

DESCRIPTION

OF SOME

NEW FOSSIL SHELLS,

FROM THE

TERTIARY OF PETERSBURG, VA.

Read before the American Philosophical Society, May 29, 1843,

BY

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ARTICLE IX.

Description of some new Fossil Shells, from the Tertiary of Petersburg, Virginia. By Henry C. Lea, Philadelphia. Read May 29, 1843.

IN the United States, the various Supercretaceous, or Tertiary, formations, are widely extended and beautifully developed. They have been traced from the St. Lawrence to the Gulf of Mexico, and from the Atlantic far into the western territory. For the sake of convenience, geologists have divided them into two groups, according to their geographical position, namely, the Atlantic and the Western Tertiary. Of the latter it is not, at present, my intention to speak,—but little, comparatively, is known of it, and it presents a rich field to any enterprising geologist who may undertake its investigation.

The northern extremity of the Atlantic Tertiary, as far as it has been discovered, is on the St. Lawrence and around Lake Champlain. From thence to Maryland, its course may be traced by a few small patches in New Jersey, and, from Maryland to the Gulf of Mexico, it exists in a broad sheet.

It is to be expected that, extending as it does over so wide a space, it should present very different characters in different localities. Accordingly, we find that much confusion has existed in its classification. Mr. McClure, the first who attempted to systematize American geology, considered it all as alluvial, but subsequent geologists soon corrected this error. Mr. Conrad, in the first number of his “Fossil Shells of the Tertiary of North America,” divided it into the Upper Marine, Middle Tertiary, and Lower Tertiary. In this arrangement, the Upper Marine corresponds very nearly with Mr. Lyell’s Pliocene, the Middle Tertiary comprises the Miocene and Eocene of the same author, and the Lower Tertiary consists of sand and gravel containing Lignite and a few shells. Mr. Conrad has, more recently, adopted the classification of Lyell, which is perhaps best, as the beds comprising his Lower Tertiary are hardly of sufficient importance to constitute a separate formation.

The latest, and probably, most correct views upon this subject are, however, those which Mr. Conrad advances in the second number of the Bulletin of the National Institution. He there supposes that we possess the Eocene, Miocene, and Post-Pliocene, as nearly as the parallel can be drawn between our strata and those of Europe. Several links of the chain, however, appear to be wanting, as but one or two species are common to the Eocene and Miocene, and only recent shells have been found existing in both the Miocene and Post-Pliocene. The Eocene does not possess a single

species at present existing; in the Miocene the proportion is small; while, in the Post-Pliocene all are recent. According to Mr. Conrad, the per centage of still existing shells in the Miocene is about seventeen, but I am inclined to think that it will prove, on further investigation, to be smaller. It, however, cannot be relied on as a certain criterion, being extremely variable in different localities. Petersburg, Virginia, may be taken as an instance of one extreme: the following is a list of the fossils which have been found there, exclusive of those herein described.

Dentalium thallus, . . . Con.	Venus Rileyi, Con.	Fissurella redimicula, . . Say.
“ attenuatum, . . . Say.	“ difformis, Say.	Crepidula fornicata, . . . “
Serpula granifera, . . . “	Cardium sub-lineatum, . . . Con.	“ costata, Morton.
Balanus sp.?	“ laqueatum, “	Dispotæa ramosa, Con.
Pholas ovalis, Say.	Cardita granulata, Say.	Natica duplicata, Say.
Panopæa reflexa, “	Cypricardia arata, “	“ heros? “
Mactra congesta, Con.	Arca centenaria, “	Acteon Wetherilli, Lea.
Crassatella undulata, . . Say.	“ idonea, “	Rotella nana, “
“ melina, Con.	“ incile, “	Trochus philanthropus, Con.
Corbula cuneata, Say.	Pectunculus subovatus, . . . “	Turritella variabilis, . . . “
“ inæqualis, “	“ quinquerrugatus, Con.	“ indenta, “
Tellina æquistriata, . . . “	“ pulvinatus,* Lamk.	“ plebeia, Say.
Lucina speciosa, “	Nucula lævis, Say.	Pleurotoma pyrenoides, Con.
“ contracta, “	“ obliqua, “	Fasciolaria mutabilis, . . . “
“ edentula, “	Chama congregata, Con.	Pyrula carica, Say.
“ divaricata, Lamk.	“ corticosa, “	“ canaliculata, “
Astarte undulata, Say.	Pecten eboreus, “	Fusus cinereus, “
“ arata, Con.	“ Madisonius, Say.	“ exilis, Con.
“ concentrica, “	Plicatula marginata, “	Murex quadricostatus, . . . Say.
Clathrodon Grayi, “	Perna torta, “	Buccinum laqueatum, Con.
Cytherea reposta, “	Ostrea Virginiana? var. . . Gmel.	“ porcinum, “
“ convexa, Say.	Capulus lugubris, Con.	Marginella perpusilla, . . . “
Artemis acetabulum, . . . Coa.		“ limatula, “

We have here sixty-eight species, in addition to one hundred and five which I shall describe in this paper, and which I consider as hitherto unknown, or in all, one hundred and seventy-three. Now, of these, but nine can be identified with existing shells, namely,

Lucina divaricata,	Crepidula fornicata,	Pyrula carica,
Artemis acetabulum,	Natica heros?	“ canaliculata,
Ostrea Virginiana?	“ duplicata,	Fusus cinereus.

and of these, two appear to me doubtful, namely, *Natica heros*, and *Ostrea Virginiana*. Considering them, however, as the recent species, this gives us about five per cent. of still existing shells. It appears almost absurd to compare this with the Miocene of Dax, the best characterized in Europe, which, by the tables of Dr. Grateloup, con-

* In the first number of the “Fossil Shells of the Tertiary of North America,” Mr. Conrad has described and figured a shell as the *Pect. pulvinatus*, Lam. But, after comparing it with a number of specimens of that species, and with Deshayes’ figures, I am forced to consider it as specifically distinct. I, therefore, propose to name it *P. ELEPHANTOPUS*.

tains between thirty and forty per cent. of recent shells. Yet the Miocene of Petersburg has not a single species which can be identified with any of the Claiborne Eocene fossils, while it abounds in shells which are found, at other localities, in company with more than twenty per cent. of recent species. These few facts will sufficiently exemplify the fallacy of attempting to classify our Tertiary by the rules which regulate that of Europe.

