mal. Bl., XIV, 1866, p. 14.—* PÆTEL, Conch. Sam., III, 1890, p. 169.
 * Margaron (*Unio superbus* LEA, Syn., 1852, p. 19; 1870, p. 28.
 * *Unio velaris* HANLEY, Biv. Shells, 1856, p. 385, pl. XXIII, fig. 42.¹
 * *Unio massini* MORELET, Jl. de Conch., XII, 1864, p. 288; Ser. Conch., IV, 1875, p. 348, pl. xv, figs. 1, 3.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

Sumatra; Cochin China.

¹ Credited to Beuson manuscript.

PHYSUNIO CROSSEI Deshayes and Julien.

- * *Unio crossei* DESHAYES and JULIEN, N. Arch. Mus., X, 1874, p. 124, pl. VI, figs. 5-7.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

Cambodia; Cochin China.

† PHYSUNIO MICROPTERUS Morelet.

- * *Unio micropterus* MORELET, Jl. de Conch., XIV, 1866, p. 63; Ser. Conch., IV, 1875, p. 349, pl. XV, fig. 7.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

Siam; Cambodia.

PHYSUNIO SEMIALATUS Deshayes and Julien.

- * *Unio semialatus* DESHAYES and JULIEN, N. Arch. Mus., X, 1874, p. 123, pl. VI, figs. 1, 2.¹

Siam; Cambodia.

† PHYSUNIO CAMBODIENSIS Lea.²

- * *Unio cambodiensis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 103; Jl. Acad. N. Sci. Phil., III, 1857, p. 313, pl. XXX, fig. 28; Obs., VI, 1857, p. 33, pl. XXX, fig. 28.

- * *Margaron (Unio) cambodiensis* LEA, Syn., 1870, p. 42.

Takrong River at Korat, Cambodia.

Section LENS Simpson, 1900.

¹ (Type, *Unio eximius* Lea.)

Shell sublenticular; three laterals of left valve distinct; cavity of the beaks compressed.

† PHYSUNIO EXIMIUS Lea.

- * *Unio eximius* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 93; Obs., VI, 1857, p. 14, pl. XXV, fig. 8; Jl. Ac. N. Sci. Phila., III, 1858, p. 294, pl. XXV, fig. 8.—

- * VON MARTENS, Pr. Zool. Soc. Lond., 1860, p. 15.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIX, fig. 481.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

- * *Margaron (Unio) eximius* LEA, Syn., 1870, p. 28.

- Unio semiquadrata* SOWERBY, Conch. Icon., XVI, 1866, pl. XLVIII, fig. 258.

- * *Unio semiquadratus* PÆTEL, Conch. Sam., III, 1890, p. 167.

Siam; Cambodia.

PHYSUNIO VELARIS Sowerby.

- * *Unio velaris* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXII, fig. 368.³—* PÆTEL, Conch. Sam., III, 1890, p. 171.

Assam.

¹ Fischer believes that the above equals *U. micropterus* Morelet (Cat., p. 142). I feel sure he is wrong, and that this is a valid species.

² I have only seen the type of this, a very young shell, but it probably belongs to the *gravidus* group.

³ A compressed shell of a uniform yellow color, probably only a variety of *eximius*.

Genus DALLIELLA Simpson 1900.

(Type *Anodonta purpurea* Valenciennes.¹)

Shell subtrapezoidal, generally thin, inflated, with a low, rounded posterior ridge and rather full beaks which have somewhat zigzagged radial sculpture, with a row of chevron-shaped folds running some distance down the posterior ridge, and with fine corrugations in front of the beaks; epidermis somewhat cloth-like; substance of the shell of a peculiar purplish-brown tint; hinge line narrow; teeth imperfectly developed, sometimes reduced to mere rudiments, when present consisting of greatly compressed, feeble, pseudocardinals and laterals; beak cavities rather shallow; dorsal scars one to a few, scattered; muscle scars faint; prismatic border wide.

Animal unknown.

(Group of *DallIELLA purpurea*.)

Shell not biangulate behind, rather smooth; nacre coppery purple; teeth very faint, compressed.

† DALLIELLA PURPUREA Valenciennes.

* *Anodonta purpurea* VALENCIENNES, Rec. Obs. Zool., II, 1833, p. 236, pl. XLVIII bis, figs. 3, 3a, 3b.—* HANLEY, Test. Moll., 1842, p. 218.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* VON MARTENS, Mal. Bl., XIV, 1866, p. 12.—* CLESSIN, Conch. Cab. Ano., 1876, p. 77, pl. XIX, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 183.

* *Margarita (Anodonta) purpurea* LEA, Syn., 1836, p. 51; 1838, p. 30.

* *Anodon purpurea* CATLOW and REEVE, Conch. Nom., 1845, p. 67.

* *Margaron (Anodonta) purpurea* LEA, Syn., 1852, p. 50; 1870, p. 79.

* † *Anodonta burroughiana*, LEA, Tr. Am. Phil. Soc., V, 1834, p. 105, pl. XVI, fig. 49; * Obs., I, 1834, p. 217, pl. XVI, fig. 49.—* CLESSIN, Conch. Cab. Ano., 1875, p. 164, pl. LIV, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 177.

* *Margaron (Anodonta) burroughiana*, LEA, Syn., 1870, p. 81.

* *Anodon burroughianus*, SOWERBY, Conch. Icon., XVII, 1870, pl. XXVII, fig. 103.

* † *Margarita (Unio) bengalensis* LEA, Syn., 1836, p. 26; 1838, p. 20.

* *Unio bengalensis* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 3, pl. II, fig. 3; * Obs., II, 1838, p. 3, pl. II, fig. 3.—* TROSCHEL, Arch. für Nat., V, 1839, pl. II, p. 233.—* HANLEY, Test. Moll., 1842, p. 194; * Biv. Shells, 1843, p. 194, pl. XXI, fig. 50.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* CHENU, Ill. Conch., 1858, pl. XXII, figs. 2, 2a, 2b.—* KUSTER, Conch. Cab. Unio, 1861, p. 228, pl. LXXVII, figs. 2, 3.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Margaron (Unio) bengalensis* LEA, Syn., 1852, p. 30; 1870, p. 47.

* *Anodon bengalensis* SOWERBY, Conch. Icon., XVII, 1867, pl. XIV, fig. 49.

* *Anodonta bengalensis* CLESSIN, Conch. Cab. Ano., 1876, p. 173, pl. LVII, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 177.

* † *Unio verecundus* GOULD, Pr. Bost. S. N. Hist., III, 1850, p. 295; * U. S. Expl. Exp., XII, 1852, p. 431, figs. 541, 541a, 541b, 541c; * Otia Conch., 1862, p. 89.—

¹Some of the species placed here have been classed with *Anodonta*, but almost any large series of specimens of any species will show variation from edentulous to toothed forms.

* REEVE, Conch. Icon., XVI, 1865, pl. xxv, fig. 125.—* PÆTEL, Conch. Sam., III, 1890, p. 171.

* *Unio mauritianus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 152; * JI. Ac. N. Sci. Phila., IV, 1860, p. 257, pl. XL, fig. 138; * Obs., VII, 1860, p. 75, pl. XL, fig. 138.

* *Margaron (Unio) mauritians* LEA, Syn., 1870, p. 42.

* ? *Anodonta heldii* KUSTER, Conch. Cab. Ano., 1873, p. 64, pl. XIX, fig. 1.

Anodonta chinensis KUSTER? Where?

Philippines. The localities India and Mauritius given for this species are no doubt erroneous.

† DALLIELLA CREPERA Lea.

* *Anodonta crepera* LEA, Pr. Zool. Soc. Lond., 1850, p. 198; * Ann. and Mag., VIII, 1851, p. 494.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* LEA, JI. Ac. N. Sci. Phila., IV, 1860, p. 238, pl. LXXXIV, fig. 117; * Obs., VII, 1860, p. 56, pl. XXXIV, fig. 117.—* CLESSIN, Conch. Cab. Ano., 1873, p. 97, pl. XXIX, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 178.

* ? *Anodon creperus* SOWERBY, Conch. Icon., XVII, No. 16.

Margaron (Anodonta) crepera LEA, Syn., 1852, p. 50; 1870, p. 80.

Luzon Island, Philippines.

† DALLIELLA TENUIS Lea.

* *Anodonta tenuis* LEA, Pr. Zool. Soc. Lond., 1850, p. 198; * Ann. and Mag., VIII, 1851, p. 494; * JI. Ac. N. Sci. Phila., IV, 1860, p. 237, pl. XXXIII, fig. 116; * Obs., VII, 1860, p. 55, pl. XXXIII, fig. 116.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* MUSGRAVE, Phot. Conch., 1863, pl. I, fig. 8.—* CLESSIN, Conch. Cab. Ano., 1873, p. 99, pl. XXX, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

* *Margaron (Anodonta) tenuis* LEA, Syn., 1852, p. 53; 1870, p. 83.

* *Anodon tenuis* SOWERBY, Conch. Icon., XVI, 1867, pl. XV, fig. 55.

Luzon Island, Philippines.

† DALLIELLA SUBCRASSA Lea.

* *Anodonta subcrassa* LEA, Pr. Zool. Soc. Lond., 1850, p. 198; * Ann. and Mag., VIII, 1851, p. 495; * JI. Ac. N. Sci. Phila., IV, 1859, p. 236, pl. XXXIII, fig. 115; * Obs., VIII, 1860, p. 54, pl. XXXIII, fig. 115.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* MUSGRAVE, Phot. Conch., 1863, pl. I, fig. 3.—* CLESSIN, Conch. Cab. Ano., 1873, p. 98, pl. XXXI, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

* *Margaron (Anodonta) subcrassa* LEA, Syn., 1852, p. 51; 1870, p. 81.

* *Anodon subcrassa* SOWERBY, Conch. Icon., XVII, 1867, pl. XIII, fig. 42.

Luzon.

† DALLIELLA GRACILIS Lea.

* *Anodonta gracilis* LEA, Pr. Zool. Soc. Lond., 1850, p. 197; * Ann. and Mag., VIII, 1851, p. 193; * JI. Ac. N. Sci. Phila., IV, 1860, p. 239, pl. XXXIV, fig. 119; * Obs., VII, 1860, p. 57, pl. XXXIV, fig. 119.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1873, p. 99, pl. XXIX, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 180.

* *Margaron (Anodonta) gracilis* LEA, Syn., 1852, p. 51; 1870, p. 82.

Dingle, Isle of Panay, Philippines.

DALLIELLA SERRADELLI Drouet.

**Unio serradelli* DROUET, Jl. de Conch., XL, 1892, p. 86.

Philippines.

(Group of *DallIELLA insularis*.)

Shell subsolid, subrhomboidal biangulate behind, pseudocardinals and laterals blurred, not greatly compressed; nacre lurid, tinged purplish.

†DALLIELLA INSULARIS Drouet.

**Pseudodon insularis* DROUET, Rev. Biol. Fr., VI, 1894, p. 217, fig. 2.

Borneo; Palawan Island, Philippines.

†DALLIELLA CRASSA Drouet.

**Pseudodon crassus* DROUET, Jl. de Conch., XL, 1892, p. 93.—*DROUET and CHAPER, Mém. Soc. Zool. de Fr., V, 1892, p. 151, pl. VI, figs. 1-3.

Borneo.

The following is an unfigured species.

**Unio semmelinki* VON MARTENS, Sitzber. Ges. Nat. Fr. Ber., 1891, p. 111.

Southeast Borneo. Possibly a *DallIELLA*.

Genus PSEUDODON Gould, 1844.

(Type, *Anodon salwiniana* Gould.)

Pseudodon GOULD, Pr. Bost. Soc. Nat. His., 1844, p. 161.

Monodontina CONRAD, Pr. Ac. N. Sci. Phila., 1853, p. 269.

Trigonodon CONRAD, Am. Jl. Couch., I, 1865, p. 233.

Monocondylus MORELET, Rev. et Mag., 1866, p. 167.

Pseudodus DE MORGAN, Bull. Soc. Zool. Fr., X, 1885, p. 422.

Shell oval to elongate, having two posterior ridges and often one or two slight, radiating elevations above on the posterior slope, above which there is usually a small wing; beaks rather low, sculpture unknown;¹ epidermis dark, often having a few faint wrinkles on the posterior slope, without rays when adult. There is a single, smooth tooth in each valve, with occasional vestiges of a second; laterals nearly or quite wanting; beak cavities shallow; dorsal scars conspicuous, deep, distinct, 4 to 7 in a row under the hinge; anterior scars irregular; nacre generally dull and lurid.

Animal² having the branchiæ wide and rounded behind, becoming

¹One or two authors in describing species say that the beaks are entirely smooth. It is probable that in most cases they have zigzag radial sculpture. Although I have examined a large number of shells belonging to the group, many of which were young, they were all so badly eroded that the beak sculpture was entirely destroyed.

²Deshayes and Julien figure but do not describe the animal of *P. moreleti* in Nouv. Arch. de Mus., X, pl. v. I am only able to make out part of the characters from this really excellent figure.

narrow in front; palpi enormously long, apparently slender, pointed behind, where they project free for some distance; mantle thin, with a wide, slightly thickened border, faintly papillose behind, there seeming to be but little distinction between anal and branchial openings; anal opening apparently smooth.

Section *SUBORBICULUS* Simpson, 1900.

(Type, *Monocondylus orbicularis* Morelet.)

Shell compressed, nearly round in outline, feebly biangulate, and having a posterior dorsal wing; beaks low; hinge with a single, compressed, smooth, slightly curved, triangular tooth in each valve.

PSEUDODON ORBICULARIS Morelet.

* *Monocondylus orbicularis* MORELET, Rev. et Mag., XVIII, 1866, p. 167.

* *Pseudodon orbicularis* MORELET, Ser. Conch., IV, 1875, p. 338, pl. XVI, fig. 5.

* *Monocondylaea orbicularis* PÆTEL, Conch. Sam., III, 1890, p. 174.

Siam; Cambodia.

Section *TRIGONODON* Conrad, 1865.

Shell solid, compressed, rhomboid, round in front, widely and faintly biangulate and rough behind; surface irregularly concentrically wavy sulcate; hinge with a strong triangular pseudocardinal in the right valve, having a decided excavation behind it, and at the posterior side of the pit a faint tooth; there is one strong triangular tooth in the left valve and a vestige of one in front of it at the upper edge of the shell; anterior scars irregular; dorsal scars crowded close to the hinge line.

(Type, *Monocondylaea crebristriata* Anthony.)

† *PSEUDODON CREBRISTRIATUS* Anthony.

* *Monocondylaea crebristriata* ANTHONY, Am. Jl. Conch., I, 1865, p. 205, pl. XVIII, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 174.

* *Trigonodon crebristriata* CONRAD, Am. Jl. Conch., I, 1865, p. 233.

* *Margaron (Monocondylaea) crebristriata* LEA, Syn., 1870, p. 72.

* *Unio crebristriatus* SOWERBY, Conch. Icon., XVI, 1868, pl. XCV, fig. 517.

* *Pseudodon crebristriatum* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. IX, fig. 3.

* *Unio rondembuschii* SOWERBY, Conch. Icon., XVI, 1868, pl. XCV, fig. 518.

† *PSEUDODON CREBRISTRIATUS* var. *PEGUENSIS* Anthony.¹

* *Monocondylaea peguensis* ANTHONY, Am. Jl. Conch., I, 1865, p. 205, pl. XVIII, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 174.

* *Margaron (Monocondylaea) peguensis* LEA, Syn., 1870, p. 73.

* *Pseudodon crebristriatum* var. *peguensis* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. IX, fig. 5.

Burma; Pegu; Cambodia?

¹Typically quite different from *P. crebristriatus*, but our large series seems to show an almost complete connection.

Section PSEUDODON Gould, 1844.

(Type, *Anodon Salwimana* Gould.)

Characters given under generic name.

(Group of *Pseudodon harmandi*.)

Shell rather small, solid, rhomboid, short, inflated; posterior ridge high, only slightly biangulate, faintly corrugated, on the posterior slope.

† PSEUDODON HARMANDI Crosse and Fischer.

* *Pseudodon harmandi* CROSSE and FISCHER, JI. de Conch., XXIV, 1876, p. 331, pl. x, fig. 2.

* *Monocondylæa harmandi* P.ETEL, Conch. Sam., III, 1890, p. 174.

Cambodia.

PSEUDODON AUREUS Heude.

* *Pseudodon aureus* HEUDE, Conch. Fluv. Nank., IX, 1885, pl. LXXII, fig. 140.

* *Margaritana aurea* P.ETEL, Conch. Sam., III, 1890, p. 172.

China.

(Group of *Pseudodon vondembuschianus*.)

Shell rather large, somewhat compressed, subsolid, elliptic-rhomboid, wider behind, where it is widely biangulate; teeth compressed.

† PSEUDODON VONDEMBUSCHIANUS Lea.

* *Margaritana vondembuschiana* LEA, Pr. Am. Phil. Soc., I, 1840, p. 288; *Tr. Am. Phil. Soc., VIII, 1842, p. 222, pl. xviii, fig. 39; *Obs., III, 1842, p. 60, pl. xviii, fig. 39.—* KUSTER, Conch. Cab. Unio, 1862, p. 295, pl. xcvi, fig. 3.

* *Margaron (Monocondylæa) vondembuschiana* LEA, Syn., 1852, p. 45; 1870, p. 73.

* *Monocondylæa vondembuschiana* H. and A. ADAMS, Gen. Rec. Moll., II, 1858, p. 501.—* P.ETEL, Conch. Sam., III, 1890, p. 175.

* *Pseudodon vondembuschiana* CONRAD, Am. JI. Conch., I, 1865, p. 233.

* *Monodontina buschiana* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, pp. 269, 449.

* *Unio von buschea* SOWERBY, Conch. Icon., XVI, 1866, pl. LI, fig. 269.

* *Alasmodonta crispata* MOUSSON, L. and Suss. W. Moll. Java, 1849, p. 97, pl. xviii, figs. 1, 2.

* *Margaritana crispata* P.ETEL, Conch. Sam., III, 1890, p. 173.

† * *Monocondylæa planulata* LEA, Pr. Ac. N. Sci. Phila., XI, 1859, p. 187; *Jl. Ac. N. Sci. Phila., IV, 1859, p. 262, pl. xlii, fig. 142; *Obs., VII, 1860, p. 80, pl. xlii, fig. 142.—* KUSTER, Conch. Cab. Unio, 1862, p. 305, pl. c, fig. 8.

* *Pseudodon planulata* CONRAD, Am. JI. Conch., I, 1865, p. 233.

* *Microcondylæa planulata* P.ETEL, Conch. Sam., III, 1890, p. 175.

* *Margaron (Monocondylæa) planulata* LEA, Syn., 1870, p. 73.

* *Margaritana fragilis* KUSTER, Conch. Cab. Unio, 1862, p. 295, pl. xcvi, fig. 2.

* *Microcondylæa fragilis* P.ETEL, Conch. Sam., III, 1890, p. 175.

* *Monocondylæa rhombica* KUSTER, Conch. Cab. Unio, 1862, p. 304, pl. c, fig. 7.

Java; Sumatra; Borneo; Malacca.

† PSEUDODON ELLIPTICUM Conrad.

* *Pseudodon ellipticum* CONRAD, Am. JI. Conch., I, 1865, p. 352, pl. xxv, fig. 1.

Cambodia.

† PSEUDODON ZOLLINGERI Mousson.

- * *Alasmodonta zollingeri* MOUSSON, L. and Suss. Moll. Java, 1849, p. 96, pl. XVIII, fig. 1.
 * *Margaritana zollingeri* KUSTER, Conch. Cab. Unio, 1862, p. 294, pl. XCVIII, fig. 1.
 * *Pseudodon zollingeri* MORELET, Ser. Conch., IV, 1875, p. 337.
 * *Monocondylæa zollingeri* PÆTEL, Conch. Sam., III, 1890, p. 174.

Java.

† PSEUDODON INOSULARIS Gould.

- * *Anodon inosularis* GOULD, Pr. Bost. Soc. N. H., I, 1844, p. 160.¹—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. IX, fig. 2.
 * *Margarou (Monocondylæa) inosularis* LEA, Syn., 1870, p. 73.
 * *Margaritana inosularis* PÆTEL, Conch. Sam., III, 1890, p. 173.

River Salwen, British Burma.

† PSEUDODON CUMINGII Lea.

- * *Anodonta cumingii* LEA, Pr. Zool. Soc. Lond., 1850, p. 199; *Ann. and Mag., VIII, 1851, p. 495.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—*MUSGRAVE, Phot. Conch., 1863, pl. I, fig. 6.—*PÆTEL, Conch. Sam., III, 1890, p. 178.
 * *Margarou (Monocondylæa) cumingii* LEA, Syn., 1852, p. 50; 1870, p. 73.
 * *Monocondylæa cumingii* LEA, Jl. Ac. N. Sci. Phila., IV, 1860, p. 235, pl. XXXIII, fig. 114; *Obs., VII, 1860, p. 53, pl. XXXIII, fig. 114.
 * *Pseudodon cumingii* CONRAD, Am. Jl. Conch., I, 1865, p. 233.
 * *Anodon cumingii* REEVE, Conch. Icon., XVII, 1870, pl. XXXI, fig. 122.
 * *Microcondylæa cumingii* CLESSIN, Conch. Cab. Ano., 1876, p. 259, pl. LXXXIII, figs. 3, 4.—*PÆTEL, Conch. Sam., III, 1890, p. 175.
 * *Pseudodus cumingii* DE MORGAN, Bull. Soc. Zool. de Fr., X, 1885, p. 422.

Malacca; Perak; Siam; Cambodia.

† PSEUDODON ÆNEOLUS Drouet.

- * *Pseudodon aeneolus* DROUET, Jl. de Conch., XL, 1892, p. 94.—*DROUET and CHAPER, Mem. Soc. Zool. de Fr., V, 1892, p. 152, pl. VI, figs. 4-7.

Borneo.

† PSEUDODON TUMIDUS Morelet.

- * *Monocondylus tumidus* MORELET, Jl. de Conch., XIV, 1866, p. 62.—*MABILLE, Rev. Zool., XXIII, 1872, p. 51, pl. v, figs. 6, 7.
 * *Pseudodon tumidus* MORELET, Ser. Conch., IV, 1875, p. 337, pl. XVI, fig. 1.

Siam; Cambodia.

PSEUDODON OVALIS Morlet.

- * *Pseudodon oralis* MORLET, Jl. de Conch., XXXVII, 1889, p. 197, pl. VII, fig. 3.

Srakeo River, Siam.

¹Gould did not figure this, but the figure in the Conchologia Indica accurately represents his species, judging from a cotype in Lea's collection, sent him by Dr. Gould. A number of these Pseudodons are very close, and it is quite probable that some of them must be united when sufficient material is studied.

PSEUDODON THOMSONI Morlet.

- * *Pseudodon thomsoni* MORLET, Jl. de Conch., XXXII, 1884, p. 401, pl. XIII, figs. 2, 2a.
 † *Margaritana thomsoni* P.ETEL, Conch. Sam., III, 1890, p. 174.

Cambodia.

† PSEUDODON SALWENIANUS Gould.

- * *Anodon salweniana* GOULD, Pr. Bost. Soc. N. Hist., I, 1844, p. 160.
 * *Anodonta salweniana* GOULD, Otia Conch., 1862, p. 193.
 * *Pseudodon salweniana* CONRAD, Am. Jl. Conch., I, 1865, p. 233.
 * *Monocondylva salweniana* P.ETEL, Conch. Sam., III, 1890, p. 174.
 * *Unio salwenianus* SOWERBY, Conch. Icon., XVI., 1868, pl. XCIV, fig. 513.
 * *Margaron (Monocondylva) salweniana* LEA, Syn., 1870, p. 72.
 * *Pseudodon salwenianum* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. IX, fig. 4.
 * *Unio salwenianus* P.ETEL, Conch. Sam., III, 1890, p. 166.

River Salwen, British Burma.

† PSEUDODON MORELETI Crosse and Fischer.

- * *Monocondylva tumida* DESHAYES and JULLIEN, Nouv. Arch. de Mus., X, 1874, p. 117, pl. v, figs. 1-3.¹
 * *Pseudodon moreleti* CROSSE and FISCHER, Jl. de Conch., XXV, 1876, p. 330.

Cambodia.

† PSEUDODON CAMBODJENSIS Petit.

- * *Monocondylva cambodjensis* PETIT, Jl. de Conch., VI, 1865, p. 122.—* P.ETEL, Conch. Sam., III, 1890, p. 174.
 * *Margaron (Monocondylva) cambodjensis* LEA, Syn., 1870, p. 72.
 * *Pseudodon cambodjensis* CONRAD, Am. Jl. Conch., I, 1865, p. 233.—* MORLET, J. de Conch., XXXII, 1866, p. 266.

Cambodia; Tonkin.

PSEUDODON CHAPERI de Morgan.

- * *Pseudodus chaperi* DE MORGAN, Bull. Soc. Zool. de Fr., X, 1885, p. 423, pl. IX, figs. 1, 2.

Cambodia; Siam.

The following species is unfigured:

PSEUDODON NICOBARICUS Mörch.

- Alasmodonta* (subg. ?) *nicobarica* MÖRCH, Jl. de Conch., XX, 1872, p. 327.²

Nicobar Islands.

¹ This fine, large shell which Deshayes and Jullien supposed to be *P. tumidus* of Morelet is quite a different thing, and Crosse and Fischer have given it a new name.

² Mörch describes the above under the name *Alasmodonta* (subgenus ?) *nicobarica*, and credits it to Fabricius. The *Mytilus nicobaricus* of the latter was only a *nomen nudum*. Mörch says his species is close to *Anodonta collingeri*.

Section BINEURUS Simpson, 1900.

Shell elongate rhomboid, thin, rounded in front, widely and feebly biangulate behind, having two or more raised radiating lines on the posterior slope, which is somewhat obliquely wrinkled; beaks low; surface finely, irregularly, concentrically grooved; epidermis olive; teeth smooth, compressed; nacre bluish. Animal unknown.

(Type, *Monocondylæ mouhoti* Lea.)

† PSEUDODON MOUHOTI Lea.

* *Monocondylæ mouhoti* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 190.

* *Pseudodon manhoti* CONRAD, Am. Jl. Conch., I, 1865, p. 233.

* *Monocondylæ mouhotiana* LEA, Jl. Ac. N. Sci. Phila., VI, 1866, p. 65, pl. XXI, fig. 62; * Obs., XI, 1867, p. 69, pl. XXI, fig. 62.—* Clessin, Conch. Cab. Ano., 1876, p. 261, pl. LXXXII, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 175.

* *Margarou (monocondylæ) mouhotiana* LEA, Syn., 1870, p. 73.

* *Unio mouhotianus* SOWERBY, Conch. Icon., XVI, 1868, pl. XCI, fig. 503.

* *Pseudodon mouhotianus* MORELET, Ser. Conch., IV, 1875, p. 339.

Cambodia; Siam.

PSEUDODON EXILIS Morelet.

* *Monocondylus exilis* MORELET, Jl. de Conch., XIV, 1866, p. 63.

* *Pseudodon exilis* MORELET, Ser. Conch., IV, 1875, p. 340, pl. XVII, fig. 1.

Perak.

PSEUDODON AVA Theobald.

* *Monocondylæ ava* THEOBALD, Jl. As. Soc. Beng., XLII, Pt. 2, 1873, p. 209, pl. XVII, fig. 15.¹

Mandelay, Burma.

Section NASUS Simpson, 1900.

(Type, *Pseudodon nankingensis* Heude.)

Shell somewhat solid, rather inflated, much elongated, with a well-developed posterior ridge, with a low, faint one above it, bluntly pointed at post-basal part; beaks not high, eroded in the specimens seen; epidermis dark; teeth compressed, high.²

Animal unknown.

† PSEUDODON NANKINGENSIS Heude.

* *Monocondylæ nankingensis* HEUDE, Jl. de Conch., XXII, 1874, p. 116; Conch. Fluv. Nank., I, 1875, pl. IV, fig. 9.

* *Monocondylæ nankingensis* PÆTEL, Conch. Sam., III, 1890, p. 174.

Rivers of Nankin.

¹I am not certain that this belongs in this group.

²I have seen only a single shell of each of the two species of this group, both very badly eroded and decayed, so that I can not give the characters accurately. The animals may show that they are not closely related to the ordinary Pseudodons.

† PSEUDODON SECUNDUS Heude.

- * *Pseudodon secundus* HEUDE, Conch. Fluv. Nank., III, 1877, pl. xviii, fig. 38.
Unio secundus PÆTEL, Conch. Sam., III, 1890, p. 167.

River Hoæ, China.

Section OBOVALIS Simpson, 1900.

(Type, *Pseudodon loomisi* Simpson.)

Shell obovate subinflated, with a low, rounded posterior ridge, and with radiating wrinkles on the posterior slope; disk nearly free from wrinkles; epidermis blackish; there is a high, triangular tooth in each valve; laterals very faint, rounded; nacre coppery.

Animal unknown.

† PSEUDODON LOOMISI Simpson.

- * *Pseudodon loomisi* SIMPSON, Pr. Ac. N. Sci. Phila., 1900, p. 84, pl. iv, fig. 7.

Japan.

The following are unfigured or indeterminate species.

- Monocondylæa walpolei* HANLEY, Proc. Zool. Soc. Lond., 1871, p. 587. Borneo.
Spatha compressa VON MARTENS, Proc. Zool. Soc. Lond., 1860, p. 66. Siam.
Pseudodon sulcatum ROCHEBRUNE, Bull. Soc. Phil., 7th ser., VI, 1882, p. 41. Mekong River, Cochin China.
Pseudodon pierri ROCHEBRUNE, Bull. Soc. Phil., VI, 1882, p. 41. Cochin China.
Pseudodon mabillei ROCHEBRUNE, Bull. Soc. Phil., VI, 1882, p. 41. Cochin China, Cambodia.
Pseudodon anodontinus ROCHEBRUNE, Bull. Soc. Phil., VI, 1882, p. 41. Cambodia.

Genus PARREYSIA Conrad, 1853.

(Type, *Unio multidentatus* Philippi.)

Parreysia CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 267.

Shell solid, inflated, oval to subrhomboid, with full, high, zigzag, radially sculptured beaks, the sculpture often extending over the disk; epidermis smooth and bright, sometimes a little rayed, with two irregular pseudocardinals in the left valve which are more or less broken into ragged denticles or are strongly, vertically striate, and two laterals, the lower the larger; right valve with one, sometimes two pseudocardinals, the upper small, compressed, and a few tubercles behind them, with two laterals, the upper the larger; cavity of the beaks rather deep, not compressed; dorsal scars under the hinge, not visible; the two upper anterior muscle scars very deep, confluent, the lower linear; nacre white to salmon, iridescent behind.

Animal unknown.

Subgenus PARREYSIA Conrad, 1853.

Characters the same as the genus.

¹ In the above reference Conrad gives the name *Parreysia* and refers to *Unio multidentatus* Parreys, which may be taken as the type. I do not know that he ever described the group.

(Group of *Parreysia corrugata*.)

Shell having the middle of the basal region swollen, beak sculpture strong, the central ridges generally united at their lower points to form chevron-shaped markings.

† PARREYSIA CORRUGATA Müller.

- * *Mya corrugata* MÜLLER,¹ Verm. Terr. et Fluv., 1774, Pt. 2, p. 214; * Besch. Ges. Nat. Ber., IV, 1779, p. 56, pl. IIIb, figs. 7, 8.—* GMELIN,² Sys. Nat., 13th ed., 1788, p. 3221.—* SCHROTER, Fluss, Conch., 1779, p. 181, pl. IX, fig. 3.—* WOOD, Gen. Conch., I, 1815, p. 108, pl. XXIV, figs. 1-3.—* DILLWYN, Cat., I, 1817, p. 52.—* MAWE, Linn. Conch., 1823, pl. IV, fig. 3.—* WOOD, Ind. Test., 1825, p. 12, pl. II, fig. 31 a; 1856, rev. ed., p. 16, pl. II, fig. 31.
- * *Unio corrugata* LAMARCK,³ An. sans Vert., VI, 1819, p. 78.—* DESHAYES, Enc. Meth., II, 1827, p. 584, pl. CCXLVIII, fig. 8.
- * *Unio (Potamida) corrugata* SWAINSON, Tr. on Mal., 1840, p. 268, fig. 51; p. 281, fig. 57.
- * *Unio corrugata* RETZIUS, Diss. Hist. Nat., 1778, p. 18.—* SPENGLER, Skriv. Selsk. Nat., III, 1793, p. 68.—* HANLEY, Test. Moll., 1842, p. 197; * Biv. Shells, 1843, p. 197.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, pp. 493, 497.—* KUSTER, Conch. Cab. Unio, 1862, p. 289, pl. XCVII, figs. 3, 4.—* BLANFORD, Jl. As. Soc. Beng., XXXV, 1867, p. 136.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXI, fig. 360.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 21, pl. XLV, figs. 2-5.—* PÆTEL, Conch. Sam., III, 1890, p. 149.
- * *Margarita (Unio) corrugatus* LEA, Syn., 1836, p. 29; 1838, p. 21.
- * *Margaron (Unio) corrugatus* LEA, Syn., 1852, p. 20; 1870, p. 30.
- * *Mya spuria* GMELIN, Syst. Nat., 13th ed., 1788, p. 322; * WOOD, Gen. Conch., I, 1815, p. 110.—* LAMARCK, An. sans Vert., VI, 1819, p. 80.
- Mya gaditana* SCHREIBERS, Versuch., 1793, p.
- * *Unio multidentatus* PHILIPPI,⁴ Conch., III, 1847, p. 46, pl. III, fig. 4.—* KUSTER, Conch. Cab. Unio., 1856, p. 136, pl. XXXVI, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 160.
- * *Margaron (Unio) multidentatus* LEA, Syn., 1870, p. 50.
- * *Unio fulmineus* PHILIPPI,⁵ Conch., III, 1847, p. 46, pl. III, figs. 5, 6.—* KUSTER, Conch. Cab. Unio., 1862, p. 286, pl. XCVI, figs. 2, 3.—* PÆTEL, Conch. Sam., III, 1890, p. 153.
- * *Unio luteus* LEA,⁶ Pr. Ac. Nat. Sci. Phila., VIII, 1856, p. 93.
- * *Unio luteus* LEA, Jl. Ac. N. Sci. Phila., III, 1857, p. 291., pl. XXIV, fig. 4; * Obs., VI, 1857, p. 11, pl. XXIV, fig. 4.

¹ Müller's description of *Mya corrugata* is inadequate, but in the Beschäftigungen it is further discussed and characteristic figures are given of the species we know as *Unio corrugatus* of India.

² Refers to Conch. Cab. VI, pl. III, fig. 22, which is probably Müller's shell. Chemnitz refers to it as *Mya corrugata teste orali*, etc. The shell referred to by him in Conch. Cab., X, p. 346, as *Mya corrugata magna*, etc., is a very different thing.

³ Lamarck refers to Enc. Meth. Pt. 19, 1797, pl. CCXLVIII, figs. 6, 8 a, b. I am not at all sure that fig. 6 is the *corrugatus* of Müller.

⁴ Credited by Philippi to Parreys. I think there can be no doubt that this is the *Mya corrugata* of Müller, as the figure and description entirely agree with the species as we know it.

⁵ Parreys is the author, according to Philippi. This and *multidentatus* are credited by Philippi to Australia. No shells like these have ever been found there.

⁶ *Luteus* in text, by error no doubt.

- * *Margaron (Unio) luteus* LEA, Syn., 1870, p. 46.
 * ? *Unio semirugatus* CHENU, Ill. Conch., 1858, pl. XII, figs. 2, 2a.
 * *Unio merodabensis* KUSTER, Conch. Cab. Unio, 1861, p. 233, pl. LXXVIII, fig. 4.—
 * BLANFORD, J. As. Soc. Beng., XXXV, 1866, p. 142.—* PÆTEL, Conch. Sam.,
 III, 1890, p. 159.
 * *Unio wynegungansis* HANLEY and THEOBALD,¹ Conch. Ind., 1876, p. 21, pl. XLV,
 fig. 6.
 * *Unio tennenti* HANLEY and THEOBALD, Conch. Ind., 1876, p. 22, pl. XLV, figs. 7-9.—
 * PÆTEL, Conch. Sam., III, 1890, p. 169.
 * *Unio phayresi* THEOBALD, manuscript.

PARREYSIA CORRUGATA var. LÆVIROSTRIS Benson.

- * *Unio lævirostris* BENSON, Ann. and Mag., 1862, p. 192; * JI. As. Soc. Beng., 1862,
 XXXV, p. 144.—* PÆTEL, Conch. Sam., III, 1890, p. 157.
 * *Unio corrugatus* var. *lævirostris* HANLEY and THEOBALD, Conch. Ind., 1876, p. 21,
 pl. XLIV, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

† PARREYSIA CORRUGATA var. NAGPOORENSIS Lea.

- * *Unio nagpoorensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 331; * JI. Ac. N. Sci.
 Phila., IV, 1860, p. 270, pl. XLV, fig. 150; * Obs., VII, 1860, p. 88, pl. XLV, fig.
 150.—* BLANFORD, JI. As. Soc. Beng., XXXV, 1866, p. 143.
 * *Margaron (Unio) nagpoorensis* LEA, Syn., 1870, p. 38.
 * *Unio corrugatus* Müll. var. *nagpoorensis* HANLEY and THEOBALD, Conch. Ind.,
 1876, p. 21.—PÆTEL, Conch. Sam., 1890, p. 149.

India; Burma.?

† PARREYSIA WYNEGUNGÆNSIS Lea.

- * *Unio wynegungansis* LEA,² Pr. Ac. N. Sci. Phila., III, 1859, p. 331; * JI. Ac. N.
 Sci. Phila., IV, 1860, p. 271, pl. XLV, fig. 151; * Obs., VII, 1860, p. 89, pl. XLV,
 fig. 151.—* BLANFORD, JI. As. Soc. Beng., XXXV, 1866, p. 143.—* SOWERBY,
 Conch. Icon., XVI, 1868, pl. LXVII, p. 339.—* PÆTEL, Conch. Sam., III, 1890,
 p. 172.
 * *Margaron (Unio) wynegungansis* LEA, Syn., 1870, p. 50.

Wynegunga River, Bengal.

† PARREYSIA FAVIDENS Benson.

- * ? *Mya spuria* Wood, Ind. Test., 1825, p. 12, pl. II, fig. 35a.
 * *Unio favidens* BENSON,³ Ann. and Mag., X, 1862, p. 188; * JI. As. Soc. Beng.,
 XXXV, 1867, p. 138.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 6,
 pl. XI, fig. 1.—* REEVE, Conch. Icon., XVI, 1865, pl. XXVI, fig. 131.—* PÆTEL,
 Conch. Sam., III, 1890, p. 152.
 * *Margaron (Unio) favidens* LEA, Syn., 1870, p. 38.
 * *Unio flavidens* PÆTEL, Conch. Sam., III, 1890, p. 152.
 * *Unio tirostris* MUSGRAVE, Hanley Phot. Conch., 1863, pl. II, fig. 9.—* HANLEY
 and THEOBALD,⁴ Conch. Ind., 1876, p. 6, pl. XI, fig. 6.—* PÆTEL, Conch.
 Sam., III, 1890, p. 170.

¹ I think this is *corrugatus* and not the *wynegungansis* of Lea.

² Heavier, more elongated and pointed behind than *corrugata*, yet probably only a variety of it.

³ Several varieties, *marceus*, *trigona*, *delta*, *chrysis*, *viridula*, and *densa* are given by Benson, which hardly seem to me to be worth mentioning.

⁴ This = *U. tripartitus* of Lea, with a darker epidermis and a more pronounced basal swelling. There is every variation in the coloring and swelling.

- † * *Unio tripartitus* LEA, Pr. Ac. N. Sci. Phila., VII, 1863, p. 190; *Jl. Ac. N. Sci. Phila., VI, 1866, p. 57, pl. XIX, fig. 55; *Obs., XI, 1867, p. 61, pl. XIX, fig. 55.
 * *Margaron (Unio) tripartitus* LEA, Syn., 1870, p. 35.¹
 * *Unio favidens* var. *marceus* BENSON, Ann. and Mag., X, 1862, p. 188.
 * *Unio marceus* HANLEY and THEOBALD, Conch. Ind., 1876, p. 19, pl. XLII, figs. 4-6.—* PÆTEL, Conch. Sam., III, 1890, p. 158.
 * *Unio smaragdites* BENSON, Ann. and Mag., X, 1862, p. 190.—* BLANFORD, Jl. As. Soc. Beng., XXXV, 1866, p. 147.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 5, pl. X, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

PARREYSIA FAVIDENS var. PINAX Benson.

- * *Unio pinax* BENSON, Ann. and Mag., 1862, p. 192; *Jl. As. Soc. Beng., XXXV, 1866, p. 144.
 * *Unio favidens* var. *pinax* HANLEY and THEOBALD, Conch. Ind., 1876, p. 6, pl. X, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

PARREYSIA FAVIDENS var. PLAGIOSOMA Benson.

- * *Unio plagiosoma* BENSON, Ann. and Mag., X, 1862, p. 191; *Jl. As. Soc. Beng., XXXV, 1866, p. 144.
 * *Unio favidens* var. *plagiosoma* HANLEY and THEOBALD, Conch. Ind., 1876, p. 6, pl. XI, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

India.

† PARREYSIA BHAMOENSIS Theobald.

- * *Unio bhamoensis* THEOBALD, Jl. As. Soc. Beng., XLII, 1874, Pt. 2, p. 207, pl. XVII, fig. 1.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 62, pl. CLV, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 146.
 * † *Unio mandalayensis* THEOBALD, Jl. As. Soc. Beng., XLII, 1874, p. 208, pl. XVII, fig. 2.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 62, pl. CLIV, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

Burma.

† PARREYSIA FEDDENI Theobald.

- * *Unio feddeni* THEOBALD, Jl. As. Soc. Beng., XLII, 1874, p. 208, pl. XVII, fig. 3.²

Penungga River, Central India.

† PARREYSIA TAVOYENSIS Gould.