It may, perhaps, be deemed not irrelevant to this subject, to introduce here the following table of the number of the species in each genus, hitherto described from the Tertiary of the United States. Unfortunately great confusion exists in their synonymy, and he who would review the descriptions of them, with an impartial and unsparing hand, would confer a great benefit on all interested in American geology. To this part of the subject, I have not pretended to pay any attention, and therefore the number of species is, in reality, smaller than that given here, many of them being repeated under the same or different genera. I, however, have not felt inclined, at present, to undertake the Augean task of clearing away the synonymes, but I hope that, as far as I pretend to go, I shall be found correct; that is, as far as the mere numbers are concerned.*

List of the Fossil Shells found in the Tertiary Beds of the United States.

Genera.	No. of species.	Genera.	No. of species.	Genera.	No. of species.
Acteon,	23	Cemoria,	1	Erycina,	2
Aligena,	2	Cerithium,	10	Fasciolaria,	5
Amphidesma,	12	Chama,	3	Fissurella,	7
Anatina,	3	Chiton,	1	Fistulana,	1
Ancillaria,	7	Conus,	5	Fulgur,	7
Anolax,	2	Corbis,	3	Fusus,	51
Anomia,	1	Corbula,	11	Gastrochæna,	1
Arca,	14	Crassatella,	8	Gnathodon,	3
Artemis,	2	Crepidula,	12	Grateloupia,	1
Astarte,	20	Cryptostoma,	1	Gryphæa,	1
Avicula,	4	Cucullæa,	4	Hiatella,	1
Balanus,	4	Cypræa,	1	Hippagus,	1
Bissomya,	1	Cumingia,	1	Hipponix,	1
Bonellia,	2	Cypricardia,	1	Infundibulum,	6
Buccinum,	20	Cyrena,	1	Isocardia,	2
Bulla,	5	Cytherea,	26	Lepton?	1
Bullina,	1	Delphinula,	12	Lima,	2
Calyptrea,	4	Dentalium,	5	Littorina,	1
Cancellaria,	17	Diplodonta,	1	Lucina,	27
Capulus,	1	Dispotæa,	6	Lutraria,	2
Cardita,	6	Donax,	1	Mactra,	16
Cardium,	7	Egeria,	10		
Cassis,	1	Emarginula,	1		

* I regret that I have not been able to obtain the names of the species figured by M. Lesueur from the Eocene of Walnut Hill, Mississippi. I have seen the plates, but I do not know whether the descriptions were ever published. It may be seen that I have included in this catalogue the species described in the following pages.

Genera.	No. of species.	Genera.	No. of species.	Genera.	No. of species.
Marginella,	16	Patella,	1	Serpula,	5
Melongena,	3	Pecten,	22	Sigaretus,	5
Mitra,	13	Pectunculus,	22	Siliquaria,	2
Modiola,	2	Perna,	2	Solarium,	18
Monodonta,	1	Petaloconchus,	1	Solen,	2
Monoceros,	5	Petricola,	3	Solecurtis,	2
Monoptygma,	2	Pholadomya,	2	Spirorbis,	1
Murex,	6	Pholas,	5	Stalagmium,	1
Mya,	3	Placuna,	1	Strigilla,	1
Myoparo,	1	Plagiostoma,	1	Tellina,	9
Mysia,	2	Planaria,	1	Terebra,	8
Mytilus,	2	Pleurotoma,	32	Teredo,	4
Nassa,	5	Plicatula,	4	Thracia,	1
Natica,	23	Proto,	1	Triton,	1
Nautilus,	1	Psammobia,	2	Trochus,	16
Nucula,	31	Psammocola,	2	Tuba,	3
Nummulites,	1	Pyramidella,	3	Turbinella,	5
Oliva,	16	Pyrula,	7	Turritella,	20
Orbicula,	1	Ranella,	1	Typhis,	2
Orbis,	1	Rostellaria,	4	Venericardia,	7
Ostrea,	18	Rotella,	5	Venerupis,	1
Pandora,	2	Saxicava,	2	Venus,	11
Panopæa,	4	Sanguinolaria,	2	Vermetus,	1
Pasithea,	21	Scalaria,	16	Voluta,	12
				Volvaria,	1

It is to the kindness of Mr. Tuomey, of Petersburg, that I owe the following shells, as well as those in the list a few pages back. Most of the smaller species herein described, I met with by carefully examining the sand scraped from the cavities of larger shells, as well as a small portion of the marl of the vicinity, with which Mr. Tuomey was kind enough to favor me. I mention this merely to show the importance of thoroughly searching the strata of the various localities before we conclude that we have all the species existing there. Attracted by the beauty of the larger shells, conchologists have very much neglected the more minute ones, which require a closer examination, and thus our knowledge of our fossil conchology is still limited. I may as well observe here, that I found the species met with in the sand from the cavities of the larger shells, in general, different from those in the loose marl. It is difficult to give a reason for this, unless there were species which usually inhabited the interior of dead shells, like the recent *Valvata tricarinata*, Say.

In looking over these shells, I have been struck with the general resemblance which obtains between them and those of a corresponding age from Dax. This is peculiarly observable in the genera *Acteon*, *Pasithea*, &c. which are very numerous in both localities. Their connexion is so close that in some cases they are scarce specifically distinct.

FAMILY SERPULIDÆ.

GENUS SERPULA.

S. CONVOLUTA, PL. 34. FIG. 1.

S. testâ in spiram discoidalem contortâ, tenui, plerumque cancellatâ, apud apicem regulariter volutâ; aperturâ rotundâ.
Shell twisted into a discoidal spire, thin, usually cancellate, regularly whorled near the apex; mouth round.

Diam. .10 of an inch.

Remarks.—This shell is generally twisted into a regular disc. The sculpture is very variable, sometimes seeming like longitudinal moniliferous costæ, and, at others, regularly cancellate. The apex is singularly formed, being smooth and perfectly voluted, like a young Turbo. This is, I suppose, the form it has when excluded from the egg.

S. ANGUINA, PL. 34. FIG. 2.

S. testâ minimâ, irregulariter contortâ, striatâ, crassâ; striis irregularibus transversis; aperturâ rotundâ.
Shell very small, irregularly twisted, striate, thick; striæ irregular, transverse; mouth round.

Diam. .04 of an inch.

Remarks.—This is a very minute species, and is, I believe, the only one of our fossil Serpulæ that has no longitudinal lines on the surface. This character will readily distinguish it from others. The apex has the same voluted character as the last, although not as well developed.

GENUS PETALOCONCHUS,* (NOBIS.)

Testa tubularis, solida, irregulariter contorta, laminis longitudinalibus duabus internis.
Shell tubular, solid, irregularly twisted, with two internal longitudinal plates.

Remarks.—The singular shell, on which I propose to found the above genus, differs from all the known tubular shells that I have met with, in the two internal longitudinal plates. It may possibly belong to the family Scalaridæ, and, if so, presents a link between them and the Plicacidæ.

P. SCULPTURATUS, PL. 34. FIG. 3.

P. testâ vel contortâ vel turritâ, crassâ, costulis longitudinalibus noduliferis; laminis internis politis, lævibus, ad aperturam obsoletis; aperturâ rotundâ.

Shell sometimes twisted, sometimes turrited, thick, with small longitudinal noduliferous ribs; internal laminae smooth, polished, obsolete at the mouth; mouth round.

Diam. .20 of an inch.

Remarks.—The longitudinal costæ are generally nodulous, but they occasionally seem rather to be cancellated by transverse sulci, which, in other specimens, appear to usurp their place. The two internal laminae are placed at about one-sixth of the circumference apart. They are generally directed towards the centre, and sometimes nearly meet. In some specimens they are much smaller than in others. They rarely or never seem to be continued to the aperture.

This is a very variable shell, both as to the sculpture and internal plates. I at first

* Α πέταλον, lamina, et κόγχος, concha.

thought that there were two or three distinct species, but the varieties glide imperceptibly into each other. It appears to be by no means an uncommon shell at Petersburg.

The form figured is a very usual one. I have but few specimens which do not exhibit a decided tendency to form regular revolutions, and in some, the axis is so straight that a pin may be thrust through the umbilicus from the apex to the base.

The second figure is a specimen fractured to exhibit the appearance of the laminae.

FAMILY TUBICOLIDÆ.

GENUS TEREDO.

T. CALAMUS, PL. 34. FIG. 4.

T. testâ incognitâ; tubo parvo, rotundo, tenui, rugoso, striis irregularibus transversis.

Shell unknown; tube small, round, thin, rugose, with irregular transverse striæ.

Diam. .08 of an inch.

Remarks.—I found several specimens of this little species of *Teredo*, on breaking open a mass of Madrepore which they had pierced. It differs from the following shell, principally, in being much smaller, thinner, and more rugose.

T. FISTULA, PL. 34. FIG. 5.

T. testâ incognitâ; tubo rotundo, tereti, crassissimo, tum recto tum curvato; striis irregularibus transversis raris.

Shell unknown; tube round, terete, very thick, sometimes straight and sometimes curved; with a few irregular transverse striæ.

Diam. .50 of an inch.

Remarks.—The transverse lines of growth vary exceedingly both in size and direction. The substance of the shell is very thick, the outer diameter being frequently .50, while that of the aperture is about .28 of an inch. I have them, however, even thicker.

GENUS GASTROCHÆNA.

G. LIGULA, PL. 34. FIG. 6.

G. tubo incognito; testâ transversâ, oblanceolatâ, valde inæquilaterali, posticè rotundatâ, anticè acuminatâ, inflatâ, concentricè striatâ; striis parvis, irregularibus; anticè hiatus maximo, valde obliquo; margine basali tortuoso; margine dorsali recto; margine antico brevissimo; natibus sub-prominulis.

Tube unknown; shell transverse, oblanceolate, very inequilateral, rounded posteriorly, acuminate anteriorly, inflated, concentrically striate; striæ small, irregular; anteriorly gaping widely and very obliquely; basal margin tortuose; dorsal margin straight; anterior margin very short; beaks somewhat prominent.

Diam. .15 of an inch.

Length .28.

Breadth .12.

Remarks.—The opening at the anterior extremity commences near the dorsal margin, and extends to about the middle of the base. The beaks are placed very near the anterior end of the shell. As in most *Gastrochænæ*, there is a small interior cuneiform process immediately under them.

In procuring several specimens of this shell from a piece of madrepore which they had pierced, I unfortunately broke the tubes, and am therefore unable to describe them.

This species is not unlike the *G. truncata*, Sowerby, a recent shell from Panama, but may be distinguished by its smaller size, rounded extremity, and longer opening. It is,

I believe, the first species of the genus as yet discovered in a fossil state in this country. Mr. Conrad mentions having found the *Fistulana elongata*, Lam. at Claiborne, but, upon comparison with M. Deshayes' figure of that shell, I do not think that it can be identical with the present species. It is larger, more twisted, and has a different sculpture on the anterior part.

The genus *Gastrochæna*, as formed by Lamarck, was placed among the *Pholadidæ*, and considered to have no tube. M. Deshayes, however, includes it in the genus *Fistulana*, as it inhabits a tube and has no teeth. Mr. Sowerby, again, considers as *Gastrochæna* those species which have a bent tube and an oval shell. According to this arrangement, the present species would, most probably, come under this genus, and as such I have placed it.

There are two *Gastrochæna* among the fossils of Great Britain, one from the Oolite, the other from the London Clay. Deshayes describes five from the Paris Basin.

FAMILY PHOLADIDÆ.

GENUS PHOLAS.

P. RHOMBOIDEA, PL. 34. FIG. 7.

P. testâ transversâ, obliquè rhomboideâ, valdè inæquilaterali, posticè rotundato-angulatâ, anticè rostratâ, inflatâ, tenui, medio divisâ lineâ impressâ; areâ posticâ striis lævibus concentricis; areâ anticâ striis acutis flexuosis concentricis; margine basali curto; margine dorsali recto, valdè reflexo; palmulâ parvâ, recurvâ, tenui; lineis internis duabus elevatis longitudinalibus.

Shell transverse, obliquely rhomboidal, very inequilateral, rounded-angular posteriorly, rostrate anteriorly, inflated, thin, divided in the middle by an impressed line; posterior area with smooth concentric striæ; anterior area with acute, flexuose, concentric striæ; basal margin short; dorsal margin straight, very much reflected; palmule small, recurved, thin; two longitudinal internal, elevated lines.