- * *Unio tavoyensis* GOULD, Pr. Bost. Soc. N. Hist., I, 1843, p. 140.—* CATLOW and REEVE, Conch. Nom., 1845, p. 64.—* KUSTER, Conch. Cab. Unio, 1856, p. 166, pl. XLVIII, fig. 2.—* GOULD, Otia Conch., 1862, p. 190.—* REEVE, Conch. Icon., XVI, 1864, pl. XIII, fig. 49.³—* BLANFORD, Jl. As. Soc. Beng., XXXV, 1866, p. 148.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 62, pl. CLIV, figs. 6, 7.—* PÆTEL, Conch. Sam., III, 1890, p. 169.
 * *Margaron (Unio) tavoyensis* LEA, Syn., 1870, p. 31.
 * *Unio savoyensis* PÆTEL, Conch. Sam., III, 1890, p. 166.
 * *Unio parma* BENSON, Sowerby Conch. Icon., XVI, 1868, pl. XCV, fig. 514.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 61, pl. CLIV, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

¹Lea claims that his species has triple laterals in the left valve. Specimens of *favidens* have the same character, and there is much variation in this particular.

²A young specimen in the U. S. National Museum collection from Morelet's collection is a good deal like *P. favidens*.

³Gould did not figure this, but Reeve's figure agrees well with the types.

† PARREYSIA TAVOYENSIS var. TRIEMBOLUS Benson.

* *Unio triembolus* BENSON, Jl. As. Soc. Beng., XXXV, 1855, p. 144; *Ann. and Mag., X, 1862, p. 190.—*HANLEY and THEOBALD, Conch. Ind., 1876, p. 43, pl. CVII, fig. 2.—*P.ETEL, Conch. Sam., III, 1890, p. 170.

*† *Unio honngdaranicus* TAPPERONE-CANEFRI, Ann. Mus. Civ., VII, 1889, p. 341.

Burma; India.

† PARREYSIA VULCANA Hanley.

* *Unio vulcanus* HANLEY, Pr. Zool. Soc. Lond., 1875, p. 606.—*HANLEY and THEOBALD, Conch. Ind., 1876, p. 62, pl. CLV, fig. 3.—*P.ETEL, Conch. Sam., III, 1890, p. 172.

Burma; Pegu.

† PARREYSIA FEÆ Tapperone-Canefri.

* *Unio feæ* TAPPERONE-CANEFRI, Ann. Mus. Civ. Gen., 2d ser., VII, 1889, p. 340.¹

Meetan River, Burma.

† PARREYSIA RAJAHENSIS Lea.

(* *Unio rajahensis* LEA, Pr. Am. Phil. Soc., II, 1841, p. 30; *Tr. Am. Phil. Soc., VIII, 1842, p. 239, pl. XXIII, fig. 53; *Obs., III, 1842, p. 77, pl. XXIII, fig. 53.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—*CHENU, Ill. Conch., 1858, pl. XXVI, figs. 3, 3a, 3b.—*P.ETEL, Conch. Sam., III, 1890, p. 165.

(* *Margaron (Unio) rajahensis* LEA, Syn., 1852, p. 25; 1870, p. 38.

(* *Unio indicus* SOWERBY, Conch. Icon., XVI, 1866, pl. XL, fig. 222.—*HANLEY and THEOBALD, Conch. Ind., 1876, p. 43, pl. CVII, fig. 1.

* *Margaron (Unio) indicus* LEA, Syn., 1870, p. 31.

India.

(Group of *Parreysia rugosa*.)

Shell rather solid, elliptical to subtrapezoidal; beaks full, with zig-zag-radial sculpture and fine corrugations and granules over the surface of the shell.

† PARREYSIA RUGOSA Gmelin.

* *Mya rugosa* GMELIN, Syst. Nat., 13th ed., 1788, p. 3222. —*WOOD, Gen. Conch. I, 1815, p. 109.—*DILLWYN, Cat. I, 1817, p. 53.—*WOOD, Ind. Test., 1825, p. 12, pl. II, fig. 33a; rev. ed., 1856, p. 16, pl. II, fig. 33.

(* *Unio rugosus* KUSTER, Conch. Cab. Unio, 1862, p. 290, pl. XCVII, fig. 5.—*BLANFORD, Jl. As. Soc. Beng., XXXV, 1867, p. 137.—*P.ETEL, Conch. Sam., III, 1890, p. 166.

Coromandel.

¹Not figured. Shells in the U. S. National Museum from Fea show this to be a valid species.

²Gmelin refers to the *Mya corrugata magna*, etc., of Chemnitz, in the Conch. Cab., X, p. 376, pl. CLXX, fig. 1649. There is a shell in Lea's collection from the Vellaur River, southeast India, which seems to be this species.

† PARREYSIA CORBIS Hanley.

* *Unio corbis* HANLEY, Biv. Shells, 1856, p. 386, pl. XXIII, fig. 43.¹—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 22, pl. XLV, fig. 10.

* *Margaron (Unio) corbis* LEA, Syn., 1870, p. 50.

Assam.

† PARREYSIA BURMANUS Blanford.

* *Unio burmanus* BLANFORD, Pr. Zool. Soc. Lond., 1869, p. 449.

* *Unio birmanus* HANLEY and THEOBALD, Conch. Ind., 1876, p. 19, pl. XLII, fig. 1.—

* PÆTEL, Conch. Sam., III, 1890, p. 146

Burma.

† PARREYSIA SIKKIMENSIS Lea.

* *Unio sikkimensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 151; * Jl. Ac. N. Sci. Phila., IV, 1859, p. 251, pl. XXXIX, fig. 131; * Obs., VII, 1860, p. 69, pl. XXXIX, fig. 131.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVI, fig. 400.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 6, pl. XI, fig. 4, p. 44, pl. CVII, figs. 6, 7.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

* *Margaron (Unio) sikkimensis* LEA, Syn., 1870, p. 64.

Sikkim, India.

† PARREYSIA GOWHATTENSIS Theobald.

* *Unio gowhattenensis* THEOBALD, Jl. As. Soc. Beng., XLII, 1873, p. 208, pl. XVII, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

Gowhatti, in Assam.

PARREYSIA SIMPULARIS Heude.

* *Unio modestus* HEUDE,² Conch. Fluv. Nank., II, 1877, pl. XIV, fig. 29.

* *Unio simpularis* HEUDE, Jl. de Conch., XXXII, 1884, p. 20.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

China.

PARREYSIA TRISULCATA Heude.

* *Unio trisulcatus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVII, fig. 108.

China.

(Group of *Parreysia leopoldvillensis*.)

Shell rounded rhomboid, somewhat inflated, subsolid, with a rounded post ridge; beaks full, the sculpture strongly and regularly zigzag-radial and extending well over the body of the shell; pseudocardinals heavy, subcompressed, crenate; anterior scars deep.

¹ Credited to Benson manuscript.

²The name *modestus* has been used by authors for a Brazilian *Unio*, but I can not find that it was ever described. Later Kuster used the name for a Chilean species; hence Heude changed his first name to *simpularis*. It is quite probable that this species should be placed in a separate group.

PARREYSIA LEOPOLDVILLENSIS Putzeys.

Unio leopoldrillensis PUTZEYS, Proc. Verb. Soc. Mal. Belg., XXVII, 1898, p. XXVII, figs 12, 13.¹

(Group of *Parreysia bakeri*.)

Shell small, inflated, oval, rounded in front, bluntly pointed behind, inflated at or behind the central base; beaks full, high, sculptured with very strong, zigzag bars which extend part way over the disk and end rather suddenly, below which the shell is smooth; posterior ridge well developed, rounded; two compressed pseudocardinals and one lateral in the right valve, two pseudocardinals and two laterals in the left valve.²

PARREYSIA BAKERI H. Adams.

* *Unio bakeri* H. ADAMS, Pt. Zool. Soc. Lond., 1866, p. 376.—* PÆTEL, Conch. Sam., III, 1890, p. 145.—* SMITH, Ann. and Mag., X, 1892, p. 126, pl. XII, fig. 11.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 231, pl. VII, fig. 6.

Lake Albert Nyanza, Central Africa.

PARREYSIA STUHLMANNI von Martens.

* *Unio stuhlmanni* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 231, pl. VII, fig. 13.

Albert Edward Lake, Central Africa.

NODULARIA HAUTTECOEURI Bourguignat.

* *Unio hauttecoeuri* BOURGUIGNAT, Moll. Ny. Ouk., 1883, p. 5, figs. 1-3.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 232, pl. I, fig. 23; VII, fig. 3.

NODULARIA HAUTTECOEURI var. EDWARDSIANA Bourguignat.

* *Unio edwardsianus* BOURGUIGNAT, Moll. Ny. Ouk., 1883, p. 12, figs. 7, 9.

Lake Victoria Nyanza, Central Africa.

PARREYSIA DUPONTI Rochebrune.

* *Reneus duponti* ROCHEBRUNE, Bull. Soc. Zool. Fr., XL, 1881, p. 481.

* *Unio duponti* ROCHEBRUNE, Bull. Soc. Philom., VI, 1882, p. 34.—* BOURGUIGNAT, Moll. Ny. Ouk., 1883, p. 8, figs. 10-12.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

* *Unio bakeri* VON MARTENS, Sitzber. Ges. Nat. Fr., 1879, p. 104.

* *Unio grandidieri* BOURGUIGNAT, Moll. Ny. Ouk., 1883, p. 7, figs. 4-6.—* PÆTEL, Conch. Sam., III, 1890, p. 154.—* VON MARTENS, Besch. Deuts. Ost-Af., 1874, p. 233.

Lake Victoria Nyanza.

PARREYSIA RUELLANI Bourguignat.

* *Unio ruellani* BOURGUIGNAT, Moll. Ny. Ouk. 1883, p. 10, figs. 16-18.—* PÆTEL, Conch. Sam., III, 1890, p. 166.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 235.

Lake Victoria Nyanza.

¹ I have not seen this species, and I place it here with some doubt.

² I adopt this group with practically the same limits as given by von Martens in the Beschalte. Unfortunately I have never seen any species belonging to it.

PARREYSIA MULTICOLOR von Martens.

* *Unio multicolor* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 236, pl. VII. fig. 4.
Lake Victoria Nyanza.

PARREYSIA NGESIANUS von Martens.

* *Unio ngesianus* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 234, pl. VII. fig. 7.
Lake Albert Edward Nyanza.

The following unfigured species are placed in this group by von Martens:

Unio billotianus CHARMES, Bull. Soc. Mal. Fr., II, 1885, p. 170, Bagamoyo, Central Africa.

Unio euphymus CHARMES, Bull. Soc. Mal. Fr., II, 1885, p. 171, Bagamoyo.

Unio dumesleanus CHARMES, Bull. Soc. Mal. Fr., II, 1885, p. 168, Bagamoyo.

(Group of *Parreysia fabagina*.)

Shell very small and solid, inflated, compressed on the sides, rhomboid, with a high, sharp posterior ridge and high beaks, having zigzag-radial sculpture sometimes extended over the disk, the posterior slope furnished with upcurved plications; pseudocardinals heavy, torn, one in the right valve, two in the left; muscular impressions circular, the anterior very deep.

PARREYSIA FABAGINA Deshayes.

* *Unio fabagina* DESHAYES, Nouv. Arch. de Mus., X, 1874, p. 128, pl. VII, figs. 4-6.—

* PÆTEL, Conch. Sam., III, 1890, p. 152.—* FISCHER, Bull. Soc. d'Hist. Nat. Autun., 1891, p. 140.

Mekong River, Cambodia.

PARREYSIA BROTI Deshayes.

* *Unio broti* DESHAYES, Nouv. Arch. de Mus., X, 1874, p. 129, pl. VII, figs. 1-3.—

* CROSSE and FISCHER, Jl. de Conch., XXVI, p. 323.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

Mekong River, Cambodia.

(Group of *Parreysia nyassaensis*.)

Shell small, solid, inflated, triangular to rhomboid, the base straight or even a little arcuate, but sometimes having a slight fullness behind the central part; a high, well-defined posterior ridge ends at the post base and is sometimes slightly double; posterior slope abrupt; beaks high, with zigzag-radial sculpture, the bars approaching and often coalescing behind the center of the disk, the whole shell frequently corrugate sculptured; epidermis greenish, often slightly rayed; teeth solid, much like those of typical *Parreysia*; nacre white or bluish, sometimes microscopically, granularly radiate outside the palleal line; beak cavities not deep; anterior scars distinct.

Animal unknown.

† PARREYSIA NYASSAENSIS Lea.

- * *Unio nyassaensis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1864, p. 108; * JI. Ac. N. Sci. Phila., VI, 1866, p. 33, pl. XII, fig. 32; * Obs., XI, 1867, p. 37, pl. XII, fig. 32.—
 * SMITH, Pr. Zool. Soc. Lond., 1881, p. 298, pl. XXXIV, fig. 34.—* PÆTEL, Conch. Sam., III, 1890, p. 161.—* ANCEY, Bull. Soc. Zool. Fr., VII, 1894, p. 225.—
 * VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 230.
 * *Margaron (Unio) nyassaensis* LEA, Syn., 1870, p. 30.
 * *Unio nyassa* SOWERBY, Conch. Icon., XVI, 1868, pl. XLI, figs. 224, 224a, 224b.
 * *Unio nyassanus* BOURGUIGNAT, Bull. Soc. Mal. Fr., VI, 1889, p. 38.
 * *Unio hermosus* BOURGUIGNAT, Bull. Soc. Mal. Fr., VI, 1889, p. 38.—* ANCEY, Bull. Soc. Zool. Fr., VII, 1894, p. 226.¹

Lake Nyassa, Central Africa.

† PARREYSIA KIRKII Lea.

- * *Unio kirkii* LEA, Pr. Ac. N. Sci. Phila., VIII, 1864, p. 108; * JI. Ac. N. Sci. Phila., VI, 1866, p. 32, pl. XII, fig. 30; * Obs., XI, 1867, p. 36, pl. XII, fig. 30.—* BOURGUIGNAT, Bull. Soc. Mal. Fr., VI, 1889, p. 38.—* ANCEY, Bull. Soc. Zool. Fr., VII, 1894, p. 225.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 229.
 * *Margaron (Unio) kirkii* LEA, Syn., 1870, p. 30.

Lake Nyassa.

PARREYSIA UJIJIENSIS Bourguignat.

- * *Unio nyassaensis* var., SMITH, Pr. Zool. Soc. Lond., 1881, p. 298, pl. XXXIV, fig. 34.²
 * *Grandidieria ujijiensis* BOURGUIGNAT, Bull. Soc. Mal. Fr., II, 1885, p. 7.

Lake Tanganyika.

† PARREYSIA AFERULA Lea.

- * *Unio aferula* LEA, Pr. Ac. N. Sci. Phila., VIII, 1864, p. 109.
 * *Unio aferulus* LEA, JI. Ac. N. Sci. Phila., VI, 1866, p. 34, pl. XIII, fig. 34; * Obs., XI, 1867, p. 38, pl. XIII, fig. 34.—* BOURGUIGNAT, Bull. Soc. Mal. Fr., VI, 1889, p. 38.—* ANCEY, Bull. Soc. Zool. Fr., VII, 1894, p. 226.
 * *Margaron (Unio) aferulus* LEA, Syn., 1870, p. 30.

Lake Nyassa.

PARREYSIA MONCETI Bourguignat.

- * *Unio monceti* BOURGUIGNAT, Moll. Ny. Ouk., 1883, p. 15, figs. 13-15.—* VON MARTENS, Besch. Deuts. Ost-Af., 1897, p. 228.

Lake Victoria, Nyanza.

¹ E. A. Smith, in Pr. Zool. Soc. Lond., 1877, p. 719; 1893, p. 640, believes that *Unio kirkii* Lea and *aferulus* Lea are but varieties of *Unio nyassaensis*, and that *Unio hermosus* Bourguignat is identical with it. It is possible that the three forms of Lea may blend together, but the types are so distinct that I do not feel justified in uniting them even as varieties one of another.

² There is some confusion about this shell. The form on pl. xxxiv, which Smith probably refers to in the text as fig. 34b is simply fig. 34 on the plate, and is, I think, a distinct species, which has received the name of *ujijiensis* from Bourguignat. There is no fig. 34b on the plate. His 34a, which Smith calls var. *tanganyicensis*, is *U. nyassaensis* Lea. Bourguignat probably alluded to the fig. 34 when he bestowed his name, although he speaks of the var. *tanganyicensis* Smith. These must not be confounded with the original *Unio tanganyicensis* of Smith, which is a very different thing.

PARREYSIA HYPSSIPRIMNUS von Martens.

* *Unio hypsiprimus* VON MARTENS, Besch. Dents. Ost-Af., 1897, p. 230, pl. VII, fig. 1.¹

Lake Nyassa.

(Group of *Parreysia molleuri*.)

Shell subquadrate, solid, inflated, rounded in front, truncated behind, with high beaks, the sculpture of which was not observed, and a strong, sharp, curved posterior ridge; surface concentrically grooved; pseudo-cardinals thick, short, cut up with vertical grooves; laterals curved; nacre white.

PARREYSIA MOLLEURI Morlet.

* *Unio molleuri* MORLET, Jl. de Conch., XXXIX, 1891, p. 242, pl. VII, fig. 4.

Valley of the Mekong River.

Subgenus AURORA Simpson, 1900.

(Type, *Unio aureus* Heude.)

Shell small, ovate, subinflated, pointed behind, rather solid, with high, small beaks and strong, corrugated sculpture, which extends over half the disk in somewhat lachrymous, zigzag ridges and nodules, the outer part of the disk apparently having one or more strong, concentric ridges, the posterior slope being radiately ridged and nodulous; epidermis fulvous, beautifully and delicately green radiated; pseudo-cardinals conical, truncate, striate; laterals lamellar; nacre orange.²

PARREYSIA AUROREA Heude.

* *Unio aureus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVII, fig. 106.--

* PETEL, Conch. Sam., III, 1890, p. 145.

China.

Subgenus PSEUDOBAPHIA Simpson, 1900.

(Type, *Unio viesianus* Heude.)

Shell large, oval, inflated, gaping in front and behind, rather solid, with full beaks, the beak sculpture not seen, posterior part distinctly biangular; ligament large; epidermis smooth, brownish, somewhat rayed, right valve with a large, irregular pseudocardinal in front of the beak, with a pit in front of it; behind it on the hinge are numerous denticles, and at some distance behind two very faint laterals; left valve with two large pseudocardinals, one behind the other, and two remote

¹I am not positive as to the systematic position of this and the last two species. The figure of the latter is from a very badly eroded shell, and it is difficult to tell what its affinities are.

²Heude's brief Latin description so poorly describes the peculiar species placed here that I can not be sure where it belongs, and that it should not have generic rank. I place it here provisionally.

blurred laterals; two upper anterior muscle scars united, very deep; posterior scars united, the lower long and oblique; beak cavities very large, deep; nacre flesh colored, dull.¹

Animal unknown.

† PARREYSIA BIESIANA Heude.

* *Unio biesianus* HEUDE, Conch. Fluv. Nank., II, 1877, pl. XIV, fig. 30.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

China.

Subgenus ACUTICOSTA Simpson, 1900.

(Type, *Unio chinensis* Lea.)

Shell pointed behind, produced at the center of the base, inflated, solid, with a sharp, pinched-up, but vanishing posterior ridge, beaks full, the sculpture strong, zigzag radial; epidermis smooth, rayed; pseudo-cardinals somewhat compressed, vertically ridged, ragged; laterals well developed, strongly obliquely ridged and granular.

† PARREYSIA CHINENSIS Lea.

* *Unio chinensis* LEA, Pr. Ac. Nat. Sci. Phila., XII, 1868, p. 150; * JI. Ac. Nat. Sci. Phila., VI, 1868, p. 325, pl. LIII, fig. 138; * Obs., XII, 1869, p. 85, pl. LIII, fig. 138.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margaron (Unio) chinensis* LEA, Syn., 1870, p. 30.

PARREYSIA CHINENSIS var. SQUAMMOSUS Heude.

* *Unio sinensis* var. *squammosus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVIII, fig. 113.

PARREYSIA CHINENSIS var. LÆVIS Heude.

* *Unio squamosus* var. *lævis* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LIX, fig. 116.

China.

PARREYSIA RETIARIA Heude.

* *Unio retiarius* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LVII, fig. 107.—* PÆTEL, Conch. Sam., III, 1890, p. 165.

China.

Genus PTYCHORHYNCHUS Simpson, 1900.

(Type, *Unio pfisteri* Heude.)

Shell elongate, elliptical, round in front, pointed behind, the point being midway of the height of the shell, solid, slightly inflated, with a faint posterior ridge; beaks rather low, sculpture not seen; the posterior slope sculptured with strong, upcurved ridges, which sometimes extend slightly on to the disk, which is otherwise smooth and shining; left valve with two rather stumpy, roughened pseudocardinals and 1 or 2

¹ Heude says the beaks are corrugated.

somewhat blurred granulous laterals; right valve with a single blunt pseudocardinal, the hinge line in front of it being excavated, and a curious blurred lateral which is sometimes slightly split up; beak cavities shallow; dorsal scars few; nacre whitish. Animal unknown.

(Group of *Ptychobranchus pfisteri*.)

Characters as in the genus.

† PTCHORHYNCHUS PFISTERI Heude.

* *Unio pfisteri* HEUDE, Jl. de Conch., XXII, 1874, p. 112; * Conch. Fluv. Nank., I, 1875, pl. I, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

PTYCHORHYNCHUS PFISTERI var. INSPIRATUS Heude.

* *Unio pfisteri* var. *inspiratus* HEUDE, Conch. Fluv. Nank., II, 1877, pl. XIV, fig. 28.—* PÆTEL, Conch. Sam., III, 1890, p. 155.

Nankin River, China.

† PTYCHORHYNCHUS MEDIASTINUS Heude.¹

* *Unio mediastinus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LXIII, fig. 123.—* PÆTEL, Conch. Sam., III, 1890, p. 158.

China.

(Group of *Ptychorhynchus apicellatus*.)

Shell subrhomboid, more or less biangulate behind.

PTYCHORHYNCHUS APICELLATUS Heude.

* *Unio apicellatus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LXIII, fig. 126.

China.

PTYCHORHYNCHUS SCHOMBURGIANUS Heude.

* *Unio schomburgianus* HEUDE, Jl. de Conch., XL, p. 314; * Conch. Fluv. Nank., IX, 1885, pl. LXXII, fig. 139.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

Isle of Hainan, China.

PTYCHORHYNCHUS INCERTUS Simpson.

* *Unio compressus* HEUDE,² Conch. Fluv. Nank., III, 1877, pl. XXIV, fig. 52.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Unio murinus* HEUDE, Conch. Fluv. Nank., VIII, 1883, pl. LXII, fig. 121.

* *Unio morinus* PÆTEL, Conch. Sam., III, 1890, p. 160.

China.

Genus VIRGUS, Simpson, 1900.

(Type, *Unio beccarianus* Tapperone Canefri.)

Shell rather solid, elongated, inequilateral, compressed, rounded in front, nearly straight below, the dorsal line as far back as the hinder

¹ Probably only a variety of *P. pfisteri*.

² The name *compressus* has been twice used previously for a *Unio*. I change it here to *incertus*.

end of the ligament parallel with the base, behind the ligament the shell is obliquely truncate, the truncation somewhat upcurved, the shell ending in a rounded point at the posterior base; posterior ridge elevated, rounded, with sculpture radiating from it above and below; beaks rather low, radially ridged; pseudocardinals small, generally two in each valve; laterals rather short, club-shaped, one in the right and two in the left valve. Animal unknown.

(Group of *Virgus beccarianus*.)

Shell having the posterior ridge high and rounded, outlined on each side by a sulcus, the radiations from this ridge rather fine; surface concentrically sculptured.

VIRGUS BECCARIANUS Tapperone Canefri.

* *Unio beccarianus* TAPPERONE CANEFRI, Ann. Mus. Genov., XIX, 1883, p. 291, pl. XI, fig. 2.—* P.ÉTEL, Conch. Sam., III, 1890, p. 145.

Fly River, New Guinea.

(Group of *Virgus mattioli*.)

Posterior ridge full, rounded, not outlined by sulci, covered with very strong corrugated ridges which curve outward each way from the center, the remainder of the shell smooth.

VIRGUS MATTIOLI Tapperone Canefri.

* *Unio mattioli* TAPPERONE CANEFRI, Ann. Mus. Genov., XIX, 1883, p. 292, pl. XI, fig. 1.—* P.ÉTEL, Conch. Sam., III, 1890, p. 158.

Fly River, New Guinea.

(Group of *Virgus misoolensis*.)

Posterior ridge merely rounded, with radiating folds scattered over the shell, pseudocardinals two in the left valve and one in the right.

VIRGUS MISOLENSIS Schepman.

* *Unio misoolensis* SCHEPMAN, Notes from Leyd. Mus., XVIII, 1896, p. 259, fig.—* DROUET, Jl. de Conch., XLV, 1897, p. 125.

Misool, Borneo.

Genus CTENODESMA Simpson, 1900.

(Type, *Unio borneensis* Issel.)

Shell subtrapezoid to long elliptical, rather thin, compressed, with a scarcely developed posterior ridge and low beaks whose sculpture is densely zigzag radial, becoming finely corrugated or nodulous on the disk and extending over most of the shell; the disk concentrically striate or sulcate at its outer edge; pseudocardinals one to two in each valve, very diverse in form, but showing a tendency to break up into

denticles; one lateral and sometimes a faint secondary one in the left valve and two in the right; dorsal scars few, diversified in form, and variously disposed in the shallow beak cavities; anterior muscle scars united; nacre whitish.

Animal unknown.

† CTENODESMA BORNEENSIS Issel.

* *Unio plicatulus* LEA,¹ Pr. Ac. Nat. Sci. Phila., III, 1859, p. 152; Jl. Ac. Nat. Sci. Phila., IV, 1860, p. 247, pl. XXXVII, fig. 126; * Obs., VII, 1860, p. 65, pl. XXXVII, fig. 126.—* REEVE, Conch. Icon., XVI, 1865, pl. XXII, fig. 102.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Margaron (Unio) plicatulus* LEA, Syn., 1870, p. 31.

* *Unio borneensis* ISSEL, Moll. Borneo, 1874, p. 113.

* *Unio péuisatus* FISCHER and CROSSE,² Miss. Sci., Pt. 7, II, 1894, p. 599.

Borneo.

† CTENODESMA GUPPYI Smith.

* *Unio guppyi* SMITH, Pr. Zool. Soc. Lond., 1885, p. 608, pl. XXXVII, figs. 88a, 88b.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

Shortland Island; Solomon Islands.

Genus RECTIDENS Simpson, 1900.

(Type, *Unio prolongatus* Drouet.)

Shell elongated, with an angle at the anterior dorsal part, pointed and slightly biangulate behind, moderately solid, with two or three posterior ridges, the lower the higher; beaks full, sculpture not observed but probably zigzag radial; the posterior slope, and often part of the disk, covered with faint, granular radiating sculpture; epidermis smooth, olive; one compressed, short, recurved pseudocardinal in the left valve under the beak, with a very long one in front of it, and two laterals; two compressed pseudocardinals in the right valve, and a single lateral; all the teeth straight or nearly so; anterior muscle scars separate; beak cavities rather shallow; only one or two dorsal scars in each valve; nacre white or reddish.

Animal unknown.

† RECTIDENS SUMATRENSIS Dunker.

* *Unio sumatrensis* DUNKER, Zeits. für Mal., IX, 1852, p. 52.—* PFEIFFER, Nov. Conch., II, 1866, p. 152, pl. XXXIX, figs. 10-12.—* VON MARTENS, Mal. Bl., XIV, 1866, p. 15.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

Lake Dana Ivar, Sumatra.

¹Lea's name was preoccupied by Kuster, or Charpentier, for a Mexican species in 1856. The name proposed by Issel in 1874 will have to be used.

²Proposed by Fischer and Crosse, because Lea's name *plicatulus* was preoccupied by Kuster.

† RECTIDENS LINGULATUS Drouet and Chaper.

* *Unio lingulatus* DROUET and CHAPER, Mém. Soc. Zool. Fr., V, 1892, p. 148, pl. v, figs. 7-9.—* DROUET, Jl. de Conch, XLI, 1893, p. 42.

Borneo.

† RECTIDENS PROLONGATUS Drouet.

* *Unio prolongatus* DROUET, Rev. Biol. Nord Fr., VI, 1894, p. 216; * Jl. de Conch., XLIII, 1895, p. 36.—* KOBELT, Abh. Senck. Nat. Ges., XXIV, 1897, p. 87, pl. XI, figs. 1, 2.

Borneo.

RECTIDENS PERAKENSIS de Morgan.

* *Unio perakensis* DE MORGAN, Bull. Soc. Zool. Fr., X, 1885, p. 424, pl. IX, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

Perak.

RECTIDENS PAHANGENSIS Smith.

* *Unio pahangensis* E. A. SMITH, Pr. Mal. Soc. Lond., III, 1899, p. 315, fig.

Pahang River, Malay Peninsula. Exceedingly near to *O. lingulatus* Drouet and Chaper.

Genus LAMELLIDENS Simpson, 1900.

(Type, *Unio marginalis* Lamarck.)

Shell elongate, elliptical, pointed behind, with a slight post-dorsal wing, a low, often biangulate posterior ridge, and generally two sharp, radiating liræ above it; beaks with curved, radiating ridges which sometimes are slightly zigzag and often become almost concentric, but which fade out as they approach each other at the center of the disk; epidermis smooth, generally shining, brownish, often with concentric bands of lighter color, rayless or nearly so; left valve with two compressed pseudocardinals, the front one roughened, and two laterals; right valve with two parallel, lamellar pseudocardinals and one lateral; cavity of the beaks rather shallow; dorsal scars few, deep, distinct, scattered; anterior scars separate; nacre bluish white to straw.

Animal unknown.

Subgenus LAMELLEDENS Simpson, 1900.

(Type, *Unio marginalis* Lamarck.)

Shell dark colored; teeth well developed.

† LAMELLIDENS MARGINALIS Lamarck.

* *Die breite Mahler-Muschel aus Grönland*, SCHRÖTER, Flusse., 1779, p. 181, pl. IX, fig. 1.

* ? *Unio groenlandicus* MÖRCH, Am. Jl. Conch., IV, 1868, p. 38.¹

* ? *Unio testudinarius* SPENGLER, Skriv. Selsk. Nat., III, 1793, p. 65.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

¹ The name *groenlandicus* can not stand for this species, since Schröter did not use his appellation in anything but a descriptive sense. The species is found only in India, no *Naiad* being known from Greenland.

- * ? *Unio truncatus* SPENGLER, Skriv. Selsk. Nat., III, 1793, p. 65.—? SCHRÖTER, Arch. Zool. Zoot. 1802, II, 2 Stück, p. 107.
- * *Unio marginalis* LAMARCK, An. sans Vert., VI, 1819, p. 79.¹—* DESHAYES, Enc. Méth. II, 1827, p. 151, pl. CXLVII, fig. 1.—* HANLEY, Test. Moll., 1842, p. 206; * Biv. Shells, 1843, p. 206, pl. XX, fig. 53.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* KUSTER, Conch. Cab. Unio, 1861, p. 239, pl. LXXX, fig. 4.—* SOWERBY, Conch. Icon., XVI, 1867, pl. LIX, fig. 297.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 20, pl. XLIII, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 158.
- * *Margarita (Unio) marginalis* LEA, Syn., 1836, p. 37; 1838, p. 24.
- * *Margaron (Unio) marginalis* LEA, Syn., 1852, p. 38; 1870, p. 60.
- * *Unio anodontina* LAMARCK, An. sans Vert., VI, 1819, p. 80.—* DESHAYES, An. sans Vert., VI, 1835, p. 546; II, 1839, p. 671.
- * *Unio anodontinus* KUSTER, Conch. Cab. Unio, 1861, p. 240, pl. LXXX, fig. 15.—* PÆTEL, Conch. Sam., III, 1890, p. 144.
- *† *Symphuota bilineata* LEA, Tr. Am. Phil. Soc., IV, 1831, p. 98, pl. XI, fig. 19; * Obs., I, 1834, p. 108, pl. XI, fig. 19.
- * *Margarita (Unio) bilineatus* LEA, Syn., 1836, p. 38; 1838, p. 25.
- * *Unio bilineatus* HANLEY, Test. Moll., 1842, p. 207; * Biv. Shells, 1843, p. 207, pl. XXI, fig. 30.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXI, fig. 365.
- * *Margaron (Unio) bilineatus* LEA, Syn., 1852, p. 38; 1870, p. 61.
- * ? *Unio evanescens* MOUSSON, Moll. Java, 1849, p. 91, pl. XVII, fig. 2.

† LAMELLIDENS MARGINALIS var. OBESUS Hanley and Theobald.

- * *Unio marginalis* var. *obesa* HANLEY and THEOBALD, Conch. Ind., 1876, p. 20, pl. XLIII, fig. 3.
- * ? *Unio corrianus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXVII, fig. 401.

† LAMELLIDENS MARGINALIS var. TRICOLOR Kuster.

- * *Unio tricolor* KUSTER, Conch. Cab. Unio, 1856, p. 156, pl. XLV, fig. 1.—* JICKELI, Faun. Moll. N. O. Af., 1874, p. 275.—* PÆTEL, Conch. Sam., III, 1890, p. 170.
- * *Unio marginalis* var. *tricolor* HANLEY and THEOBALD, Conch. Ind., 1876, p. 20, pl. XLIII, fig. 5.

LAMELLIDENS MARGINALIS var. CANDAHARICUS Hanley and Theobald.

- * *Unio marginalis* var. *caudaharica* HANLEY and THEOBALD, Conch. Ind., 1870, p. 20, pl. XLIII, fig. 4.

† LAMELLIDENS MARGINALIS var. CYLINDRICUS Hanley and Theobald.

- * *Unio marginalis* var. *cylindrica* HANLEY and THEOBALD, Conch. Ind., 1876, p. 20, pl. XLIV, fig. 1.

LAMELLIDENS MARGINALIS var. HANLEYI Simpson.

- * *Unio marginalis* var. *corriana* HANLEY and THEOBALD, Conch. Ind., 1876, p. 20, pl. XLIV, fig. 4.²

India; Burma; Pegu; Ceylon; Canton River, China?. I believe that Mousson's *U. evanescens* is *L. marginalis*, but can it be from Java?

¹ I use Lamarck's name for this species because the *U. testudinarius* and *truncatus* were only briefly and imperfectly described, and never figured, their habitats being given as Greenland. Lamarck refers to the figures in Enc. Méth., pl. 247, figs. 1, 1a, 1b, 1c, which very accurately represent the shell we know as *Unio marginalis*.

² Not Lea's *corrianus* at all, but very different. I change the name to *hanleyi*.

† LAMELLIDENS PULCHER Tapperone-Canefri.

* *Unio pulcher* TAPPERONE-CANEFRI, Ann. Mus. Civ., VII, 1889, p. 350.¹

Houngdaran, Burma.

LAMELLIDENS EXANTHEMATICUS Kuster.

* *Unio exanthematicus* KUSTER, Conch. Cab. Unio, 1861, p. 243, pl. LXXXI, fig. 2.—

* PÆTEL, Conch. Sam., III, 1890, p. 152.

East Indies.

† LAMELLIDENS THWAITESII Lea.

Unio thwaitesii LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 152; * JI. Ac. N. Sci. Phila., IV, 1860, p. 246, pl. XXXVII, fig. 125; * Obs., VII, 1860, p. 64, pl. XXXVII, fig. 125.—* REEVE, Conch. Icon., XVI, 1865, pl. XXIII, fig. 105.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 20, pl. XLIII, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 169.

* *Margaron (Unio) thwaitesii* LEA, Syn., 1870, p. 41.* *Unio consobrinus* HANLEY and THEOBALD, Conch. Ind., 1876, p. 19, pl. XLI, fig. 7.

Ceylon.

† LAMELLIDENS CONSOBRINUS Lea.

* *Unio consobrinus* LEA,² Pr. Ac. N. Sci. Phila., III, 1859, p. 331; * JI. Ac. N. Sci. Phila., 1860, p. 272, pl. XLV, fig. 152; * Obs., VII, 1860, p. 90, pl. XLV, fig. 152.—

* PÆTEL, Conch. Sam., III, 1890, p. 148.

* *Margaron (Unio) consobrinus* LEA, Syn., 1870, p. 46.* *Unio corbeti* DESCHAMPS, Bull. Soc. Zool. Fr., XVII, 1892, p. 68, fig.³

China; India; Ceylon.

† LAMELLIDENS LAMELLATUS Lea.

* *Unio lamellatus* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 19, pl. VI, fig. 16; * Obs., II, 1838, p. 19, pl. VI, fig. 16.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 234.—

* HANLEY, Test. Moll., 1842, p. 194; Biv. Shells, 1843, p. 194, pl. XXI, fig. 49.—

* CATLOW and REEVE, Conch. Nom., 1845, p. 60.—* H. and A. ADAMS, Gen.

Rec. Moll., II, 1857, p. 494.—* CHENU, Ill. Conch., 1858, pl. XXII, figs. 3, 3a,

3b.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LI, fig. 272.—* HANLEY and

THEOBALD, Conch. Ind., 1876, p. 21, pl. XLIV, fig. 7.—* PÆTEL, Conch. Sam.,

III, 1890, p. 126.

* *Margarita (Unio) lamellatus* LEA, Syn., 1836, p. 26; 1838, p. 20.* *Margaron (Unio) lamellatus* LEA, Syn., 1852, p. 29; 1870, p. 46.* † *Unio layardii* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 153; * JI. Ac. N. Sci. Phila., IV, 1860, p. 243, pl. XXXVI, fig. 122; * Obs., VII, 1860, p. 61, pl. XXXVI, fig. 122.—

* REEVE, Conch. Icon., XVI, 1865, pl. XXIII, fig. 111.—* HANLEY and THEO-

BALD, Conch. Ind., 1876, p. 19, pl. XLI, fig. 1.—* PÆTEL, Conch. Sam., III,

1890, p. 157.

* *Margaron (Unio) layardii* LEA, Syn., 1870, p. 46.

India; Ceylon.

¹ Only a Latin description is given. We have two shells in the U. S. National Museum from the type lot, and it is, perhaps, a valid species, close to *marginalis*.

² Possibly only a variety of *thwaitesii*.

³ *Unio mainwaringi* Nevill. Shells have been several times received bearing this name, which seem to me to be only *consobrinus*. I can not find that Nevill ever described the species.

LAMELLIDENS SCUTUM Sowerby.

* *Unio scutum* SOWERBY, Conch. Icon., XVI, 1868, pl. XCIV, fig. 510.¹—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 22, pl. XLVI, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 167.

Tenasserim.

† LAMELLIDENS CORRIANUS Lea.

* *Unio corrianus* LEA, Tr. Am. Phil. Soc., VI, 1834, p. 65, pl. IX, fig. 25; * Obs., I, 1834, p. 177, pl. IX, fig. 25.—* HANLEY, Test. Moll., 1842, p. 207; * Biv. Shells, 1843, p. 207, pl. XX, fig. 60.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

* *Margarita (Unio) corrianus* LEA, Syn., 1836, p. 38; 1838, p. 25.

* *Margaron (Unio) corrianus* LEA, Syn., 1852, p. 38; 1870, p. 61.

India; Burma; Pegu.

† LAMELLIDENS GENEROSUS Gould.

* *Unio generosus* GOULD, Pr. Bost. S. N. Hist., II, 1847, p. 220; * Otia Conch., 1862, p. 210.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 22, pl. XLVI, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 153.

* *Margaron (Unio) generosus* LEA, Syn., 1870, p. 29.

* ? *Unio lamellatus* SOWERBY, Conch. Icon., XVI, 1868, pl. XCIV, fig. 511.

Burma; Pegu.

† LAMELLIDENS CANEFRIANUS Simpson.

* *Unio protensus* TAPPERONE-CANEFRI,² Am. Mus. Civ. Gen., VII, 1889, p. 349.

Prome, Lower Burma.

† LAMELLIDENS JENKINSIANUS Benson.³

* *Unio jenkinsonianus* BENSON, Ann. and Mag., X, 1862, p. 185.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 19, pl. XLI, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 155.

Assam.

Subgenus SPATHOPSIS, Simpson. 1900.

(Type, *Anodonta guillaini* Recluz.)

Shell long, elliptical, compressed, beaks rather low, said to bear concentrically roughened ridges, with slight plications in front and behind them; posterior ridge not developed; surface shining, smooth; hinge line narrow, with faint, greatly elongated pseudocardinals and laterals;

¹ Credited by Sowerby to Benson.

² Preoccupied by Lea in 1865 for a North Carolina *Unio*, hence the name is changed as above.

³ This is figured by Hanley and Theobald as a heavy shell, shaped much like an old *Unio buckleyi*, and quite different from the other species of the genus. But there is in the U. S. National Museum collection a specimen which is much thinner than the figured shell, and more nearly approaching *marginalis* in form.

escutcheon deep, triangular; beak cavities shallow; anterior muscle scars elongated; posterior faint; iridescent behind.¹

Animal unknown.

LAMELLIDENS GUILLAINI Recluz.

* *Anodonta guillaini* RECLUZ, Jl. de Conch., I, 1850, p. 55; * Zeits. fur Mal., VII, 1851, p. 140.—* CROSSE, Jl. de Conch., XXXI, 1883, p. 222, pl. IX, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 180.

Biava, northeast Africa, in the Somali country.

Genus TRAPEZOIDEUS Simpson.

(Type, *Unio foliacea* Gould.)

Shell trapezoid, much compressed, with a low posterior ridge, and but slightly raised though pointed beaks, which seem to be sculptured with irregularly radial ridges arranged in two imperfect chevron-shaped loops; surface concentrically sculptured, often having irregular radial ridges on the posterior slope; epidermis yellowish-green or brownish, with two or more green rays above the posterior ridge; teeth compressed; two pseudocardinals in the left valve, one under the beak, the other in front, often not well separated, and two laterals; right valve with two pseudocardinals and one lateral; pseudocardinals all irregular, often pitted and peculiarly dentellate; laterals granular, showing traces of vertical striation; cavity of the beaks rather deep, compressed; muscle scars shallow, anterior scars separate; naere soft, creamy, yellowish in the beak cavities.

Animal unknown.

† TRAPEZOIDEUS FOLIACEUS Gould.

* *Unio foliacea* GOULD, Pr. Bost. Soc. N. Hist., I, 1843, p. 141; * Otia Conch., 1862, p. 191.

* *Unio foliaceus* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 19, pl. XLI, fig. 3.—* ANDERSON, Yunnan Exp., 1877, p. 900, pl. LXXX, figs. 8-12.—* PÆTEL, Conch. Sam., III, 1890, p. 153.