Diam. .20 of an inch.

Length .28.

Breadth .18.

Remarks.—The striæ on the anterior part of the shell are sometimes wrinkled so regularly that they give it the appearance of being cancellate, although there are no radiating lines. The posterior part of the shell is nearly smooth, from the dividing line to the umbonial slope, where there are numerous regular lines of growth. There is a kind of second dentiform process, immediately below the beaks, formed by the recurving of the upper termination of the posterior margin. The two internal striæ extend from the beaks to the base. The posterior one is situated immediately under the umbonial slope. The anterior one is caused by the impressed dividing line. It extends, in a point, a little beyond the basal margin.

This shell is very similar to a specimen of the *P. ovalis*, Say, without the tube, and with the thin anterior basal portion removed, but I believe it to be a perfect shell, as I obtained it myself from the hole which it had formed, and in which it appeared to have remained undisturbed. It was surrounded by a little indurated mud which preserved it entire. It seemed to be entirely destitute of a tube, which character separates it from the *P. ovalis*. It also differs in the shape and size of the palmule, and in the two internal lines.

FAMILY SOLENIDÆ.

GENUS SOLEN.

S. MAGNODENTATUS, PL. 34. FIG. 8.

S. testâ anticè truncatâ, et valdè hiantè, lævi, politâ, crassâ; natibus compressis; dente laterali uno; dente cardinali uno, longo, acuto.

Shell truncate, and gaping very much anteriorly, smooth, polished, thick; beaks compressed; with one lateral, and one long, acute, cardinal tooth.

Diam.— . Length— . Breadth— .

Remarks.—Although I possess but a small fragment of this shell, yet it differs so essentially in the teeth from all of our Solenes, that I have no hesitation in pronouncing it distinct. I believe that it is the only extinct fossil species as yet found in our Tertiary.

GENUS PANOPÆA.

P. DUBIA, PL. 34. FIG. 9.

P. testâ quadrato-ellipticâ, transversâ, inæquilaterali, posticè truncatâ, anticè rotundatâ, sub-inflatâ, crassiusculâ, striatâ; striis concentricis, regularibus; margine basali recto; margine dorsali recto; nymphis magnis, exsertis, longissimis; cardine cochleâ parvâ.

Shell quadrately elliptical, transverse, inequilateral, posteriorly truncate, anteriorly rounded, somewhat inflated, rather thick, striate; striæ concentric, regular; basal margin straight; dorsal margin straight; beaks prominent; nymphæ large, exserted, very long; hinge with a small fosset.

Diam. .10 of an inch. Length .08. Breadth— .

Remarks.—The nymphæ are unusually large, much exserted, and very long, extending the whole length of the dorsal margin. Near the beak, they are suddenly depressed and twisted round, and terminate in a small, shallow, internal fosset, or spoon-shaped tooth.

It is not without some hesitation that I have placed this shell among the Panopææ, as it has a spoon-shaped tooth in place of an erect, pointed one, but there is no genus to which it can be said positively to belong, and I do not consider its peculiar characters sufficient to authorize the erection of a new one for its reception. It seems to connect the Glycymeris with the Anatina, having the nymphæ of the one, and the spoon-shaped tooth of the other.

FAMILY MYIDÆ.

GENUS MYA.

M. REFLEXA, PL. 34. FIG. 10.

M. testâ quadrilaterali, sub-inæquilaterali, posticè rotundatâ, anticè truncatâ et valdè apertâ, inflatâ, striatâ; striis concentricis, irregularibus; clivo umboniali elevato, rotundato; margine basali curvato; margine dorsali arcuato; natibus prominentibus, incurvis.

Shell quadrilateral, somewhat inequilateral, rounded posteriorly, truncate and very open anteriorly, inflated, striate; striæ concentric, irregular; umbonial slope elevated, rounded; basal margin curved; dorsal margin arcuate; beaks prominent, incurved.

Diam. .18 of an inch. Length .22. Breadth .29.

Remarks.—The opening at the anterior portion of the shell is remarkably large, and the margin there appears to be somewhat reflected. The striæ are more numerous and better characterized at the extremities, than in the central portion of the shell.

As but one valve of this shell, and that the left one, is before me, I cannot determine the shape of the tooth. The pit to receive it is small and almost horizontal.

This is, I believe, the only extinct species of *Mya* as yet found in our Tertiary.

GENUS THRACIA, (LEACH.)

T. TRANSVERSA, PL. 34. FIG. 11.

T. testâ sub-ellipticâ, valdè inæquilaterali, posticè acuminato-rotundatâ, anticè truncatâ, sub-compressâ, tenui, medio lævi, posticè et anticè concentricè striatâ; clivo umboniali rotundato; margine basali curvato; margine dorsali medio angulato, posticè convexo, anticè concavo; natibus sub-acutis; callo nymphali parvo, obliquo.

Shell sub-elliptical, very inequilateral, acuminate rounded posteriorly, truncate anteriorly, sub-compressed, thin, smooth centrally, striate posteriorly and anteriorly; umbonial slope rounded; basal margin curved; dorsal margin angular in the middle, posteriorly convex, anteriorly concave; beaks somewhat acute; nymphal callosity small, oblique.

Diam. .10.

Length .18.

Breadth .28 of an inch.

Remarks.—From the shape of the anterior margin, I conclude that the shell must have gaped considerably there, but as I have no pair of valves, I cannot be certain. The sinus of the palleal impression is deep, and near the anterior cicatrix. In this character, it differs from the rest of the genus.

This is, I believe, the first *Thracia* found in our Tertiary deposits. Deshayes, in his tables, gives four as the number of European Tertiary species. The present one is the smallest of the genus.

GENUS ANATINA.

A. TELLINOIDES, PL. 34. FIG. 12.

A. testâ ovato-triangulari, transversâ, posticè angulatâ, anticè rotundatâ, compressâ, posticè undulatâ, tenui, concentricè striatâ; striis crebris minutis; margine basali sub-flexuoso; natibus compressis, prominentibus; dentibus lateralibus magnis; cochleâ obliquâ, ovato-acuminatâ, minimè profundâ; cicatricibus magnis.