* *Margaron (Unio) foliaceus* LEA, Syn., 1852, p. 39; 1870, p. 62.

* † *Unio peguensis* ANTHONY, Am. Jl. Conch., I, 1865, p. 351, pl. XXV, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCV, fig. 519.—* PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Margaron (Unio) peguensis* LEA, Syn., 1870, p. 51.

TRAPEZOIDEUS FOLIACEUS var. COMPTUS Deshayes and Jullien.

* *Unio comptus* DESHAYES and JULLIEN, Nonv. Arch. de Mus., X, 1874, p. 126, pl. VI, figs. 3, 4.

* *Unio fragiles* NEVILL, Jl. As. Soc. Beng., XLVI, 1877, p. 39.—* ANDERSON, Yunnan Exp., 1877, p. 400, pl. LXXX, figs. 8-12.

Burma; Cambodia.

¹ I hardly know where to place this, as the description is lacking in several essential characters. It is probable that the beak sculpture is much like that of *Lamellidens* instead of being properly concentric, and it may be a subgenus of that group.

† *TRAPEZOIDENS MISELLUS* Morelet.

- * *Unio misellus* MORELET, Jl. de Conch., XIII, 1865, p. 21; * Ser. Conch., IV, 1875, p. 341, pl. XIV, fig. 2.—* P.ETEL, Conch. Sam., III, 1890, p. 159.
 * † *Unio siamensis* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 133; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 279, pl. XXXVIII, fig. 93; * Obs., XII, 1869, p. 39, pl. XXXVIII, fig. 93.
 * *Margarou (Unio) siamensis* LEA, Syn., 1870, p. 57.

TRAPEZOIDEUS PALLEGOIXI Sowerby.

- * *Anodon pallegoixi* SOWERBY,¹ Conch. Icon., XVII, 1867, pl. xvii, fig. 17.
 * *Anodonta pallegoixi* CLESSIN, Conch. Cab. Ano., 1876, p. 210, pl. LXIV, fig. 6.—
 * P.ETEL, Conch. Sam., III, 1890, p. 183.

Siam; Cambodia.

TRAPEZOIDEUS PENINSULARIS Simpson.

- * *Unio sumatrensis* SOWERBY,² Conch. Icon., XVI, 1865, pl. xxviii, fig. 142.

Sumatra.

TRAPEZOIDEUS EXOLESCENS Gould.³

- * *Unio exolescens* GOULD, Pr. Bost. S. N. Hist., I, 1843, p. 141.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 43, pl. cvii, fig. 5.—* P.ETEL, Conch. Sam., III, 1890, p. 152.
 * *Margarou (Unio) exolescens* LEA, Syn., 1852, p. 32; 1870, p. 51.

Tavoy, Burma.

TRAPEZOIDEUS THECA Benson.

- * *Unio theca* BENSON, Ann. and Mag., X, 1862, p. 186.—* HANLEY and THEOBALD, Conch. Ind., 1876, p. 6, pl. xii, fig. 5.—* P.ETEL, Conch. Sam., III, 1890, p. 169.

Cane River, Bundelkhand, India.

Genus *ARCONAIA* Conrad, 1865.

(Type, *Triquetra lanceolata* Lea.)

- * *Arconaia* CONRAD, Am. Jl. Conch., I, 1865, p. 234.

Shell greatly elongated, inflated, solid, twisted on its axis, sometimes straight, but generally having the posterior end curved strongly to the right or left, with a decided posterior ridge on both sides of the shell, ending in a blunt point, with usually a small ridge above on the post slope; beaks rather low, sculpture not seen, but probably zigzag radial;

¹ Sowerby says nothing about teeth in his shell, which is from Siam. The teeth of Lea's specimen of *U. siamensis* are scarcely developed, and a comparison of his shell with Sowerby's figure convinces me that they are very nearly allied. Lea's figure shows the shell biangulate behind, which is an error.

² This is not Lea's *sumatrensis*, nor that of Dunker. I have therefore changed the name to *peninsularis*. I am not certain as to its relations. It is not *U. comptus* Deshayes and Jullien, as Fischer believes.

³ Gould did not figure this, and I have not seen the type. The shell figured as this by Hanley and Theobald in the *Conchologia* probably belongs here.

often a few nodulous or wavy ridges cross the body of the shell, which is irregularly sulcate; epidermis rayless; two pseudocardinals in the right valve, the upper compressed, separated from the split-up lower one by a parallel-sided pit, two in the left, and two heavy laterals; one lateral in the right and a vestige of one below it; laterals granulated and vertically striate; muscle scars deep, anterior small, the front and upper united, the hinder separate, posterior muscle scars long, oblique; beak cavities very shallow; dorsal scars numerous, placed just on the inner edge of the hinge; nacre white. The lobes of the mantle are not united into siphons, but separated throughout, with only a feeble commissure separating the anal and branchial openings.

(Group of *Arconaia lanceolata*.)

Shell with an anterior wing.

† ARCONAIA LANCEOLATA Lea.

* *Triquetra lanceolata* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 79.

* *Hyria lanceolata* LEA, Pr. Ac. N. Sci. Phila., 1856, p. 300.

* *Arconaia lanceolata* CONRAD, Am. Jl. Conch., I, 1865, p. 234.

* *Triquetra contorta* LEA,¹ Pr. Ac. N. Sci. Phila., VIII, 1856, p. 300; * Obs., VI, 1857, p. 39, pl. XXXIII, fig. 33; * Jl. Ac. N. Sci. Phila., III, 1858, p. 319, pl. XXXIII, fig. 33.

* *Hyria contorta* SOWERBY, Conch. Icon., XVII, 1869, pl. 1, figs. 2 a, 2 b.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Margaron (Triquetra) contorta* LEA, Syn., 1870, p. 26.

* *Unio contortus* HEUDE, Conch. Fluv. Nank., II, 1877, pl. xv, fig. 31.

China.

† ARCONAIA MUTICA Heude

* *Unio contortus* var. *muticus* HEUDE, Conch. Fluv. Nank., II, 1877, pl. xv, fig. 32.

China.

(Group of *Arconaia conjungens*.)

Shell moderately solid, slightly twisted and bent, rounded in front; pseudocardinals not so much torn as in the *lanceolata* group; not winged in front.

ARCONAIA CONJUNGENS Heude.

* *Unio contortus* var. *conjungens* HEUDE, Conch. Fluv. Nank., II, 1877, pl. xv, fig. 33.

China.

Genus PSEDAVICULA Simpson, 1900.

(Type, *Unio johnstoni* Smith.)

Shell rather solid, inflated, with a well-developed anterior and posterior dorsal wing; dorsal line strongly incurved; beaks full, not high; a

¹The specific name was changed to *contorta* by Lea, because he thought his earlier name, *lanceolata*, was less appropriate.

high, down-curved posterior ridge runs to the posterior basal point, and between this point and the posterior point of the wing the outline is deeply incurved; base and lower part of anterior end rounded; surface slightly sculptured with concentric ridges; beak sculpture probably zigzag rayed; anterior tooth of left valve elongate, slightly corrugated, that of the right double; laterals in left valve double, single in the right, straight, elongated, thin, and prominent; nacre, rose tinted.

Animal unknown.

PSEUDAVICULA JOHNSTONI Smith.

Unio (metaptera) johnstoni SMITH, Pr. Zool. Soc. Lond., 1893, p. 640, pl. LIX, figs. 18-20.¹

Lake Mweru, British Central Africa.

Genus ARCIDOPSIS Simpson, 1900.

(Type, *Unio footei* Theobald.)

Shell inequilateral, elongated, with dorsal and ventral lines nearly straight and parallel; anterior end strongly and obliquely truncated from the beaks to the anterior base, and ending in a rather sharp but rounded point below; posterior end obliquely truncated above, rounded below; posterior ridge full, rounded; the shell in front and below rather compressed; surface concentrically and radially ridged; pseudocardinals strong, two in the right valve, one in the left, and supported by a strong, cardinal rib; muscle scars well impressed; parallel line distinct. Animal unknown.²

ARCIDOPSIS FOOTEI Theobald.

* *Unio footei* THEOBALD, Jl. As. Soc. Beng., XLV, 1876, p. 187, pl. XIV, figs. 9, 9a.

Kistna River, India.

The following are indeterminate Oriental Unionidæ:

Unio acrorrhynchus VON MARTENS, S. B. Nat Fr., 1894, p. 214. Korea.

Unio alfierianus BOURGUIGNAT, Voy. Choa, 1885, p. 43. Choa, Central Africa.

Unio antiniloticus BOURGUIGNAT, Bull. Soc. Zool. Fr., XI, 1880, p. 482, pl. XII, fig. 5.
High Senegal.

Unio ascia HANLEY, Biv. Shells, 1856, p. 385.

Unio bridouxi BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 13. Lake Tanganyika.

Unio cyanus PHILIPPI, Zeits für Mal., VIII, 1852, p. 125. S. Africa.

Unio diespiter MABILLE, Bull. Soc. Mal. Fr., IV, 1887, p. 162. Tonkin.

Unio dolichorhynchus TAPPERONE CANEFRI, Ann. Mus. Civ. Gen., 1889, p. 348.
Mercato de Mandelay.

¹ A remarkable *Naiad*, closely imitating some of the South American *Prisodons* in general appearance, to which it may be nearly allied.

² Unfortunately Theobald's Latin description of *Unio footei* is not at all complete. No laterals are mentioned, and he says nothing of the color of the epidermis or of the nacre. The beaks were too much worn in his specimens to give any characters. The shell resembles some of the *Arcas* of the *Barbatia* group, and may not belong to the *Unionidæ* at all.

- Unio forscali* PARREYSS. Where described? Egypt.
- Unio gianelli* TAPPERONE CANEFRI, Ann. Mus. Civ. Gen., 1889, p. 353. Mercato de Mandelay.
- Unio gibbus* SPENGLER, Skriv. Selsk. Nat., III, 1793, p. 64. Tranquebar.
- Unio gladiator* ANCEY, Le Nat., III, 1881, p. 468. Tonkin.
- Unio gottschei* VON MARTENS, S. B. Nat. Fr., 1894, p. 215. Korea.
- Unio grantianus* BOURGUIGNAT, Moll. Ny. Ouk., 1883, p. 14. Lake Oukerewe, Central Africa.
- Unio guillemeti* BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 15. Lake Tanganyika.
- Unio hagnei* STRUBELL, Nach. Mal. Ges., 1897, p. 10. Sumatra.
- Unio hamyanus* BOURGUIGNAT, Voy. Choa., 1885, p. 42. Central Ethiopia.
- Unio idgi* BOURGUIGNAT Moll. Terr. et Fluv. Choa, 1885, p. 39. Choa, Africa.
- Unio ilqui* SOLEILET, Voy. Choa, 1885, p. 40. Central Ethiopia.
- Unio inaqualis* ROCHEBRUNE, Bull. Soc. Philom., 1882, p. 44. Mekong.
- Unio jaculus* ROCHEBRUNE, Bull. Soc. Philom., 1882, p. 44. Mekong.
- Unio josseti* BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 19. Lake Tanganyika.
- Unio jouberti* BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 8. Lake Tanganyika.
- Unio larigerinus* BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 14. Lake Tanganyika.
- Unio ligula* MOUSSON, L. & S. W. Moll. Java, 1849, p. 94. Java.
- Unio longitudinalis* ANTON, Verz der Conch. 1839, p. ?
- Diplodon ludovicianum* ROCHEBRUNE, Bull. Soc. Phil., 1882, p. 43. Mekong.
- Unio madagascariensis* SGANZIN, Mem. Soc. Hist. Strab., 1846, p. 8. Mahoupa River, Madagascar. No figure.
- Unio menardi* BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 20. Lake Tanganyika.
- Unio meneliki* SOLILLET, Voy. Choa, 1885, p. 41. Central Ethiopia.
- Unio moineti* BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 11. Lake Tanganyika.
- Unio palembangensis* STRUBELL, Nach. Mal. Ges., 1887, p. 10. Sumatra.
- Dysnomia paronina* ROCHEBRUNE, Bull. Soc. Phil., 1882, p. 43. Cochinchina.
- Unio pliculosus* VON MARTENS, S. B. Nat. Fr., 1894, p. 216. Korea.
- Unio schweinfurthi* VON MARTENS, S. B. Nat. Fr., 1886, p. 127. Egypt.
- Unio sitifensis* MORELET, Jl. de Conch., 1853, p. 298.
- Unio soleilleti* BOURGUIGNAT, Voy. Choa, 1885, p. 39. Central Ethiopia.
- Loncosilla solenoides* RAFINESQUE, Cont. Mon., 1831, p. 7. Jellinghy River, Bengal.
- Unio subamygdalinus* DROUET, Jl. de Conch., 1895, p. 33. West Africa.
- Unio truncatus* SPENGLER, Skriv. Selsk. Nat., III, 1793, p. 66. Tranquebar.
- Unio verrucifer* VON MARTENS, S. B. Nat. Fr., 1894, p. 216. Korea.
- Unio rinckei* BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 18. Lake Tanganyika.
- Unio visseri* BOURGUIGNAT, Un. & Ir. Tan., 1886, p. 21. Lake Tanganyika.
- Zaira elegans* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 12.
- Zaira poirieri* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 11.
- Zaira araneosa* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 11.
- Zaira sordida* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 13.
- Zaira disciformis* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 10.

The last five from the Kongo. I know nothing whatever of the genus *Zaira*. It may be merely a new name for the section *Cwlatura* of the genus *Nodularia*. It was proposed by Rochebrune.¹

LAMPHORHAMPHUS.

Male and female shells alike, dull-colored; beak sculpture nearly or quite radial, marsupium occupying the entire inner branchiæ, forming a pad-like mass.

¹ Bull. Soc. Mal. Fr., 1886, p. 1.

Genus TETRAPLODON Spix, 1827.

Castalia LAMARCK, An. sans Vert., VI, 1819, p. 66.

Tetraplodon SPIX, Test. Fluv. Bras., 1827, p. 32.

Prisodon LEA, Synopsis, 1852, p. 18.

Shell triangular, solid, inflated, with a high, sharp, posterior ridge, behind which it is decidedly truncated; beaks very full and high, sculpture strictly radial, or with one or two pairs of the central bars coalescing below, the whole extending more or less over the disk as strong ridges; epidermis thick, dark, dull colored; hinge line arched; there is a very strong, compressed pseudocardinal in the left valve, and there are two in the right, all in front of the beaks; behind them are several denticles; one lateral in the right valve and two in the left; all the teeth strongly vertically ridged; beak cavities deep, not compressed; anterior muscle scars small, deep; nacre whitish.

Animal having the labial palpi wider than long; margins of mantle inferiorly open, but united posteriorly to form two siphons, branchial and anal; branchial opening surrounded with papillæ; anal opening smooth; outer branchiæ united to the mantle to their posterior ends; inner united to the abdominal sac; foot tongue-shaped, thick, produced anteriorly. (Troschel.)

(Type, *Tetraplodon pectinatum* Spix.)¹

(Group of *Tetraplodon ambiguus* characters, as in the genus.)

† TETRAPLODON AMBIGUUS (Lamarck) Sowerby.²

* ? *Prisodon truncatus* SCHUMACKER, Ess. Nouv. Syst., 1817, p. 139.

* ? *Castalia ambigua* LAMARCK, An. sans Vert., VI, 1819, p. 67; GUERIN, Icon. Regne. An., 1829, pl. XXVIII.—* WYATT, Man. Conch., 1838, p. 65, pl. XI, fig. 5.—

* CHENU, Man., 1859, II, p. 149, fig. 735.—* SOWERBY, Conch. Icon., XVII, 1869, pl. I, fig. 1.

* *Unio ambigua* DESHAYES, Tr. Elem. Conch., 1839, p. 18, pl. XXIX, figs. 7-9.

* *Unio ambiguus* SOWERBY, Rec. and Fos. Shells, XVI, 1823, fig. d.—* REEVE, Conch. Syst., 1841, p. 117, pl. LXXVII, fig. 2.—* CATLOW and REEVE, Conch. Nom., 1845, p. 55.—* DESHAYES, Tr. Elem., II, 1853, p. 219, pl. XXIX, figs. 7-9.—

* KUSTER, Conch. Cab. Unio, 1856, p. 165, pl. XLVIII, fig. 1.

* *Tetraplodon pectinatum* SPIX, Test. Fluv. Bras., 1827, p. 32, pl. XXV, figs. 3-4.

*† *Castalia inflata* D'ORBIGNY, Guer. Mag., 1835, p. 43.—* HANLEY, Test. Moll., 1842, p. 173; * Biv. Shells, 1843, p. 173, pl. XXIV, fig. 12.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 598, pl. LXXII, figs. 4-10.

*† *Castalia turgida* HUPE, Moll. Nouv., III, 1857, p. 76, pl. XIV, fig. 1.—* SOWERBY, Conch. Icon., XVII, 1869, pl. III, fig. 11.

¹ The name *Castalia* applied by Lamarck to this genus in 1819 can not stand, as it was used in Vermes in 1817. I have every reason to suppose that the young in this and all the South American genera of *Unionide* are carried in the inner gills.

² Schumacher gave only a brief description of his *Prisodon truncatus*, and referred to no figure, and the same can be said of Lamarck regarding his *Castalia ambigua*, both of which are supposed by authors to be the above species. But either of these descriptions apply equally well to several species, therefore they can not be considered authentic.

*† *Castalia hanleyana* SOWERBY, Conch. Icon., XVII, 1869, pl. i, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Castalia carolinensis* SOWERBY, Conch. Icon., XVII, 1869, pl. ii, fig. 6.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Castalia cordata* STROBEL, Mat. Mal., Pt. I, 1874, p. 75.

Amazon and Rio de la Plata River systems.

† TETRAPLONDON QUADRILATERUM d'Orbigny.

* *Castalia quadrilatera* D'ORBIGNY, Guer. Mag., No. 62, 1835, p. 42.—* HANLEY, Test. Moll., 1842, p. 173; * Biv. Shells, 1843, p. 173.—* D'ORBIGNY, Voy. Am. Mer, 1843, p. 599, pl. LXXIII.—* TROSCHEL, Arch. für Nat., XIII, 1847, Pt. 1, p. 222.—* VON IHERING, Arch. für Nat., 1893, p. 89.

* *Mya ambigua* WOOD, Ind. Test. Rev., 1856, p. 200, pl. i (supp.), fig. 9.

* *Castalia acuticosta* HUPE, Moll. Nouv., III, 1857, p. 77, pl. XIV, fig. 3.—* SOWERBY, Conch. Icon., XVII, 1869, pl. iii, figs. 12, 12a, 12b.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Castalia cordata* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 509, pl. CXX; III, figs. 2, 2a.—* SOWERBY, Conch. Icon., XVII, 1869, pl. ii, fig. 8.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Castalia latiquadrata* SOWERBY, Conch. Icon., XVII, 1869, pl. ii, fig. 10.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Tropical South America east of the Andes. Perhaps a form of *ambiguus*.

† TETRAPLONDON OVATUS Sowerby.

* *Castalia ovata* SOWERBY, Conch. Icon., XVII, 1869, pl. i, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Brazil.

† TETRAPLONDON RETUSUS Hupe.

* *Castalia ambigua* SOWERBY, Conch. Man., 1839, fig. 140.

* *Castalia retusa* HUPE, Moll. Nouv., III, 1857, p. 75, pl. XIV, fig. 2.—* SOWERBY, Conch. Icon., XVII, 1869, pl. i, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Guiana.

TETRAPLONDON QUADRATUS Sowerby.

* *Castalia quadrata* SOWERBY, Conch. Icon., XVII, 1867, pl. ii, figs. 7, 7a, 7b.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

TETRAPLONDON SCHOMBERGIANUS Sowerby.

* *Castalia schombergiana* SOWERBY, Conch. Icon., XVII, 1869, pl. XIV, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Guiana.

(Group of *Tetraplodon multisulcatus*.)

Shell small, somewhat compressed, with a moderate posterior ridge, and covered throughout with delicate ridges; teeth more Unionoid than in the typical *Tetraplodon*s.

Animal unknown.

TETRAPLODON MULTISULCATUS Hupe.

* *Castalia ambigua* BLAINVILLE, Man., 1825, p. 539, pl. LXVII, fig. 4.

* *Castalia multisulcata* HUPE, Moll. Nouv., III, 1857, p. 75, pl. XIV, fig. 4.—* SOWERBY, Conch. Icon., XVII, 1869, pl. II, figs. 9, 9a, 9b.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Brazil.

TETRAPLODON ECARINATUS Mousson.

* *Castalia ecarinata* MOUSSON, Mal. Bl., XVI, 1869, p. 185.—* PFEIFFER, Nov. Conch., IV, 1876, p. 140, pl. CXXXI, figs. 9, 10.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Puerto Nuevo, Magdalena River, Colombia.

TETRAPLODON CROSSEANUS Hidalgo.

* *Castalia crosseana* HIDALGO, Jl. de Conch., XIII, 1865, pp. 316, 429, pl. XIV, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Imbabura, Ecuador.

Genus CASTALINA Von Ihering, 1891.

Castalina VON IHERING, Zool. Anzeiger, 1891, p. 478.

Shell somewhat triangular, inflated, but having the sides a little flattened, solid, with a strong posterior ridge, the subtruncate posterior slope rising almost to a wing above; beaks full, high, with nearly strictly radial sculpture; surface slightly, irregularly, concentrically sulcate, sometimes a little corrugated; posterior slope generally plicate or corrugated; epidermis thick, rayless, blackish; hinge plate arched, wide; two to several radial pseudocardinals in each valve; two vertically or obliquely striate laterals in the left valve and one in the right; beak cavities deep; anterior muscle scars deep, united; nacre whitish.

Animal, probably very much like that of *Tetraplodon*, but with the mantle closed or open at the branchial and anal openings.

(Type, *Castalina martensi* von Ihering.)

(Group of *Castalina martensi*.)

Characters as in the genus.

†CASTALINA MARTENSI von Ihering.

* *Castalina martensi* VON IHERING, Zool. Anz., XIV, 1891, p. 477; Arch. für Nat., 1893, p. 81, pl. III, fig. 5.

Southern Brazil.

†CASTALINA NEHRINGI von Ihering.

Castalina nehringi VON IHERING, Zool. Anz., XIV, 1891, p. 477; * Arch. für Nat., 1893, p. 75, pl. III, fig. 4.

Southern Brazil.

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† CASTALINA PSAMMOICA d'Orbigny.

* *Unio psammoica* D'ORBIGNY, Guer. Mag., 1835, p. 35; * Voy. Am. Mer., 1843, p. 608, pl. LXXI, figs. 4-7.—* KUSTER, Conch. Cab. Unio, 1861, p. 263, pl. LXXXVIII, fig. 4.

* *Castalina psammoica* VON IHERING, Arch. für Nat., 1893, p. 79.

* *Margaron (Unio) psammoicus* LEA, Syn., 1852, p. 19; 1870, p. 30.

* *Unio psammoicus* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCIII, fig. 507.—* PÆTEL, Conch. Sam., III, 1890, p. 164.

Tributaries of the Rio de la Plata.

† CASTALINA UNDOSA von Martens.

* *Castalia undosa* VON MARTENS, S. B. Nat. Fr., 1885, p. 148; * Conch. Mitth., III, 1885, p. 19, pl. XLII, figs. 2, 3.—PÆTEL, Conch. Sam., III, 1890, p. 190.—VON IHERING, Arch. für Nat., 1893, p. 84.—* NEHRING, Jl. de Conch., 1894, p. 82.

Southern Brazil.

(Group of *Castalina orbignyi*.)

Shell irregularly rhomboid, somewhat compressed, equilateral, anterior end rounded, posterior truncate, having a wide, shallow, radiating furrow above the rounded posterior ridge which causes a sinuosity in the outline; epidermis brownish yellow, hinge crenate; one pseudo-cardinal in the left valve and two in the right, which are jagged or somewhat broken up; laterals elongate and striate.

CASTALINA ORBIGNYI Hupe and Deville.¹

* *Unio orbignyi* HUPE and DEVILLE, Rev. et Mag., 1850, p. 645, pl. XVI, fig. 1.—

* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.

* *Margaron (Unio) orbignyi* LEA, Syn., 1852, p. 24; 1870, p. 37.

* *Unio orbignyana* HUPE, Moll. Nouv., III, 1857, p. 83, pl. XVII, fig. 1.

* *Unio d'orbignyanus* SOWERBY, Conch. Icon., XVI, 1868, pl. XCVI, fig. 523.

* *Unio orbignyanus* PÆTEL, Conch. Sam., III, 1890, p. 162.

Upper Amazon.

Genus CASTALIELLA Simpson, 1900.

(Type, *Castalia sulcata* Krauss.)

Shell subtriangular, greatly inflated, subsolid and strongly sulcate; beaks high, the sculpture regularly radiate; posterior ridge well defined and sharp; epidermis reddish chestnut; hinge line narrow, arched; there are two vertically striate pseudocardinals in the right valve, separated by a parallel-sided socket, the lower the larger and split, and three in the left standing side by side, the middle one the largest, the lower two torn, with a few small tubercles in each valve behind them; one granular

¹ I do not know just where to place this species, never having seen it, and the descriptions not being full in essential details. It is probably a *Castalina*. No mention is made of sculpture, but from the figure it seems to be slightly sulcate.

lateral in the right valve and two in the left, which show traces of vertical striation; beak cavities deep, not compressed; nacre purple.¹

Animal unknown.

† *CASTALIELLA SULCATA* Krauss.

* *Castalia sulcata* KRAUSS, Zeits. für Mal., 1849, p. 99.—* PÆTEL, Conch. Sam., III, 1890, p. 190.

* *Unio kraussii* LEA, Pr. Ac. N. Sci. Phila., VI, 1853, p. 376.²

* *Margaron (Unio) kraussii* LEA, Syn., 1870, p. 35.

Surinam.

Genus *CALLONAIA* Simpson, 1900.

(Type, *Castalia duprei* Recluz.)

Shell triangular, thin, inflated, with very high, full beaks which appear to be without sculpture;³ a very high, sharp posterior ridge extends to the base of the shell, above which it is decidedly truncated; anterior end somewhat pointed above, rounded below; ligament very short; surface nearly smooth but somewhat sulcate anteriorly; epidermis bright greenish yellow, shining; hinge line strongly arched; teeth compressed, high; two pseudocardinals in each valve, all interlocking and side by side; one lateral in the right valve and two in the left, a little ragged and granularly vertically striate; beak cavities very deep, not compressed; muscle scars superficial; nacre brilliant, bluish white, radiately striate posteriorly. Animal unknown.

† *CALLONAIA DUPREI* Recluz.

* *Castalia duprei* RECLUZ, Rev. Zool., 1843, p. 305, pl. XXXV; * Mag. Zool., 1843, p. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 509.—* CHENU, Man., 1859, II, p. 149, fig. 738.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Unio duprei* CATLOW and REEVE, Conch. Nom., 1845, p. 58.

* *Margaron (Prisodon) duprei* LEA, Syn., 1852, p. 18; 1870, p. 27.

* *Castalia dolabella* SOWERBY, Conch. Icon., XVII, 1869, pl. III, figs. 13 a, 13 b, 13 c.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Great lakes of Para, Brazil.

¹This species, of which the type is in the Lea collection, has some of the characters of *Prisodon* and *Castalina*, but I can not satisfactorily refer it to either, and it is certainly not a *Diplodon*. Its strong sulcation, reddish chestnut epidermis, and purple nacre are characters that are not possessed by any South American *Naiades* that I am acquainted with.

²Lea received this shell from Dr. Dunker under the name of *Castalia sulcata* Krauss. Believing it to be a *Unio*, he placed it in that genus, and the name *sulcatus* being preoccupied in *Unio*, he changed it as above.

³In one of Lea's shells the beaks are almost perfect, and not a sign of sculpture can be seen.

Genus HYRIA Lamarck, 1819.

(Type, *Hyria corrugata* Lamarck.)*Hyria* LAMARCK, An. sans Vert., VI, 1819, p. 81.¹*Triplodon* SPIX, Test. Fluv. Bras., 1827, p. 35.*Naita* SWAINSON, Tr. on Mal., 1840, p. 379.

Shell subrhomboidal, solid, slightly inflated, narrower and dorsally winged in front, and having a post-dorsal wing; posterior ridge often double, causing the shell to be biangulate behind; beaks low, with strong, nearly radial sculpture, the central bars coalescing below, the whole continuing as strong, radial, and zigzag ridges over more or less of the disk; epidermis thick, greenish when young, brownish or blackish when old; there are two or more rather short, compressed pseudo-cardinals in each valve, which are much split up into denticles; one lateral in the right and two in the left valve; teeth often somewhat vertically striated; dorsal scars numerous; nacre whitish.

Animal with mantle lobes united together behind and furnished with two short, contractile siphons. (J. E. Gray.)

Subgenus HYRIA Lamarck, 1819.

(Type, *Hyria corrugata* Lamarck.)

Characters as in the genus.

†HYRIA CORRUGATA Lamarck.

* *Hyria corrugata* LAMARCK, An. sans Vert., VI, 1819, p. 82.—* SOWERBY, Rec. and Foss. Shells, 1823, No. XVI, fig. *d*; * Conch. Man., 1839, fig. 144.—* REEVE, Conch. Syst., I, 1841, p. 120, pl. XC, fig. 2.—* HANLEY, Test. Moll., 1842, p. 215; * Biv. Shells, 1843, p. 215.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* KUSTER, Conch. Cab. Unio, 1856, p. 140, pl. XL, fig. 1.—* CHENU, Man., 1859, II, p. 149, fig. 733.—* REEVE, Elem. Conch., II, 1860, pl. XXXI, fig. 179.—* SOWERBY, Conch. Icon., XVII, 1869, pl. I, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* ? *Unio corrugata* BLAINVILLE, Man., 1825, p. 539, pl. LXVII, fig. 1.

¹In 1753 Klein (Testamen Methodi, p. 135, pl. 9, fig. 36) used the name *Triquetra* for the shell which has since been known as *Hyria syrmatophora* Gronovius. In 1817 Schumacher founded the genus *Prisodon* (Essai Nouv. Système, p. 138), in which under section *a* he placed his *P. obliquus*, a smooth species considerably drawn out, and in section *b* he put *P. truncatus*, which is possibly the same as the *Castalia ambigua* of Lamarck. These certainly belong to two genera. Dr. Lea in the Synopsis used Klein's name for the winged shell (*Hyria corrugata* Lamarck), and used the name *Prisodon* for Schumacher's section *b* (*P. truncatus* Schumacher). Lea erred in this, because Klein was not a binomial author, and his name can not be used. In the proceedings of the U. S. National Museum, XVIII, 1896, p. 315, I restored the name of *Prisodon* Schumacher to the first section, pointing out that the *P. obliquus* Schumacher must stand as its type. Two years after Schumacher's name appeared Lamarck published the generic name *Hyria* in the Animaux sans Vertèbres, VI, 1819, p. 81, and placed in it first his *H. avicularis*, which equals Schumacher's *P. obliquus*, and secondly *H. corrugata*. I now believe that these corrugated forms are generically distinct from the smooth ones, and as Schumacher's *Paxyodon* is almost certainly founded on one of the smooth species, Lamarck's name *Hyria* can be used by elimination for the *corrugatus* and allied forms.

- * *Margaron (Triquetra) corrugata* LEA, Syn., 1852, p. 17; 1870, p. 25.
 * *Triquetra corrugata* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 508.
 * ? *Triplodon rugosum* SPIX, Test. Fluv. Bras., 1827, p. 35, pl. XXIX, figs. 1, 2.
 * *Hyria rugosa* DESHAYES, Enc. Méth., II, 1827, p. 151, pl. CCXLVII, fig. 2.
 * *Mya angulata* WOOD, Ind. Test. Sup., 1828, p. 3, pl. I, fig. 12.
 * *Margarita (Unio) angulatus* LEA, Syn., 1836, p. 10; 1838, p. 13.
 * *Hyria exasperata* SOWERBY, Conch. Icon., XVII, 1869, pl. II, fig. 3.—*PÆTEL, Conch. Sam., III, 1890, p. 189.

Eastern Peru to Guiana; south throughout Brazil.

†HYRIA RUGOSISSIMA Sowerby.

- * *Hyria rugosissima* SOWERBY, Conch. Icon., XVII, 1869, pl. III, fig. 5.—*PÆTEL, Conch. Sam., III, 1890, p. 189.

Amazon River.

HYRIA LATIALATA Sowerby.

- * *Hyria latialata* SOWERBY, Conch. Icon., XVII, 1869, pl. II, fig. 4.—*PÆTEL, Conch. Sam., III, 1890, p. 189.

Guiana.

†HYRIA TRANSVERSA Hupe.

- * *Hyria transversa* HUPE, Moll. Nouv., III, 1857, p. 79, pl. XV, fig. 1.—*SOWERBY, Conch. Icon., XVII, 1869, pl. IV, fig. 7.—*PÆTEL, Conch. Sam., III, 1890, p. 189.

Brazil.

Subgenus TRIQUETRANA Simpson, 1900.

(Type, *Unio stevensi* Lea.¹)

Shell compressed, with a feebly developed posterior wing, thickened in front; each valve with about three somewhat divergent pseudo-cardinals which are sometimes nearly smooth and at others break into denticles; one granular lateral in the right valve and two in the left which are sometimes obliquely and faintly vertically striate; external sculpture much as in *Hyria*. Animal unknown.

†HYRIA STEVENSI Lea.

- * *Unio stevensi* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 188; *Jl. Ac. N. Sci. Phila., VIII, 1874, p. 22, pl. VII, fig. 19; *Obs., XIII, 1874, p. 26, pl. VII, fig. 19.

Yuruari River, Guiana.

Genus PRISODON Schumacher, 1817.

(Type, *Mya syrmatophora* Meuschen in Gronovius.)

- Triquetra* KLEIN, Tent. Methodi, Ost, 1753, p. 135.
Prisodon SCHUMACHER (part), Essai Nouv. Syst., 1817, p. 138.
Pacyodon SCHUMACHER, Essai Nouv. Syst., 1817, p. 139.

Shell aviculiform, solid, somewhat inflated, with a well-developed posterior ridge, the area above it being excavated, its outline from the

¹This shell bears much the same relation to *Hyria* that *Castalina* does to *Tetraplodon*, its teeth being more unionoid than those of *Hyria* and the shell more compressed.

hinder basal point to the end of the post dorsal wing generally incurved; posterior slope having a radial row of plications, as in *Oristaria*; surface slightly concentrically sculptured and having delicate radiating *liræ* throughout, so that the surface is microscopically reticulated; beaks full, but not elevated, without sculpture as far as noticed; epidermis yellowish green or brownish, shining, often bronzy; hinge narrow under the beaks, widening in front and behind; left valve with two or more elongated compressed pseudocardinals which show a tendency to break into denticles, and two laterals; right valve with two or more similar pseudocardinals and a single lateral; laterals vertically, granularly striate.

Animal with the labial palpi triangular, the hinder parts free as in *Unio*, not united posteriorly; branchiæ large, equal in size. (Troschel.)

Subgenus **PRISODON** Schumacher, 1817.

(Type, *Mya syrmatophora* Meuschen.)

Characters as in the genus.

† **PRISODON SYRMATOPHORUS** Meuschen in Gronovius.

* *Triquetra subviridis* KLEIN, Tent. Méth. Ost., 1753, p. 135, pl. ix, fig. 36.¹—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 505; III, pl. CXX, figs. 1, 1a.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Margaron (Triquetra) subviridis* LEA, Syn., 1852, p. 17; 1870, p. 25.

* *Mya syrmatophora* MEUSCHEN in Gronovius, Zooph., 1781, pl. XVIII, figs. 1, 2.²—* GMELIN, Syst. Nat., 1788, No. 3222.—* WOOD, Gen. Conch., I, 1815, p. 110.—* DILLWYN, Cat., I, 1817, p. 54.—* WOOD, Ind. Test., 1825, p. 12, pl. II, fig. 36b.

* *Hyria syrmatophora* SOWERBY, Rec. and Foss. Shells, XVI, 1823, fig. d; * Conch. Man., 1839, fig. 143.—* REEVE, Conch. Syst., I, 1841, p. 120, pl. xc, fig. 1.—* HANLEY, Test. Moll., 1842, p. 214; * Biv. Shells, 1843, p. 214.—* CATLOW and REEVE, Conch. Man., 1845, p. 65.—* TROSCHTEL, Arch. für Nat., XIII, Pt. I, 1847, p. 271.—* WOOD, Ind. Test. rev., 1856, p. 17, pl. II, fig. 36.—* HUPE, Moll. Nouv., III, 1857, p. 79, pl. xv, fig. 2.—* SOWERBY, Conch. Icon., XVII, 1869, pl. v, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Unio syrmatophora* DESHAYES, Tr. Elem., II, 1853, p. 219, pl. XXIX, figs. 10, 11.

* *Margarita (Unio) syrmatophorus* LEA, Syn., 1836, p. 11; 1838, p. 13.

* ? *Paryodon ponderosus* SCHUMACHER, Ess. Nouv. Syst., 1817, p. 140, pl. XI, fig. 3.

* *Hyria avicularis* var. *b.* LAMARCK, An. sans Vert., VI, 1819, p. 82.

Guiana; Brazil.

† **PRISODON COMPLANATUS** Hupe.

* *Hyria complanata* HUPE, Moll. Nouv., III, 1857, p. 80, pl. xv, fig. 3.—* SOWERBY, Conch. Icon., XVII, 1869, pl. IV, fig. 9.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

* *Hyria syrmatophora* KUSTER, Conch. Cab. Unio, 1856, p. 141, pl. XLI, fig. 4.

Guiana.

¹ Klein's species evidently equals the *syrmatophora* of Gronovius, but his name can not be used, as he was not a binomial author.

²Gronovius used only generic names in the Zoophylacem, and died while the work was in progress. Meuschen finished it and figured the above species and described it in the explanation of the plate.

† PRISODON ALATUS Sowerby.¹

- * *Hyria alata* SOWERBY, Conch. Icon., XVII, 1869, pl. v, fig. 13.—PÆTEL, Conch. Sam., III, 1890, p. 189.

Guiana.

PRISODON CASTELNAUDI Hupe.

- * *Hyria castelnaudi* HUPE, Moll. Nouv., III, 1857, p. 81, pl. XVI, fig. 1.—* SOWERBY, Conch. Icon., XVII, 1869, pl. IV, fig. 8.—* PÆTEL, Conch. Sam., III, 1890, p. 189.²

Brazil.

† PRISODON OBLIQUUS Schumacher.

- * *Prisodon obliquus* SCHUMACHER, Ess. Nouv. Syst., 1817, p. 139, pl. XL, fig. 2.³
 * *Hyria obliqua* PÆTEL, Conch. Sam., III, 1890, p. 189.
 * *Hyria avicularis* LAMARCK, An. sans Vert., VI, 1819, p. 82.—* CROUCH, Ill. Int. Lam., 1827, p. 16, pl. IX, figs. 5 a, b.—* STARK, Nat. Hist., II, 1828, p. 89.—* WYATT, Man. Conch., 1838, p. 67, pl. v, fig. 4.—* DELESSERT, Rec. Coq. Lam., 1841, pl. XII, fig. 9.—* HANLEY, Test. Moll., 1842, p. 214; * Biv. Shells, 1843, p. 214, pl. XXIV, fig. 11.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* TROSCHEL, Arch. für Nat., XIII, Pt. 1, 1847, p. 271, pl. VI, fig. 3.—* CHENU, Man., 1859, II, p. 149, fig. 734.—* SOWERBY, Conch. Icon., XVII, 1869, pl. III, figs. 6 a, b.
 * *Unio avicularis* DESHAYES, Enc. Méth., II, 1830, p. 583; * Traite Elem. Conch., 1839, p. 18, pl. XXIX, figs. 10, 11.
 * *Hyria avicularia* GUERIN, Icon. Regne An., 1844, II, pl. XXVIII, fig. 8.
 * *Unio caudatus* WAGNER, Test. Fluv. Bras., 1827, p. 35, pl. XXVII, figs. 1, 2.
 * *Diplodon furcatum* SPIX, Test. Fluv. Bras., 1827, p. 35, pl. XXVII, figs. 1, 2.
 * *Hyria elongata* SWAINSON, Ex. Conch., 1841, p. 29, pl. XXIV.
 * *Triquetra elongata* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 508.

Amazon drainage; southward through Brazil.

PRISODON RECTUS Sowerby.⁴

- * *Hyria recta* SOWERBY, Conch. Icon., XVII, 1868, pl. v, fig. 10.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

South America; locality unknown.

† PRISODON BROWNIANUS Lea.

- * *Unio brownianus* LEA, Tr. Am. Phil. Soc., 1838, p. 108, pl. XXIV, fig. 116; * Obs., II, 1838, p. 108, pl. XXIV, fig. 116.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 237.
 * *Margarita (Unio) brownianus* LEA, Syn., 1838, p. 13.
 * *Hyria browniana* HANLEY, Test. Moll., 1842, p. 215; * Biv. Shells, 1843, p. 215.—* CATLOW and REEVE, Conch. Nom., 1845, p. 65.—* SOWERBY, Conch. Icon., XVII, 1869, pl. v, fig. 12.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

¹ This form has the posterior wing greatly produced and curved upward. I doubt whether it is more than a form of *symmatophora*.

² This is probably a variety of *obliquus* Schumacher.

³ Only a part of the interior is figured, but from its form I think there need be no doubt as to what the author meant.

⁴ This may be only a peculiar *obliquus*. The dorsal line curves up in the center.

* *Margaron (Triquetra) browniana* LEA, Syn., 1852, p. 17; 1870, p. 26.

* *Triquetra browniana* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 508.

Amazon River.

Subgenus **HYRIANA** Simpson, 1900.

(Type, *Unio ortonii* Lea.)

Shell solid, compressed, elliptical, with a slight posterior dorsal wing and a strong one anteriorly, and a well-defined but low posterior ridge ending in a point well above the base, inflated at post-basal region, distinctly sulcate; beaks low, apparently not rayed; epidermis shining, light yellowish brown; hinge line evenly curved; pseudocardinals numerous, much split into denticles and crooked; two laterals in the left valve and one (no doubt) in the right; beak cavities very shallow; dorsal scars numerous, anterior scars deep; nacre whitish, radially grooved along the palleal line.¹

† PRISODON ORTONII Lea.

* *Unio ortonii* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 161; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 321, pl. LII, fig. 134; *Obs., XII, 1869, p. 81, pl. LII, fig. 134.—

* PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Margaron (Unio) ortonii* LEA, Syn., 1870, p. 28.

River Napo, Ecuador.

Genus **DIPLODON** Spix, 1827.

(Type, *Diplodon ellipticum* Spix.)

Diplodon SPIX, Test. Fluv. Bras., 1827, p. 33, pl. XXVI.

Shell elliptical, rounded, elongated or trapezoidal, with rather low beaks which are more or less distinctly radially sculptured, the ridges usually curved and approaching below, with a low or scarcely developed posterior ridge; surface slightly concentrically sculptured, sometimes broken into fine nodules or corrugations; epidermis dull, rayless; hinge with two compressed pseudocardinals in the right valve, and one slender lateral, and two compressed pseudocardinals in the left valve, one in front of the other, and two laterals; nacre bluish to white, dull, often blotched; beak cavities shallow; dorsal scars numerous, forming a row in the beak cavity parallel with the hinge line.

Animal with the marsupium occupying nearly the whole length of the inner branchiæ, a few ovules sometimes being found in the outer gills;²

¹ I have seen only a single left valve, the type. The anterior wing of this is gone, and the epidermis is somewhat eroded. The shell has been injured when young, which has probably caused a long, low, radial furrow that runs in front of the posterior ridge. The space occupied by the pseudocardinals is not so long proportionally as in typical *Prisodon*.

² I found a few ovules in the outer gills of *D. acutirostris* Lea, of South America, while the inner gills were full, and Mr. Henry Suter states that the ovules of *D. menziesi* Gray, of New Zealand, occupy the inner gills for the most part.

branchiæ rather large, angular at base, inner much the larger, united their whole length to the abdominal sac; palpi scarcely projecting posteriorly; mantle very thin, thickened on the edges; branchial opening papillose, separated from the smooth anal opening by a strong bridge; superanal opening not closed below.

Subgenus **DIPLODON** Spix, 1827.

Beak sculpture consisting of unbroken ridges, covering the whole beaks.

Animal having the labial palpi rounded below and at posterior base, scarcely projecting behind.

(Type, *Diplodon ellipticum* Spix.)

(Group of *Diplodon delodontus*.)

Shell elliptical to subtrapezoidal, inflated, subsolid, with a low posterior ridge, sometimes having a slight posterior dorsal wing; one or two central pairs of bars of the beak sculpture usually joining below; pseudocardinals sometimes slightly dentellate.

Animal having the characters of the genus.

† **DIPLODON DELODONTUS** Lamarck.

* *Unio delodonta* LAMARCK, An. sans. Vert., VI, 1819, p. 77.—* DELESSERT, Rec. Coq. Lam., 1841, pl. XII, fig. 7.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 605.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CHENU, Ill. Conch., 1858, pl. XII, figs. 1. 1a.

* *Margarita (Unio) delodontus* LEA, Syn., 1836, p. 26; 1838, p. 20.

* *Unio delodontus* HANLEY, Test. Moll., 1842, p. 194; * Biv. Shells, 1843, p. 194, pl. XXI, fig. 56.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* KUSTER, Conch. Cab. Unio, 1861, p. 234, pl. LXXVIII, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 150.

* *Margaron (Unio) delodontus* LEA, Syn., 1852, p. 29; 1870, p. 46.

* *Unio delodon* STROBEL, Mat. Mal., Pt. I, 1874, p. 71.

*† *Unio lacteolus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 40, pl. VIII, fig. 19; * Obs., I, 1834, p. 152, pl. VIII, fig. 19.—* D'ORBIGNY, Mag. Zool., 1835, p. 34.

Argentina; Paraguay; Uruguay; southern Brazil.

† **DIPLODON RHOMBEUS** Wagner.

* *Unio rhombeus* WAGNER, Test. Fluv. Bras., 1827, p. 34, pl. XXVIII, figs. 1, 2.—

* HANLEY, Test. Moll., 1842, p. 208; * Biv. Shells, 1843, p. 208, pl. XXII, fig. 20.—

* CATLOW and REEVE, Conch. Nom., 1845, p. 63.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* PÆTEL, Conch. Sam., III, 1890, p. 165.

* *Margarita (Unio) rhombeus* LEA, Syn., 1836, p. 39; 1838, p. 25.

* *Margaron (Unio) rhombeus* LEA, Syn., 1852, p. 38; 1870, p. 61.

Brazil.

† **DIPLODON PAULISTA** von Ihering.

* *Unio paulista* VON IHERING, Arch. für Nat., 1893, p. 93, pl. IV, fig. 7.—* NEHRING, Jl. de Conch., 1894, p. 82.

São Paulo, Brazil.

† DIPLODON AMPULLACEUS Lea.

* *Unio ampullaceus* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 34; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 269, pl. XXXV, fig. 83; * Obs., XII, 1869, p. 29, pl. XXXV, fig. 83.

* *Margaron (Unio) ampullaceus* LEA, Syn., 1870, p. 53.

South America.

† DIPLODON APPRIMUS Lea.

* *Unio apprimus* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 34; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 263, pl. XXXIII, fig. 78; Obs., XII, 1869, p. 23, pl. XXXIII, fig. 78.

* *Margaron (Unio) apprimus* LEA, Syn., 1870, p. 46.

South America.

† DIPLODON WYMANII Lea.¹

* *Unio wymanii* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 90; *Jl. Ac. N. Sci. Phila., VI, 1863, p. 381, pl. XLII, fig. 289; * Obs., X, 1863, p. 17, pl. XLII, fig. 289.—

* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIV, fig. 449.—* VON MARTENS, Mal. Bl., XV, 1868, p. 193.—* PÆTEL, Conch. Sam., III, 1890, p. 172.

* *Margaron (Unio) wymanii*, LEA, Syn., 1870, p. 35.

Uruguay River, South America.

- DIPLODON EXPANSUS Kuster.²

* *Unio expansus* KUSTER, Conch. Cab. Unio, 1856, p. 149, pl. XLIII, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

Brazil?

† DIPLODON PECULIARIS Lea.

* *Unio peculiaris* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 33; *Jl. Acad. N. Sci. Phila., VI, 1868, p. 265, pl. XXXIV, fig. 80; Obs., XII, 1869, p. 25, pl. XXXIV, fig. 80.

* *Margaron (Unio) peculiaris* LEA, Syn., 1870, p. 47.

* † *Unio paraguayensis* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 34; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 271, pl. XXXV, fig. 85; Obs., XII, 1869, p. 31, pl. XXXV, fig. 85.—* VON MARTENS, S. B. Nat. Fr., 1895, p. 34.

* *Margaron (Unio) paraguayensis* LEA, Syn., 1870, p. 45.

* ? *Unio nitidulus* KUSTER, Conch. Cab. Unio., 1848, p. 226, pl. LXXVI, fig. 6.—

* PÆTEL, Conch. Sam., III, 1890, p. 161.

Paraguay.

† DIPLODON FIRMUS Lea.³

* *Unio firmus* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 33; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 267, pl. XXXIV, fig. 82; *Obs., XII, 1869, p. 27, pl. XXXIV, fig. 82.

* *Margaron (Unio) firmus* LEA, Syn., 1870, p. 45.

DIPLODON FIRMUS var. BÆTTGERI von Ihering.

* *Unio firmus* LEA var. *bættgeri* VON IHERING, Arch. für Nat., 1893, p. 105, pl. IV, fig. 2.—* NEHRING, Jl. de Conch., 1894, p. 83.

Brazil.

¹ Extremely close to *apprimus*, and probably only a young shell of that species.

² I know nothing of this. It looks more like an Australian than a South American form, and is quite likely a *D. australis*. Kuster credits it to Charpentier manuscript.

³ A little longer and more solid than *peculiaris*, but I doubt whether it is distinct. The types of these two and *paraguayensis* are badly worn.

† DIPLODON URUGUAYENSIS Lea.

**Unio uruguayensis* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 90; *Jl. Ac. N. Sci. Phila., V, 1863, p. 388, pl. XLV, fig. 298; *Obs., X, 1863, p. 241, pl. XLV, fig. 298.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIV, fig. 448.—*PÆTEL, Conch. Sam., III, 1890, p. 171.

**Margaron (Unio) uruguayensis* LEA, Syn., 1870, p. 46.

Uruguay River, South America.

† DIPLODON WHEATLEYANUS Lea.

**Unio wheatleyanus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; *Obs., VI, 1857, p. 28, pl. XXIX, fig. 23; *Jl. Ac. N. Sci. Phila., 1858, p. 308, pl. XXIX, fig. 23.—*SOWERBY, Conch. Icon., XVI, 1868, pl. XL, fig. 487.—*STROBEL, Mat. Mal., Pt. 1, 1874, p. 71.

**Margaron (Unio) wheatleyanus* LEA, Syn., 1870, p. 50.

Argentina.

† DIPLODON RUDUS Lea.

**Unio rudus* LEA, Pr. Ac. Nat. Sci. Phila., III, 1859, p. 187; *Jl. Ac. Nat. Sci. Phila., IV, 1860, p. 266, pl. XLIII, fig. 146; Obs., VII, 1860, p. 84, pl. XLIII, fig. 146.—*KUSTER, Conch. Cab. Unio, 1861, p. 261, pl. LXXXVIII, fig. 1.

**Margaron (Unio) rudus* LEA, Syn., 1870, p. 50.

**Unio rudis* PÆTEL, Conch. Sam., III, 1890, p. 166.

Rio de la Plata.

† DIPLODON GREEFIANUS von Ihering.

**Unio greefiannus* VON IHERING, Arch. für Nat., 1893, p. 96, pl. IV, fig. 18.¹—*NEHRING, Jl. de Conch., 1894, p. 82.

São Paulo, Brazil.

† DIPLODON PIGER Lea.

**Unio piger* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 90; *Jl. Ac. N. Sci. Phila., V, 1863, p. 388; *Obs., X, p. 23, pl. XLV, fig. 296.—*SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIV, fig. 449.—*PÆTEL, Conch. Sam., III, 1890, p. 163.

**Margaron (Unio) piger* LEA, Syn., 1870, p. 46.

Uruguay River, South America.

† DIPLODON PRUNOIDES Lea.

**Unio prunoides* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 150; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 323, pl. LIII, fig. 136; *Obs., XII, 1869, p. 83, pl. LIII, fig. 136.

**Margaron (Unio) prunoides* LEA, Syn., 1870, p. 47.

South America.?

† DIPLODON BESKEANUS Dunker.

**Unio beskeanus* DUNKER, Zeits. für Mal., V, 1848, p. 182.²

**Margaron (Unio) beskeanus* LEA, Syn., 1870, p. 61.

Brazil.

¹Credited to Dunker Manuscript.

²There is a specimen in the Lea collection contributed under this name by Dunker himself. It is near *locellus* and *suavidicus*. I do not know that it has ever been figured.

†DIPLODON LOCELLUS Lea.

- * *Unio locellus* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 34; * JI. Ac. N. Sci. Phila., VI, 1868, p. 264, pl. XXXIII, fig. 79; * Obs., XII, 1869, p. 24, pl. XXXIII, fig. 79.
 * *Margaron (Unio) locellus* LEA, Syn., 1870, p. 47.

Argentina.

†DIPLODON SUAVIDICUS Lea.

- * *Unio suavidicus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 95; * Obs., VI, 1857, p. 29, pl. XXIX, fig. 24; * JI. Ac. N. Sci. Phila., III, 1858, p. 309, pl. XXIX, fig. 24.
 * *Margaron (Unio) suavidicus* LEA, Syn., 1870, p. 54.

Amazon.

†DIPLODON BROWNII Lea.

- * *Unio brownii* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 95; * Obs., VI, 1857, p. 27, pl. XXIX, fig. 22; * JI. Ac. N. Sci. Phila., III, 1858, p. 307, pl. XXIX, fig. 22.
 * *Margaron (Unio) brownii* LEA, Syn., 1870, p. 61.

South America?. Dr. Lea reports it from Mocha, Asia (with a question), which is certainly an error.

†DIPLODON LEAI Simpson.¹

- * *Margarita (Unio) modestus* LEA, Syn., 1836, p. 32; 1838, p. 22.
 * *Margaron (Unio) modestus* LEA, Syn., 1852, p. 33; 1870, p. 54.
 * *Unio modestus* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.

Brazil.

†DIPLODON RHUACOICUS d'Orbigny.

- * *Unio rhuacoica* D'ORBIGNY, Gner. Mag., 1835, p. 35; * Voy. Am. Mer., 1843, p. 606, pl. LXIX, figs. 4, 5.
 * *Margaron (Unio) rhuacoicus* LEA, Syn., 1870, p. 54.
 * *Unio rhuacoicus* VON MARTENS, Mal. Bl., XV, 1868, p. 195.
 * *Monocondylaea rhuacoica* PÆTEL, Conch. Sam., III, 1890, p. 147.

Uruguay.

†DIPLODON CHARRUANUS d'Orbigny.

- * *Unio charruana* D'ORBIGNY, Guer. Mag., 1835, p. 35; Voy. Am. Mer., 1843, p. 606, pl. LXXI, figs. 8-14.
 * *Margarita (Unio) charruanus* LEA, Syn., 1838, p. 20.

¹ Lea credits this to Ferussac in his Synopsis, but I do not think it has ever been described by that author or anyone else. In 1856 Kuster properly described and figured a species in the Conchylien Cabinet (Vol. Unio, p. 147, pl. XLIII, fig. 2) under the name of *Unio modestus*, which he credits to Charpentier's manuscript, a different shell from that referred to by Lea and the Adams brothers. If the latter was never described the name *modestus* can not be used for it, as it was first properly applied to another species. The shells in Lea's collection may be described as follows: Shell small, subrhomboid, rather solid; beaks full with radial sculpture, the two middle bars coalescing; surface faintly concentrically sculptured, dark olive; two compressed pseudocardinals in each valve which are strongly obliquely striated; two laterals in the left valve and one in the right; anterior muscle scars distinct; nacre bluish; beak cavities shallow. Length 28, height 17, diameter 13 mm.

* *Margaron (Unio) charruanus* LEA, Syn., 1852, p. 29; 1870, p. 54.

* *Unio charruanus* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCIII, figs. 505, 505a, 505b.—* PÆTEL, Conch. Sam., III, 1890, p. 147.

* *Unio faba* D'ORBIGNY, Mag. Zool., 1835, p. 35.—* HANLEY, Test. Moll., 1842, p. 197.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 606, pl. LXXI, figs. 8–11.—* HANLEY, Biv. Shell, 1843, p. 197.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

* *Margarita (Unio) faba* LEA, Syn., 1838, p. 21.

* *Margaron (Unio) faba* LEA, Syn., 1852, p. 31; 1870, p. 50.

Uruguay.

DIPLODON CAIPIRA von Ihering.

* *Unio caipira* VON IHERING, Arch. für Nat., 1893, p. 98, pl. IV, fig. 9.—* NEHRING, Jl. de Conch., 1894, p. 83.

Southern Brazil.

† DIPLODON PICEUS Lea.

* *Unio piceus* LEA, Pt. Ac. N. Sci. Phila., IV, 1860, p. 91; * Jl. Ac. N. Sci. Phila., V, 1863, p. 397, pl. XLI, fig. 287; * Obs., X, 1863, p. 15, pl. XLI, fig. 287.

* *Margaron (Unio) piceus* LEA, Syn., 1870, p. 53.

* *Unio suppositus* VON IHERING (according to von Ihering), where is it described?

Uruguay River, South America.

† ? DIPLODON WAGNERIANUM Simpson.¹

* *Unio ellipticus* WAGNER, Test. Fluv. Bras., 1827, p. 33, pl. XXVI, figs. 1, 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* KUSTER, Conch. Icon. Unio, 1861, p. 238, pl. LXXX, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIV, fig. 382.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

* *Margaron (Unio) ellipticus* LEA, Syn., 1852, p. 21; 1870, p. 31.

Brazil.

† DIPLODON ÆTHIOPS Lea.

* *Unio aethiops* LEA, Pt. Ac. N. Sci. Phila., IV, 1860, p. 91; * Jl. Ac. N. Sci. Phila., V, 1863, p. 377, pl. XLI, fig. 285; Obs., X, 1863, p. 13, pl. XLI, fig. 285.—* VON MARTENS, Mal. Bl., XVI, 1868, p. 196.

* *Margaron (Unio) aethiops* LEA, Syn., 1870, p. 53.

DIPLODON ÆTHIOPS var. PIRICICABANA von Ihering.

* *Unio aethiops*, LEA, var. *piricicabana* VON IHERING, Arch. für Nat., 1893, p. 102.—* NEHRING, Jl. de Conch., 1894, p. 83.

Uruguay and Paraguay rivers; southern Brazil.

¹ Barnes applied the name *Unio ellipticus* in 1823 to a species which is believed to be *Unio ligamentinus*. Wagner placed this shell in the genus *Unio* in the text, but Spix called it *Diplodon ellipticum* in the plate. I therefore change the name to *wagnerianum*. I have never seen a shell that just agrees with his figure. It is near *aethiiformis* von Ihering.

† DIPLODON DIVARICATUS Lea.¹

* *Unio divaricatus* LEA, Tr. Am. Phil. Soc., V, 1834, p. 64, pl. IX, fig. 24; * Obs., I, 1834, p. 176, pl. IX, fig. 24.—* HANLEY, Test. Moll., 1842, p. 197; * Biv. Shells, 1843, p. 197, pl. XXIII, fig. 36.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* JICKELI, Faun. Moll. N. O. Af., 1874, p. 280.—* PÆTEL, Conch. Sam., III, 1890, p. 151.

* *Margarita (Unio) divaricatus* LEA, Syn., 1836, p. 29; 1838, p. 21.

* *Margaron (Unio) divaricatus* LEA, Syn., 1852, p. 31; 1870, p. 49.

South America.

† DIPLODON BINNEYI Lea.²

* *Unio binneyi* LEA, Pr. Am. Phil. Soc., IV, 1845, p. 167; * Tr. Am. Phil. Soc., X, 1848, p. 77, pl. VI, fig. 18; * Obs., IV, 1848, p. 51, pl. VI, fig. 18.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 245.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

* *Margaron (Unio) binneyi* LEA, Syn., 1852, p. 29; 1870, p. 46.

South America.

(Group of *Diplodon granosus*.)

Shell elliptical to subtrapezoidal, somewhat compressed, rather thin, beaks low, the sculpture irregularly radial, the ridges narrow and sharp, separated by wide, trough-like spaces, the outer in particular often becoming somewhat nodulous or corrugated, the inner approaching and united below; surface sometimes slightly concentrically ridged and granose; teeth delicate, compressed; nacre bluish.³

Animal unknown.

† DIPLODON GRANOSUS Bruguiere.

* *Unio granosa* BRUGUIERE, Jl. de Hist. Nat., I, 1792, p. 107, pl. VI, figs. 3, 4.—

* LAMARCK, An. sans Vert., VI, 1819, p. 79.—* DESHAYES, Enc. Meth., II, 1827, p. 151, pl. CCXLIX, fig. 2.

* *Unio granosus* HANLEY, Test. Moll., 1842, p. 182; * Biv. Shells, 1843, p. 182, pl. XXIII, fig. 21.—* CATLOW and REEVE, Conch. Nom., 1845, p. 59.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* DROUET, Moll. Guyane, 1859, p. 86.

¹ Credited by Lea to Egypt, but no doubt a South American species, as it has regular radial beak sculpture and appears to belong with this group.

² Dr. Lea believes that this shell came from Alabama, but it certainly did not. It is undoubtedly a South American form. The type, the only shell I have seen is dead and in bad condition; but the beaks have radial sculpture, and I think it belongs here.

³ No wide distinction exists between this and the preceding group, and there are species which might be assigned about as easily to one as the other. In general the forms of this division are more delicate, thinner, and more compressed than those of the *Delodontus* group. There are few clear characters in any of the species. Philippi and others have, it seems to me, unduly multiplied names for these forms, and the lack of suitable material and their extreme simplicity and similarity make it impossible for me to always determine which are valid. The synonymy is in bad shape, but I have done the best I could at straightening it out.

- * *Margarita (Unio) granosus* A. SYN., 1836, p. 17; 1838, p. 16.
 * *Margaron (Unio) granosus* LEA, SYN., 1852, p. 23; 1870, p. 34.
 * *Unio multistriatus* LEA,¹ Tr. Am. Phil. Soc., IV, 1831, p. 91, pl. XII, fig. 22; * Obs. I, 1834, p. 101, pl. XII, fig. 22.—* HANLEY, Test. Moll., 1842, p. 176; * Biv. Shells, 1843, p. 176, pl. XX, fig. 35.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* CHENU, Ill. Conch., 1858, pl. XI, figs. 2, 2a, 2b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXV, fig. 455.—* PÆTEL, Conch. Sam., III, 1890, p. 160.
 * *Margarita (Unio) multistriatus* LEA, SYN., 1836, p. 13; 1838, p. 14.
 * *Unio multistriata* D'ORBIGNY, Voy. Am. Mer., 1843, p. 607.
 * *Unio pfeifferi* DUNKER, Zeits. für Mal., V, 1848, p. 181.—* PFEIFFER, Nov. Conch., II, 1866, p. 151, pl. XXXIX, figs. 4-9.—* PÆTEL, Conch. Sam., III, 1890, p. 163.
 * *Unio psammactinus* PHILIPPI, Conch., III, 1848, p. 79, pl. V, fig. 2.—* KUSTER, Conch. Cab. Unio, 1856, p. 159, pl. XLV, fig. 6.²—* VON MARTENS, Mal. Bl., XV, 1868, p. 194.
 * † *Unio famelicus* GOULD, Pr. Bost. Soc. N. Hist., III, 1850, p. 294;³ U. S. Expl. Exp., XII, 1852, p. 432, figs. 544, 544a, 544b.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 249.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* GOULD, Otia. Conch., 1862, p. 88.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXV, fig. 391.—* B. H. WRIGHT, Check List, 1888.
 * *Margaron (Unio) famelicus* LEA, SYN., 1852, p. 34; 1870, p. 54.
 * *Unio niloticus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIII, fig. 374.

Brazil; Guiana.

DIPLODON GRANULIFERUS Dunker.

- * *Unio granuliferus* DUNKER, Zeits. für Mal., V, 1848, p. 182.—* PFEIFFER, Nov. Conch., II, 1866, p. 150, pl. XXXIX, figs. 1-3.
 * *Unio granulifer* PÆTEL, Conch. Sam., III, 1890, p. 154.

Province of Rio de Janeiro, Brazil.

† DIPLODON EFFULGENS Lea.

- * *Unio effulgens* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; * Jl. Ac. N. Sci. Phil., III, 1857, p. 303, pl. XXVIII, fig. 18; * Obs., VI, 1857, p. 23, pl. XXVIII, fig. 18.—PÆTEL, Conch. Sam., III, 1890, p. 151.—* VON IHERING, Arch. für Nat., 1893, p. 106.
 * *Margaron (Unio) effulgens* LEA, SYN., 1870, p. 35.
 * *Unio eurhynchus* KUSTER, Conch. Cab. Unio, 1861, p. 237, pl. LXXIX, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

Brazil.

¹The type presented by Mrs. Mawe is not in the Lea collection, but there are fairly typical examples in it. The species varies much in form and sculpture, some specimens being smooth, and all variations occur to those quite granose throughout. Lea places his species in the synonymy *U. ellipticus* Spix, which I think is an error. The type of *multistriatus* is more elongated than the figure of *U. granosus* in the Encyclopedie Méthodique, but agrees very well with undoubted specimens of this species which I have seen.

²Credited by Kuster to Bronn *in litt.*

³Credited by Gould to Walla Walla, Oregon. It is a young, rather smooth *granosus* I am sure, and the habitat given is wrong. The type is in the U. S. National Museum.

† DIPLODON RUFOFUSCUS Lea.

- * *Unio rufofuscus* LEA, Pr. Ac. N. Sci. Phila., IX, 1865, p. 76; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 282, pl. xxxix, fig. 96; *Obs., XII, 1869, p. 42, pl. xxxix, fig. 96.
 * *Margaron (Unio) rufofuscus* LEA, Syn., 1870, p. 31.

South America.

DIPLODON DEMARARAENSIS Lea.

- * *Unio demararacensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 152; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 253, pl. xxxix, fig. 133; *Obs., VII, 1860, p. 71, pl. xxxix, fig. 133.—*REEVE, Conch. Icon., XVI, 1865, pl. xxii, fig. 99.
 * *Margaron (Unio) demararaensis* LEA, Syn., 1870, p. 36.
 * *Unio demararaensis* PÆTEL, Conch. Sam., III, 1890, p. 150.

Demerara.

† DIPLODON LEPIDIOR Lea.

- * *Unio lepidus* LEA,¹ Pr. Ac. N. Sci. Phila., IV, 1860, p. 91; *Jl. Ac. N. Sci. Phila., V, 1863, p. 390, pl. l, fig. 306; *Obs., X, 1863, p. 25, pl. l, fig. 306.
 * *Margaron (Unio) lepidior* LEA, Syn., 1870, p. 53.

Uruguay River.

† DIPLODON PARCUS Lea.

- * *Unio parcus* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 34; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 262, pl. xxxiii, fig. 77; *Obs., XII, 1869, p. 22, pl. xxxiii, fig. 77.
 * *Margaron (Unio) parcus* LEA, Syn., 1870, p. 47.

South America.

† DIPLODON CHILENSIS Gray.

- * *Unio chilensis* GRAY, Spic. Zool., 1828, pl. vi, fig. 12.—* PHILIPPI, Conch., III, 1847, p. 9, pl. iv, fig. 2.—* HUPE, Gay's Hist. Chile, VIII, 1854, p. 317.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* KUSTER, Conch. Cab. Unio, 1862, p. 282, pl. xcv, fig. 12.—* SOWERBY, Conch. Icon., XVI, 1867, pl. lvi, fig. 286.—* PÆTEL, Conch. Sam., III, 1890, p. 148.
 * *Unio smithii* GRAY and PIDGEON, Griff. Cuv., XII, 1834, p. 600, pl. xx, fig. 3.²—* HANLEY, Biv. Shells, 1843, p. 195, pl. xxiii, fig. 58.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 495.—* PÆTEL, Conch. Sam., III, 1890, p. 167.
 * *Margarita (Unio) smithii* LEA, Syn., 1836, p. 27; 1838, p. 20.
 * *Margaron (Unio) smithii* LEA, Syn., 1852, p. 30; 1870, p. 48.
 * *Unio auratus* PHILIPPI, Conch., III, 1847, p. 9, pl. iv, fig. 1.³—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* PÆTEL, Conch. Sam., III, 1890, p. 145.
 * *Margarita (Unio) auratus* LEA, Syn., 1836, p. 31; 1838, p. 22.
 * *Margaron (Unio) auratus* LEA, Syn., 1852, p. 33; 1870, p. 53.
 * *Unio araucanus* PHILIPPI, Conch., III, 1847, p. 50, pl. iv, fig. 3.—* KUSTER, Conch. Cab. Unio, 1862, p. 283, pl. xcv, fig. 3.
 * *Margaron (Unio) araucanus* LEA, Syn., 1870, p. 53.
 * *Unio araucana* HUPE, Gay's Hist. Chile, 1854, p. 317.

Chile.

¹ Changed to *lepidior* because the name *lepidus* had been used for a *Unio* by Gould.

² Only the briefest description is given of this in the index. From the figure it seems to be identical with *chilensis*.

³ Generally credited to Swainson, and Philippi refers it to him with doubt. But I can not find that Swainson ever published it.

DIPLODON SOLIDULUS Philippi.

- * *Unio solidulus* PHILIPPI, Mal. Bl., XVI, 1869, p. 46.—* PFEIFFER, Nov. Conch., III, 1869, p. 480, pl. CIII, figs. 9, 10.—* PÆTEL, Conch. Sam., III, 1890, p. 168.

Near Santiago; Chile.

DIPLODON GASSIESI Kuster.

- * *Unio gassiesi* KUSTER(part), Conch. Cab. Unio, 1856, p. 148, pl. XLIII, fig. 4.¹
* *Unio auratus* REEVE, Conch. Icon., XVI, 1865, pl. XXIX, fig. 150.

Chile.

DIPLODON APLATUS Reeve.²

- * *Unio aplatus* REEVE, Conch. Icon., XVI, 1865, pl. XXVIII, fig. 143.—* PÆTEL, Conch. Sam., III, 1890, p. 144.

Island of Chiloe, Chile.

†DIPLODON MOLINÆ Philippi.

- * *Unio molinæ* PHILIPPI, Conch., III, 1847, p. 50, pl. IV, fig. 4.—*HUPE, Gay's Hist. Chile, VIII, 1854, p. 316.—* KUSTER, Conch. Cab. Unio, 1862, p. 281, pl. XCV, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 159.
* *Unio auratus* SOWERBY, Conch. Icon., XVI, 1866, pl. XLV, fig. 245.³

Southern Chile.

†DIPLODON MODESTUS Kuster.⁴

- * *Unio modestus* KUSTER, Conch. Cab. Unio, 1856, p. 147, pl. XLIII, fig. 2.
* *Unio ianthinus* PHILIPPI, Mal. Bl., XVII, 1869, p. 47.—* PFEIFFER, Nov. Conch., III, 1869, p. 485, pl. CIV, figs. 11, 12.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
* *Unio valdivanus* PHILIPPI, Mal. Bl., XVI, 1869, p. 48.—* PFEIFFER, Nov. Conch., III, 1869, p. 479, pl. CIII, figs. 7, 8.
* *Unio montanus* PHILIPPI, Mal. Bl., XVI, 1869, p. 48.—* PFEIFFER, Nov. Conch., III, 1869, p. 482, pl. CIV, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 159.

Chile.

†DIPLODON ATRATUS Sowerby.

- * *Unio atratus* SOWERBY, Conch. Man., 1839, fig. 148.⁵
* *Unio limensis* KUSTER, Conch. Cab. Unio, 1856, p. 146, pl. XLII, fig. 7; XLIII, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 157.
* *Unio jacobæus* PHILIPPI, Mal. Bl., XVI, 1869, p. 44.—* PFEIFFER, Nov. Conch., III, 1869, p. 478, pl. CIII, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
* *Unio landbecki* PHILIPPI, Mal. Bl., XVI, 1869, p. 45.—* PFEIFFER, Nov. Conch., III, 1869, p. 479, pl. CIII, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 156.

¹ Kuster figures two species, I think, for *gassiesi*. His fig. 3 is, I think, a young *molinæ* Kuster; fig. 4 seems to equal *auratus* of Reeve, not of Philippi or Sowerby.

² Swainson manuscript according to Reeve.

³ Not *U. auratus* of Reeve, figured previously in the same work.

⁴ Credited to Charpentier manuscript by Kuster. See foot note on *Diplodon leai* Simpson, p. 876.

⁵ Not *Unio (Niaa) atrata* Swainson, which equals *Unio gracilis* Barnes. Sowerby's name has precedence.

- Unio diplodon* PHILIPPI, Mal. Bl., XVI, 1869, p. 46.—* PFEIFFER, Nov. Conch., III, 1869, p. 483, pl. CIV, figs. 7, 8.—* PÆTEL, Conch. Sam., III, 1890, p. 150.
- *† *Unio dunkerianus* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; * Obs., VI, 1857, p. 25, pl. XXIII, fig. 20; * JI. Ac. N. Sci. Phila., III, 1858, p. 303, pl. XXVIII, fig. 20.—* KUSTER, Conch. Cab. Unio, 1862, p. 290, pl. XCI, fig. 6.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XC, fig. 485.—* PÆTEL, Conch. Sam., III, 1890, p. 151.—* VON IHERING, Arch. für Nat., 1893, p. 109.
- * *Margaron (Unio) dunkerianus* LEA, Syn., 1870, p. 32.

Peru; Chile.

DIPLODON OBTUSUS d'Orbigny.

- * *Unio obtusa* D'ORBIGNY, Guer. Mag., 1835, p. 35; * Voy. Am. Mer., 1843, p. 610.—* HUPE, Gay's Hist. Chile, VIII, 1854, p. 316.

Chile.

DIPLODON RHUACONICUS Kuster.²

- * *Unio rhuaconicus* KUSTER, Conch. Cab. Unio, 1856, p. 145, pl. XLII, fig. 5.

Brazil.

† DIPLODON CHILOËNSIS Kuster.

- * *Unio chiloënsis* KUSTER, Conch. Cab., 1856, p. 161, pl. XXXV, fig. 6.—* PÆTEL, Conch. Sam., III, 1890, p. 148.

Island of Chiloe, Chile.

† DIPLODON CASÆBLANCÆ Philippi.

- * *Unio casablanca* PHILIPPI, Zeits. für Mal., V, 1848, p. 176.
- * *Unio casablanca* PFEIFFER, Nov. Conch., III, 1869, p. 481, pl. CIV, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 147.
- * *Margaron (Unio) casablanca* LEA, Syn., 1870, p. 53.
- * *Unio longus* PHILIPPI, Mal. Bl., XVI, 1869, p. 44.—* PFEIFFER, Nov. Conch., III, 1869, p. 477, pl. CIII, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 158.
- * *Unio colchaguensis* PHILIPPI, Mal. Bl., XVI, 1869, p. 47.—* PFEIFFER, Nov. Conch., III, 1869, p. 484, pl. CIV, figs. 9, 10.—* PÆTEL, Conch. Sam., III, 1890, p. 148.
- * *Unio foncki* PHILIPPI, Mal. Bl., XV, 1869, p. 49.—* PFEIFFER, Nov. Conch., III, 1869, p. 483, pl. CIV, figs. 5, 6.
- * *Unio funcki* PÆTEL, Conch. Sam., III, 1890, p. 153.

Chile.

DIPLODON FRENZELLII von Ihering.

- * *Unio frenzellii* VON IHERING, Arch. für Nat., 1893, p. 3, pl. IV., fig. 12.

Patagonia and Chile.

DIPLODON MARTENSI von Ihering.

- * *Unio martensi* VON IHERING, Arch. für Nat., 1893, p. 100, pl. IV, fig. 10.

Southern Brazil.

¹Said by d'Orbigny to be of Ferussac, but he does not say where that author described it, and I do not know where. This name has been used for at least four different species of *Unionida*: As above; in Cuvier's Animal Kingdom (edition without date); for *Unio retusus*, by Potiez and Michaud; and by Dr. Lea. I presume that d'Orbigny is entitled to the name.

²Kuster credits this to "Pfeiffer teste Charpentier." I do not know what it is. It is very different from d'Orbigny's *rhuacoica*.

† DIPLODON CUPRINUS Simpson.

* *Unio fragilis* SOWERBY,¹ Conch. Icon., XVI, 1856, pl. xxx, fig. 155.

Island of Chiloe, Chile.

DIPLODON AUREUS Simpson.

* *Unio auratus* KUSTER, Conch. Cab. Unio, 1856, p. 161, pl. XLVI, fig. 3.²

Chile.

DIPLODON CORIACEUS Dunker.

* *Unio coriaceus* DUNKER, Zeits. für. Mal., V, 1848, p. 181.—* VON IHERING, Arch. für Nat., 1893, p. 115.

Rio Negro, Province of Rio Janeiro, Brazil.

DIPLODON CHILDRENI Gray.

* *Unio childreni* GRAY, Griff. Cuv., XII, 1834, p. 600 (index), pl. xx, fig. 1.—* CATLOW and REEVE, Conch. Icon., 1845, p. 57.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* PETEL, Conch. Sam., III, 1890, p. 148.

Margarita (Unio) childreni LEA, Syn., 1836, p. 25; 1838, p. 19.

* *Margaron (Unio) childreni* LEA, Syn., 1852, p. 28; 1870, p. 44.

South America.

(Group of *Diplodon burroughianus*.)

Shell elliptical, moderately solid, inflated, sharply pointed behind, with a high, well-developed posterior ridge; beaks rather full; the sculpture consisting of regularly radiating, widely separated, sharp ridges, the intervening grooves rounded out; (pidermis smooth, dark olive with lighter bands; pseudocardinals compressed, rough, vertically ridged, usually trifold or quadrid in each valve; laterals curved, compressed, muscle scars smooth; nacre white, silvery.

Animal unknown.

† DIPLODON BURROUGHIANUS Lea.

* *Unio burroughianus*, LEA, Tr. Am. Phil. Soc., V, 1834, p. 67, pl. x, fig. 27; * Obs., I, 1834, p. 179, pl. x, fig. 27.—* D'ORBIGNY, Guer. Mag., 1835, p. 34.—* HANLEY, Test. Moll., 1842, p. 197; * Biv. Shells, 1843, p. 197, pl. xxii, fig. 2.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 609.—* CATLOW and REEVE, Conch. Nom., 1845, p. 56.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* SOWERBY, Conch. Icon., XVI, 1866, pl. xxxii, fig. 169.—* PETEL, Conch. Sam., III, 1890, p. 146.

* *Margarita (Unio) burroughianus*, LEA, Syn., 1836, p. 29; 1838, p. 21.

* *Margaron (Unio) burroughianus*, LEA, Syn., 1852, p. 31; 1870, p. 50.

Parana River, South America.

¹ Sowerby's name being preoccupied in *Unio*, I change it to *cuprinus*, which has not been used in *Diplodon*. The date, 1856 on the plate, is perhaps a typographical error for 1866.

² The name *auratus* is preoccupied in *Unio*, by Philippi in the Conchylien. This being a different species, I change it to *aureus*.

† DIPLODON TRIFIDUS Lea.

- * *Unio trifidus*, LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 89; * JI. Ac. N. Sci. Phila., V, 1863, p. 386, pl. XLIV, fig. 295; * Obs., X, 1863, p. 22, pl. XLIV, fig. 295.
 * *Margaron (Unio) trifidus*, LEA, Syn., 1870, p. 50.

Argentina.

(Group of *Diplodon pazi*.)

Shell subtrapezoidal, rounded in front and strongly biangulate behind, the wavy beak sculpture extending well over the disk; epidermis olive; pseudocardinals ragged, with a tendency to break into denticles.

DIPLODON PAZI Hidalgo.

- * *Castalia pazi* HIDALGO, JI. de Conch., XVI, 1868, p. 353, pl. XIII, fig. 6.—* PÆTEL, Conch. Sam., III, 1890, p. 189.

Imbabura, Ecuador.

DIPLODON HYLÆAUS d'Orbigny.

- * *Unio hylæa* D'ORBIGNY, Guer. Mag., 1835, p. 36; * Voy. Am. Mer., 1843, p. 607, pl. LXIX, figs. 8, 9.
 * *Margaron (Unio) hylæus* LEA, Syn., 1852, p. 21; 1870, p. 31.
 * *Unio hylæus* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCIII, fig. 506.—* PÆTEL, Conch. Sam., III, 1890, p. 155.
 * *Unio guaraniana* D'ORBIGNY, Guer. Mag., 1835, p. 37; * Voy. Am. Mer., 1843, p. 608, pl. LXIX, figs. 10-12.

Bolivia; Paraguay River.

(Group of *Diplodon parallelipipedon*.)

Shell elongated, subtrapezoidal, inflated, obliquely truncated behind; posterior ridge strong; beaks rather low, sculpture of nearly or quite strictly radial bars with concave spaces between; epidermis dark; pseudocardinals compressed in the young, granular, vertically striate and breaking into denticles in the old shell; laterals long, curved, granular, often vertically striate; anterior scars smooth, distinct.

† DIPLODON PARALLELIPIPEDON Lea.

- * *Unio parallelipipedon* LEA, Tr. Am. Phil. Soc., V, 1834, p. 60, pl. VIII, fig. 20; * Obs., I, 1834, p. 172, pl. VIII, fig. 20.—* D'ORBIGNY, Guer. Mag., 1835, p. 34.—* HANLEY, Test. Moll., 1842, p. 205; Biv. Shells, 1843, p. 205.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 609.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 491.—* KUSTER, Conch. Cab. Unio, 1861, p. 220, pl. LXXIV, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIX, fig. 478.—* PÆTEL, Conch. Sam., III, 1890, p. 162.
 * *Margarita (Unio) parallelipipedon* LEA, Syn., 1836, p. 35; 1838, p. 24.
 * *Margaron (Unio) parallelipipedon* LEA, Syn., 1852, p. 56; 1870, p. 58.
 ? *Unio bonplandi* VALENCIENNES, in continuation of Humboldt's Zool. Obs., 1827.¹

Rio de la Plata system.

¹ According to Lea. I have not seen this paper, and Lea does not cite the page. A specimen with the above label from the Morelet collection = *parallelipipedon* Lea.

† DIPLODON PATAGONICUS d'Orbigny.

* *Unio patagonica* D'ORBIGNY, Guer. Mag., 1835, p. 37; *Voy. Am. Mer., 1843, p. 610, pl. LXX, figs. 1-4.

* *Margarita (Unio) patagonicus* LEA, Syn., 1838, p. 25.

* *Unio patagonicus* HANLEY, Test. Moll., 1842, p. 208; *Biv. Shells, 1843, p. 298, pl. XXII, fig. 16.—*CATLOW and REEVE, Conch. Nom., 1845, p. 62.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 461.—*REEVE, Conch. Icon., XVI, 1865, pl. XXI, fig. 93.—*STROBEL, Mat. Mal., Pt. 1, 1874, p. 72.—*P. ETEL, Conch. Sam., III, 1890, p. 162.

* *Margaron (Unio) patagonicus* LEA, Syn., 1852, p. 38; 1870, p. 61.

Patagonia.

† DIPLODON ACUTIROSTRIS Lea.

* *Unio acutirostris* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 34; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 270, pl. XXXV, fig. 84; *Obs., XIII, 1869, p. 30, pl. XXXV, fig. 84.

* *Margaron (Unio) acutirostris* LEA, Syn., 1870, p. 58.

South America.

(Group of *Diplodon quadrans*.)

Shell subtrapezoid, slightly truncate in front, nearly equilateral, greatly inflated, its greatest diameter below the beaks, from which it is wedge-shaped in front and behind, solid, with a decidedly rounded posterior ridge; epidermis brownish, concentrically striate, beaks full but not high, ligament long and slender; pseudocardinals large, compressed, striate and crenulate, double in the right valve, single in the left; laterals curved, crenulate; beak cavities rounded; anterior cicatrices deep, confluent; naere white.

Animal unknown.