Shell ovate-triangular, transverse, angular posteriorly, rounded anteriorly, compressed, posteriorly undulate, thin, concentrically striate; striæ numerous, minute; basal margin slightly flexuose; beaks compressed, prominent; lateral teeth large; fosset oblique, ovate-acuminate, shallow; cicatrices large.

Diam. .25.

Length .45.

Breadth — of an inch.

Remarks.—Of the lateral teeth, the posterior one is much the longer. The fosset is small, quite oblique, acute above and rounded below. The broad undulation on the posterior part of the shell gives it very much the appearance of a *Tellina*, when viewed externally. The lines of growth are small, very numerous and irregular.

This species is quite thin and fragile. Out of some half a dozen specimens, I have but one perfect valve, and that is a very young one. I am therefore unable to give all the dimensions.

Judging from description, this shell is not unlike the *A. antiqua*, Conrad, but the difference in size and sculpture, and the posterior undulation distinguish them at once.

FAMILY MACTRIDÆ.

GENUS ALIGENA, (NOBIS.)

Testa æquivalvis? subæquilateralis, posticè et anticè clausa; cardo dente cardinali uno, sulco sub natibus longo, minime profundo.

Shell equivalve? sub-equilateral, closed posteriorly and anteriorly; hinge with one cardinal tooth, and a long shallow sulcation under the beaks.

Remarks.—The cardinal tooth is, in general, rather small. The sulcus appears to have received the ligament. It commences at the beak, and runs obliquely past the dorsal margin into the cavity under the beak. As I possess only odd valves of both the following species, I am unable to determine whether the shell is equivalve or not.

I have in vain endeavoured to find some genus, already described, which might receive these little shells, but their peculiar characters in having one cardinal tooth, and a ligamentiferous sulcation, descending into the shell, distinguish them from other genera. Their place in the systems is, most probably, in the family Mactridæ, between *Erycina* and *Ungulina*.

I have called the genus, *Aligena*, one of the surnames of *Venus*, from its resemblance to *Erycina*, also an appellation of that goddess.

A. STRIATA, PL. 34. FIG. 13.

A. testâ transversâ, sub-ellipticâ, posticè et anticè rotundatâ, inflatâ, tenui, striatâ; striis concentricis, propè marginem basalem maximis; clivo umboniali elevato, sub-angulato; margine basali curvato; margine dorsali medio angulato, posticè et anticè curvato; natibus prominentibus, incurvis, sub-lævibus; dente cardinali minimo; sulco longo, pene transverso; margine interno integro.

Shell transverse, sub-elliptical, rounded anteriorly and posteriorly, inflated, thin, striate; striæ concentric, very large near the basal margin; umbonial slope elevated, somewhat angulate; basal margin curved; dorsal margin angular in the middle, curved posteriorly and anteriorly; beaks prominent, incurved, nearly smooth; cardinal tooth very small; sulcation long, nearly transverse; margin entire within.

Diam. .10.

Length .19.

Breadth .21 of an inch.

Remarks.—The concentric striæ are irregular in size and number, but there is a general increase from the beaks to the base. Those near the base, indeed, almost merit the name of costæ. The cardinal tooth is extremely small.

A. LEVIS, PL. 34. FIG. 14.

A. testâ transversâ, sub-quadrilaterali, posticè rotundatâ, anticè subtruncatâ, convexâ, inflatâ, lævi; margine basali recto; margine dorsali medio angulato, posticè et anticè curvato; natibus sub-prominulis, incurvis; dente cardinali longo; sulco lato, curto, pene transverso; margine interno integro.

Shell transverse, sub-quadrilateral, posteriorly rounded, anteriorly sub-truncate, convex, inflated, smooth; basal margin straight, dorsal margin angular in the middle, curved anteriorly and posteriorly; beaks somewhat prominent, incurved; cardinal tooth long; sulcation wide, short, nearly transverse; margin entire within.

Diam. .14.

Length .18.

Breadth .22 of an inch.

Remarks.—There are a few, almost imperceptible lines of growth over the surface of the shell, which, under a powerful microscope, give it a somewhat roughened appearance. The cardinal tooth is very long, and the sulcus is shallow, so that the hinge, at first glance, is not unlike that of the genus *Thracia*.

This shell is closely allied to the preceding, but the differences in outline, hinge and sculpture separate them.

FAMILY LITHOPHAGIDÆ.

GENUS PETRICOLA.

P. COMPRESSA, PL. 34. FIG. 15.

P. testâ valdè transversâ, valdè inæquilaterali, sub-ellipticâ, compressâ, posticè sub-truncatâ, anticè rotundatâ, tenui, striatâ posticè et anticè; striis minimis, concentricis; margine basali recto; margine dorsali recto; natibus sub-acutis, prominentibus; dentibus duobus, parvis, divergentibus.

Shell very transverse, very inequilateral, sub-elliptical, compressed, posteriorly sub-truncate, anteriorly rounded, thin, striate posteriorly and anteriorly; striæ very small, concentric; basal margin straight; dorsal margin straight; beaks somewhat acute, prominent; teeth two, small, divergent.

Diam. .10.

Length .12.

Breadth .25 of an inch.

Remarks.—The concentric lines of growth are very small. They are visible on the anterior and posterior portions of the shell. On the central part they are obsolete, leaving it smooth. The teeth are small and unusually divergent for a Petricola.

This shell is smaller and more compressed than any of our described species. In form it much resembles *Saxicava vaginoides*, Desh., but it is more transverse and differs in the hinge.

FAMILY NYMPHIDÆ.

GENUS PSAMMOCOLA, (BLAINVILLE.)

P. LUCINOIDES, PL. 34. FIG. 16.

P. testâ sub-orbiculari, pene æquilaterali, posticè et anticè rotundatâ, convexâ, tenui, striatâ; striis concentricis, minimis; natibus prominentibus, sub-rectis; valvâ sinistrâ dentibus duobus cardinalibus, quorum unus bifidus, lateralibus nullis.

Shell suborbicular, almost equilateral, rounded anteriorly and posteriorly, convex, thin, striate; striæ concentric, very small; beaks prominent, nearly straight; left valve with two cardinal teeth, one of which is bifid, and no lateral ones.

Diam. .15.

Length .31.

Breadth .35 of an inch.