DIPLODON QUADRANS Lea.¹

* *Unio quadrans* LEA, Pr. Ac. N. Sci. Phila., IV, 1859, p. 306; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 360, pl. LXI, fig. 185; *Obs., VIII, 1860, p. 42, pl. LXI, fig. 185.—*B. H. WRIGHT, Check List, 1888.

* *Margaron (Unio) quadrans* LEA, Syn., 1870, p. 36.

South America (?).

Subgenus CYCLOMYA Simpson, 1900.

(Type, *Unio funebris* Lea.)

Shell obovate to suborbicular, narrowed in front, produced just behind the center of the base, generally slightly pointed about the middle of the posterior end, with a scarcely perceptible posterior ridge and a slight dorsal wing behind; beaks high, irregularly radial; hinge line

¹ Only one specimen of this shell is reported, this being in the Wheatley collection, and credited to Texas. The beak sculpture is all eroded away, but I am almost sure it is a South American shell, allied, perhaps, to *D. apprimus*, *uruguayensis*, and possibly to Hupe's *Unio orbigny*.

strongly arched, curved behind and incurved in front of the beaks; the lower pseudocardinal in the right valve largest, often much split up into denticles, pseudocardinals of the left valve variable, dentellate; two lower anterior scars deep, united, the upper very deep, separate.

Animal unknown.

Section *CYCLOMYA* Simpson, 1900.

(Type, *Unio funebris* Lea.)

† *DIPLODON GRATUS* Lea.

* *Unio gratus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 91; * JI. Ac. N. Sci. Phila., V, 1863, p. 382, pl. XLIII, fig. 290; * Obs., X, 1863, pl. XLIII, fig. 290.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIV, fig. 444.—* PÆTEL, Conch. Sam., III, 1890, p. 154.

* *Margaron (Unio) gratus* LEA, Syn., 1870, p. 56.

Uruguay River, South America.

† *DIPLODON PATELLOIDES* Lea.

* *Unio patelloides* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 89; * JI. Ac. N. Sci. Phila., V, 1863, p. 383, pl. XLIII, fig. 291; * Obs., X, 1863, p. 19, pl. XLIII, fig. 291.

* *Margaron (Unio) patelloides* LEA, Syn., 1870, p. 56.

Amazon River.

† *DIPLODON PERÆFORMIS* Lea.

* *Unio peræformis* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 90; * JI. Ac. N. Sci. Phila., V, 1863, p. 384, pl. XLIII, fig. 292; * Obs., X, 1863, p. 20, pl. XLIII, fig. 292.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXIV, fig. 443.—* PÆTEL, Conch. Sam., III, 1890, p. 163.

* *Margaron (Unio) peræformis* LEA, Syn., 1870, p. 55.

Uruguay River, South America.

† *DIPLODON FONTAINIANUS* d'Orbigny.

* *Unio fontainiana* D'ORBIGNY, Guer. Mag., 1835, p. 36.

* *Unio fontainianus* HANLEY, Biv. Shells, 1856, p. 384, pl. XXI, fig. 27.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVII, fig. 466.—* PÆTEL, Conch. Sam., III, 1890, p. 153.—* VON IHERING, Arch. für Nat., 1893, p. 90.

* *Margaron (Unio) fontainianus* LEA, Syn., 1870, p. 56.

* *Unio fontaineana* D'ORBIGNY, Voy. Am. Mer., 1843, p. 605, pl. LXIX, figs. 6, 7.—* HUPE, Anim. Nouv., 1857, p. 82.

Parana River, southern Brazil.

† *DIPLODON ROTUNDUS* Wagner.

* *Unio rotundus* WAGNER,¹ Test. Fluv. Bras., 1827, p. 34, pl. XXV, figs. 3, 4.—

* MORICAND, Mem. His. Soc. Gen., 1838, p. 49, pl. IV, figs. 12-14.—* KUSTER, Conch. Cab. Unio, 1856, p. 160, pl. XLVI, figs. 1, 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXII, fig. 369.—* PÆTEL, Conch. Sam., III, 1890, p. 166.

* *Margaron (Unio) rotundus* LEA, Syn., 1870, p. 56.

Brazil.

¹ *Diplodon rotundum* Spix in explanation of plate.

† DIPLODON DISCULUS Lea.

* *Unio disculus*, LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 91; * JI. Ac. N. Sci. Phila., V, 1863, p. 385, pl. XLIV, fig. 293; * Obs., X, 1863, p. 21, pl. XLIV, fig. 293.

* *Margaron Unio disculus* LEA, Syn., 1870, p. 55.

Uruguay River, South America.

† DIPLODON FUNEBRALIS Lea.

* *Unio funebris* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 91; * JI. Ac. N. Sci. Phila., V, 1863, p. 378, pl. XLI, fig. 286; * Obs., X, 1863, p. 14, pl. XLI, fig. 286.—

* SOWERBY, Conch. Icon., XVI, 1867, pl. LVII, fig. 290.—* PÆTEL, Conch. Sam., III, 1890, p. 153.

* *Margaron Unio funebris* LEA, Syn., 1870, p. 55.

Uruguay River.

† DIPLODON PARANENSIS Lea.

* *Unio paranensis* LEA, Tr. Am. Phil. Soc., V, 1834, p. 49, pl. XIV, fig. 42.—* Obs., I, 1834, p. 211, pl. XIV, fig. 42.—* HANLEY, Test. Moll., 1842, p. 202; * Biv. Shells, 1843, p. 202, pl. XXI, fig. 3.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 603.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* KUSTER, Conch. Cab., 1861, p. 253, pl. LXXXV, fig. 3.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LI, fig. 268; * PÆTEL, Conch. Sam., III, 1890, p. 162.

* *Margarita (Unio) paranensis* LEA, Syn., 1836, p. 33; 1838, p. 23.

* *Margaron (Unio) paranensis* LEA, Syn., 1852, p. 34; 1870, p. 55.

* † *Unio nocturnus* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 91; * JI. Ac. N. Sci. Phila., V, 1863, p. 380, pl. XLII, fig. 288; * Obs., X, 1863, p. 16, pl. XLII, fig. 288.

* *Margaron (Unio) nocturnus* LEA, Syn., 1870, p. 56.

Uruguay and Parana rivers.

Section BULLOIDEUS Simpson, 1900.

(Type, *Unio bulloides* Lea.)

Shell rounded, inflated, thin, nearly equilateral, truncate behind and slightly so before, with a rather sharp posterior ridge and a dorsal wing; beaks full, rather high, regularly radial; epidermis smooth, bronzy olive; pseudocardinals compressed, much elongated, disposed to be split into denticles, two in the right valve and one in the left; laterals two in the left valve and one in the right; dorsal scars few and scattered in the rather shallow cavities; nacre bluish.

† DIPLODON BULLOIDES Lea.

* *Unio bulloides* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 187; * JI. Ac. N. Sci. Phila., IV, 1860, p. 264, pl. XLII, fig. 144; * Obs., VII, 1860, p. 82, pl. LXII, fig. 144.—

* KUSTER, Conch. Cab. Unio, 1861, p. 186, pl. LIX, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVIII, fig. 275.—* PÆTEL, Conch. Sam., III, 1890, p. 146.

Margaron (Unio) bulloides LEA, Syn., 1870, p. 55.

Rio de la Plata.

† DIPLODON SOLISIANUS d'Orbigny.

* *Unio solisiana* D'ORBIGNY, Guer. Mag., 1835, p. 35; * Voy. Am. Mer., 1843, p. 604, pl. LXIX, figs. 1-3.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCIII, fig. 508.

Rio de la Plata and its affluents.

DIPLODON VARIABILIS Maton.

* *Mya variabilis* MATON, Tr. Linn. Soc. Lond., X, 1811, p. 327, pl. XXIV, figs. 4-7.¹—
* WOOD, Gen. Conch., I, 1815, p. 111.—* DILLWYN, Cat., I, 1817, p. 53.—* WOOD, Ind.
Test., 1825, p. 13, pl. II, fig. 38a; rev. ed., 1856, p. 17, pl. III, fig. 38.

* *Unio variabilis* D'ORBIGNY, Voy. Am. Mer., 1843, p. 604, pl. LXXI, figs. 1-3.—
* HANLEY, Test. Moll., 1842, p. 202; * Biv. Shells, 1843, p. 202.—* CATLOW and
REEVE, Conch. Nom., 1845, p. 65.—* H. and A. ADAMS, Gen. Rec. Moll.,
II, 1857, p. 492.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXIV, fig. 381.—
* STROBEL, Mat. Mal., Pt. 1, 1874, p. 69.—* PÆTEL, Conch. Sam., III, 1890,
p. 171.

* *Margarita (Unio) variabilis* LEA, Syn., 1836, p. 33; 1838, p. 23.

* *Margaron (Unio) variabilis* LEA, Syn., 1852, p. 35; 1870, p. 56.

* *Mytilus matoniana* D'ORBIGNY, Guer. Mag., 1835, p. 35.

* *Unio matonianus* PÆTEL, Conch. Sam., III, 1890, p. 158.

* ? *Unio membranacea* HANLEY, Biv. Shells, 1843, p. 202, pl. XXII, fig. 6.

* *Unio membranaceus* PHILIPPI, Conch., III, 1848, p. 80, pl. v, fig. 4.—* KUSTER,
Conch. Cab. Unio., 1862, p. 284, pl. XCV, fig. 5.

Rio de la Plata.

Subgenus *HYRIDELLA* Swainson, 1840.

(Type, *Unio australis* Lamarck.)

Beaks rather low, sculpture consisting of curved, generally nodulous ridges, which approach below but usually have a smooth area of shell between them; surface sulcate or sometimes corrugated and nodulous; epidermis rayless; teeth rather delicate, compressed, often somewhat rudimentary.

Animal having the embryos occupying the inner gills for the most part,² which are united for their entire length to the abdominal sac; outer gills pointed below in the middle; palpi triangular; branchial opening papillose; anal opening smooth, not separated from the super anal opening.

Section *HYRIDELLA* Swainson, 1840.

Shell covered with concentric, sulcate sculpture; pseudocardinals well developed, compressed; laterals delicate, sometimes imperfect.

(Group of *Diplodon dorsuosus*.)

Shell somewhat rhomboid, inflated solid, with rather full beaks, the sculpture consisting of very strong, subradial, corrugated ridges which curve toward each other below, those in the center sometimes joining, this sculpture extending well out on the disk; upper part of posterior slope having slight radial folds.

¹I feel certain that Maton has illustrated two species, figs. 4, 6, and 7 being nearly circular, with a rather straight hinge, while fig. 5 is a small shell, is much inflated at the posterior base, and is incurved in front of the breaks. He describes the large shell first. The small one may be the young of *D. patelloides*.

²According to Suter in a letter.

† DIPLODON DORSUOSUS Gould.

- * *Unio dorsuosus* GOULD, Pr. Bost. Soc. N. H., III, 1850, p. 296; * U. S. Expl. Exp., XII, 1852, p. 430, figs. 540, 540a, 540b; * Otia Conch., 1862, p. 89.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* PÆTEL, Conch. Sam., III, 1890, p. 151.
 * *Margaron (Unio) dorsuosus* LEA, Syn., 1852, p. 21.
 * *Unio napeauensis* CONRAD, Pr. Ac. N. Sci. Phila., V, 1852, p. 10; * JI. Ac. N. Sci. Phila., 1854, p. 296, pl. XXVI, fig. 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 498.—* REEVE, Conch. Icon., XVI, 1865, pl. XXIII, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 160.
 * *Margaron (Unio) napeanensis* LEA, Syn., 1852, p. 20; 1870, p. 30.

Nepean River, Australia.

DIPLODON GLENELGENSIS Dennant.

- * *Unio glenelgensis* DENNANT, Pr. Roy. Soc. Vict., X, 1898, p. 112, pl. IV.

Glenelg River, Victoria.

(Group of *Diplodon menziezi*.)

Shell subrhomboid; beak sculpture not strong, consisting of broken, nodulous ridges curving toward each other below, with generally a smooth space between, not extending over the shell.

Animal as in the subgenus.

† DIPLODON MENZIEZI Gray.

- * *Unio menziezi* GRAY, In Dieffenbach's N. Z., II, 1843, p. 257.—* ? MUSGRAVE, Phot. Conch., 1863, pl. II, fig. 1.—* HUTTON, N. Z. Moll., 1880, p. 160.—* PÆTEL, Conch. Sam., 1890, p. 159.
 * *Unio menziezianus* REEVE, Conch. Icon., XVI, 1865, pl. XXIX, fig. 152.
 * *Margaron (Unio) menzieni* LEA, Syn., 1870, p. 46.
 * *Unio aucklandica* GRAY, In Dieffenbach's N. Z., II, 1843, p. 257.—* HUTTON, N. Z. Moll., 1880, p. 161.
 * ? *Unio aucklandicus* SOWERBY, Conch. Icon., XVI, 1866, pl. XXX, fig. 156.—* PÆTEL, Conch. Sam., III, 1890, p. 145.
 * *Margaron (Unio) aucklandicus* LEA, Syn., 1870, p. 45.

† DIPLODON MENZIEZI var. RUGATUS Hutton.¹

- * *Unio rugatus* HUTTON, Tr. N. Z. Inst., XVI, 1884, p. 216.—* PÆTEL, Conch. Sam., III, 1890, p. 166.

† DIPLODON MENZIEZI var. HOCHSTELLERI Krauss.

- * *Unio hochstelleri* DUNKER, Mal. Bl., VIII, 1862, p. 153.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVI, fig. 463.—* HUTTON, N. Z. Moll., 1880, p. 161.—* PÆTEL, Conch. Sam., III, 1890, p. 155.²

¹The name *rugatus* was applied previously to a European *Unio* by Rossmassler; but it may be used as a varietal name. This seems to be a small form of *menziezi* which sometimes merges into *hochstelleri*.

²Suter believes this to be only a pathologic form of *menziezi*. He says in a letter to the author that he has seen the same kind of disease among small *rugatus*.

† *DIPLODON MENZIEZI* var. *DEPAUPERATUS* Hutton.

**Unio depauperatus* HUTTON, Tr. N. Z. Inst., XVI, 1884, p. 216.—*PÆTEL, Conch. Sam., III, 1890, p. 150.

New Zealand.

DIPLODON WAIKARENSIS Colenso.

**Unio waikarensis* COLENZO, Tasm. Jl. N. Sci., II, 1841, p. 250, footnote; Tr. N. Z. Inst., XIV, 1882, p. 169.¹

Waikare Lake, New Zealand.

† *DIPLODON ZELEBORI* Dunker.

**Unio zelebori* DUNKER, Reise der Nov., 1867, p. 15, pl. II, fig. 28.—*HUTTON, N. Z. Moll., 1880, p. 161.—*PÆTEL, Conch. Sam., III, 1890, p. 172.

**Margaron (Unio) zelebori* LEA, Syn., 1870, p. 52.

New Zealand.

DIPLODON FLYENSIS Tapperone Canefri.

**Unio flyensis* TAPPERONE CANEFRI, Ann. Mus. Genov., XIX, 1883, p. 293, fig. 1.—*PÆTEL, Conch. Sam., III, 1890, p. 153.

Fly River, New Guinea.

† *LIPLODON VITTATUS* Lea.

**Unio vittatus* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 153; *Jl. Ac. N. Sci. Phila., IV, 1860, p. 249, pl. XXXVIII, fig. 128; *Obs., VII, 1860, p. 67, pl. XXXVIII, fig. 128.—*REEVE, Conch. Icon., XVI, 1864, pl. XXIII, fig. 83.—*PÆTEL, Conch. Sam., III, 1890, p. 171.

**Margaron (Unio) vittatus* LEA, Syn., 1870, p. 35.

Australia.

† *DIPLODON LESSONI* Kuster.

**Unio lessoni* KUSTER, Conch. Cab., 1856, p. 135, pl. XXXVI, fig. 4.—*PÆTEL, Conch. Sam., III, 1890, p. 157.

**Unio australis* KUSTER, Conch. Cab., 1861, p. 230, pl. LXXVII, fig. 6.

New South Wales.

† *DIPLODON AUSTRALIS* (Lamarck) Hanley.²

*?*Unio australis* LAMARCK, An. sans. Vert., VI, 1819, p. 80.—*?DESHAYES, Enc. Méth., II, 1830, p. 582.—*HANLEY, Test. Moll., 1842, p. 192; *Biv. Shells, 1843, p. 192, pl. XXI, fig. 25.—*CATLOW and REEVE, Conch. Nom., 1845, p. 56.—*PHILIPPI, Conch., III, 1848, p. 81, pl. v, fig. 5.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—*PÆTEL, Conch. Sam., III, 1890, p. 145.

¹ Suter thinks this is a variety of *menziezi*, but Colenso states that the posterior slope is keeled. If this is so, it must be quite different from that species.

² Lamarck's description of this species is wholly inadequate, and would apply about equally well to several species. He refers to no figure, and Lea states that he did not see the type. I credit the species to Hanley, whose figure seems to represent a form of an abundant and variable species commonly referred to Lamarck.

- * *Margarita (Unio) australis* LEA, Syn., 1836, p. 25; 1838, p. 19.
 * *Hyridella australis* SWAINSON, Tr. on Mal., 1840, p. 285.
 * *Margaron (Unio) australis* LEA, Syn., 1852, p. 28; 1870, p. 44.
 *? *Unio depressus* LESSON, Voy. Coquille, 1830, II, p. 427, pl. xv, fig. 5.
 * *Margarita (Unio) depressus* LEA, Syn., 1836, p. 32; 1838, p. 22.
 * *Margaron (Unio) depressus* LEA, Syn., 1852, p. 33; 1870, p. 54.
 * *Unio ambiguus* PHILIPPI, Conch., III, 1847, p. 47, pl. III, fig. 2.¹—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXIX, fig. 355.—* PÆTEL, Conch. Sam., III, 1890, p. 144.
 * *Unio shuttleworthi* KUSTER, Conch. Cab. Unio, 1856, p. 152, pl. XLIV, fig. 2.
 * *Unio philippianus* KUSTER, Conch. Cab. Unio, 1861, p. 235, pl. LXXIX, fig. 2.
 * *Unio balouneusis* CONRAD, Pr. Ac. N. Sci. Phila., V, 1850, p. 10; * JI. Ac. N. Sci. Phila., II, 1854, p. 295, pl. XXVI, fig. 3.
 *? *Unio daniellii* VILLA, Jl. de Conch., XIX, 1871, p. 328.—* SMITH, Jl. Linn. Soc., XVI, 1882, p. 307.—*? PÆTEL, Conch. Sam., III, 1890, p. 150.
Unio bednalli TATE. Where? ²

† DIPLODON AUSTRALIS var. LEGRANDI Petterd.

- * *Unio depressus* REEVE, Conch. Icon., XVI, 1864, pl. XVIII, fig. 81.
 * *Unio legrandi* PETTERD, Pr. R. Soc. Tasm., 1887, p. 22; 1888, p. 81.

Australia; Tasmania.

† DIPLODON JEFFREYSIANUS Lea.

- * *Unio jeffreysianus* LEA, Pr. Ac. N. Sci. Phila., I, 1871, p. 188; * JI. Ac. N. Sci. Phila., VIII, 1874, p. 23, pl. VII, fig. 20; * Obs., XIII, 1874, p. 27, pl. VII, fig. 20.

Australia.

† DIPLODON PROFUGUS Gould.

- * *Unio profugus* GOULD, Pr. Bost. Soc. N. II., 1850, p. 295; * U. S. Expl. Exp., XII, 1852, p. 429, figs. 543, 543a, 543b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 494.—* GOULD, Otia Conch., 1862, p. 88.
 * *Margaron (Unio) profugus* LEA, Syn., 1852, p. 29.

Hunter's River, New South Wales.

DIPLODON MORETONICUS Reeve.

- * *Unio moretonicus* REEVE, Conch. Icon., XVI, 1865, pl. XXIV, fig. 118.—* PÆTEL, Conch. Sam., III, 1890, p. 160.
 * *Margaron (Unio) mortonicus* LEA, Syn., 1870, p. 43.

Tasmania.

¹ Credited to Parreyss in litt.

² Specimens received from Mr. Bednall bearing the above name are undoubtedly a form of *D. australis*. I do not know whether it has been described or not.

³ The types are in the U. S. National Museum collection. Lea believes it to be the same as the *australis*. I am inclined to think it distinct.

† DIPLODON CULTELLIFORMIS Conrad.¹

- *? *Unio depressa* LAMARCK, An. sans. Vert., VII, 1819, p. 79.—*? DELESSERT, Rec. Coq. Lam., 1841, pl. XII, fig. 5.—* CHENU, Ill. Conch., 1858, pl. XII, figs. 4, 4a.
- * *Unio depressus* HANLEY, Test. Moll., 1842, p. 200; * Biv. Shells, 1843, p. 200.—* CATLOW and REEVE, Conch. Nom., 1845, p. 58.—* CONRAD, Jl. Ac. N. Sci. Phila., 1854, p. 295, pl. XXXVI, fig. 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* PÆTEL, Conch. Sam., III, 1890, p. 150.
- * *Unio cultelliformis* CONRAD, Pr. Ac. N. Sci. Phila., V, 1850, p. 10.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* PÆTEL, Conch. Sam., III, 1890, p. 149.
- * *Margaron (Unio) cultelliformis* LEA, Syn., 1852, p. 32; 1870, p. 52.
- *† *Unio paramatensis* LEA, Pr. Ac. N. Sci. Phila., VI, 1862, p. 176; * Jl. Ac. N. Sci. Phila., VI, 1866, p. 60, pl. XX, fig. 59; * Obs., XI, 1867, p. 64, pl. XX, fig. 59.
- * *Margaron (Unio) paramattensis* LEA, Syn., 1870, p. 35.

Australia.

† DIPLODON LUTULENTUS Gould.

- * *Unio lutulentus* GOULD, Pr. Bost. Soc. N. Hist., III, 1850, p. 295; * U. S. Expl. Exp., XII, 1852, p. 428, figs. 542, 542a, 542b, 542c.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 493.—* GOULD, Otia Conch., 1862, p. 88.—* REEVE, Conch. Icon., XVI, 1865, pl. XXV, fig. 122.—* HUTTON, N. Z. Moll., 1880, p. 161.—* PÆTEL, Conch. Sam., III, 1890, p. 158.
- * *Margaron (Unio) lutulentus* LEA, Syn., 1852, p. 32; 1870, p. 52.

New Zealand.

† DIPLODON WILSONII Lea.

- * *Unio wilsonii* LEA, Pr. Ac. N. Sci. Phila., 1859, p. 153; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 257, pl. XL, fig. 137; * Obs., VII, p. 74, pl. XL, fig. 137.—* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVIII, fig. 474.—* PÆTEL, Conch. Sam., III, 1890, p. 172.
- * *Margaron (Unio) wilsonii* LEA, Syn., 1870, p. 47.
- *† *Unio (Alasmodon) stuarti* ADAMS and ANGAS, Pr. Zool. Soc. Lond., 1863, p. 417.²
- * *Unio stuarti* SOWERBY, Conch. Icon., XVI, 1866, pl. LIV, fig. 279.
- * *Anodon stuarti* SOWERBY, Conch. Icon., XVII, 1867, pl. XXXIV, figs. 136, 136a, 136b.
- * *Margaron (Unio) stuarti* LEA, Syn., 1870, p. 52.
- * *Margaritana stuarti* PÆTEL, Conch. Sam., III, 1890, p. 174.
- * *Anodonta stuarti* PÆTEL, Conch. Sam., III, 1890, p. 185.

Australia.

† DIPLODON EVANSI Adams and Angas.

- * *Unio (Alasmodon) evansi* ADAMS and ANGAS, Pr. Zool. Soc. Lond., 1864, p. 39.
- * *Unio evansi* SOWERBY, Conch. Icon., XVI, 1867, pl. LVI, fig. 285.—* PÆTEL, Conch. Sam., III, 1890, p. 152.

¹ I can not identify Lamarck's *Unio depressus* with any certainty from his very meager description. Lea believed it to equal the form I have considered as *australis*, but Lamarck's description seems to apply to a more elongated species. Delessert's figure in 1841 probably equals Lea's *paramattensis*. As the name *depressus* was used for a *Unio* in 1801 by Donovan I am obliged to use another for this.

² A specimen of this in the Lea collection from the Stuart expedition is identical with Lea's species.

* *Margaron (Unio) evansi* LEA, Syn., 1870, p. 56.

* *Margaritana evansi* PÆTEL, Conch. Sam., III, 1890, p. 173.

Murray River, Australia

Section CUCUMERIA Conrad, 1853.

(Type, *Unio novæ-hollandiæ* Gray.)

Shell elongated, trapezoidal, widest behind; pseudocardinals irregular, small, not well developed, showing a tendency to break into denticles; laterals feeble; pallial line strongly pitted; nacre much thicker in front.

(Group of *Diplodon novæ-hollandiæ*.)

Shell having the posterior two-thirds covered with irregular nodules, which radiate somewhat from the posterior ridge.

† DIPLODON NOVÆ-HOLLANDIÆ Gray.

* *Unio novæ-hollandiæ* GRAY, Pr. Zool. Soc. Lond., 1834, p. 57.—* MOLLER, Syn. Nov. Gen., 1836, p. 197.—* HANLEY, Test. Moll., 1842, p. 182; * Biv. Shells, 1843, p. 182.—* CATLOW and REEVE, Conch. Nom., 1845, p. 61.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 496.—* PÆTEL, Conch. Sam., III, 1890, p. 161.

* *Margarita (Unio) novæ-hollandiæ* LEA, Syn., 1836, p. 17; 1838, p. 16.

* *Margaron (Unio) novæ-hollandiæ* LEA, Syn., 1852, p. 23; 1870, p. 35.

* † *Unio cucumoides* LEA, Proc. Am. Phil. Soc., 1840, p. 285; * Tr. Am. Phil. Soc., VIII, 1842, p. 192, pl. VII, fig. 2; * Obs., III, 1842, p. 30, pl. VII, fig. 2.—* HANLEY, Biv. Shells, Sup., 1856, p. 382, pl. XXIV, fig. 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 497.—* CHENU, Ill. Conch., 1858, pl. XXVII, figs. 3, 3a, 3b.—* KUSTER, Conch. Cab. Unio, 1861, p. 219, pl. LXXIV, fig. 1.—* REEVE, Conch. Icon., XVI, 1865, pl. XIX, fig. 89.—* PÆTEL, Conch. Sam., III, 1890, p. 149.

* *Margaron (Unio) cucumoides* LEA, Syn., 1852, p. 21; 1870, p. 31.

* ? *Unio cumingianus* DUNKER, Zeits. für Mal., 1853, p. 53.

Australia.

(Group of *Diplodon shuttleworthii*.)

Beak sculpture consisting of strong, irregularly radiate, curved, nodulous bars; surface of shell somewhat sulcate, but not nodulous.

† DIPLODON SHUTTLEWORTHII Lea.

* *Unio shuttleworthii* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 94; * Jl. Ac. N. Sci. Phila., III, 1857, p. 304, pl. XXVIII, fig. 19; VI, 1857, p. 24, pl. XXVIII, fig. 19.—

* SOWERBY, Conch. Icon., XVI, 1866, pl. XXXII, fig. 167.

* *Margaron (Unio) shuttleworthii* LEA, Syn., 1870, p. 36.

* ? *Unio mutabilis* REEVE, Conch. Icon., XVI, 1865, pl. XXIV, fig. 112.

* *Unio angasi* SOWERBY, Conch. Icon., XVI, 1867, pl. LV, fig. 282.

* *Margaritana angasi* PÆTEL, Conch. Sam., III, 1890, p. 172.

* *Anodonta angasi* PÆTEL, Conch. Sam., III, 1890, p. 176.

Australia.

† DIPLODON MUTABILIS Lea.

* *Unio mutabilis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 152; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 248, pl. xxxvii, fig. 127; * Obs., VII, 1860, p. 66, pl. xxxviii, fig. 127.—* PÆTEL, Conch. Sam., III, 1890, p. 160.

* *Margaron (Unio) mutabilis* LEA, Syn., 1870, p. 53.

Murray River, Australia.

Subgenus LÆVIROSTRIS Simpson, 1900.

(Type, *Unio stagnorum* Dautzenberg.)

Shell irregularly quadrate, thin, inequilateral, compressed, rounded and narrowed in front, somewhat biangulate and truncate behind; beaks rather low, without sculpture;¹ surface finely concentrically grooved; epidermis delicately lamellated and serrate; pseudocardinals small; laterals elongated; anterior muscle impressions small, well marked; posterior scars superficial; nacre bluish-white.

Animal unknown.

DIPLODON STAGNORUM Dautzenberg.

* *Unio stagnorum* DAUTZENBERG, Bull. Acad. Belg., XX, 1890, p. 372, pl. 1, figs. 7, 10.

Kongo River, Africa.

The following are unfigured and uncertain species.

* *Unio depressa* D'ORBIGNY, Guer. Mag., 1835, p. 34.²

* *Unio fokkesi* DUNKER, Zeits. für Mal., IX, 1853, p. 54.

Rio de la Plata, Brazil. According to von Ihering, this = *U. wheatleyanus* Lea.

* *Unio koscretzi* CLESSIN, Mal. Bl., X, p. 172.

River Guahyba, Brazil.

* *Unio macropterus* DUNKER, Zeits. für Mal., III, 1846, p. 109.

Brazil.

* *Unio paraguayanus* VON MARTENS, S. B. Ges. Nat. Fr., 1895, p.

* *Unio zealandicus* PÆTEL, C. Sam., III, 1890, p. 172. Said to be of Gray. Where?

Unio damnoica D'ORBIGNY. Where?

Unio guahybae VON IHERING.

Unio athiopiiformis VON IHERING.

Unio bishoffi VON IHERING.

Unio sebastane VON IHERING.

Unio iheringi VON CLESSIN.

¹ According to Dautzenberg the beaks of the remarkable species on which I have founded the above subgenus are completely smooth. It has the appearance of a *Diplodon* in all other respects, according to the figures and description. Dautzenberg does not very carefully describe the teeth.

² According to d'Orbigny (Voy. Am. Mer., p. 611), this species, which he says is the *depressa* of Lamarek, is found in Chile, near Valparaiso. It can not be Lamarek's species.

I do not know where the last five species are described, and they probably have never been published. Wright has named a Texan species *Unio iheringi*.

Family MUTELIDÆ.

Shell usually without sculpture throughout; beaks smooth or but faintly corrugated, never exhibiting the remains of an embryonic shell; with or without teeth, which, when present, are irregularly taxodont, the shell showing vestiges of them in all the genera; nacre soft, richly tinted, generally surrounded with a wide, prismatic border; escutcheon large, distinct; pallial line usually simple, but sometimes having a slight sinus posteriorly.

Animal having the labial palpi large, rounded below, generally without free points, scarcely or not at all united posteriorly; anal and superanal openings not separated; mantle generally closed behind into branchial and anal siphons, which are always separated by a strong bridge; marsupium occupying the inner gills; embryo a lasidium, composed of three segments, the anterior head-like, the median bearing a single shell, the posterior tail-like.

Genus SPATHA Lea, 1838.

(Type, *Anodonta rubens* Lamarck.)

Spatha LEA, Tr. Am. Phil. Soc., VI, 1858, p. 141, footnote.

Shell elliptical; beaks very slightly or not at all sculptured; left valve having a faint, compressed tooth under and in front of the beak, which fits into a corresponding depression in the right valve; the entire hinge area often covered with longitudinally folded epidermal matter; escutcheon dark, sharply triangular; beak cavities shallow, with a single, elongate, deep scar in each; two large anterior muscle scars and two posterior ones, the upper small.

Animal having the palpi longer than wide, semicircular, attached along the upper edge, not united; mantle margin united behind so that the branchial and anal apertures are closed; on the under margin the mantle is entirely open; outer branchiæ united to the mantle to their extremity; inner the larger, free from the abdominal sack; foot tongue shaped, thick; anal and branchial openings separated by a strong bridge. *S. rubens* Lamarck (Troschel).

Subgenus SPATHA Lea, 1838.

(Type, *Spatha rubens* Lamarck.)

Shell solid, having faint concentric beak sculpture.

(Group of *Spatha rubens*.)

Sculpture of the beaks following the growth lines; shell solid.

† SPATHA RUBENS Lamarck.

- * *Anodonta rubens* LAMARCK, An. sans. Vert., VI, 1819, p. 85.—* BLAINVILLE, Man., 1825, p. 538.—* CAILLIAUD, Voy. à Meroé, IV, p. 262; Atlas, II, 1826, pl. LX, fig. 12.—* AUDOUIN, Savigny's Exp. de l'Egypte, Coquilles, 1827, pl. VII.—* DESHAYES, Enc. Meth., II, 1827, p. 147, pl. CCI, figs. 1, 1b.
- * *Iridina rubens* RANG, Nouv. Ann. Mus., 1885, p. 314.—* LEA, Syn., 1836, p. 56.—* HANLEY, Biv. Shells, 1843, p. 225.—* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* MORELET, Moll. Terr. et Fluv., 1868, p. 98.
- * *Platiris (Spatha) rubens* LEA, Syn., 1838, p. 33; 1852, p. 55; 1870, p. 89.
- * *Spatha rubens* CLESSIN, Conch. Cab. Ano., 1853, p. 185, pl. VII, fig. 1; 1876, pl. LXI, fig. 1.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 507, pl. CXIX; III, figs. 3, 3a.—* CHENU, Man., 1859, II, p. 148, fig. 729.—* PÆTEL, Conch. Sam., III, 1890, p. 188.
- * *Anodon rubens* SOWERBY, Conch. Icon., XVII, 1867, pl. II, fig. 5.
- Anodonta clappertoni* KÖENIG, Duchane and Clapperton's Travels, 1826, p.
- Anodonta splendens* DE CRISTOFORI, Crist. and Jan. Cat., 1832 (?), p.
- * *Iridina solida* ANTON, Verz. der Conch., 1839, p. 16.
- * *Anodonta solida* KUSTER, Conch. Cab. Ano., 1853, p. 50, pl. XII, fig. 1.
- * *Spatha wissmani* VON MARTENS, S. B. Nat. Fr., 1883, p. 73; Conch. Mitth., III, 1885 (?), p. 139, pl. XXVII.
- * *Spatha rotundata* VON MARTENS, Besch., 1897, p. 242, fig. d.²

† SPATHA RUBENS var. CAILLIAUDI von Martens.

- * *Anodonta rubens* AUDOUIN in SAVIGNY, Icon. Moll. Eg., 1827, pl. VII, fig. 1.
- * *Spatha cailliaudi* VON MARTENS, Mal. Bl., XIII, 1866, p. 9.—* JICKELI, L. and S. W. Moll., 1874, p. 259, pl. VIII, fig. 1.—* KOBELT, Icon., new ed., II, 1886, p. 27, pl. XLVI, fig. 267.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 314.—* PÆTEL, Conch. Sam., III, 1890, p. 188.
- * *Spatha bellamyi* JOUSSEAUME, Bull. Soc. Zool. Fr., XI, 1886, p. 491, pl. XIII, figs. 2, 2a.
- * *Spatha renei* JOUSSEAUME, Bull. Soc. Zool. Fr., XI, 1886, p. 492, pl. XIII, figs. 3, 3a.

Nile; Niger; Senegal; other points in West Africa.

† SPATHA LEPSII Jickeli.

- * *Spatha lepsii* JICKELI, Faun. L. and S. W. Moll., 1874, p. 265, pl. IX, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 188.

Upper Egypt: Senegal.

† SPATHA CHAIZIANA Rang.

- * *Anodonta chaiziana* RANG, Mem. Aceph. Senegal, (Nouv. Ann. Mus.), 1835, p. 13, pl. XXVIII.³—* MORELET, Moll. Terr. and Fluv., 1868, p. 97.

¹ Savigny's plates were issued without explanation in 1813. In 1827 Audouin published an explanation of them. Von Martens believes this is not the *Spatha rubens* of the Encyc. Méth. (Mal. Bl., 1866). This species is widespread, abundant, and variable, and the material I have examined leads me to believe that it may include either the short, rounded form of the Encyc. Méth. or specimens that are more elongated and even somewhat rhomboid.

² I can not see any essential difference between this and forms of what I believe are *S. rubens*. I believe that the *S. cailliaudi* is only one of these forms.

³ I have only seen the reprint of this paper, which begins with page 1.

* *Margarita (Anodonta) chaiziana* LEA, Syn., 1838, p. 30.

* *Anodon chaiziana* CATLOW and REEVE, Conch. Nom., 1845, p. 66.

* *Margaron (Anodonta) chaiziana* LEA, Syn., 1852, p. 49; 1870, p. 79.

* *Spatha chaiziana* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 507.—* CLESSIN, Conch. Cab. An., 1876, p. 187, pl. LXIII, figs. 3, 4.—* PLETTEL, Conch. Sam., III, 1890, p. 188.

Senegal; Niger; Upper Nile; West Africa.

† SPATHA TRISTIS Jousseume.

* *Spatha tristis* JOUSSEAUME, Bull. Soc. Zool. Fr., XI, 1886, p. 497.¹

* *Spatha rochebrunei* JOUSSEAUME, Bull. Soc. Zool. Fr., XI, 1886, p. 494, pl. XIV, figs. 1, 1a.

Upper Senegal.

SPATHA TRAPEZIA von Martens.

* *Spatha trapezia* VON MARTENS, Besch., 1897, p. 243, fig.

SPATHA TRAPEZIA var. SENILIS von Martens.

* *Spatha trapezia* var. *senilis* VON MARTENS, Besch., 1897, p. 244.

Lake Victoria Nyanza.

SPATHA DROUETI Chaper.

* *Spatha droueti* CHAPER, Bull. Soc. Zool. de Fr., X, 1885, p. 2, pl. 1, figs. 1-3.²—

* PLETTEL, Conch. Sam., III, 1890, p. 188.

Assinie, Africa.

SPATHA MARTENSI STURANY.

Spatha martensi STURANY in Baumann, Durch Massai, 1894, p. 12, pl. xxv, fig.

39.—VON MARTENS, Besch., 1897, p. 244.

Stream falling into Lake Victoria Nyanza. I have not seen Sturany's paper.

SPATHA KIRKI Ancey.

* *Spathella Kirki* ANCEY, Bull. Soc. Zool. Fr., VII, 1894, p. 229, figs. 4-6.—* VON MARTENS, Besch., 1897, p. 244, fig.³

SPATHA KIRKI var. LIEDERI von Martens.

* *Spatha kirki* var. *liederi* VON MARTENS, Besch., 1897, p. 245.

Shire River and Lake Nyanza.

SPATHA MABILLETI Jousseume.

* *Spatha mabilleti* JOUSSEAUME, Bull. Soc. Zool. de Fr., XI, 1886, p. 495, pl. XIV, figs. 2, 2a.

Senegal River.

¹ Morelet believes this to = *chaiziana*. An author's shell is in the U. S. National Museum, and I am inclined to believe it to be a valid species.

² Only inside and dorsal views, and I can not be sure whether it is a good species or not.

³ This species seems to me to be very close to *S. trapezia* von Martens.

SPATHA ADANSONI Jousseaume.

- * *Spathella adansonii* JOUSSEAUME, Bull. Soc. Zool. Fr., XI, 1886, p. 498, pl. XIV, figs. 4, 4a.

High Senegal.

† SPATHA WAHLBERGI Krauss.

- * *Iridina wahlbergi* KRAUSS, Sud Af. Moll., 1848, p. 19, pl. II, fig. 1.
 * *Platiris (Spatha) wahlbergi* LEA, Syn., 1852, p. 55; 1870, p. 89.
 * *Spatha wahlbergi* H. and A. ADAMS, Gen. Rec. Moll, II, 1857, p. 507.—¹VON MARTENS, Mal. Bl., VI, 1860, p. 217.—* CLESSIN, Conch. Cab. Ano., 1876, p. 187, pl. LXIII, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 188.—* VON MARTENS, Besch., 1897, p. 247.
 * *Mutela wahlbergi* SMITH, Ann. and Mag., VIII, 1891, p. 319.
 * † *Spatha natalensis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1864, p. 113; * JI. Ac. N. Sci. Phila., VI, 1866, p. 64, pl. XX, fig. 58; * Obs., XI, 1867, p. 68, pl. XX, fig. 58.—* CLESSIN, Conch. Cab. Ano., 1876, p. 189, pl. LXII, figs. 7, 8.
 * *Platiris (Spatha) natalensis* LEA, Syn., 1870, p. 89.
 * *Spatha hartmanni* VON MARTENS, Mal. Bl., XIII, 1866, p. 10.—* JICKELI, Faun., 1874, p. 263, pl. VIII, fig. 2.—* CLESSIN, Conch. Cab. Ano., 1875, p. 190, pl. LXI, figs. 2, 3.—* PÆTEL, Conch. Sam., III, 1890, p. 188.
 * *Anodon tabula* SOWERBY; Conch. Icon., XVII, 1867, pl. XVIII, fig. 68.
 * *Anodonta tabula* PÆTEL, Conch. Sam., III, 1890, p. 185.

SPATHA WAHLBERGI var BOURGNIGNATI Bourgnignat.

- * *Spatha bourgnignati* BOURGNIGNAT, Esp. Ouk. et Tan., 1885, p. 12.
 * *Spathella bourgnignati* BOURGNIGNAT, Moll. Af. Eq., 1889, p. 197, pl. VIII, fig. 1.
 * *Spathella spatuliformis* BOURGNIGNAT, Moll. Af. Eq., 1889, p. 199, fig.
 * *Spatha wahlbergi spatuliformis* VON MARTENS, Beschalte, 1897, p. 248, pl. VII, fig. 18.
 * *Spathella bloyeti* BOURGNIGNAT, Moll. Af. Eq., 1889, p. 198, pl. VIII, fig. 3.
 * *Spatha bloyeti* VON MARTENS, Besch., 1897, p. 249.

Tropical and southern Africa. The variety is reported from Lake Nyassa.

SPATHA LACUSTRIS Simpson.¹

- * *Spatha anceyi* BOURGNIGNAT, Bull. Soc. Zool. Fr., VII, 1894, p. 231, fig. 7.—* VON MARTENS, Besch., 1897, p. 247.

Lake Nyassa.

† SPATHA NYASSAENSIS Lea.

- * *Spatha nyassaensis* LEA, Pr. Ac. N. Sci. Phila., VIII, 1864, p. 109; * JI. Ac. N. Sci. Phila., VI, 1866, p. 36, pl. XIII, fig. 33; * Obs., XI, 1867, p. 40, pl. XIII, fig. 33.—* ? CLESSIN, Conch. Cab. Ano., 1876, p. 190, pl. LXII, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 188.—* VON MARTENS, Besch., 1897, p. 246.
 * *Platiris (Spatha) nyassaensis* LEA, Syn., 1870, p. 89.
 * *Spathella nyassaensis* ANCEY, Bull. Soc. Zool. Fr., VI, 1894, p. 228.
 * *Spatha nyassana* BOURGNIGNAT, Bull. Soc. Mal. Fr., VI, 1889, p. 38.

¹ Changed from *S. anceyi*, as there is another species with that name.

SPATHA MARNOI Jickeli.

* *Spatha marnoi* JICKELI, L. and Suss. Moll. N. Ost-Af., 1874, p. 259, pl. VIII, fig. 3.—

* PÆTEL, Conch. Sam., III, 1890, p. 188.

Abyssinia.

SPATHA SUBÆQUILATERA von Martens.

* *Spatha subæquilatera* VON MARTENS, Conch. Mitt., III, 1887, p. 18, pl. XLI, figs. 8, 9; * Besch., 1897, p. 246, pl. VII, fig. 16.

Spatha baumanni STURANY in Baumann, Durch. Massai., 1894, p. 12, pl. XXV, fig. 38.

Lake Victoria Nyanza.

SPATHA SINUATA von Martens.

* *Spatha sinuata* VON MARTENS, S. B. Nat. Fr., 1883, p. 173; Conch. Mitt., II, 1885, p. 190, pl. XXXIV, figs. 5, 6.

Congo.

(Group of *Spatha petersi*.)

Shell rather thin and small, greenish or olive; beak sculpture consisting of faint, more or less oblique, parallel ridges; hinge line narrow; teeth scarcely developed; naere bluish or greenish. Animal unknown.

† SPATHA PETERSI von Martens.

* *Spatha petersi* VON MARTENS, Mal. Bl., VI, 1860, p. 218, pl. III, figs. 1, 2.—

* DOHRN, Pr. Zool. Soc. Lond., 1864, p. 117.—* VON MARTENS, Besch., 1897, p. 251.

* *Mutela petersi* CLESSIN, Conch. Cab. Ano., 1875, p. 197, pl. LXII, figs. 1, 2.—

* PÆTEL, Conch. Sam., III, 1890, p. 187.—* SMITH, Pr. Mal. Soc. Lond., 1894, p. 167.

Spathella petersi BOURGUIGNAT, Mol. Af. Eq., 1889, p. 197.

* † *Spatha modesta* LEA, Pr. Ac. N. Sci. Phila., VIII, 1864, p. 109; * Jl. Ac. N. Sci.

Phila., VI, 1866, p. 37, pl. XIII, fig. 35; * Obs., XI, 1867, p. 41, pl. XIII, fig. 35.

* *Platiris (Spatha) modesta* LEA, Syn., 1870, p. 89.

Mozambique; Zanzibar and Uganda.

† SPATHA ARCUATA Cailliaud.

* *Anodonta arcuata* CAILLIAUD,¹ Voy. à Méroé, IV, 1826, p. 263; II, pl. LX, figs. 4, 5.—

* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* H. and A. ADAMS, Gen., Rec. Moll., II, 1857, p. 503.—* VON MARTENS, Mal. Bl., XIII, 1866, p. 77.—

* ?CLESSIN, Conch. Cab. Ano., 1874, p. 145, pl. XLVII, figs. 1, 2.—* JICKELI, L. and Suss. Moll. N. Ost-Af. 1874, p. 265.—* PÆTEL, Conch. Sam., III, 1890, p. 176.

* *Margarita (Anodonta) arcuata* LEA, Syn., 1836, p. 54; 1838, p. 32.

* *Iridina arcuata* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 146, pl. LV, fig. 4.

* *Margaron (Anodonta) arcuata* LEA, Syn., 1852, p. 53; 1870, p. 83.

* *Spatha arcuata* JICKELI, Faun., 1874, p. 265.—* PÆTEL, Conch. Sam., III, 1890, p. 188.

Egypt; Abyssinia.

¹ *Arcuta* in The Voyage; a typographical error, I presume.

SPATHA CRYPTORADIATA Putzeys.

- * *Spatha cryptoradiata* PUTZEYS, Proc. Verb. Soc. Mal. Belg., 1898, pl. XXVII, figs. 14, 15.

Leopoldville; Congo.

SPATHA STUHLMANNI von Martens.

- * *Spatha stuhlmanni* VON MARTENS, Besch., 1897, p. 250, fig. 1

Lake Albert; Nyanza.

SPATHA SUBRENIFORMIS Sowerby.

- * *Anodon soleniformis* SOWERBY, Conch. Icon., XVII, 1867, pl. XIV, fig. 50.

- * *Anodonta subreniformis* P.ETEL, Conch. Sam., III, 1890, p. 185.

Lake Nyanza.

SPATHA PFEIFFERIANA Bernardi.

- * *Margaritana pfeifferiana* BERNARDI, Jl. de Conch., IV, 1860, p. 331, pl. XII, figs. 1, 2.—P.ETEL, Conch. Sam., III, 1890, p. 173.

- * *Margaron (Margaritana) pfeifferiana* LEA, Syn., 1870, p. 68.

Gaboon; West Africa.

†SPATHA DAHOMEYENSIS Lea.

- * *Anodonta dahomeyensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 154; * Jl. Ac. N. Sci. Phila., IV, 1859, p. 261, pl. XLI, fig. 141; * Obs., VII, 1860, p. 79, pl. XLI, fig. 141.—* P.ETEL, Conch. Sam., III, 1890, p. 178.—* CLESSIN, Conch. Cab. Ano., 1873, p. 103, pl. XXXI, figs. 5, 6.

- * *Anodon dahomeyensis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXVI, fig. 151.

- * *Margaron (Anodonta) dahomeyensis* LEA, Syn., 1870, p. 82.

- * † *Anodonta senegalensis* LEA, Pr. Ac. N. Sci. Phila., III, 1859, p. 154; * Jl. Ac. N. Sci. Phila., IV, 1860, p. 260, pl. XLI, fig. 140; * Obs., VII, 1860, p. 78, pl. XLI, fig. 140.—* CLESSIN, Conch. Cab. Ano., 1873, pl. XXXI, figs. 7, 8.—* P.ETEL, Conch. Sam., III, 1890, p. 184.

- * *Anodon senegalensis* SOWERBY, Conch. Icon., XVII, 1867, pl. XI, fig. 35; 1870, pl. XXXIII, fig. 130.

- * *Margaron (Anodonta) senegalensis* LEA, Syn., 1870, p. 82.

- * *Spatha senegalensis* P.ETEL, Conch. Sam., III, 1890, p. 188.

- * *Mutclina senegalica* JOUSSEAUME, Bull. Soc. Zool. de Fr., XI, 1886, p. 488.²

West Africa.

SPATHA COMPLANATA Jousseau.

- * *Mutclina complanata* JOUSSEAUME, Bull. Soc. Zool. de Fr., XI, 1886, p. 489, pl. XIII, figs. 1, 1a.

Upper Senegal; Niger River.

¹ I am doubtful whether this is distinct from *S. arenata*.

² Jousseau has the unspeakable assurance to take the *Anodonta senegalensis* of Lea, place it in the so-called genus *Mutclina*, change the specific name to *senegalica*, and credit the whole to Bourguignat.

SPATHA DIVARICATA von Martens.

* *Spatha divaricata* VON MARTENS, Besch., 1897, p. 250, pl. VII, fig. 15.

Lake Victoria; Nyanza.

Subgenus MONCETIA Bourguignat, 1885.

(Type, *Moncetia anceyi* Bourguignat.)

Shell long-elliptical, inequilateral, compressed, thick, somber-colored; beaks compressed, smooth, sharp; hinge with a tubercular eminence near the beak of the right valve, with two internal ligaments and three groups of muscular impressions (Bourguignat).¹

Animal unknown.

SPATHA ANCEYI Bourguignat.

* *Moncetia anceyi* BOURGUIGNAT, Esp. Ouk., 1885, p. 34; * Icon. Mal., 1888, pl. XXX, fig. 1.—* VON MARTENS, Besch., 1897, p. 258.

* *Moncetia jouberti* BOURGUIGNAT Un. et Ir., 1886, p. 63; * Icon. Mal., 1888, pl. XXX, fig. 4.

Lake Tanganyika.

SPATHA MONIETI Bourguignat.

* *Moncetia monieti* BOURGUIGNAT, Un. et Ir., 1886, p. 61; * Icon. Mal., 1888, pl. XXX, fig. 7.

* *Moncetia rochebruneana* BOURGUIGNAT, Nouv. Mal., 1886, p. 62; * Icon. Mal., 1888, pl. XXX, fig. 8.

Lake Tanganyika.

SPATHA LAVIGERINA Bourguignat.

* *Moncetia lavigerina* BOURGUIGNAT, Nouv. Mal., 1886, p. 60; * Icon. Mal., 1888, pl. XXX, fig. 6.

* *Moncetia bridourei* BOURGUIGNAT, Un. et Ir., 1886, p. 65; * Icon. Mal., 1888, pl. XXX, fig. 5.

Lake Tanganyika.

Subgenus ASPATHARIA Bourguignat, 1885.

(Type, *Margaritana vignoniana* Bernardi.)

Shell elongated rhomboid, somewhat compressed, with a full, rounded posterior ridge, from which curved rows of fine, broken corrugations radiate; epidermis dark olive, wrinkled, rayless; beak sculpture not seen; hinge with a low, slightly elevated ridge in the left valve in front of the beak; dorsal scars small; nacre lurid, bluish-green. Animal unknown.

¹This may be a distinct genus, though its characters seem to agree fairly well in most respects with those of *Spatha*. Bourguignat does not describe the muscle scars or tell anything of the nacre.

†SPATHA VIGNONIANA Bernardi.

* *Margaritana vignoniana* BERNARDI, Jl. de Conch., VII, 1858, p. 302, pl. x, fig. 1.—

* PÆTEL, Conch. Sam., III, 1890, p. 174.

* *Unio vignoniana* REEVE, Conch. Icon., XVI, 1865, pl. xxv, fig. 120.

* *Anodonta vignonana* MUSGRAVE, Phot. Conch., 1863, pl. i, fig. 1.

* *Anodon vignonanus* REEVE, Conch. Icon., XVII, 1870, pl. xxix, fig. 116.

* *Margaron (Unio) vignonana* LEA, Syn., 1870, p. 32.

* *Margaron (Margaritana) vignouana* LEA, Syn., 1870, p. 67.

* ? *Anodonta rugifera* DUNKER, Mal. Bl., V, 1858, p. 225.¹

Gaboon, West Africa.

SPATHA CORRUGATA Dautzenberg.

* *Spatha corrugata* DAUTZENBERG, Jl. de Conch., XLI, 1893, p. 50, pl. viii, fig. 5.

River Niari, West Africa.

The following are unfigured and unidentified species.

* *Spatha pangallicensis* ROCHEBRUNE, Bull. Soc. Phil., VI, 1882, p. 33.

High Senegal.

* *Anodonta tawi* RANG., Nouv. Ann. Mus., 1834, p. 297.

Senegal.

* *Spatha baikii* H. ADAMS, Proc. Zool. Soc. Lond., 1866, p. 447.

Niger River.

* *Spatha anataria* JICKELI, Faun. Suss. Moll. N. O. Af., 1874, p. 266.

Egypt.

* *Spatha gancinensis* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 9.

* *Spatha corneola* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 9.

* *Spathella protchi* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 9.

Kongo River.

* *Chambardia* BOURGUIGNAT in Servain, 1891. New name for the Egyptian *Iridinide*.

Chambardia bourguignati, *C. locardiana*, *C. letourneuxiana*, *C. pharaonum*, *C. rhynchonella*, *C. rhynchoidea*. Some of these are credited to Bourguignat and some to Servain. I don't know what they are. They may be Moncetias.

Genus MUTELA Scopoli, 1777.

(Type, *Iridina exotica* Lamarck.)

Mutela SCOPOLI, Intr. Nat. Hist., 1777, p. 397.

Iridina LAMARCK, An. sans Vert., VI, 1819, p. 88.

Calliscapha SWAINSON, Tr. on Mal., 1840, p. 380.

Eufra GISTEL, Naturg. Hohe Schul., 1848, p.

Shell elongated, slightly inflated, with low, smooth beaks, and a rounded posterior ridge; surface faintly concentrically grooved; epidermis rayless; hinge straight, having generally vestiges of taxodont teeth;

¹Probably = *S. vignoniana* Bernardi, but there is only a Latin description. Both were published the same year.

dorsal scars an irregular row, extending downward and forward; muscle scars irregular.

Animal having the palpi longer than wide, not united; mantle margin united as far as the foot, so that the branchial and anal openings are closed; outer branchiæ united to the mantle to the extremity; inner entirely united to the foot; foot tongue shaped, somewhat produced anteriorly. *Iridina celestis* Lea (Troschel.)

(Group of *Mutela exotica*.)

Shell elongate, rhomboid, wider and subtruncated behind, subsolid.

† MUTELA EXOTICA Lamarck.

- * *Iridina exotica* LAMARCK, An. sans Vert., VI, 1819, p. 89; * Enc. Méth., II, 1827, p. 147, pl. CCIV, fig. 1, 1b; * STARK, Nat. Hist., II, 1828, p. 88.—* LEA, Syn., 1836, p. 56.—* HANLEY, Biv. Shells, 1843, p. 225.—* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* SOWERBY, Conch. Icon., XVI, 1868, pl. I, fig. 2.—* CLESSIN, Conch. Cab. Ano., 1875, p. 231, pl. LXXI, fig. 1.
- * *Anodonta exotica* BLAINVILLE, Man., 1825, p. 538, pl. LXVI, fig. 3.
- * *Platiris (Iridina) exotica* LEA, Syn., 1838, p. 33; 1852, p. 54; 1870, p. 88.
- * *Pleiodon exoticus* PÆTEL, Conch. Sam., III, 1890, p. 188.
- * *Iridina elongata* SOWERBY, Rec. and Fos. Shells, VII, 1821, fig. 1.¹—* OKEN, Isis, 1834, p. 458.—* SOWERBY, Conch. Man., 1839, fig. 150.—* SWAINSON, Tr. on Mal., 1840, p. 286, fig. 60.—* REEVE, Conch. Syst., I, 1841, p. 122, pl. XCII.—* HANLEY, Biv. Shells, 1843, p. 225.—* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* SOWERBY, Conch. Icon., XVI, 1868, pl. I, fig. 1.
- * *Platiris (Spatha) elongata* LEA, Syn., 1838, p. 34.
- * *Mutela elongata* PÆTEL, Conch. Sam., III, 1890, p. 187.
- * *Iridina striata* OKEN, Isis, 1834, p. 458.
- * ? *Mutela soleniformis* BOURGUIGNAT, Esp. Ouk., 1885, p. 25.—* PELSENER, Bull. Mus. Belg., IV, 1886, p. 109.—* BOURGUIGNAT, Icon. Mal., 1888, pl. XXII, fig. 2.—* VON MARTENS, Besch., 1897, p. 254.
- * ? *Mutela bridouxi* BOURGUIGNAT, Un. et Ir., 1886, p. 25; * Icon. Mal., 1888, pl. XXII, fig. 1.

Tropical Africa.

† MUTELA DUBIA Gmelin.

- Le Mutel* ADANSON, Hist. Nat. du Sen., 1757, p. 234, pl. XVII, fig. 21.
- * *Mytilus dubia* GMELIN, Syst. Nat., 1788, p. 3368.²
- * *Anodonta dubia* BOSC, Hist. Nat. Coq., III, 1824, p. 144.
- * *Platiris (Spatha) dubia* LEA, Syn., 1852, p. 55; 1870, p. 89.
- * *Mutela dubia* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 506, pl. CXIX; III, figs. 1, 1a.—* CLESSIN, Conch. Cab. Ano., 1873, p. 194, pl. XXV, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 187.
- * *Iridina dubia* CHENU, Man., 1859, II, p. 147, fig. 726.
- * *Mytilus dubius* DILLWYN, part. Cat., I, 1817, p. 318.—* WOOD, Ind. Test. rev., 1856, p. 69, pl. XII, fig. 36.

West Africa.

¹ I agree with Lea that this = *exotica*. The teeth are not strongly developed.

² Gmelin refers to Adanson's figure. Dillwyn evidently has Gmelin's species and *Cristaria plicata* from China confounded. Two or three of these so-called species of *Mutela* are very close, and large series from different localities would probably show that they run together. There is much variation in the form and the development of hinge tubercles, even in a single species from a given locality.

* *MUTELA NILOTICA* Sowerby.

- * *Iridina nilotica* SOWERBY, Zool. Journal, I, 1835, p. 53, pl. II.—* ? CAILLIAUD, Voy. à Méroé, 1826, pl. LX, fig. 12.—* AUDOUIN, SAVIGNY, Icon. Moll. Egypt, 1827, pl. VII, fig. 2.—* CROUCH, Ill. Int. Lam., 1827, p. 17, pl. X, fig. 1.—* LEA, Syn., 1836, p. 56.—* HANLEY, Biv. Shells, 1843, p. 225.—* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* DESHAYES, Tr. Ele., II, 1853, p. 219, pl. XVII, figs. 6, 7.—* CHENU, Man., 1859, II, p. 148, fig. 727.—* SOWERBY, Conch. Icon., XVI, 1868, pl. II, fig. 4.
- * *Platiris (Spatha) nilotica* LEA, Syn., 1838, p. 33.
- * *Mytilus niloticus* WOOD, Ind. Test. Rev., 1856, p. 207, pl. II, sup. fig. 1.
- * *Mutela nilotica* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 506.—* JICKELI, Faun., 1874, p. 259.—* PÆTEL, Conch. Sam., III, 1890, p. 187.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 313.
- * ? *Mutela jouberti* BOURGUIGNAT, Un. et Ir., 1886, p. 28; * Icon. Mal., 1888, pl. XXIII, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 187.
- * ? *Mutela visseri* BOURGUIGNAT, Un. et Ir., 1886, p. 31.—* PÆTEL, Conch. [Sam., III, 1890, p. 187.
- * *Mutela vysseri* BOURGUIGNAT, Icon. Mal., 1888, pl. XXIII, fig. 3.

MUTELA NILOTICA var. *EMINI* von Martens.

- * *Mutela nilotica* var. *emini* VON MARTENS, Besch., 1897, p. 253.

Tropical Africa.

† *MUTELA ANGUSTATA* Sowerby.

- * *Iridina angustata* SOWERBY, Conch. Icon., XVI, 1868, pl. II, fig. 5.
- * *Mutela angustata* JICKELI, Faun. N. O. Af., 1874, p. 268.—* PÆTEL, Conch. Sam., III, 1890, p. 187.—* WESTERLUND, Faun. Pal., II., pl. 7, 1890, p. 312.

Tropical Africa.

† *MUTELA ALATA* Lea.

- * *Spatha alata* LEA, Pr. Ac. N. Sci. Phila., 1864, p. 109; * Jl. Ac. N. Sci. Phila., 1866, p. 35, pl. XII, fig. 31; * Obs., XI, 1867, p. 39, pl. XII, fig. 31.—* PÆTEL, Conch. Sam., III, 1890, p. 188.
- * *Platiris (Spatha) alata* LEA, Syn., 1870, p. 89.
- * *Mutela alata* CLESSIN, Conch. Cab. Ano., 1876, p. 196, pl. LXII, figs. 7, 8.—* ANCEY, Bull. Soc. Zool. de Fr., 1894, p. 232.—* VON MARTENS, Besch., 1897, p. 253.
- * *Burtonia alata* ANCEY, Bull. Soc. Mal. Fr., VI, 1889, p. 38.

Lake Nyassa.

MUTELA SIMPSONI Ancey.

- * *Mutela simpsoni* ANCEY, Bull. Soc. Zool. de Fr., VII, 1894, p. 233, fig. 8.
- * *Mutela alata* var. *simpsoni* VON MARTENS, Besch., 1897, p. 253.

Shire and Karonga rivers, near Lake Nyassa.

MUTELA BOURGUIGNATI Bourguignat.¹

- * *Mutela bourguignati* BOURGUIGNAT, Esp. Ouk., 1885, p. 8.—* SMITH, Ann. and Mag., X, 1892, p. 128, pl. XII, fig. 16.—* VON MARTENS, Besch., 1897, p. 255.

Lake Nyanza.

¹ Credited to Ancey, *in litt.*

(Group of *Mutela rostrata*.)

Shell somewhat inflated, thin, elongated, with a low, rounded posterior ridge ending in a point about midway up from the base; beaks low, smooth; epidermis bluish green, rayless; hinge line edentulous or having only the faintest vestiges of denticles; muscle scars large, shallow, indistinct; nacre bluish, shaded violet.

Animal the same as in typical *Mutela*.

† MUTELEA ROSTRATA Rang.

* *Iridina rostrata* RANG, Nouv. Ann. Mus., 1835, p. 316.—* POTIEZ and MICHAUD, Gall. Moll., 1844, p. 147, pl. LVI, fig. 1.

* *Spatha rostrata* VON MARTENS, Mal. Bl., XIII, 1866, p. 11.

* *Mutela rostrata* JICKELI, Faun., 1874, p. 260.—* WESTERLUND, Faun. Pal., II, Pt. 7, 1890, p. 312.—* PÆTEL, Conch. Sam., III, 1890, p. 187.

* *Mutela rostrata* BOURGUIGNAT, Bull. Soc. Zool. de Fr., II, 1886, p. 488.

* *Iridina caelestis* LEA, Syn., 1836, p. 57; * Tr. Am. Phil. Soc., VI, 1838, p. 82, pl. XXII, fig. 70; * Obs., II, 1838, p. 82, pl. XXII, fig. 70.—* TROSCHER, Arch. für Nat., V, 1839, Pt. 2, p. 239.—* HANLEY, Biv. Shells, 1843, p. 225.—* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* TROSCHER, Arch. für Nat., XIII, 1847, I, p. 273.—* SOWERBY, Conch. Icon., XVI, 1868, pl. II, fig. 3.

* *Platiris (Spatha) caelestis* LEA, Syn., 1838, p. 33; 1852, p. 55; 1870, p. 89.

* *Mutela caelestis* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 506.—* CLESSIN, Conch. Cab. An., 1876, p. 193, pl. XXV, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 187.

Tropical Africa.

Subgenus PSEUDOMUTELEA Simpson, 1900.

(Type, *Mycetopus plicatus* Sowerby.¹)

Shell rather thin, elongate, wide, round and gaping behind, cut away and gaping at the anterior base; beaks low; surface rudely sulcate; a series of irregular nodulous projections extends down the low posterior ridge; hinge edentulous, with a kind of faint, broken internal ligament, with a wide prismatic streak behind; muscle scars distinct, united, the anterior protractor, however, separated and irregular; nacre lurid violet, iridescent behind.

† MUTELEA PLICATA Sowerby.

* *Mycetopus plicatus* SOWERBY, Conch. Icon., XVI, 1868, pl. II, fig. 3; Icon. XVI, 1868, pl. II, fig. 3.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 8.—* PÆTEL, Conch. Sam., III, 1890, p. 187.

* *Platiris (Mycetopus) plicatus* LEA, Syn., 1870, p. 90.

* *Mutela plicata* JICKELI, Faun. Moll. N. Ost-Af., 1874, p. 270.

Locality unknown, but Africa, no doubt. Sowerby credits it to Gray's manuscript in the British Museum.

¹ This is certainly not a *Mycetopoda*, but is evidently nearer *Mutela* than anything. I have placed it in that group as a subgenus, though it may be worthy of generic rank.

The following are unfigured *Mutelas*:

- * *Mutela laxigerina* BOURGUIGNAT, Un. and Ir., 1886, p. 26. Lake Tanganyika.
- * *Mutela moinei* BOURGUIGNAT, Un. et Ir., 1886, p. 27. Lake Tanganyika.
- * *Mutela subdiaphana* BOURGUIGNAT, Moll. Fluv. Ny., 1883, p. 5. Victoria Nyanza.
- * *Mutelina thottoni* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 7. Kongo.
- * *Mutelina legumen* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 6. Kongo.
- * *Mutelina mabilli* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 7. Kongo.
- * *Mutelina paludicola* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 8.
- * *Mutelina prasina* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 7. Kongo.
- * *Iridina wehwitschii* MORELET, Voy. de Angola, 1868, p. 98.

Genus CHELIDONOPSIS Ancey, 1887.

(Type, *Chelidoneura arietina* Rochebrune.)

Chelidoneura ROCHEBRUNE, S. B. Nat. Fr., 1886, p. 3.

Chelidonopsis ANCEY, Conch. Exchange, II, 1887, p. 22.

Shell elongated, thin, narrowed in front, gaping on the anterior basal part and winged on the front dorsal portion, rounded behind, with a pinched-up posterior ridge which develops into an open or closed tube near its hinder part; the shell ending in a diamond-shaped gap; epidermis shining slightly, concentrically grooved; hinge-line narrow, straight, with faint vestiges of denticles; a deep furrow inside marks the position of the posterior ridge; muscle scars faint; nacre brilliant, iridescent.

Animal unknown.

CHELIDONOPSIS ARIETINA Rochebrune.

- * *Chelidoneura arietina* ROCHEBRUNE, Bull. Soc. Mal. Fr., III, 1886, p. 4, pl. 1, figs. 1-4.

Gancini, Kongo.

† CHELIDONOPSIS HIRUNDO von Martens.

- * *Spatha hirundo* VON MARTENS, S. B. Nat. Fr., 1881, p. 122; *Conch. Mitth., III, 1885?, p. 139, pl. XXVII; ¹ Conch. Mitth., II, 1883, p. 139, pl. XXVII.

- * *Spatha (Mutela) hirundo* ROCHEBRUNE, Bull. Soc. Mal., Fr., III, 1886, p. 2, pl. 1, figs. 5, 6.

Chelidoneura hirundo VON MARTENS, S. B. Nat. Fr., 1886, p. 161, pl. 1, figs. 5, 6.

Kongo region.

Genus BRAZZÆA Bourguignat, 1885.

(Type, *Brazzæa anceyi* Bourguignat.²)

Brazzæa BOURGUIGNAT, Esp. Nouv. et Gen. Nouv., 1885, p. 321.

Shell thin, transparent, brilliant wine-colored, elliptical, greatly inflated, with a slight post-dorsal wing, and a high double posterior ridge; beaks smooth, compressed, but the region below them full;

¹ Probably the young of *arietina*.

² This appears to be a valid genus, belonging to the *Mutelidae*. I copy for the most part Bourguignat's description, which leaves out some essential characters. I have never seen any of the species.

hinge edentulous, filiform, with two ligaments, one internal, the other external; there are three groups of muscular impressions and several dorsal scars running in a row from the beak forward and downward; upper border of the left valve projecting over that of the right, forming a sinuous wing.

Animal unknown.

BRAZZÆA ANCEYI Bourguignat.

* *Brazzæa anceyi* BOURGUIGNAT, Esp. Ouk. et Tan., 1885, p. 33; * Icon., 1888, pl. XXVIII, figs. 1-4.—* VON MARTENS, Besch., 1897, p. 258.

* *Brazzæa eximia* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 57; * Icon., 1888, pl. XXIX, fig. 5.

Lake Tanganyika.

BRAZZÆA BOURGUIGNATI Bourguignat.

* *Brazzæa bourguignati* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 58; * Icon., 1888, pl. XXVIII, figs. 5, 6.

Lake Tanganyika.

BRAZZÆA ELONGATA Bourguignat.

* *Brazzæa elongata* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 51; * Icon., 1888, pl. XXIX, figs. 2, 3.

Lake Tanganyika.

BRAZZÆA COULBOISI Bourguignat.

* *Brazzæa coulboisi* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 50; * Icon., 1888, pl. XXIX, fig. 1.

Lake Tanganyika.

BRAZZÆA VENTROSA Bourguignat.

* *Brazzæa ventrosa* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 45; * Icon., 1888, pl. XXIX, fig. 4.

Lake Tanganyika.

The following are unfigured species:

Brazzæa randabeli BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 46.

Brazzæa moineti BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 47.

Brazzæa jourdyi BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 48.

Brazzæa charbonnieri BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 52.

Brazzæa lavigerina BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 53.

Brazzæa bridouxi BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 54.

Brazzæa newcombiana BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 55.

All from Lake Tanganyika.

Genus **PLEIODON** Conrad, 1834.

(Type, *Pleiodon oratus* Swainson.)

Pleiodon CONRAD, Jl. Ac. N. Sci. Phila., VII, 1834, p. 178.

Shell elliptical, inflated, solid, with a rounded posterior ridge, and full, smooth beaks; epidermis smooth, shining, generally rayless; hinge

¹Said by Bourguignat to be of Joubert *in litt.*

plate wide, nearly straight, set with strong, irregular, taxodont teeth throughout its length; beak cavities moderate, with a row of dorsal scars running obliquely downward and forward; anterior and posterior muscle scars well defined.

Animal with the palpi semilunar, united to the mantle by a straight border, longer than wide; outer gills generally larger than the inner, united their whole length to the mantle; inner united to the abdominal sac; genitalia occupying each side the lateral part of the visceral mass as far forward as the foot; mantle closed below the branchial siphon, and united into branchial and anal siphons; anal opening rather small; branchial opening large, the two separated by a solid bridge which solders together the extremities of the four branchiæ; both orifices have a thickened inner edge, the branchial being furnished with short tubercles or granules; mantle united below posteriorly one-fourth its length; foot large and strong; adductor muscles strong (Pelseneer).

Subgenus **PLEIODON** Conrad.

Characters as in the genus.

† **PLEIODON OVATUS** Swainson.

- * *Iridina ovata* SWAINSON, Phil. Mag., LXI, 1823, p. 112.—* OKEN, Isis, 1834, p. 458.—* REEVE, Conch. Syst., I, 1841, p. 122, pl. XCIII.—* HANLEY, Biv. Shells, 1843, p. 225.—* CATLOW and REEVE, Conch. Nom., 1845, p. 68; * Elements of Conch., II, 1860, pl. XXXIII, fig. 184.—* CLESSIN, Conch. Cab. Ano., 1875, p. 230, pl. LXX, fig. 2; LXXI, fig. 2.
- * *Platiris (Iridina) ovata* LEA, Syn., 1838, p. 33; 1852, p. 54; 1870, p. 88.
- * *Pleiodon ovata* CONRAD, Jl. Ac. Nat. Sci. Phila., VII, 1854, p. 298; * H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 506.
- * *Pleiodon ovatus* CHENU, Man., 1859, II, p. 148, fig. 728.—* SOWERBY, Conch. Icon., XVI, 1866, pl. I, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 188.
- Iridina exotica* CHILDREN, Brande's Jl., XV, 1823, p. ?
- * *Pleiodon macmurtriei* CONRAD, Jl. Ac. Nat. Sci. Phila., VII, 1834, p. 13, pl. XIII; VII, 1854, p. 298.
- * *Margarita (Pleiodon) macmurtriei* LEA, Syn., 1836, p. 55.
- * *Iridina valens* JAY, Cat., 1850, p. 70.¹
- * *Mutela valens* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 506.—* PÆTEL, Conch. Sam., III, 1890, p. 187.
- * *Platiris (Iridina) leaii* LEA, Syn., 1852, p. 54; 1870, p. 88.²
- * *Pleiodon leaii* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 506.—* PÆTEL, Conch. Sam., III, 1890, p. 188.
- * *Pleiodon splendens* CONRAD, Jl. Ac. Nat. Sci. Phila., VII, 1854, p. 299.
- * *Iridina splendida* CHENU, Ill. Conch., 1858, pl. 1, figs. 2, 2a, 2b, 2c, 2d.

West Africa.

The following are unfigured species of *Pleiodon*:

- * *Pleiodon diolibanus* BOURGUIGNAT, Moll. Egypt and Ab., 1879, p. 47.
- * *Pleiodon elongatus* BOURGUIGNAT, Moll. Egypt and Ab., 1879, p. 47. Senegal River.

¹Said to be of Parreyss.

²Presented to Dr. Lea by Sowerby as *Iridina leaii*. Lea believes it to be a young *ovatus*.

* *Pleiodon letourneaurianus* BOURGUIGNAT, Moll. Egypt and Ab., 1879, p. 48. Senegal River.

* *Pleiodon pachyodon* BOURGUIGNAT, Moll. Egypt and Ab., 1879, p. 43.

Subgenus CAMERONIA Bourguignat, 1879.

(Type, *Iridina spekii* Woodward.)

Anterior end of the hinge plate usually (not always) split up lengthwise into irregular teeth, which bear tubercles on their surfaces.¹

The mantle of *P. spekii* has a decided palleal sinus behind. (Pelseneer.)

† PLEIODON SPEKII Woodward.

* *Iridina (Pleiodon) spekii* WOODWARD, Pr. Zool. Soc. Lond., 1859, p. 348, pl. XLVII, fig. 2; * Ann. and Mag., V, 1860, p. 337.

* *Pleiodon spekii* SOWERBY, Conch. Icon., XVI, 1866, pl. I, fig. 2.

* *Platiris (Iridina) spekii* LEA, Syn., 1870, p. 88.

* *Cameronia spekii* BOURGUIGNAT, Moll. Egypt and Ab., 1879, p. 43.

* *Iridina spekii* CLESSIN, Conch. Cab. Ano., 1875, p. 232, pl. LXX, fig. 2.

* *Pleiodon (Cameronia) spekii* CROSSE, Jl. de Conch, XXIX, 1881, p. 130.

* *Pleiodon spekii* SMITH, Proc. Zool. Soc., 1881, p. 296, pl. XXXIV, figs. 31, 31a.—
* PÆTEL, Conch. Sam., III, 1890, p. 188.

* *Mutela (Iridina) spekii* VON MARTENS, Besch., 1897, p. 256.

* *Cameronia gigantea* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 68; * Icon. Mal., 1888, pl. XXXV, fig. 1.

* *Cameronia admirabilis* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 69; * Icon. Mal., 1888, pl. XXXIV, fig. 1.

* *Cameronia coulboisi* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 77; * Icon. Mal., 1888, pl. XXXI, figs. 1, 2.

Cameronia jossети BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 82; * Icon. Mal., 1888, pl. XXXII, fig. 3.

* *Cameronia paradoxa* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 91; * Icon. Mal., 1888, pl. XXXII, fig. 1.

Lake Tanganyika.

PLEIODON LANDEAUI Bourguignat.

* *Cameronia landeai* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 74; * Icon. Mal., 1888, pl. XXXI, fig. 3.²

Lake Tanganyika.

PLEIODON BOURGUIGNATI Bourguignat.³

* *Cameronia bourguignati* BOURGUIGNAT, Esp. Ouk., 1885, p. 26; * Icon. Mal., 1888, pl. XXXIII.

Lake Tanganyika.

The following are unfigured species of *Cameronia*.

* *Cameronia anceyi* BOURGUIGNAT, Esp. Ouk., 1885, p. 30. Lake Tanganyika.

* *Cameronia bridouxi* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 71.

* *Cameronia charbonnieri* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 83. Lake Tanganyika.

¹The splitting up of the anterior end of the hinge is altogether irregular, and may be due to disease, as the hinge is sometimes entire.

²Probably a short, diseased *spekii*.

³Credited to Ancey *in litt.* by Bourguignat.

- * *Cameronia complanata* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 76. Lake Tanganyika.
- * *Cameronia dromauxi* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 84. Lake Tanganyika.
- * *Cameronia giraudi* BOURGUIGNAT, Nat. Prod., 1885, p. 107. Lake Tanganyika.
- * *Cameronia guillemeti* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 72. Lake Tanganyika.
- * *Cameronia jouberti* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 88. Lake Tanganyika.
- * *Cameronia lavigirina* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 85. Lake Tanganyika.
- * *Cameronia locardiana* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 78. Lake Tanganyika.
- * *Cameronia marioniana* BOURGUIGNAT, Esp. Onk., 1885, p. 28. Lake Tanganyika.
- * *Cameronia mabilliana* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 86. Lake Tanganyika.
- * *Cameronia moineci* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 89. Lake Tanganyika.
- * *Cameronia pulchella* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 73. Lake Tanganyika.
- * *Cameronia obtusa* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 75. Lake Tanganyika.
- * *Cameronia randebeli* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 90. Lake Tanganyika.
- * *Cameronia revoiliana* BOURGUIGNAT, Moll. Tan., 1885, p. 107. Lake Tanganyika.
- * *Cameronia rynchii* BOURGUIGNAT, Un. et Ir. Tan., 1886, p. 81. Lake Tanganyika.

Genus MONOCONDYLÆA d'Orbigny, 1835.

(Type, *Monocondylæa paraguayana* d'Orbigny.)

Aplodon SPIX (not of Rafinesque, 1818), Test. Fluv. Bras., 1827, pl. XXV, figs. 1, 2.

Monocondylæa D'ORBIGNY, Guerin Mag., 1835, p. 37.

Spiroconcha PILSBRY, Nautilus, VII, 1893, p. 30.

Shell rounded to obovate, rather solid, with a low, posterior ridge which is generally bordered by two or more dark, radiating bands; epidermis dull olive green to olive brown, cloth like; hinge with two irregular teeth under the beak in the left valve and two in the right, the posterior under the beak, the anterior in front of it and interlocking with those of the left valve, the whole generally more or less tuberculate; nacre soft, silvery, with iridescent shades; anterior scars united; posterior indistinct; prismatic layer wide.

Animal with the marsupium occupying the whole length of the inner branchiæ; gills very large, curved below, inner very much the larger, united the whole length of the abdominal sac; palpi small, round below, attached along their upper edge; mantle thick, greatly thickened at the edge, with a few papillæ in front of the branchial opening below; branchial opening large, with numerous small knob-like papillæ; anal opening large, without papillæ, separated completely from the branchial opening by a bridge; superanal opening not closed below.

(Group of *Monocondylæa guarayana*.)

Shell obovate, inflated, solid, often slightly produced just behind the center of the base; beaks full, turned inward and forward.

† MONOCONDYLÆA GUARAYANA d'Orbigny.

- * *Monocondylæa guarayana* D'ORBIGNY, Guer. Mag., 1835, p. 38; * Voy. Am. Mer., 1843, p. 614, pl. LXVIII, figs. 4-5.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501; III pl. CXVII, fig. 3.—* CHENU, Man., 1859, II, p. 145, fig. 715.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
- * *Margarita* (*Monocondylæa*) *guarayana* LEA, Syn., 1838, p. 28.
- * *Unio guarayana* HANLEY, Test. Moll., 1842, p. 213; * Biv. Shells, 1843, p. 213, pl. XXII, fig. 14.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCVI, fig. 524.
- * *Margaron* (*Monocondylæa*) *guarayana* LEA, Syn., 1852, p. 45; 1870, p. 73.

Bolivia.

MONOCONDYLÆA INERME Spix.

- * *Aplodon inerme* SPIX, Test. Fluv. Bras., 1827, p. 32, pl. XXV, figs. 1-2.—* VON IHERING, Arch. für Nat., 1890, p. 126, pl. IX, figs. 1-3.

South Brazil.

† MONOCONDYLÆA PARCHAPPII d'Orbigny.

- * *Monocondylæa parchappii* D'ORBIGNY, Guer. Mag., 1835, p. 38; * Voy. Am. Mer., 1843, p. 615, pl. LXVIII, figs. 1-3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
- * *Margarita* (*Monocondylæa*) *parchappii* LEA, Syn., 1838, p. 28.
- * *Unio parchappii* HANLEY, Test. Moll., 1842, p. 212; * Biv. Shells, 1843, p. 212, pl. XXII, fig. 13.—* CATLOW and REEVE, Conch. Nom., 1845, p. 62.
- * *Margaron* (*Monocondylæa*) *parchappii* LEA, Syn., 1852, p. 45; 1870, p. 73.
- * † *Monocondylæa pazii* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 34; * JI. Ac. N. Sci. Phila., VI, 1868, p. 273, pl. XXXVI, fig. 88; * Obs., XII, 1869, p. 36, pl. XXXVI, fig. 88.—* CLESSIN, Conch. Cab. Ano., 1876, p. 251, pl. LXXIX, figs. 6-7.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
- * *Margaron* (*Monocondylæa*) *pazii* LEA, Syn., 1870, p. 73.

Argentina.

† MONOCONDYLÆA PARAGUAYANA d'Orbigny.

- * *Monocondylæa paraguayana* D'ORBIGNY, Guer. Mag., 1835, p. 37.—* SOWERBY, Conch. Man., 1839, fig. 149.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 612, pl. LXX, figs. 5-7.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501.—* CLESSIN, Conch. Cab. Ano., 1876, p. 245, pl. LXXVIII, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
- * *Margarita* (*Margaritana*) *paraguayana* LEA, Syn., 1838, p. 27.
- * *Unio paraguayana* HANLEY, Test. Moll., 1842, p. 212; * Biv. Shells, 1843, p. 212, pl. XXII, fig. 17.—* SOWERBY, Conch. Icon., XVI, 1866, pl. LII, fig. 273.
- * *Margaron* (*Monocondylæa*) *paraguayana* LEA, Syn., 1852, p. 45; 1870, p. 73.
- * *Unio paraguayanus* CATLOW and REEVE, Conch. Nom., 1845, p. 62.
- * † *Monocondylæa minuana* D'ORBIGNY, Guer. Mag., 1835, p. 37; * Voy. Am. Mer., 1843, p. 612, pl. LXX, figs. 8-10.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
- * *Margarita* (*Margaritana*) *minuana* LEA, Syn., 1838, p. 28.
- * *Margaron* (*Monocondylæa*) *minuana* LEA, Syn., 1852, p. 45; 1870, p. 73.
- * *Unio minuanus* HANLEY, Test. Moll., 1842, p. 213; * Biv. Shells, 1843, p. 213, pl. XXII, fig. 18.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCI, fig. 497.

Rio de la Plata drainage.

† MONOCONDYLÆA RETICULATA Moricand.

- * *Monocondylæa reticulata* MORICAND, Rev. et Mag., X, 1858, p. 453, pl. xv, fig. 2.
 * *Margaron (Monocondylæa) reticulata* LEA, Syn., 1870, p. 72.
 * *Margaritana reticulata* PÆTEL, Conch. Sam., III, 1890, p. 173.
 * *Unio reticulatus* SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVII, fig. 458.
 * *Aplodon reticulatus* VON IHERING, Arch. für Nat., 1893, p. 115.