Remarks.—This shell is unusually lenticular for a Psammocola. The concentric striæ are numerous and extremely small. There are, however, three or four larger ones, nearly equidistant, over the surface of the shell.

The general resemblance which this shell bears to some species of the genus *Lucina*, will readily distinguish it from its congeners.

I have adopted this genus on the authority of Sowerby, who says that in it Blainville unites the *Psammobia* and *Psammotæa* of Lamarek, considering the difference between these genera as artificial and accidental.

P. REGIA, PL. 34. FIG. 17.

P. testâ transversâ, ovato-quadratâ, inæquilaterali, posticè hiantè, anticè et posticè subtruncatâ, valdè inflatâ, crassissimâ, sulcatâ; sulcis radiantibus, crebris, æqualibus, latis; margine basali penè recto; margine dorsali sub-cur-

vato; natibus valdè elevatis, acuminatis; in valvâ utraq̃ue dentibus cardinalibus duobus, lateralibus nullis; nymphis curtis, crassis; lunulâ parvâ, cordatâ; cicatricibus maximis; cicatrice palleali valdè sinuato.

Shell transverse, ovately quadrate, inequilateral, gaping posteriorly, subtruncate anteriorly and posteriorly, very much inflated, very thick, sulcate; sulci radiating, numerous, equal, wide; basal margin almost straight; dorsal margin slightly curved; beaks much elevated, acuminate; hinge in each valve with two cardinal and no lateral teeth; nymphæ short, thick; lunule small, cordate; cicatrices very large; palleal impression much sinuated.

Diam. 1.25.

Length 1.56.

Breadth 2.30 inches.

Remarks.—The radiating sulci are largest and deepest on the posterior extremity of the shell; they are interrupted by occasional lines of growth. The palleal impression becomes very broad as it approaches the anterior cicatrix. It is very rugose, and has a large, semi-elliptical sinus posteriorly. In the right valve, one of the teeth is bifid, but, as in all my specimens the hinge of the left valve is fractured, I am unable to say whether this be the case in it or not. The outline of the shell is very variable. I have one specimen which is nearly oblong, with a sinuated basal margin and almost central beaks. In this form its external appearance approaches closely that of the *Arca centenaria* of Say.

Judging from description, this shell must resemble the *Petricola centenaria*, Conrad, but its nymphæ, teeth and sinuated palleal impression, exclude it from that genus. It is larger and more beautiful than any of its congeners.

GENUS LUCINA.

L. PUNCTULATA, PL. 34. FIG. 18.

L. testâ rotundâ, lenticulari, sub-æquilaterali, posticè et anticè truncato-rotundatâ, convexâ, tenui, diaphanâ, punctulatâ, substriatâ; striis concentricis, irregularibus, raris; clivo umboniali rotundato; natibus prominentibus, acutis; valvâ sinistrâ dentibus cardinalibus duobus, laterali uno; margine interno integro.

Shell rounded, lenticular, sub-equilateral, truncately rounded posteriorly and anteriorly, convex, diaphanous, punctulate, somewhat striate; striæ concentric, few, irregular; umbonial slope rounded; beaks prominent, acute; left valve with one lateral and two cardinal teeth; internal margin entire.

Diam. .16.

Length .32.

Breadth .35 of an inch.

Remarks.—The concentric lines of growth are, for the most part, very small, but there are two or three larger ones. The punctulations extend over the whole surface. They are very small, and cannot be seen without the aid of a microscope, but they impart a rough feeling to the shell when handled.

This shell may be readily distinguished from all its fossil congeners by its diaphanous substance and punctulate surface.

L. LENS, PL. 34. FIG. 19.

L. testâ orbiculari, æquilaterali, valdè convexâ, crassâ, costatâ; costis concentricis, parvis, creberrimis, planulatis, politis; margine dorsali flexuoso; natibus prominentibus, acutis, incurvis; lunulâ ellipticâ, magnâ, profundâ; dentibus in utraq̃ue valvâ, cardinalibus duabus parvis, lateralibus duabus magnis; margine interno minutè crenulato.

Shell orbicular, equilateral, very convex, thick, costate; costæ concentric, small, very numerous, flattened, polished; dorsal margin flexuose; beaks prominent, acute, incurved; lunule elliptical, large, deep; each valve with two small cardinal, and two large lateral teeth; internal margin minutely crenulate.

Diam .28.

Length .35.

Breadth .38 of an inch.

Remarks.—The ribs are very small, and appear like striæ, unless examined with a microscope. There are occasional larger ones, where the shell appears to have ceased

growing for awhile, and some are minutely wrinkled. The cicatrices are deep and well defined. The whole shell is remarkably globose.

This species agrees pretty well with the description of *S. trisulcata*, Conrad, but that shell is said to be "obovate," while ours is very rotund. It is also closely allied to some of its congeners from Claiborne.

FAMILY CONCHIDÆ.

GENUS ASTARTE.

A. LINEOLATA, PL. 34. FIG. 20.

A. testâ triangulari, pene æquilaterali, inflatâ, crassâ, striatâ; striis creberrimis, rotundatis, concentricis; margine basali sub-curvato; natibus elevatis, acuminatis; lunulâ valdè elongatâ; dentibus magnis, valdè divergentibus; margine interno crenulato.

Shell triangular, almost equilateral, inflated, thick, striate; striæ concentric, very numerous, rounded; basal margin somewhat curved; beaks elevated, acuminate; lunule much elongated; teeth large, very divergent; internal margin crenulate.

Diam. .15.

Length .18.

Breadth .21 of an inch.

Remarks.—The striæ are very regular, minute, and about fifty in number, on a full-grown specimen now before me. The lunule is unusually long and rather broad. The beaks are elevated and produced.

I, at first, regarded this as a young specimen of *A. concentrica*, Conrad, but the crenulations on the inner margin prove it to be full-grown. In size it approaches the *A. lunulata*, Con., but the striæ are much smaller and more numerous, and the shell is more inflated.

GENUS CYTHEREA.

C. ELEVATA, PL. 34. FIG. 21.

C. testâ ovatâ, transversâ, inæquilaterali, posticè subtruncatâ, anticè rotundato-angulatâ, inflatâ, crassâ, nitente, substriatâ; striis concentricis, minimis, medio obsolete; margine basali curvato; margine dorsali angulato; natibus elevatis, prominentibus; dentibus magnis, quorum uno bifido.