Brazil.

MONOCONDYLÆA COSTULATA Moricand.

- * *Monocondylæa costulata* MORICAND, Rev. et Mag. Zool., X, 1858, p. 453, pl. xv, fig. 1;
 * SOWERBY, Conch. Icon., XVI, 1868, pl. LXXXVIII, fig. 470.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
 * *Margaron (Monocondylæa) costulata* LEA, Syn., 1870, p. 72.

Brazil.

† MONOCONDYLÆA CORRIENTESENSIS d'Orbigny.

- * *Monocondylæa corrientensis* D'ORBIGNY, Guer. Mag., 1835, p. 38; * Voy. Am. Mer., 1843, p. 615, pl. LXVII, figs. 8-10.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501.—* CLESSIN, Conch. Cab. Ano., 1876, p. 246, pl. LXXVIII, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
 * *Margarita (Monocondylæa) corrientensis* LEA, Syn., 1838, p. 28.
 * *Unio corrientensis* HANLEY, Test. Moll., 1842, p. 212; * Biv. Shells, 1843, p. 212, pl. XXII, fig. 15.—* CATLOW and REEVE, Conch. Nom., 1845, p. 57.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCIII, fig. 509.
 * *Margaron (Monocondylæa) corrientensis* LEA, Syn., 1852, p. 45; 1870, p. 73.

Argentina.

MONOCONDYLÆA JASPIDEA Hupe.

- * *Unio jaspidea* HUPE, An. Nouv., III, 1857, p. 83, pl. XVII, fig. 2.¹
 * *Margaron (Unio?) jaspideus* LEA, Syn., 1870, p. 37.

Amazon.

(Group of *Monocondylæa franciscana*.)

Shell moderately inflated, lenticular, rounded, not very solid; sometimes slightly produced at the post basal region; beaks rather low.

† MONOCONDYLÆA FRANCISCANA Moricand.

- * *Unio (Monocondylæa) franciscana* MORICAND, Mem. Soc. Hist. Nat. Gen., VIII, 1837, p. 39, pl. III, figs. 14-17.—* TROSCHEL, Arch. für Nat., VIII, 1842, Pt. 2, p. 404.
 * *Margarita (Margaritana) franciscana* LEA, Syn., 1838, p. 35.
 * *Margaron (Monocondylæa) franciscana* LEA, Syn., 1852, p. 45; 1870, p. 72.
 * *Monocondylæa franciscana* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501.—* CLESSIN, Conch. Cab. Ano., 1876, p. 251, pl. LXXIV, figs. 4, 5.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
 * *Aplodon franciscana* VON IHERING, Arch. für Nat., 1893, p. 115.

Brazil.

† MONOCONDYLÆA LENTIFORMIS Lea.

- * *Monocondylæa lentiformis* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 34; * JI. Ac. N. Sci. Phila., VI, 1868, p. 272, pl. XXXVI, fig. 86; * Obs., XII, 1869, p. 32, pl. XXXVI, fig. 86.—* CLESSIN, Conch. Cab. Ano., 1876, p. 250, pl. LXXIX, figs. 4, 5.—* PÆTEL, Conch. Sam., 1890, p. 174.

¹ The figure shows the teeth, which appear to be those of a *Monocondylæa*.

* *Margaron (Monocondylæa) lentiformis* LEA, Syn., 1870, p. 72.

* *Aplodon lentiformis* VON IHERING, Arch. für. Nat., 1893, p. 67.—* NEHRING, J. de Conch., 1894, p. 82.

Southern Brazil.

The following species is unknown to me:

* *Monocondylæa tamsana* DUNKER, Mal. Bl., V, 1858, p. 226.

Genus IHERINGELLA Pilsbry, 1893.

(Type, *Plagiodon isocardioides* Lea.)

Plagiodon LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 79.

Iheringella PILSBRY, Nautilus, VII, 1893, p. 30.

Shell solid, inflated, rounded to rhomboid in outline, with a more or less developed posterior ridge; beaks high, curved inward and forward, without sculpture; epidermis dull olive, cloth-like; hinge teeth imperfectly developed, nodulous or more or less broken into denticles, there being an irregular tooth in the left valve under the beak, sometimes partially bifid, and two in the right valve, with the pit between them under the beak; anterior muscle scars deep, partially united; posterior scars shallow; nacre soft, bluish silvery, iridescent behind.

Animal unknown.

(Group of *Iheringella isocardioides*.)

Shell rhomboid or *isocardia* shaped, with a high, distinct, strongly curved posterior ridge; beaks decidedly full and turned forward.

† IHERINGELLA ISOCARDIOIDES Lea.

* *Plagiodon isocardioides* LEA, Pr. Ac. N. Sci. Phila., VIII, 1856, p. 79.¹

* *Plagiodon isocardioides* LEA, Obs., VI, 1857, p. 38, pl. XXXII, fig. 32; * Jl. Ac. N. Sci. Phila., III, 1858, p. 318, pl. XXXII, fig. 32.—* KUSTER, Conch. Cab. Unio, 1862, p. 292, pl. XCVII, figs. 8–10.

* *Unio isocardioides* SOWERBY, Conch. Icon., XVI, 1868, pl. XC, fig. 484.—* PÆTEL, Conch. Sam., III, 1890, p. 156.

* *Margaron (Plagiodon) isocardioides* LEA, Syn., 1870, p. 71.

Rio de la Plata; Eastern Peru?

IHERINGELLA SEMISULCATA H. Adams.

* *Monocondylæa (Plagiodon) semisulcata* H. ADAMS, Pr. Zool. Soc. Lond., 1870, p. 376, pl. XXVII, fig. 3.

Eastern Peru.

(Group of *Iheringella rotundata*.)

Shell somewhat rounded, sublenticular, posterior ridge rather low.

† IHERINGELLA ROTUNDATA Mousson.

* *Plagiodon rotundatus* MOUSSON, Mal. Bl., XVI, 1869, p. 187.—* PFEIFFER, Nov. Conch., IV, 1876, p. 139, pl. CXXXI, figs. 8, 9.

South America.

¹ Printed as above. A typographical error, probably.

IHERINGELLA BALZANI von Ihering.

* *Plagiodon balzani* VON IHERING, Arch. für Nat., 1893, p. 69, pl. III, fig. 3.

Rio Paraguay; San Paulo, Brazil.

Genus FOSSULA Lea, 1870.

(Type, *Monocondylaea fossiculifera* d'Orbigny.)

Fossula LEA, Syn., 1870, p. 72 (footnote).

Shell obovate, inflated, solid, with rather high beaks and a low posterior ridge; epidermis olive-brown, somewhat smooth, sometimes slightly rayed; there is an irregular tooth in the left valve under the beak, and behind it a cavity; in the right valve there is a cavity under the beak, and an irregular tooth in front of and another behind it; the teeth and cavities are generally partly covered with brownish or amber-colored matter, and more or less pitted; anterior cicatrices well marked, united; posterior faint; prismatic border wide.

Animal unknown.

† FOSSULA FOSSICULIFERA d'Orbigny.

* *Monocondylaea fossiculifera* D'ORBIGNY, Guer. Mag., 1835, p. 38; * Voy. Am. Mer., 1843, p. 614, pl. LXXX, figs. 5-7.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501.—* CLESSIN, Conch. Cab. An., 1876, p. 249, pl. XLIX, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 174.

* *Margarita (Margaritana) fossiculifera* LEA, Syn., 1838, p. 28.

* *Unio fossiculifera* HANLEY, Test. Moll., 1842, p. 213; * Biv. Shells, 1843, p. 213, pl. XXII, fig. 19.—* SOWERBY, Conch. Icon., XVI, 1868, pl. XCVI, fig. 521.

* *Margaron (Monocondylaea) fossiculifera* LEA, Syn., 1852, p. 45; 1870, p. 73.

* *Fossula fossiculifera* VON IHERING, Arch. für Nat., 1893, p. 64, pl. III, fig. 2.

* *Unio fossiculiferus* CATLOW and REEVE, Conch. Nom., 1845, p. 59.

* *Anodonta fusciculifera* PÆTEL, Conch. Sam., III, 1890, p. 179.

Parana River, South America.

FOSSULA BALZANI von Ihering.

* *Fossula balzani* VON IHERING, Arch. für Nat., 1893, p. 65, pl. III, fig. 1.

Rio Paraguay; Rio Apae, South America.

Genus LEILA Gray, 1840.

(Type, *Anodonta blainvilliana* Lea.)

Columba LEA (not *Columba* Linnæus, aves, 1758), Tr. Am. Phil. Soc., V, 1833, p. 78.

Leila GRAY, Syn. Brit. Mus., 1840, p. 142.

Shell large, obovate, inflated, with a straight hinge line which is produced into a slight wing before and behind, the posterior end bluntly pointed and somewhat truncate above, with a faint posterior ridge; beaks full, smooth, epidermis olive, generally smooth; hinge edentulous; beak cavities rather shallow; dorsal scars small and numerous, running in a straight line from behind the beaks downward and forward; posterior muscle scars united, large; palleal line generally showing a sinus.¹

¹ Conchologically this genus seems to be very closely related to *Glabaris*, especially to the group of *G. trapesialis*. Some of the shells of that genus have a slight dorsal wing in front and behind, and traces of a palleal sinus.

Animal having the mantle united behind into two short, separate, contractile siphons, according to Gray.¹

† LEILA BLAINVILLEANA Lea.²

- * *Anodonta blainvilleana* LEA, Tr. Am. Phil. Soc., V, 1834, p. 77, pl. XII, fig. 35;
 * Obs., I, 1834, p. 189, pl. XI, fig. 35.—* HANLEY, Test. Moll., 1842, p. 222;
 * Biv. Shells, 1843, p. 222, pl. XXIV, fig. 18.
 * *Margarita (Anodonta) blainvilleana* LEA, Syn., 1836, p. 53; 1838, p. 31.
 * *Anodon blainvilleana* CATLOW and REEVE, Conch. Nom., 1845, p. 66.
 * *Margaron (Anodonta) blainvilleana* LEA, Syn., 1852, p. 52.
 * *Leila blainvilleana* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 507; III, pl. CXIX, figs. 4, 4a.—* CHENU, Man., 1859, II, p. 148, fig. 730.
 * *Columba blainvilleana* CLESSIN, Conch. Cab. Ano., 1876, p. 253, pl. LXXXVI, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 188.
 * *Anodon parishii* GRAY, Pr. Zool. Soc. Lond., 1834, p. 57.³—* MÖLLER, Syn. Nov. Gen., 1836, p. 195.—* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
 * *Margarita (Anodonta) parishii* LEA, Syn., 1836, p. 53; 1838, p. 31.
 * *Anodonta parishii* HANLEY, Test. Moll., 1842, p. 222; * Biv. Shells, 1843, p. 222.—
 * PÆTEL, Conch. Sam., III, 1890, p. 183.
 * *Margaron (Anodonta) parishii* LEA, Syn., 1852, p. 52.
 * *Leila parishii* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 507.
 * *Anodon hians* SOWERBY, Conch. Icon., XVII, 1867, pl. IV, fig. 8.

Peru; Brazil; south to Argentina.

† LEILA ESULA d'Orbigny.

- * *Iridina esula* D'ORBIGNY, Guerin Mag., 1835, p. 43; * Voy. Am. Mer., 1843, p. 597.
Anodonta esula JAN, Charpentier and Jan, Cat., 1837, p. 24.⁴
 * *Margarita (Anodonta) esula* LEA, Syn., 1838, p. 32.
 * *Margaron (Anodonta) esula* LEA, Syn., 1852, p. 52.
 * *Margaron (Columba) esula* LEA, Syn., 1870, p. 86.
 * *Leila esula* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 507.
 * *Anodonta arcuata* HANLEY, Biv. Shells, 1843, p. 223.
 * *Leila pulvinata* HUPE, Moll. Nouv., III, 1857, p. 90, pl. XX, fig. 1.
 * *Columba pulvinata* CLESSIN, Conch. Cab. Ano., 1876, p. 255, pl. LXXV, figs. 1, 2.—
 * PÆTEL, Conch. Sam., III, 1890, p. 188.
 * *Anodon pulvinatus* SOWERBY, Conch. Icon., XVII, 1867, pl. V, fig. 10.
 * *Leila castelnaudi* HUPE, Moll. Nouv., III, 1857, p. 91, pl. XIX, fig. 1.—* VON MARTENS, Mal. Bl., XV, 1868, p. 201.
 * *Anodon castelnaudi* SOWERBY, Conch. Icon., XVII, 1868, pl. XX, fig. 79.
 * *Columba castelnaudii* CLESSIN, Conch. Cab. Ano., 1876, p. 254, pl. LXXXIV, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 188.

Bolivia; Brazil; Paraguay.

¹ Ann. and Mag. Nat. Hist., VI, p. 316.

² The volume of the transactions in which Lea's name was published was issued, according to Scudder, in August or September, 1834. Gray read the paper containing the description of his *Anodon parishii* before the Zoological Society on July 8 of the same year, and the date of publication of that volume of the proceedings is 1834. As I do not know just when it appeared, and as Lea's is the better known name, I retain the latter.

³ Gray states in a letter to Lea, November, 1834, that his *A. parishii* and Lea's *blainvilliana* are the same.

⁴ According to Lea. I have not seen this paper. The species is quite commonly credited to Jan, but it was published by d'Orbigny under the name of *Iridina esula* in 1835, and I am not aware that Jan described it earlier than 1837.

LEILA SPIXII von Ihering.

- **Anodon giganteus* SPIX (part), Test. Fluv. Bras., 1827, p. 27, pl. XIX, fig. 1 (young).
 **Anodonta gigantea* KUSTER, Conch. Cab. Ano. 1853, p. 6, pl. I, fig. 2 (young).
 **Columba spirixii* VON IHERING, Arch. für Nat., 1890, p. 135, pl. IX, fig. 4.

Amazon River.

Genus GLABARIS Gray, 1847.

(Type, *Anodonta exotica* Lamarck.)

Glabaris GRAY, Pr. Zool. Soc. Lond., 1847, p. 197.

Shell rounded to elongated, inflated, subsolid; beaks full, smooth; epidermis smooth or clothlike, rarely having faint rays; hinge line straight or slightly curved, edentulous, sometimes a little sinuous, the escutcheon distinct and large; nacre soft tinted, the prismatic border wide and well defined.

Animal with the marsupium occupying the whole of the inner branchiæ, which are united their entire length to the abdominal sac; palpi generally semicircular or kidney shaped; attached along their entire upper length, not projecting posteriorly; branchial and anal openings with or without papillæ, not united into siphons in the specimens examined, separated by a strong bridge; superanal opening not closed below.

Section GLABARIS Gray, 1847

(Type, *Anodonta exotica* Lamarck.)

Shell rounded to elliptical; posterior ridge low or wanting.

(Group of *Glabaris patagonicus*.)

Shell solid, inflated, obovate, usually somewhat produced behind the center of the base; beaks quite full, projecting above the hinge line; epidermis olive brown, rather smooth, generally rayless; anterior muscle scars well defined.

Animal with the gills large, rounded below; palpi rather large; mantle thickened at edge and furnished with palpi in front of the branchial opening; branchial opening large, with numerous minute papillæ; anal opening large, with no papillæ.

† GLABARIS PATAGONICUS Lamarck.

- **Anodonta patagonica* LAMARCK, An. sans. Vert., VI, 1819, p. 88.—* LAMARCK, Enc. Méth., II, 1827, p. 147, pl. 203, fig. 1.—* STARK, Nat. Hist., II, 1828, p. 89.—* HANLEY, Test. Moll., 1842, p. 221; *Biv. Shells, 1843, p. 221.—* KUSTER, Conch. Cab. Ano., 1853, p. 50, pl. XII, fig. 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—* VON MARTENS, Mal. Blatt., XV, 1868, p. 198.—* PÆTEL, Conch. Sam., III, 1890, p. 183.

**Margarita (Anodonta) patagonica* LEA, Syn., 1836, p. 52; 1838, p. 31.

**Anodon patagonica* CATLOW and REEVE, Conch. Nom., 1845, p. 67.

**Margaron (Anodonta) patagonica* LEA, Syn., 1852, p. 51; 1870, p. 82.

- * *Anodon trapezens* SPIX, Test. Fluv. Bras., 1827, p. 28, pl. XX, fig. 1.
 * *Anodonta trapezeum* D'ORBIGNY, Voy. Am. Mer., 1843, pp. 6, 19.
 * *Anodonta trapezea* KUSTER, Conch. Cab. Ano., 1853, p. 7, fig. 3.
 * *Glabaris trapezea* VON JHERING, Arch. für Naturg., 1893, p. 57.
 * † *Anodonta lato-marginata* LEA, Tr. Am. Phil. Soc., V, 1834, p. 76, pl. XII, fig. 34;
 * Obs., I, 1834, p. 188, pl. XII, fig. 34.—* HANLEY, Test. Moll., 1842, p. 221; * Biv. Shells, 1843, p. 221, pl. XXIV, fig. 14.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—* CHENU, Man., II, 1859, p. 146, fig. 724.—* CLESSIN, Conch. Cab., 1873, p. 76, pl. XXI, figs. 3, 4.
 * *Margarita (Anodonta) lato-marginata* LEA, Syn., 1836, p. 53; 1838, p. 31.
 * *Margaron (Anodonta) lato-marginata* LEA, Syn., 1852, p. 51; 1870, p. 82.
 * *Anodon lato-marginatus* SOWERBY, Conch. Icon., XVII, 1867, pl. II, fig. 3.
 * *Anodon lati-marginata* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
 * *Anodonta lati-marginata* STROBEL, Mat. Mal., Pt. 1, 1874, p. 67.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
 * *Anodonta membranacea* D'ORBIGNY, Voy. Am. Mer., 1843, p. 616, pl. LXXIX, fig. 11.
 * *Anodonta solida* KUSTER, Conch. Cab. Ano., 1853, p. 50, pl. XII, fig. 1.
 * † *Anodonta uruguayensis* LEA,¹ Pr. Ac. N. Sci. Phila., IV, 1860, p. 92; * JI. Ac. N. Sci. Phila., V, 1863, p. 393, pl. XLVIII, fig. 302; * Obs., X, 1863, p. 29, pl. XLVIII, fig. 302.—* CLESSIN, Conch. Cab., 1874, p. 114, pl. XXXVIII, figs. 1, 2.—* SOWERBY, Conch. Icon., XVII, 1870, pl. XXX, fig. 121,
 * *Margaron (Anodonta) uruguayensis* LEA, Syn., 1870, p. 83.
 * *Columbia uruguayensis* PÆTEL, Conch. Sam., III, 1890, p. 188.
 * *Anodonta sinnosa* CLESSIN, Conch. Cab. Ano., 1873, p. 90, pl. XXII, figs. 1, 2.
 * *Anodonta serpentina* CLESSIN, Conch. Cab. Ano., 1876, p. 223, pl. LXXV, figs. 2, 3.—* PÆTEL, Conch. Sam., III, 1890, p. 184.

GLABARIS PATAGONICUS var. FELIX Pilsbry.

- * *Glabaris lato-marginatus* LEA, var. *felix* PILSBRY, Pr. Ac. N. Sci. Phila., 1869, p. 563, pl. XXVI, fig. 8.

† Southern South America, east of the Andes; the variety in Colonia, Uruguay.

GLABARIS CRASSUS Swainson.

- * *Anodon crassus* SWAINSON, Zool. Ill., 1st ser., III, 1823, pl. CLXVII.
 * *Margarita (Anodonta) crassa* LEA, Syn., 1836, p. 23; 1838, p. 32.
 * *Anodonta crassa* HANLEY, Test. Moll., 1842, p. 222; * Biv. Shells, 1843, p. 222.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—* PÆTEL, Conch. Sam., III, 1890, p. 178.
 * *Anodon crassa* CATLOW and REEVE, Conch. Nom., 1845, p. 66.
 * *Margaron (Anodonta) crassa* LEA, Syn., 1852, p. 52; 1870, p. 83.

Rio de la Plata.

† GLABARIS WYMANII Lea.

- * *Anodonta wymanii* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 91; * JI. Ac. N. Sci. Phila., V, 1863, p. 390, pl. XLIV, fig. 294; * Obs., X, 1863, p. 26, pl. XLIV, fig. 294.—* CLESSIN, Conch. Cab. Ano., 1873, p. 104, pl. XXXII, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 186.

¹An old worn shell—the type—is the only one in the Lea collection, save a few very young that are doubtfully the same. It is a little more inflated than most specimens that are called *lato-marginata*, but not more than some are, and I hardly think it distinct.

* *Margaron (Anodonta) wymanii* LEA, Syn., 1870, p. 80.

* *Anodon wymani* SOWERBY, Conch. Icon., XVII, 1870, pl. XXX, fig. 117.

Uruguay River, South America.

† GLABARIS SIRIONIS d'Orbigny.

* *Anodonta sirionis* D'ORBIGNY, Mag. Zool., 1835, p. 40.—* HANLEY, Test. Moll., 1842, p. 221; * Biv. Shells, 1843, p. 221.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 615, pl. LXXIV, figs. 4-6; LXXX, figs. 1-4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—* CLESSIN, Conch. Cab. Ano., 1874, p. 128, pl. XLI, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 184.

* *Margarita (Anodonta) sirionis* LEA, Syn., 1838, p. 31.

* *Anodon sirionis* CATLOW and REEVE, Conch. Nom., 1845, p. 68.

* *Margaron (Anodonta) sirionis* LEA, Syn., 1852, p. 51; 1870, p. 82.

* *Anodonta ferrarisii* D'ORBIGNY, Guer. Mag., 1835, p. 40.

Rio de la Plata

† GLABARIS PAZII Lea.

* *Anodonta pazii* LEA, Pr. Ac. N. Sci. Phila., X, 1866, p. 35; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 274, pl. XXXVI, fig. 87; * Obs., XII, 1869, pl. XXXVI, fig. 87.—* CLESSIN, Conch. Cab. Ano., 1874, p. 139, pl. XLIII, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 183.

* *Margaron (Anodonta) pazii* LEA, Syn., 1870, p. 81.

South America.

† GLABARIS RUBICUNDUS Lea.

* *Anodonta rubicunda* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 92; * Jl. Ac. N. Sci. Phila., V, 1863, p. 392, pl. XLVI, fig. 299; * Obs., X, 1863, p. 28, pl. XLVI, fig. 299.—* CLESSIN, Conch. Cab. Ano., 1876, p. 106, pl. XXXII, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 184.

* *Anodon rubicundus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXX, fig. 118.

* *Margaron (Anodonta) rubicunda* LEA, Syn., 1870, p. 75.

Uruguay River, South America.

† GLABARIS ROTUNDUS Spix.

* *Anodon rotundus* SPIX, Test. Fluv. Bras., 1827, p. 28, pl. XX, figs. 2-4.

* *Anodon rotunda* KUSTER, Conch. Cab. Ano., 1853, p. 33, pl. VIII, fig. 1.

* *Margaron (Anodonta) rotunda* LEA, Syn., 1870, p. 81.

* *Glabariss rotunda* VON IIERING, Arch. für Nat., 1893, p. 59.

* † *Anodonta cailliaudii* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 308; * Jl. Ac. N. Sci. Phila., V, 1863, p. 395, pl. XLV, fig. 297; * Obs., X, 1863, p. 31, pl. XLV, fig. 297.—* CLESSIN, Conch. Cab. Ano., 1873, p. 105, pl. XXXII, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 177.

* *Anodon cailliaudi* SOWERBY, Conch. Icon., XVII, 1867, pl. XII, fig. 38.

* *Margaron (Anodonta) cailliaudii* LEA, Syn., 1870, p. 81.

Brazil.

GLABARIS MEMBRANACEUS Maton.¹

* *Mytilus membranaceus* MATON, Tr. Linn. Soc. Loud., 1811, p. 329, pl. XXIV, figs. 11, 12.

¹ It is difficult to tell what this is, but I believe it to be some species of *Glabariss*, from the fact that Maton says that the hinge is edentulous. The figure (11) plainly shows it to be destitute of radial beak sculpture, though the umbo is perfect. The specimens figured are evidently young.

- * *Margarita (Anodonta) membranacea* LEA, Syn., 1836, p. 22; 1838, p. 23.
 * *Margaron (Anodonta) membranacea* LEA, Syn., 1852, p. 34; 1870, p. 55.
 * *Unio membranaceus* HANLEY, Test. Moll., 1842, p. 202.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 492.—* PÆTEL, Conch. Sam., III, 1890, p. 159.
 * *Unio subtrapezius* PHILIPPI, Zeits. für Mal., IV, 1847, p. 96; * Abbild., III, 1848, p. 80, pl. V, fig. 3.—* KUSTER, Conch. Cab. Unio, 1862, p. 283, pl. xcv, fig. 4.

Rio de la Plata.

† GLABARIS IHERINGI Clessin.

- * *Anodonta iheringi* CLESSIN, Mal. Bl., V, 1882, p. 191, pl. IV, fig. 5.—* PÆTEL, Conch. Sam., III, 1890, p. 180.¹

(Group of *Glabaris crispatus*.)

Shell elliptical obovate, slightly produced at the posterior base, and straight or very feebly incurved in front of it; epidermis fuscous or tawny, cloth-like behind, somewhat rayed by more or less incised lines in front, where it is wrinkled like dried paint, the wrinkles often being looped; nacre lurid, bluish, somewhat iridescent.

Animal unknown.

† GLABARIS CRISPATUS Bruguiere.

- * *Anodontites crispata* BRUGUIERE, Jl. de Hist. Nat., I, 1792, p. 131.
 * *Anodonta crispata* LAMARCK, An. sans Vert., VI, 1819, p. 86.²—* LEA, Obs., I, 1834, p. 205.—* HANLEY, Test. Moll., 1842, p. 217; * Biv. Shells, 1843, p. 217.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* PÆTEL, Conch. Sam., III, 1890, p. 178.
 * *Margarita (Anodonta) crispata* LEA, Syn., 1836, p. 48; 1838, p. 29.
 * *Anodon crispata* CATLOW and REEVE, Conch. Nom., 1845, p. 66.
 * *Margaron (Anodonta) crispata* LEA, Syn., 1852, p. 47; 1870, p. 75.
 * ? *Anodonta crispa* LAMARCK, Enc. Meth., II, 1827, p. 147, pl. CCIII, fig. 3.
 * † *Anodonta puberula* GOULD, U. S. Expl. Ex., XII, 1852, p. 434, figs. 548, 548a, 548b.³
 * *Anodon reticulatus* SOWERBY, Conch. Icon., XVII, 1867, pl. x, fig. 27.
 * *Margaron (Anodonta) reticulata* LEA, Syn., 1870, p. 80.
 * *Anodonta reticulata* PÆTEL, Conch. Sam., III, 1890, p. 184.

Widely distributed in tropical South America.

GLABARIS PHILIPPIANUS Simpson.⁴

- * *Anodonta subsinuata* PHILIPPI, Mal. Bl., XVI, 1869, p. 41.—* PFEIFFER, Nov. Conch., III, 1869, p. 487, pl. CV, figs. 7, 8.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

Ucayali River, Peru.

¹ This species combines characters of the *Patagonicus* and *Tenebricosus* groups.

² Lamarck refers to Encyclopaedie Méthodique, pl. CCIII, figs. 3, 3a, 3b.

³ According to Lea's note in pencil on the margin of this description the species = *crispata*. I think he is right.

⁴ The name *subsinuata*, applied to this by Philippi, will have to be placed in the synonymy, as Sowerby used it previously for a *Glabaris* which he placed in *Anodonta*,

† GLABARIS NAPOENSIS Lea.

- * *Anodonta napoensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 162; * JI. Ac. N. Sci. Phila., VI, 1868, p. 324, pl. LIII, fig. 137; * Obs., XII, 1869, p. 84, pl. LIII, fig. 137.—* CLESSIN, Conch. Cab. Ano., 1873, p. 116, pl. XXXIV, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 182.

* *Margaron (Anodonta) napoensis* LEA, Syn., 1870, p. 80.

River Napo, Ecuador.

† GLABARIS TORTILIS Lea.

- * *Anodonta tortilis* LEA, Tr. Am. Phil. Soc., X, 1852, p. 291, pl. XXVIII, fig. 54; * Obs., V, 1852, p. 47, pl. XXVIII, fig. 54.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1875, p. 166, pl. LV, figs. 7, 8.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

* *Margaron (Anodonta) tortilis* LEA, Syn., 1852, p. 47; 1870, p. 75.

* *Anodon tortilis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXVII, fig. 154.

Cartagena, Colombia.

† GLABARIS LUTEOLUS Lea.

- * *Anodonta luteola* LEA, Pr. Ac. N. Sci. Phila., II, 1858, p. 118; JI. Ac. N. Sci. Phila., IV, 1860, p. 267, pl. XLIII, fig. 147; * Obs., VII, 1860, p. 85, pl. XLIII, fig. 147.—* CLESSIN, Conch. Cab. Ano., 1874, p. 122, pl. XXXVII, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 181.

* *Margaron (Anodonta) luteola* LEA, Syn., 1870, p. 83.

* *Anodon luteolus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXIII, fig. 132.

Isthmus of Darien; Nicaragua; Costa Rica.

† GLABARIS SCHOMBURGIANUS Sowerby.

* *Anodon schomburgianus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXIV, fig. 137.

* *Anodonta schomburgkiana* CLESSIN, Conch. Cab. Ano., 1876, p. 235, pl. LXXVII, fig. 4.

British Guiana.

† GLABARIS STREBELII Lea.

- * *Anodonta strebelii* LEA, Pr. Ac. N. Sci. Phila., XX, 1868, p. 150; * JI. Ac. N. Sci. Phila., VII, 1868, p. 322, pl. LII, fig. 135; * Obs., XII, 1869, p. 82, pl. LII, fig. 135.—* CLESSIN, Conch. Cab. Ano., 1874, p. 138, pl. XLII, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 185.

* *Margaron (Anodonta) strebelii* LEA, Syn., 1870, p. 79.

Mexico.

† GLABARIS CYLINDRACEUS Lea.

* *Margarita (Anodonta) cylindracea*, LEA, Syn., 1836, p. 54; 1838, p. 32.

- * *Anodonta cylindracea* LEA, Tr. Am. Phil. Soc., VI, 1838, p. 45, pl. XIII, fig. 40; * Obs., II, 1838, p. 45, pl. XIII, fig. 40.—* TROSCHEL, Arch. für Nat., V, 1839, Pt. 2, p. 238.—* HANLEY, Test. Moll., 1842, p. 223; Biv. Shells, 1843, p. 223.—* CONRAD, Pr. Ac. N. Sci. Phila., VI, 1853, p. 263.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874, p. 161, pl. LIII, figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 178.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 528.

* *Anodon cylindracea* CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* SOWERBY, Conch. Icon., XVII, 1869, pl. XXIV, fig. 93.

* *Margaron (Anodonta) cylindracea* LEA, Syn., 1852, p. 51; 1870, p. 82.

Medellin River, Mexico.

† GLABARIS PUELCHANUS d'Orbigny.

- * *Anodonta puelchana* D'ORBIGNY, Guer. Mag., 1835, p. 40; Voy. Am. Mer., 1843, p. 620, pl. LXXIX, figs. 7-9.—* CHENU, III. Conch., 1858, pl. III, figs. 7, 7a.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* STROBEL, Mal. Argent., 1874.—* CLESSIN, Conch. Cab. Ano., 1874, p. 130, pl. XLI, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 183.
- * *Margaron (Anodonta) puelchana* LEA, Syn., 1852, p. 51; 1870, p. 81.
- * *Anodonta obtusula* HUPE, Moll. Nouv., III, 1857, p. 87, pl. XVII, fig. 3.—* CLESSIN, Conch. Cab. Ano., 1875, p. 214, pl. LXVI, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 182.
- * *Anodon obtusula* SOWERBY, Conch. Icon., XVII, 1868, pl. XX, fig. 81.
- * *Margaron (Anodonta) obtusula* LEA, Syn., 1870, p. 79.
- * *Glabaris obtusula* VON IHERING, Arch. für Nat., 1893, p. 119.

Patagonia, north to the Amazon; west to Bolivia.

† GLABARIS LIMNOICUS d'Orbigny.

- * *Anodonta limnoica*, D'ORBIGNY, Guer. Mag., 1835, p. 40.—* HANLEY, Test. Moll., 1842, p. 218.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 619, pl. LXXIX, figs. 1-3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1874, p. 129, pl. XLI, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
- * *Anodon limnoica* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
- * *Margarita (Anodonta) limnoica* LEA, Syn., 1838, p. 30.
- * *Margaron (Anodonta) limnoica* LEA, Syn., 1852, p. 50; 1870, p. 79.
- * *Anodonta limnoica* CHENU, III. Conch., 1858, pl. III, figs. 1, 1a, 1b.

Argentina.

GLABARIS LUCIDUS d'Orbigny.¹

- * *Anodonta lucida* D'ORBIGNY, Guer. Mag., 1835, p. 40; * Voy. Am. Mer., 1843, p. 620, pl. LXXIX, fig. 4-6.—* CHENU, III. Conch., 1858, pl. III, figs. 6, 6a, 6b.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1875, p. 208, pl. LXIX, figs. 4, 5.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
- * *Margaron (Anodonta) lucida* LEA, Syn., 1852, p. 51; 1870, p. 82.

Uruguay.

GLABARIS INCARUM Philippi.

- * *Anodonta incarum* PHILIPPI, Mal. Bl., XVI, 1869, p. 40.—* PFEIFFER, Nov. Conch., III, 1869, p. 488, pl. CV., figs. 9-11.—* PÆTEL, Conch. Sam., III, 1890, p. 180.²

Peru.

† GLABARIS HOLTONIS Lea.

- * *Anodonta holtonis* LEA, Pr. Ac. N. Sci. Phila., I, 1857, p. 85; * JI. Ac. N. Sci. Phila., III, 1857, p. 316, pl. XXXII, fig. 31; * Obs., VI, 1847, p. 36, pl. XXXII, fig. 31.—* CLESSIN, Conch. Cab. Ano., 1874, p. 149, pl. L., figs. 5, 6.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.
- * *Anodon holtonis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXVI, fig. 147.
- * *Margaron (Anodonta) holtonis* LEA, Syn., 1870, p. 79.

Colombia.

¹ It is not unlikely that this and the two preceding species are variations of one thing.

² Probably a form of *G. puelchanus* d'Orbigny.

(Group of *Glabaris inaequalvis*.)

Shell elliptical, moderately solid and inflated, with a low posterior ridge, slightly produced behind near the base and truncated above the posterior slope; beaks full, smooth; ligament imbedded in a sort of groove which extends to the anterior point of the shell; epidermis slightly roughened, often clothlike and showing the rest periods, having faint radiating lines; nacre bluish, soft, but not brilliant.

Animal unknown.

†GLABARIS INÆQUALVIS Lea.

**Anodonta inaequalvis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 95; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 292, pl. XLIII, fig. 108; *Obs., XII, 1869, p. 52, pl. XLIII, fig. 108.—*CLESSIN, Conch. Cab. Ano., 1874, p. 137, pl. XLIV, figs. 7, 8.—*B. H. WRIGHT, Check List, 1888.

**Margaron (Anodonta) inaequalvis* LEA, Syn., 1870, p. 83.

*†*Anodonta lenticularis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 95; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 290, pl. XLI, fig. 102; *Obs., XII, 1869, p. 50, pl. XLI, fig. 102.—*CLESSIN, Conch. Cab. Ano., 1874, p. 134, pl. XLII, figs. 5, 6.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 181.

**Margaron (Anodonta) lenticularis* LEA, Syn., 1870, p. 81.

**Anodon glabrus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXV, fig. 97.

**Anodon montezianus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXVI, fig. 145.

**Anodonta viridana* CLESSIN, Conch. Cab. Ano., 1876, p. 226, pl. LXXV, fig. 5.—*PÆTEL, Conch. Sam., III, 1890, p. 186.—*FISCHER and CROSSE, Miss. Sci. Pt. 7, II, 1894, p. 521.

Lake Nicaragua; Mexico.

†GLABARIS GRANADENSIS Lea.

**Anodonta granadensis* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 96; *Jl. Ac. N. Sci. Phila., VI, 1868, p. 288, pl. XLI, fig. 100; *Obs., XII, 1869, p. 48, pl. XLI, fig. 100.—*CLESSIN, Conch. Cab. Ano., 1874, p. 134, pl. XLIV, figs. 3, 4.—*B. H. WRIGHT, Check List, 1888.—*PÆTEL, Conch. Sam., III, 1890, p. 180.

**Margaron (Anodonta) granadensis* LEA, Syn., 1870, p. 81.

Lake Nicaragua, Central America.

†GLABARIS TRAUTWINIANUS Lea.

**Anodonta trautwiniana* LEA, Tr. Am. Phil. Soc., X, 1852, p. 287, pl. XXVI, fig. 48; *Obs., V, 1852, p. 43, pl. XXVI, fig. 48.

**Margaron (Anodonta) trautwiniana* LEA, Syn., 1870, p. 81.

**Anodon trautwinianus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXIII, fig. 134.

**Margaron (Anodonta) trautwiniana* LEA, Syn., 1852, p. 51.

**Anodonta trautwiniana* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—*CLESSIN, Conch. Cab. Ano., 1874, p. 112, pl. XXXVI, figs. 1, 2.—*PÆTEL, Conch. Sam., III, 1890, p. 186.

*? *Anodonta oratus* SWAINSON, Ex. Conch., 1841, pl. XXXVI.

? *Anodonta carthagena* ———, Who? Where?

Cartagena, Colombia.

GLABARIS MONTEZUMA Lea.¹

**Anodonta montezuma* LEA, Pr. Am. Phil. Soc., II, 1841, p. 31; *Tr. Am. Phil. Soc., 1842, p. 240, pl. XXIII, fig. 55; *Obs., III, 1842, p. 78, pl. XXIII, fig. 55.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—*CLESSIN, Conch. Cab. An., 1876, p. 220, pl. LXXII, figs. 7, 8.—*B. H. WRIGHT, Check List, 1888.—*P.ÉTEL, Conch. Sam., III, 1890, p. 182.

**Margarou (Anodonta) montezuma* LEA, Syn., 1852, p. 51; 1870, p. 82.

Central America.

(Group of *Glabaris trapesialis*.)

Shell large, inflated, elliptical, narrower in front, with full, rather prominent beaks, a slight wing on the post dorsal part, and sometimes a small one in front of the beaks; epidermis smooth, generally uniform olive green; hinge line straight or slightly sinuous; escutcheon large and conspicuous; nacre bluish silvery, sometimes marked with parallel, wavy, dark lines.

Animal with the marsupium filling the inner branchiæ; gills large, inner the larger; palpi very large, reniform; mantle thin, with a wide, thickened edge; branchial opening small, plicate, but not crenulate or papillose; anal opening large, smooth, separated from the branchial by a strong bridge.

† GLABARIS TRAPESIALIS Lamarck.

**Anodonta trapesialis* LAMARCK, An. sans. Vert., VI, 1819, p. 87.

**Iridina trapesialis* D'ORBIGNY, Guer. Mag., 1835, p. 43².

**Glabaris trapesialis* PILSBY, Pr. Ac. N. Sci. Phila., 1896, p. 563.

**Anodonta trapesialis* BLAINVILLE, Man. de Mal. et Conch., 1825, p. 538, fig. 1.—*DESHAYES, Enc. Meth., II, 1827, p. 147, pl. CCV, fig. 1.—*WYATT, Man. Conch., 1838, p. 68, pl. XI, fig. 3.—*HANLEY, Test. Moll., 1842, p. 220; *Biv. Shells, 1843, p. 220.—*KUSTER, Conch. Cab. An., 1853, p. 31, pl. VII, fig. 4.—*H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—*CLESSIN, Conch. Cab. An., 1876, p. 235, pl. LXXVII, fig. 5.

**Anodon trapesialis* CROUCH, Ill. Int. Lam., 1827, p. 16, pl. IX, fig. 7.—*CATLOW and REEVE, Conch. Nom., 1845, p. 68.

**Margarita (Anodonta) trapesialis* LEA, Syn., 1836, p. 53; 1838, p. 31.

**Margarou (Anodonta) trapesialis* LEA, Syn., 1852, p. 52; 1870, p. 82.

**Columba trapesialis* P.ÉTEL, Conch. Sam., III, 1890, p. 188.

**Anodon giganteus* SPIX (part), Test. Fluv. Bras., 1827, p. 27, pl. XIX, fig. 2.

**Anodon gigantea* SOWERBY, Conch. Icon., XVII, 1867, pl. VIII, fig. 18.

**Anodonta gigantea* VON MARTENS, Mal. Bl., XV, 1868, p. 196.

**Columba gigantea* P.ÉTEL, Conch. Sam., III, 1890, p. 188.

*? *Anodon penicillatus* GRAY,³ Pr. Zool. Soc. Lond., 1834, p. 57.—*MÖLLER, Syn. Nov. Gen., 1836, p. 195.

¹ I have never seen this shell, and can not be positive from the figure and description whether it is a *Glabaris* or an *Anodonta*. I incline to think it the former, and that it belongs in this group.

² = *Anodontites trapesialis* Lamarck according to d'Orbigny in above, but in Voy. An. Mer. he says it is not that.

³ I have never seen this shell. Dr. Lea believes it to = *trapesialis* Lamarck.

- **Anodonta penicillata* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—
 *PÆTEL, Conch. Sam., III, 1890, p. 183.
 **Anodon susanna* GRAY in Griffith, Cuv., XII, 1834, pl. XXIV, fig. 1.¹—*SOWERBY,
 Conch. Icon., XVII, 1867, pl. IX, fig. 21.
 **Anodonta susanna* PÆTEL, Conch. Sam., III, 1890, p. 185.
 *†*Anodonta ciconia* GOULD, Pr. Bost. Soc. Nat. Hist., IV, 1851, p. 92.²—*?GOULD
 and CARPENTER, Pr. Zool. Soc. Lond., 1856, p. 202.—*OTIA, Conch., 1862, p.
 213.—*PÆTEL, Conch. Sam., III, 1890, p. 177.—*?FISCHER and CROSSE,
 Miss. Sci., Pt. 7, II, 1894, p. 534, pl. LXVIII, figs. 2, 2a.
 **Anodon blainvilliana* SOWERBY, Conch. Icon., XVII, 1867, pl. VI, fig. 2.