Shell transverse, ovate, inequilateral, subtruncate posteriorly, rounded-angular anteriorly, inflated, thick, shining, substriate; striæ concentric, very small, obsolete in the middle; basal margin curved; dorsal margin angular; beaks elevated, prominent; teeth large, one bifid.

Diam. .19.

Length .28.

Breadth .32 of an inch.

Remarks.—There are no very decided characters about this shell, yet I cannot refer it to any known species. When young, its form is more longitudinal. It is more allied to *C. convexa*, Say; than to any other shell.

C. SPHÆRICA, PL. 34. FIG. 22.

C. testâ rotundâ, æquilaterali, globosâ, tenui, lævi, politâ; margine dorsali curvato; natibus elevatis, prominentibus, rectis lunulâ minimâ, lanceolatâ; dentibus parvis.

Shell rotund, equilateral, globose, thin, smooth, polished; dorsal margin curved; beaks elevated, prominent, straight; lunule very small, lanceolate; teeth small.

Diam. .18.

Length .19.

Breadth .20 of an inch.

Remarks.—This shell is rounded and more globose than any of its congeners that I have seen. These characters will serve to distinguish it from all our other fossil species.

GENUS VENUS.

V. ASCIA, PL. 34. FIG. 23.

V. testâ longitudinali, obliquè triangulari, sub-inaequilaterali, posticè et anticè sub-angulatâ, compressâ, crassâ, striatâ; striis concentricis raris; margine basali minimè curvato; margine dorsali angulato; natibus prominentibus, acutis; dentibus tribus divergentibus; cicatrice palleali acutè sinuata; lunulâ magnâ, elevatâ, lineâ impressâ marginatâ.

Shell longitudinal, obliquely triangular, sub-inequilateral, somewhat angular posteriorly and anteriorly, compressed, thick, striate; striæ concentric, few; basal margin slightly curved; dorsal margin angular; beaks prominent, acute; teeth three, diverging; palleal impression acutely sinuate; lunule large, elevated, margined with an impressed line.

Diam. .15.

Length .30.

Breadth .31 of an inch.

Remarks.—The surface is somewhat rugulose with irregular lines of growth, which, in two or three places, amount almost to ribs. The general outline is that of a triangle with slightly curved sides.

This shell has an unusual shape for a Venus, but the three distinct cardinal teeth will not admit it into any other genus. Although the sinus of the palleal impression is deep and acute, it has not the circular outline of the Artemis.

FAMILY CARDIIDÆ.

GENUS HIATELLA.

H. LANCEA, PL. 34. FIG. 24.

H. testâ transversissimâ, inaequilaterali, posticè et anticè truncato rotundatâ, minimè hiantè, valdè compressâ, concentricè striatâ; striis minimis; clivo umboniali elevato; margine basali recto; margine dorsali medio sub angulato, posticè et anticè recto; natibus prominentibus; dentibus magnis.

Shell very transverse, inequilateral, truncately rounded posteriorly and anteriorly, gaping very slightly, very much compressed, concentrically striate; striæ very small; umbonial slope elevated; basal margin straight; dorsal margin sub-angular in the middle, straight posteriorly and anteriorly; beaks prominent; teeth large.

Diam. 10.

Length .15.

Breadth .29 of an inch.

Remarks.—The lines of growth are very small and inconspicuous. The two teeth in the left valve diverge considerably. The anterior one is bifid.

This genus is placed in the family Cardiidæ by Lamarck, and in the Lithophagidæ by Sowerby, who does not regard it as distinct from Saxicava. Which is right, I have no means of determining, and I therefore leave it where Lamarck places it.

FAMILY ARCACIDÆ.

GENUS NUCULA.

N. DOLABELLA, PL. 34. FIG. 25.

N. testâ obliquè triangulari, inaequilaterali, posticè et anticè angulatâ, inflatâ, crassiusculâ, striatâ; striis concentricis, minutissimis; striis longitudinalibus, pene obsoletis, raris, clivo umboniali precipiti; margine basali curvato; margine dorsali medio acutè angulato, posticè et anticè recto; dentibus parvis; cochleâ parvâ, sub triangulari; margine interno crenulato.

Shell obliquely triangular, inequilateral, posteriorly and anteriorly angulated, inflated, rather thick, striate; concentric striæ very small; longitudinal striæ, few, almost obsolete; umbonial slope steep; basal margin curved; dorsal margin acutely angular in the middle, posteriorly and anteriorly straight; teeth small; fosset small, sub-triangular; internal margin crenulate.

Diam .17.

Length .18.

Breadth .20 of an inch.

Remarks.—The longitudinal striæ are only visible in a strong light, with a powerful microscope. The concentric lines of growth are also small, with the exception of two or three larger ones.

This may prove to be only a variety of *N. obliqua*, Say, but it differs from all my specimens of that shell in being more inequilateral and inflated, in the form of the fosset, and in the straight series of teeth.

N. DIAPHANA, PL. 34. FIG. 26.

N. testâ transversâ, inæquilateralî, sub-ellipticâ, posticè et anticè rotundatâ, inflatâ, diaphanâ, tenui, levi, politâ, intus margaritacâ; clivo umbonialî sub planulato; margine basali curvato; margine dorsali curvato; natibus prominentibus; dentibus valde arcuatis, anticis quinque, posticis duodecim; cochleâ rhomboideâ, obliquâ; margine interno crenulato.

Shell transverse, inequilateral, sub-elliptic, rounded anteriorly and posteriorly, inflated, diaphanous, thin, smooth, polished, pearly within; umbonial slope somewhat flattened; basal margin curved; dorsal margin curved; beaks prominent; teeth very arcuate, five anterior, twelve posterior; fosset rhomboidal, oblique; internal margin crenulated.

Diam .04.

Length .11.

Breadth .15 of an inch.

Remarks.—This little shell, in common with the preceding, has some resemblance to the *N. obliqua*, Say, but it may be distinguished by its elliptical shape, thin and diaphanous substance, smooth surface, and rhomboidal fosset. The teeth are also more arcuate, and there is a greater disparity between the posterior and anterior series.

In outline, this species is closely allied to the *N. antiqua*, Mighels and Adams, from the Post-Pliocene of Massachusetts.