† GLABARIS TRAPESIALIS var. ANSERINUS Spix.³

- **Anodon anserinus* SPIX, Test. Fluv. Bras., 1827, p. 29, pl. XVII, figs. 1, 2.—*SOWERBY,
 Conch. Icon., XVII, 1870, pl. XXXI, fig. 125.
 **Anodon anserina* CATLOW and REEVE, Conch. Nom., 1845, p. 66.
 **Margarita (Anodonta) anserina* LEA, Syn., 1838, p. 31.
 **Anodonta anserina* HANLEY, Test. Moll., 1842, p. 222; *Biv. Shells, 1843, p. 222.—
 *H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—*CHENU, Man., 1859, II,
 p. 146.—*CLESSIN, Conch. Cab. Ano., 1873, p. 80, pl. XX, fig. 1.—*PÆTEL,
 Conch. Sam., III, 1890, p. 176.
 **Margaron (Anodonta) anserina* LEA, Syn., 1852, p. 52; 1870, p. 83.

† GLABARIS TRAPESIALIS var. EXOTICUS Lamarck.

- **Anodonta exotica* LAMARCK, An. sans Vert., VI, 1819, p. 87.—*STARK, Nat. Hist., II,
 1828, p. 89.—*DELESSERT, Rec. Coq. Lam., 1841, pl. XIII, fig. 1.—*HANLEY, Test.
 Moll., 1842, p. 217; *Biv. Shells, 1843, p. 217.—*D'ORBIGNY, Voy. Am. Mer.,
 1843, p. 621.—*CHENU, Ill. Conch., 1858, pl. III, fig. 2.—*VON MARTENS,
 Mal. Bl., XV, 1868, p. 197.—*STROBEL, Mat. Mal., Pt. 1, 1874, p. 66.—*CLESSIN,
 Conch. Cab. Ano., 1875, p. 178, pl. LVIII, figs. 1, 2.
 **Anodonta exotica* CATLOW and REEVE, Conch. Nom., 1845, p. 66.
 **Columba exotica* PÆTEL, Conch. Sam., III, 1890, p. 188.

† GLABARIS TRAPESIALIS var. SCRIPTUS Sowerby.

- **Anodon scriptus* SOWERBY, Conch. Icon., XVII, 1867, pl. IV, fig. 9.⁴
 **Anodon subsinuatus* SOWERBY, Conch. Icon., XVII, 1867, pl. VII, fig. 14.

¹This is briefly described in the index, p. 595, as *Anodon susanna*. In the text the genus is called *Anodontites*.

²Two specimens of this, a large and a smaller one, are in the Gould collection. Lea places the species in the synonymy of *G. trapesialis* Lamarck., to which Lewis objects in a note on the back of Gould's label on account of its locality—Mexico. After carefully comparing these shells with all our *trapesialis* in the Museum collections I am unable to separate the two. Carpenter states (Mazatlan Shells, p. 117) that it is found rather plentifully at Mazatlan. I do not believe that the locality given for Gould's shells is correct (it is referred to Mexico with doubt by its author), and have no doubt that they are from South America. The species alluded to by Carpenter is probably *G. glauca* Valenciennes, which is closely related to *G. trapesialis*.

³*Glabaritis trapesialis* is a very abundant, widely distributed species, and shows a great number of variations. Some of these are probably worthy of varietal names, others seem to be so mixed with various forms that they are scarcely worthy of any designation.

⁴A brownish, somewhat elongated form, much narrowed in front, receiving its name from having dark purplish letter-like marks on the nacre. There is every possible development of this character from shells in which it is a marked feature to those without it at all.

- * *Anodon subsinuatus* SOWERBY, Conch. Icon., XVII, 1867, pl. VIII, fig. 15.
 * *Anodon areolatus* SOWERBY, Conch. Icon., XVII, 1867, pl. X, fig. 28.
 * *Anodonta bahiensis* KUSTER, Conch. Cab. Ano., 1873, p. 94, pl. XX, fig. 2.—*PÆTEL, Conch. Sam., III, 1890, p. 176.
 * *Glabaris bahiensis* VON IHERING, Arch. für Naturg., 1893, p. 115.

GLABARIS TRAPESIALIS var. **MORETONIANUS** Sowerby.

- * *Anodon moretonianus* SOWERBY, Conch. Icon., XVII, 1867, pl. IX, fig. 20.

† **GLABARIS TRAPESIALIS** var. **RIOPLATENSIS** Sowerby.

- * *Anodon rioplatensis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVI, fig. 101.
 * *Anodonta rioplatensis* CLESSIN, Conch. Cab. Ano., 1875, p. 217, pl. LXIV, fig. 3.—
 * PÆTEL, Conch. Sam., III, 1890, p. 184.
 * ? *Anodon ciconia* SOWERBY, Conch. Icon., XVII, 1870, pl. XXIX, fig. 115 a.

† **GLABARIS TRAPESIALIS** var. **CYGNÆFORMIS** Pilsbry.

- * *Glabaris trapesialis* var. *cygnaformis* PILSBRY, Pr. Ac. N. Sci. Phila., 1896, p. 563, pl. XXVI, fig. 4, 5.

Tropical South America from Brazil and Peru southward.

† **GLABARIS RADIATUS** Spix.¹

- * *Anodon radiatus* SPIX, Test. Fluv. Bras., 1827, p. 31, pl. XXIII, fig. 1.
 * *Margaron (Anodonta) radiatus* LEA, Syn., 1870, p. 83.
 * *Margarita (Anodonta) radiata* LEA, Syn., 1836, p. 51.
 * *Anodon radiata* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
 * *Glabaris radiata* VON IHERING, Arch. für Nat., 1893, p. 115.

Brazil.

† **GLABARIS SIMPSONIANUS** Pilsbry.

- * *Glabaris simpsonianus* PILSBRY, Pr. Ac. N. Sci. Phila., 1896, p. 564, pl. XXVII, fig. 13.

Rio de la Plata.

GLABARIS HERTWIGII von Ihering.

- * *Anodonta hertwigii* VON IHERING, Arch. für Nat., 1890, p. 150, pl. IX, fig. 7.

† **GLABARIS SINUOSUS** Lamarck.

- * *Anodonta sinuosa* LAMARCK, An. sans Vert., VI, 1819, p. 87.—* DESHAYES, Enc. Meth., II, 1827, p. 147, pl. CCIII, fig. 2.—* HANLEY, Test. Moll., 1842, p. 224;
 * Biv. Shells, 1843, p. 224, Pt. 24, fig. 16.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* PÆTEL, Conch. Sam., III, 1890, p. 184.
 * *Margarita (Anodonta) sinuosa* LEA, Syn., 1836, p. 54; 1838, p. 32.
 * *Anodon sinuosa* CATLOW and REEVE, Conch. Nom., 1845, p. 68.
 * *Margaron (Anodonta) sinuosa* LEA, Syn., 1852, p. 53; 1870, p. 83.
 * *Anodon sinuosus* SWAINSON, Ex. Conch., 2d ed., 1841, p. 29, pl. XVI.

Brazil.

¹The specimen figured is a young shell, somewhat narrowed at the posterior end, and quite full at the central base, with broad, faint rays. It may be only a variety of *trapesialis*.

GLABARIS GRIJALVÆ Morelet.

- * *Anodonta grijalvæ* MORELET, Jl. de Conch., XXXI, 1884, p. 12.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 532, pl. LXIX, figs. 1, 1a.
* *Anodonta grijalvæ* PÆTEL, Conch. Sam., III, 1890, p. 180.¹

Tabasco, Mexico.

† GLABARIS GLAUCUS Valenciennes.

- * *Anodonta glauca* VALENCIENNES, Rec. Obs. Zool., II, 1833, p. 236, pl. I, fig. 2.—* FERUSSAC, Guer. Mag., 1835, p. 25.—* DESHAYES, An. sans Vert., 2d ed., VI, 1835, p. 569; 3d ed., II, 1839, p. 679.—* DELESSERT, Rec. Coq. Lam., 1841, pl. XIII, fig. 3.—* HANLEY, Test. Moll., 1842, p. 221; * Biv. Shells, 1843, p. 221.—* CONRAD, Pt. Ac. N. Sci. Phila., VI, 1853, p. 264.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. An., 1876, p. 222, pl. LXXXIII fig. 1.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.—* FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 533, pl. LXIX, figs. 1, 1 a.
* *Margarita (Anodonta) glauca* LEA, Syn., 1836, p. 51; 1838, p. 30.
* *Anodon glauca* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* GOULD, Pr. Bost. Soc. N. Hist., III, 1850, p. 293.
* *Margarou (Anodonta) glauca* LEA, Syn., 1852, p. 50; 1870, p. 80.
* *Monocondylæa glauca* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 501.—* PÆTEL, Conch. Sam., III, 1890, p. 174.
* *Anodon glaucus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXVII, fig. 105.
* ? *Anodonta ciconia* GOULD, Pr. Bost. Soc. N. Hist. IV, 1851, p. 92.—* CARPENTER, Maz. Shells, 1857, p. 117.—* ? FISCHER and CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 534, pl. LXVIII, figs. 2, 2a.
* *Anodonta burroughiana* CHENU (part), Ill. Conch., 1858, pl. III.

GLABARIS GLAUCUS var. SINALOENSIS Crosse and Fischer.

- * *Anodonta glauca* VALENCIENNES, var. *sinaloenses* CROSSE and FISCHER, Jl. de Conch., XXXI, 1883, p. 219.

Mexico, south to Peru and Brazil.

GLABARIS UMBONATUS Simpson.

- Anodon ciconia* SOWERBY (part), Conch. Icon., XVII, 1870, pl. XXIX, fig. 115b.²

Locality unknown.

† GLABARIS BRIDGESII Lea.

- * *Anodonta bridgesii* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 95; * Jl. Ac. N. Sci. Phila., VI, 1868, p. 291, pl. XLII, fig. 104; * Obs., XII, 1869, p. 51, pl. XLII,

¹The above atrocity, which is a sample of many names in Pætel, is no doubt intended for *G. grijalvæ*.

²Sowerby gives two figures of what he calls *ciconia*, 115a being most likely a young shell of some form of *trapesialis*, the other a totally different form, apparently a new species of *Glabaris* of the *trapesialis* group. As far as the figure shows it may be described as follows: Shell subquadrate with nearly straight dorsal and basal lines, biangulate behind, greatly inflated, with very full, high beaks which rise far above the dorsal line, winged and angulated at the front and hinder dorsal line; color olive-green. Length, 147 mm.; height, 92 mm.; elevation of beaks above dorsal line, 10 mm.

fig. 104.—* CLESSIN, Conch. Cab. Ano., 1874, p. 136, pl. XLV, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 177.

* *Margaron (Anodonta) bridgesii* LEA, Syn., 1870, p. 81.

Nicaragua; Honduras.

† GLABARIS JEWITTIANUS Lea.

* *Anodonta jewittiana* LEA, Pr. Ac. N. Sci. Phila., XII, 1868, p. 95.

* *Anodonta jewittii* LEA, Jl. Ac. N. Sci. Phila., VI, 1869, p. 289, pl. XLI, fig. 101; * Obs., XII, 1869, p. 49, pl. XLI, fig. 101.—* CLESSIN, Conch. Cab. Ano., 1874, p. 135, pl. XLIV, figs. 1, 2.—* B. H. WRIGHT, Check List, 1888.—* PÆTEL, Conch. Sam., III, 1890, p. 180.

* *Margaron (Anodonta) jewittii* LEA, Syn., 1870, p. 81.

Lake Nicaragua.

† GLABARIS FORBESIANUS Lea.

* *Anodonta forbesiana* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 92; * Jl. Ac. N. Sci. Phila., V, 1863, p. 393, pl. XLVII, fig. 301; * Obs., X, 1863, p. 29, pl. XLVII, fig. 301.—* CLESSIN, Conch. Cab. Ano., 1873, p. 115, pl. XXXIV, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 179.

* *Anodon forbesianus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXX, fig. 119.

* *Margaron (Anodon'a) forbesiana* LEA, Syn., 1870, p. 81.

Uruguay; Peru.

† GLABARIS MORICANDII Lea.

* *Anodonta moricandii* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 90; * Jl. Ac. N. Sci. Phila., V, 1863, p. 396, pl. XLIX, fig. 303; Obs., X, 1863, p. 32, pl. XLIX, fig. 303.—* CLESSIN, Conch. Cab. Ano., 1874, p. 114, pl. XXXVIII, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 182.

* *Anodon moricandii* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXII, fig. 126.

* *Margaron (Anodonta) moricandii* LEA, Syn., 1870, p. 81.

* *Glabaris moricandii* VON IHERING, Arch. für Nat., 1893, p. 115.

* ? *Anodonta exotica* SOWERBY, Conch. Icon., XVII, 1867, pl. XVI, fig. 57.

* *Anodonta angustata* CLESSIN,¹ Conch. Cab. Ano., 1876, p. 226, pl. LXXIV, figs. 6, 7.—* PÆTEL, Conch. Sam., III, 1890, p. 176.

Brazil.

(Group of *Glabaris georginae*.)

Shell subsolid, obovate, with a decided, curved posterior ridge, and a smaller one above it, the space between the ridges a shallow groove.

GLABARIS GEORGINÆ Griffith.

* *Anodonta georginae* GRIFFITH, Griff. Cuvier, XII, 1834, pl. XIX. Brief description in index.

Rivers of Paraguay.

(Group of *Glabaris trigonus*.)

Shell long, elliptical, solid, inflated, produced at posterior base with smooth, shining epidermis; nacre very bright.

¹ Appears to be a very young *G. moricandii*.

† GLABARIS TRIGONUS Spix.

- * *Anodon trigonus* SPIX, Test. Fluv. Bras., 1827, p. 29, pl. XXII, fig. 2.
 * *Margarita (Anodonta) trigona* LEA, Syn., 1836, p. 51; 1838, p. 30.
 * *Anodon trigona* CATLOW and REEVE, Conch. Nom., 1845, p. 68.
 * *Anodonta trigona* HANLEY, Test. Moll., 1842, p. 218.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 618.—* KUSTER, Conch. Cab. Ano., 1853, p. 9, pl. II, fig. 5.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* PÆTEL, Conch. Sam., III, 1890, p. 186.
 * *Margaron (Anodonta) trigona* LEA, Syn., 1852, p. 50; 1870, p. 75.
 * *Anodon chiquetana* D'ORBIGNY, Guer. Mag., 1835, p. 41.
 * *Anodonta chiquetana* PÆTEL, Conch. Sam., III, 1890, p. 177.
 * *Anodonta castelnandi* HUPE, Moll. Nonv., III, 1857, p. 88, pl. XVIII, fig. 4.—* PÆTEL, Conch. Sam., III, 1890, p. 177.
 * *Anodonta subrostrata* PHILIPPI, Mal. Bl., XVI, 1869, p. 39.—* PFEIFFER, Nov. Conch., III, 1869, p. 486, pl. CV, figs. 1-3.—* PÆTEL, Conch. Sam., III, 1890, p. 185.
 * *Anodonta ucayalensis* PHILIPPI, Mal. Bl., XVI, 1869, p. 40.—* PFEIFFER, Nov. Conch., III, 1869, p. 486, pl. CV, figs. 4-6.—* PÆTEL, Conch. Sam., III, 1890, p. 186.

Brazil; Ecuador; Peru; Bolivia.

† GLABARIS AMAZONENSIS Lea.

- * *Anodonta amazonensis* LEA, Pr. Ac. N. Sci. Phila., IV, 1860, p. 89; * JI. Ac. N. Sci. Phila., V, 1863, p. 395, pl. XLVI, fig. 300; * Obs., X, 1863, p. 31, pl. XLVI, fig. 300.—* CLESSIN, Conch. Cab. Ano., 1874, p. 119, pl. XXXVII, fig. 7.—* PÆTEL, Conch. Sam., III, 1890, p. 176.
 * *Anodon amazonensis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXX, fig. 120.
 * *Margaron (Anodonta) amazonensis* LEA, Syn., 1870, p. 82.

Amazon.

GLABARIS WEDDELLII Hupe.

- * *Anodonta weddellii* HUPE, Moll. Nouv., III, 1857, p. 87, pl. XVII, fig. 5.—* CLESSIN, Conch. Cab. Ano., 1876, p. 214, pl. LXVI, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 186.
 * *Anodon weddellii* SOWERBY, Conch. Icon., XVII, 1868, pl. XX, fig. 80.
 * *Margaron (Anodonta) weddellii* LEA, Syn., 1870, p. 79.

Brazil.

† GLABARIS ELONGATUS Swainson.

- * *Anodon elongatus* SWAINSON, Zool. Ill., 1st Ser., III, pl. CLXXVI, 1823.
 * *Margarita (Anodonta) elongata* LEA, Syn., 1836, p. 53; 1838, p. 32.
 * *Anodonta elongata* HANLEY, Test. Moll., 1842, p. 223; * Biv. Shells, 1843, p. 223.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.
 * *Anodon elongata* CATLOW and REEVE, Conch. Nom., 1845, p. 66.
 * *Anodonta solidula* DEVILLE and HUPE, Rev. et Mag. Zool., 1850, p. 644, pl. XVI, fig. 2.—* HUPE, Moll. Nouv., III, 1857, p. 88, pl. XVIII, fig. 2.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1876, p. 221, pl. LXXIII, fig. 2.—* PÆTEL, Conch. Sam., III, 1890, p. 185.
 * *Margaron (Anodonta) solidula* LEA, Syn., 1852, p. 53; 1870, p. 83.
 * *Anodon solidula* SOWERBY, Conch. Icon., XVII, 1869, pl. XXIII, fig. 91.
 † * *Anodonta wheatleyi* LEA, Tr. Am. Phil. Soc., X, 1852, p. 287, pl. XXVI, fig. 49; * Obs., V, 1852, p. 43, pl. XXVI, fig. 49.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874, p. 113, pl. XXXVI, figs. 3, 4.—* PÆTEL, Conch. Sam., III, 1890, p. 186.
 * *Margaron (Anodonta) wheatleyi* LEA, Syn., 1852, p. 51; 1870, p. 82.

- * *Anodon amethystus* SOWERBY, Conch. Icon., XVII, 1869, pl. XXIV, figs. 95, 95a, 95b.¹
 * *Anodonta amethysta* CLESSIN, Conch. Cab. Ano., 1875, p. 180, pl. LX, fig. 3.
 * *Anodon dactylus* SOWERBY, Conch. Icon., XVII, 1867, pl. XIX, fig. 75.
 * *Anodonta dactylus* CLESSIN, Conch. Cab., 1875, p. 175, pl. LVII, fig. 3.—PÆTEL, Conch. Sam., III, 1890, p. 178.
Margaron (Anodonta) dactylus LEA, Syn., 1870, p. 80.

GLABARIS LINGULATUS Hupe.

- * *Anodonta lingulata* HUPE, Moll. Nouv., III, 1857, p. 89.—* CLESSIN, Conch. Cab. Ano., 1875, p. 215, pl. LXVI, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 181.
 * *Anodon lingulata* SOWERBY, Conch. Icon., XVII, 1869, pl. XXIII, fig. 90.
 * *Margaron (Anodonta) lingulata* LEA, Syn., 1870, p. 79.
 * *Glabaris lingulata* VON IHERING, Arch. für Nat., 1893, p. 119.

Paraguay.

†GLABARIS MORTONIANUS Lea.

- * *Anodonta mortoniana* LEA, Tr. Am. Phil. Soc., V, 1834, p. 80, pl. XIII, fig. 37; *Obs., I, 1834, p. 192, pl. XIII, fig. 37.—* HANLEY, Test. Moll., 1842, p. 219.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502.—* CLESSIN, Conch. Cab. Ano., 1874, p. 151, pl. XLVIII, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 182.
 * *Margarita (Anodonta) mortoniana* LEA, Syn., 1838, p. 30.
 * *Anodon mortoniana* CATLOW and REEVE, Conch. Nom., 1845, p. 67.
 * *Margaron (Anodonta) mortoniana* LEA, Syn., 1852, p. 150; 1800, p. 80.

Parana River, South America.

GLABARIS LONGINUS Spix.

- * *Anodon longinus* SPIX, Test. Fluv. Bras, 1827, p. 29, pl. XXII, fig. 1.
 * *Mycetopus longinus* CLESSIN, Conch. Cab. Ano., 1875, p. 202.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 8.
 * *Iridina longina* LEA, Syn., 1836, p. 57.
 * *Anodonta longina* KUSTER, Conch. Cab. Ano., 1853, p. 7, pl. II, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 181.

Brazil; Amazon.

GLABARIS LEOTANDI Guppy.²

- * *Anodonta leotandi* GUPPY, Ann. and Mag., XIV, 1864, p. 243; * XVII, 1866, p. 54; Pr. Sci. Assn. Trinidad, 1872, p. —; * Jl. Conch., VII, 1894, p. 229.
 * *Anodonta leotandi* B. H. WRIGHT, Check List, 1888.
 * *Margaron (Anodonta) leotandi* LEA, Syn., 1870, p. 83.

Trinidad Island, West Indies.

Section STYGANODON von Martens, 1900.

(Type, *Anodonta tenebricosa* Lea.)

Shell subrhomboid, with a thick, dark, rather rough, sombre-colored epidermis, which is sometimes faintly rayed, nacre lurid, shaded green; animal unknown.

(Group of *Glabaris tenebricosus*.)

Shell elongate, slightly inflated; base incurved.

¹ Changed to *wheatleyi* Lea, by Sowerby in index.² I am not certain where this groups, as I have never seen the shell, and it has not been figured.

† GLABARIS TENEBRICOSUS Lea.

- * *Anodonta tenebricosa* LEA, Tr. Am. Phil. Soc., V, 1834, p. 78, pl. XII, fig. 36;
 * Obs., I, 1834, p. 190, pl. XII, fig. 36.—* D'ORBIGNY, Guer. Mag., 1835, p. 39.—
 * HANLEY, Test. Moll., 1842, p. 224.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 616.—
 * Hanley, Biv. Shells, 1856, p. 224.—* H. and A. ADAMS, Gen. Rec. Moll., II,
 1857, p. 503.—* CHENU, Man., 1859, p. 146, fig. 720.—* VON MARTENS, Mal. Bl.,
 XV, 1868, p. 200.—* P.ETEL, Conch. Sam., III, 1890, p. 185.
 * *Margarita (Anodonta) tenebricosa* LEA, Syn., 1836, p. 54; 1838, p. 32.
 * *Anodon tenebricosa* CATLOW and REEVE, Conch. Nom., 1845, p. 68.—* SOWERBY,
 Conch. Icon., XVII, 1867, pl. XIII, fig. 43.
 * *Margaron (Anodonta) tenebricosa* LEA, Syn., 1852, p. 53; 1870, p. 83.
 * *Glabaris tenebricosa* VON IHERING, Arch. für Nat., 1893, p. 61.
 * *Anodon tenebricosus* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXI, fig. 123.

Brazil, Ecuador, Peru; south to Argentina.

GLABARIS PASTASANUS Clessin.

- * *Anodonta pastasana* CLESSIN, Mal. Bl. (2), I, 1879, p. 173, pl. XI, fig. 1.

Rio Pastasa, Ecuador.¹

† GLABARIS SOLENIFORMIS d'Orbigny.

- * *Anodonta soleniformis* D'ORBIGNY, Guer. Mag., 1835, p. 41; * Voy. Am. Mer., 1843,
 p. 617, pl. LXXIV, figs. 1, 3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p.
 503.—* CLESSIN, Conch. Cab. Ano., 1873, p. 111, pl. XXVII, fig. 1.—* P.ETEL,
 Conch. Sam., III, 1890, p. 185.
 * *Margarita (Anodonta) soleniformis* LEA, Syn., 1838, p. 32.
 * *Margaron (Anodonta) soleniformis* LEA, Syn., 1852, p. 53; 1870, p. 83.
 * *Glabaris soleniformis* VON IHERING, Arch. für Nat., 1893, p. 59.
 * *Anodon solenidea* SOWERBY, Conch. Icon., XVII, 1867, pl. XVIII, fig. 65.
 * *Margaron (Anodonta) solenidea* LEA, Syn., 1870, p. 83.

Brazil, south into Argentina.

† GLABARIS CLESSINI Fischer.

- * *Mycetopus plicatus* CLESSIN, Mal. Bl., V, 1882, p. 190, pl. IV, fig. 7.
 * P.ETEL, Conch. Sam., III, 1890, p. 187.
 * *Mycetopus clessini*, FISCHER,² Jl. de Conch., XXXVIII, 1890, p. 8, footnote.
 * *Glabaris nehringi* VON IHERING, Arch. für Nat., 1893, p. 60.

Southern Brazil; southward into Argentina.

GLABARIS BAMBOUSEARUM Morelet.

- * *Anodon bambousearum* MORELET, Test. Nov., II, 1851, p. 24.—* FISCHER and
 CROSSE, Miss. Sci., Pt. 7, II, 1894, p. 527, pl. LXIII, figs. 6, 6a.

Palenque in Chiapas, Mexico.

¹ Probably only a variety of *tenebricosus*.

² Fischer changed the name *plicatus* to *clessini* because the former name had been used by Sowerby for a species which he (Sowerby) placed in *Mycetopus*. Sowerby's shell is a *Mutela*, and that of Clessin a *Glabaris* of the *Tenebricosus* group. Von Ihering applied the name *nehringi* to the above after Fischer had changed it, and was evidently not aware that the French savant had given it a new name.

† GLABARIS SCHRÖTERIANUS Lea.

- * *Anodonta schröteriana* LEA, Tr. Am. Phil. Soc., XI, 1852, p. 292, pl. XXIX, fig. 55;
 * Obs., V, 1852, p. 48, pl. XXIX, fig. 55.—* HUPE, Moll. Nouv., III, 1857, p. 89, pl. XVIII, fig. 3.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 503.—* CLESSIN, Conch. Cab. Ano., 1874, p. 151, pl. XLVII, figs. 5, 6.—* PÆTEL, Conch. Sam., III, 1890, p. 184.
 * *Margarona (Anodonta) schröteriana* LEA, Syn., 1852, p. 51; 1870, p. 82.
 * *Anodonta schröteriana* SOWERBY, Conch. Icon., XVII, 1868, pl. XX, fig. 74.
 * *Margaritana schröteriana* PÆTEL, Conch. Sam., III, 1890, p. 173.

Amazon drainage.

(Group of *Glabaris obtusus*.)

Shell short, inflated, thin, feebly rayed, rays often broken; base rather full.

† GLABARIS OBTUSUS Spix.

- * *Anodon obtusus* SPIX, Test. Fluv. Bras., 1827, p. 30, pl. XXII, fig. 3.
 * *Margarita (Anodonta) obtusa* LEA, Syn., 1836, p. 52; 1838, p. 31.
 * *Anodonta obtusa* HANLEY, Test. Moll., 1842, p. 221; Biv. Shells, 1843, p. 221.—
 * POTIEZ and MICHAUD, Gall. Moll., 1844, p. 144, pl. LV, fig. 3.—* KUSTER, Conch. Cab. Ano., 1853, p. 8, pl. II, figs. 3, 4.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 504.—* MUSGRAVE, Phot. Conch., 1863, pl. I, fig. 7.—* CLESSIN, Conch. Cab. Ano., 1875, p. 170, pl. LVI, figs. 1, 2.—* PÆTEL, Conch. Sam., III, 1890, p. 182.
 * *Margarona (Anodonta) obtusa* LEA, Syn., 1852, p. 51; 1870, p. 82.
 * *Anodon obtusa* CATLOW and REEVE, Conch. Nom., 1845, p. 67.—* SOWERBY, Conch. Icon., XVII, 1867, pl. XII, fig. 39.
 * *Anodonta* VALENCIENNES, Coq. Mar. Biv., 1827?, pl. XLVIII, figs. 3a, 3b.¹

Brazil; Paraguay.

† GLABARIS LITURATUS Spix.

- * *Anodon obtusus* var. *b. lituratum* SPIX, Test. Fluv. Bras., 1827, p. 30, pl. XXII, fig. 4.
 * *Anodonta liturata* HUPE, Moll. Nouv., 1857, p. 87, pl. XVII, fig. 4.²
 * *Anodon liturata* SOWERBY, Conch. Icon., XVII, 1868, pl. XX, fig. 78.

Brazil.

Section VIRGULA Simpson, 1900.

(Type, *Glabaris ensiformis* Spix.)

Shell subsolid to solid, moderately inflated, greatly elongated, straight or falcate, rounded in front, sharply pointed at the posterior base, where the high, sharply defined posterior ridge ends and above which it is somewhat obliquely truncated; beaks not high; epidermis green to olive; nacre brilliant, bluish or purplish, iridescent, rayed with very fine, indistinct ridges; posterior end with a slight sinus.

Animal unknown.

¹ Valenciennes gives no name or description with the above, but the figure is, no doubt, *G. obtusa*.

² Hupe is certain that this is different from *obtusum*, and says that the small angular marks on its surface are very distinct; that it is thinner and less inflated. I doubt whether it is more than a variety of *obtusum*.

† GLABARIS ENSIFORMIS Spix.

- * *Anodon ensiformis* SPIX, Test. Fluv. Bras., 1827, p. 31, pl. XXIV, figs. 1, 2.—
 * CATLOW and REEVE, Conch. Nom., 1845, p. 66.—* SOWERBY, Conch. Icon.,
 XVII, 1867, pl. XI, fig. 31.
 * *Iridina ensiformis* LEA, Syn., 1836, p. 57.
 * *Anodonta ensiformis* HANLEY, Test. Moll., 1842, p. 223; * Biv. Shells, 1843, p.
 223.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 618, pl. LXXIX, fig. 10.—* KUS-
 TER, Conch. Cab. An., 1853, p. 8, pl. II, fig. 12.—* H. and A. ADAMS, Gen. Rec.
 Moll., II, 1857, p. 503.—* ? CHENU, Man., 1859, II, p. 146, fig. 721.—* PÆTEL,
 Conch. Sam., III, 1890, p. 179.
 * *Margarita (Anodonta) ensiformis* LEA, Syn., 1838, p. 32.
 * *Margaron (Anodonta) ensiformis* LEA, Syn., 1852, p. 51; 1870, p. 82.

Tropical South America.¹

† GLABARIS FALSUS Simpson.²

Yuruari River, a branch of the Orinoco.

† GLABARIS LEGUMEN von Martens.

- * *Anodonta legumen* VON MARTENS, S. B. Nat. Fr., 1888, p. 65.

Southern Brazil.

The following are unfigured or indeterminate species of *Glabaris*.

- * *Anodon brevis* SOWERBY, Conch. Icon., XVII, 1870, pl. XXXI, fig. 124.

La Plata, South America.³

- * *Anodon porcifer* GRAY, Pr. Zool. Soc. Lond., 1834, p. 58.

Paraguay.

- * *Unio (Anodontes) spixii* D'ORBIGNY, Guer. Mag., 1835, p. 39.⁴

Brazil.

- * *Anodon cheeziana* SOWERBY, Conch. Icon., XVII, 1867, pl. XV, fig. 52.

Probably a *Glabaris*.

- * *Anodonta nicaragua* PHILIPPI, Zeits. für Mal., V, 1848, p. 130.

Nicaragua.

¹ The three very peculiar species of this section seem to show relationship with *G. wheatleyi* and *G. clessini*.

² Shell elongated, rather thin, subrhomboid and pointed at the posterior base, slightly rayed on the low, rounded posterior ridge; beaks low; epidermis olive green, somewhat cloth-like; hinge line nearly straight; anterior scars deep; escutcheon small, dark; naere shaded bluish and greenish, lurid purplish in the center, iridescent behind. Length, 76 mm.; height, 21 mm.; diameter, 11 mm. This was supposed by Dr. Lea to be *ensiformis* and I thought it was that until a more careful examination convinced me of its distinctness. It is a smaller, thinner, more rhomboid shell, and has a somewhat cloth-like epidermis, while that of *ensiformis* is smooth. I regret that I can not figure this species, and that I must describe it in a footnote, but I only discovered that it was a distinct species as the Synopsis was about ready for the press.

³ I can not tell what this is. If it is a true *Glabaris*, it would be the type of a group perhaps near *G. tenebricosus*.

⁴ D'Orbigny refers to figures in Spix, but his references are badly mixed up.

* *Anodonta aperta* RAFINESQUE, Atl. Jl., No. 4, 1832, p. 134.

Parana River, South America.

* *Anodonta atrovirens* PHILIPPI, Zeits. für Mal., V, 1848, p. 130.

* *Anodonta carinata* DUNKER, Mal. Bl., V, 1858, p. 225.

Colombia.

* *Anodonta cornea* PHILIPPI, Zeits. für Mal., V, 1848, p. 130.

Nicaragua.

* *Anodonta giullaini* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 502. Credited to Recluz.

* *Anodonta paphos* RAFINESQUE, Atl. Jl. and Friend., 1832, p. 134.

Parana River.

* *Anodon pictus* SWAINSON, Ex. Conch., 2d ed., 1841, p. 39.

* *Anodonta wallisi* MOUSSON, Mal. Bl., XVI, 1869, p. 188.

* *Anodonta tehuatepecensis* FISCHER and CROSSE, Miss. Sci., 1894, p. 526.

Tehuantepec. Not yet figured.

* *Anodonta hertwigi* VON IHERING.

Where?

* *Anodonta bergi* VON IHERING.

Where?

Genus MYCETOPODA d'Orbigny, 1835.¹

(Type, *Mycetopoda soleniformis* d'Orbigny.)

Mycetopoda D'ORBIGNY, Guer. Mag., No. 62, 1835, p. 41.

Mycetopus D'ORBIGNY, Voy. Am. Mer., 1847, p. 600.

Shell thin, elongated, truncate above behind, with a low, posterior ridge and rather flat, smooth or slightly concentrically wrinkled beaks; epidermis smooth, shining, pale greenish-yellow or brownish, rayless; hinge line long, straight, edentulous or showing faint traces of denticles, under a glass, beneath the naere; naere soft, bluish-white and iridescent; muscular impressions faint, irregular, the smaller anterior scar above the larger one; beak cavities shallow.

Animal having very long gills, the inner much the larger, united to the abdominal sac throughout their whole length; palpi large, round below, projecting very slightly behind and attached along the whole length of the straight upper border; mantle very thin, slightly thickened at the edges; branchial opening closed below into a short papillose siphon, and separated from the nearly smooth anal opening by a strong bridge; superanal opening not closed below; foot very long, developed at the lower end into a sort of head or button.

¹ So named by its author in the Guerin Magazine, but afterwards changed by him to *Mycetopus* in the Voyage Amerique Meridionale. The genus has been made the type of a separate family by Gill, and was so acknowledged by Pelseneer and others, but it does not seem to me to be separable from the *Mutelidae*. Certain shells under favorable light show slight denticulations along the hinge line, which are, no doubt, vestigial taxodont teeth common to the family; the labial palpi and anal bridge are decidedly mutelid in character, and the great development of the foot is paralleled in *Solenia*, *Lastena*, and to some extent by *Gonidea* among the *Unionida*.

(Group of *Mycetopoda siliquosa*.)

Beaks in front of the center of the shell; anterior end evenly rounded; basal lines nearly straight; posterior ridge quite low. Animal with the characters of the genus.

†MYCETOPODA SILIQUOSA Spix.

- * *Anodon siliquosus* SPIX, Test. Fluv. Bras., 1827, p. 30, pl. XXIII, fig. 2.
 * *Mycetopoda siliquosus* D'ORBIGNY, Guer. Mag., 1835, p. 41.
 * *Mycetopus siliquosus* D'ORBIGNY, Voy. Am. Mer., 1843, p. 601, pl. LXVII.—* HANLEY, Test. Moll., 1842, p. 224; * Biv. Shells, 1843, p. 224.—* CATLOW and REEVE, Conch. Nom., 1845, p. 69.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 505; III, pl. CXVIII, fig. 1.—* SOWERBY, Conch. Icon., XVI, 1868, pl. I, fig. 2; III, fig. 2a.—* CLESSIN, Conch. Cab. Ano., 1875, p. 200, pl. LXVIII, figs. 2-4; LXIX, fig. 1.—* PÆTEL, Conch. Sam., III, 1890, p. 187.—* VON IHERING, Arch. für Nat., 1893, p. 56.
 * *Platiris (Mycetopus) siliquosus* LEA, Syn., 1852, p. 56; 1870, p. 90.
 * *Platiris (Iridina) siliquosa* LEA, Syn., 1836, p. 56; 1838, p. 34.
 * *Anodonta siliquosa* KUSTER, Conch. Cab. Ano., 1853, p. 35, pl. VIII, fig. 3.
 * *Mycetopoda siliquosa* CHENU, Ill. Conch., 1858, pl. I, figs. 2, 2a, 2b, 2c.

Bolivia, Brazil; south into Argentina.

*MYCETOPODA OCCIDENTALIS Clessin.¹

- Mycetopoda Occidentalis* CLESSIN, Mal. Bl. I, 1879, p. 174, pl. XI, figs. 2, 3.—
 * PÆTEL, Conch. Sam., III, 1890, p. 187.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 8.

Ecuador.

MYCETOPODA STAUDINGERI von Ihering.²

- * *Mycetopus staudingeri* VON IHERING, Arch. für Naturg., 1890, p. 131, figs. A, B.

Upper Amazon in Ecuador and Peru.

MYCETOPODA SUBSINUATA Sowerby.

- * *Mycetopus subsinuatus* SOWERBY, Conch. Icon., XVI, 1868, pl. IV, fig. 10.—* CLESSIN, Conch. Cab. Ano., 1875, p. 205, pl. LXVII, fig. 3.—* PÆTEL, Conch. Sam., III, 1890, p. 187.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 8.

Bogota; Colombia; Ecuador.

†MYCETOPODA PYGMÆA Spix.

- * *Anodon siliquosus* var. *b pygmaeus* SPIX, Test. Fluv. Bras., 1827, p. 30, pl. XXIII, figs. 3, 4.
 * *Mycetopus pygmaeus* SOWERBY, Conch. Icon., XVI, 1868, pl. II, fig. 4.—* CLESSIN, Conch. Cab. Ano., 1875, p. 205, pl. LXX, fig. 3.—* PÆTEL, Conch. Sam., 1890, p. 197.—* FISCHER, Jl. de Conch., XXXVIII, 1890, p. 8.
 * *Platiris (Mycetopus) pygmaeus* LEA, Syn., 1870, p. 90.
 † *Mycetopus weddellii* HUPE, Moll. Nonv., III, 1857, pl. XX, fig. 2.—* SOWERBY, Conch. Icon., XVI, 1868, pl. II, fig. 5.—* CLESSIN, Conch. Cab. Ano., 1875, p.

¹ Probably a wide variety of *M. siliquosus*.

² I have never seen this species, and the author only gives two rough interior outline figures, but its form is so much like that of *siliquosus* that I somewhat doubt its specific value

203, pl. LXVI, fig. 6.—* FISCHER, JI. de Conch., XXXVIII, 1890, p. 8.—* PÆTEL, Conch. Sam., III, 1890, p. 187.

Brazil; northward to Nicaragua.

MYCETOPODA HUPEANA Clessin.

* *Mycetopus pygmaeus* HUPE, Moll. Nouv., III, 1857, p. 93, pl. XIX, fig. 2.

* *Mycetopus hupcanus* CLESSIN, Conch. Cab. Ano., 1875, p. 206, pl. LXVI, fig. 15.—

* FISCHER, JI. de Conch., XXXVIII, 1890, p. 8.

Brazil.

(Group of *Mycetopoda ventricosa*.)

Shell rather short and high, inequilateral subrhomboid with a strong angle at the anterior upper point, cut away below in front, slightly sinuous on the base, narrower behind, strongly truncate on posterior slope; posterior ridge wide and lightly curved, hinge line curved.

Animal unknown.

†MYCETOPODA VENTRICOSA d'Orbigny.

* *Mycetopoda ventricosa* D'ORBIGNY, Voy. Am. Mer., 1843, p. 602, pl. LXXII, figs. 1-3.—

* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 505.—* SOWERBY, Conch. Icon., XVI, 1868, pl. III, fig. 8.—* CLESSIN, Conch. Cab. Ano., 1875, p. 202, pl. LXIX, figs. 2, 3.—* FISCHER, JI. de Conch., XXXVIII, 1890, p. 8.—* PÆTEL, Conch. Sam., III, 1890, p. 187.

* *Platiris (Mycetopus) ventricosus* LEA, Syn., 1852, p. 56; 1870, p. 90.

Bolivia.

(Group of *Mycetopoda soleniformis*.)

Shell large, rounded in front, but somewhat truncated on the lower anterior part; base line evenly incurved; posterior ridge well developed, curved, truncate on posterior slope; beaks central.

Animal that of the genus.

†MYCETOPODA SOLENIFORMIS d'Orbigny.

* *Mycetopoda soleniformis* D'ORBIGNY, Guer. Mag., 1835, p. 41.—* CHENU, III, Conch., 1858, pl. I, figs. 1a, 1b.

* *Platiris (Mycetopus) soleniformis* LEA, Syn., 1838, p. 34; 1852, p. 56; 1870, p. 90.

* *Mycetopus soleniformis* REEVE, Conch. Syst., I, 1841, p. 125, pl. XCIV.—* HANLEY, Test. Moll., 1842, p. 224; * Biv. Shells, 1843, p. 224.—* D'ORBIGNY, Voy. Am. Mer., 1843, p. 601, pl. LXVI.—* CATLOW and REEVE, Conch. Nom., 1845, p. 69.—* H. and A. ADAMS, Gen. Rec. Moll., II, 1857, p. 505; III pl. CXVIII, figs. 2a, 2b.—* CHENU, Man., 1859, II, p. 147, fig. 725.—* REEVE, Elements of Conch., II, 1860, pl. XXXII, fig. 181a, b.—* SOWERBY, Conch. Icon., XVI, 1868, pl. I, fig. 1.—* CLESSIN, Conch. Cab. Ano., 1875, p. 201, pl. LXVIII, fig. 1.—* FISCHER, JI. de Conch., XXXVIII, 1890, p. 7.—* PÆTEL, Conch. Sam., III, 1890, p. 187.

* *Mycetopus solenoides* SOWERBY, Conch. Man., 1839, fig. 151.

* *Margarou (Anodonta) soleniformis* LEA, Syn., 1852, p. 53.

* *Platiris (Mycetopus) soleniformis* LEA, Syn., 1870, p. 90.

Bolivia; Peru.

¹1843 was the date of issue of the last part of the voyage. The description of *Mycetopus* in this work appeared earlier.

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