N. ÆQUILATERA, PL. 34. FIG. 27.

N. testâ longitudinaliter-ellipticâ, æquilateralî, posticè et anticè sub-curvatâ, inflatâ, crassâ, punctato-costatâ; costis radiantibus, vel punctiferis vel cancellatis; margine basali valdè curvato; margine dorsali angulato; natibus prominulis, incurvis, rectis; dentibus parvis, rectis, anticis tribus, posticis octo; cochleâ parvâ, profundâ; margine interno crenulato.

Shell longitudinally elliptical, equilateral, somewhat curved posteriorly and anteriorly, inflated, thick, punctately costate; costæ small, radiating, punctiferous or cancellate; basal margin very much curved; dorsal margin angulate; beaks somewhat prominent, incurved, straight; teeth small, straight, three anterior, eight posterior; fosset small, deep; margin crenulate within.

Diam .08.

Breadth .10.

Length .12 of an inch.

Remarks.—The ribs are small, sometimes divaricate, and punctulate. They occasionally have the appearance of being cancellate. The shorter series of teeth is immediately under the beaks and adjoining the fosset, from which the longer series is removed by a smooth intervening space. This character, and the longitudinal equilateral shape seem to remove it from the genus *Nucula*, but they can hardly be said to amount to generic distinctions.

This shell bears a general resemblance to the *Myoparo costatus*, Lea, but its shape does not admit it into that genus.

N. CARINATA. PL. 34. FIG. 28.

N. testâ transversâ, ovato-acuminatâ, subinæquilaterali, anticè rostratâ, posticè rotundatâ, inflatâ, crassiusculâ, concentricè sulcatâ; sulcis parvis, crebris, regularibus, rotundatis; clivo umboniali elevato, carinato; margine basali curvato; margine dorsali medio angulato, posticè convexo, anticè concavo; natibus minimè elevatis, recurvis; dentibus angulatis, carinatis; anticis quatuordecim, posticis quindecim; cochleâ triangulâri, profundâ; margine interno integro.

Shell transverse, ovate-acuminate, sub-inequilateral, anteriorly rostrate, posteriorly rounded, inflated, rather thick, concentrically sulcate; sulci small, numerous, regular, rounded; umbonial slope elevated, carinate; basal margin curved; dorsal margin angular in the middle, posteriorly convex, anteriorly concave; beaks very slightly elevated, recurved; teeth angular, carinate, fourteen anterior, fifteen posterior; fosset triangular, deep; internal margin crenulate.

Diam. .15.

Length .18.

Breadth .11 of an inch.

Remarks.—The teeth are large and angular, with a carina on the outside edge of the angle. The two series are nearly equal in number.

This shell is very similar to the *N. concentrica*, Say: the points of difference are, however, the greater proportionate length of our species, its carinate umbonial slope, and peculiar teeth. It is also more equilateral, and has the series of teeth more nearly equal. In these two last characters, it also approaches the *N. media*, Lea.

N. ACUTIDENS, PL. 34. FIG. 29.

N. testâ tenui, lævi, politâ; dentibus magnis, longissimis, arcuatis, acutis, perpendicularibus; cochleâ minimè profundâ.

Shell thin, smooth, polished; teeth large, very long, arcuate, acute, perpendicular; fosset shallow.

Diam. —

Length —

Breadth — of an inch.

Remarks.—I have but a fragment of the hinge of this shell, but the teeth are so remarkable that they appear to distinguish it from all our other species. They are very long, thin, pointed, and placed perpendicularly to the hinge margin, so as to project beyond the shell and be seen nearly as well externally as internally.

FAMILY MYTILIDÆ.

GENUS MODIOLA.

M. SPINIGERA, PL. 35. FIG. 30.

M. testâ quadrato-ellipticâ, transversâ, inæquilaterali, posticè truncatâ, anticè rotundatâ, sub-inflatâ, tenui, diaphanâ, striatâ; striis parvis, concentricis, irregularibus; clivo umboniali angulato; margine basali recto; margine dorsali recto, spinoso; natibus prominentibus, rotundatis.

Shell quadrately-elliptical, transverse, inequilateral, posteriorly truncate, anteriorly rounded, somewhat inflated, thin, diaphanous, striate; striæ small, concentric, irregular; umbonial slope angulated; basal margin straight; dorsal margin straight, spinous; beaks prominent, rounded.

Diam .08 of an inch.

Length .10.

Breadth .14.

Remarks.—The spines on the dorsal margin are rather short and few in number; they project perpendicularly from the line of the margin. The substance of the shell is extremely thin. The beaks are long and somewhat incurved.

This little shell is interesting from its singular spinous appendages. No other *Modiola*, that I have met with, has them. Indeed, the only shell I have ever seen with spines similarly posited, is the *Cardium aviculare*, Lam., from the Paris Basin.

FAMILY MALLEIDÆ.

GENUS AVICULA.

A. MULTANGULA, PL. 35. FIG. 31.

A. testâ valdè transversâ, sub-inæquilaterali, anticè acutè rostratâ, posticè truncatâ, compressâ, undulatâ, crassâ, striatâ; striis radiantibus minimis, raris; clivo umboniali elevato; margine basali flexuoso; margine dorsali recto; natibus compressis; cardinis arcâ triangulâri, transversâ; sulco ligamentifero, triangulâri, profundo; testâ parte anticâ internè valdè incrassatâ.

Shell very transverse, sub-inæquilateral, acutely rostrate anteriorly, truncate posteriorly, compressed, undulate, thick, striate; striæ few, radiating, very small; umbonial slope elevated; basal margin flexuose; dorsal margin straight; beaks compressed; area of the beaks triangular, transverse; ligamentiferous sulcation triangular, deep; anterior part of the shell, very much incrassated within.

Diam. .18.

Length .20.

Breadth .45 of an inch.

Remarks.—There are numerous exceedingly minute lines of growth over the surface. The radiating striæ are plainest where they terminate at an angle in the basal margin. The cavity of the beaks is very deep and small. It is abruptly cut off by the incrassation of the anterior end, which is perfectly flat and on a level with the dorsal and basal margins. As all of my specimens are very much worn, I cannot perceive any trace of the muscular impressions.

This curious little shell differs from the genus *Avicula* somewhat in the hinge. The fosset is more conspicuous than in general with that genus, while the tooth is almost or entirely obsolete. I had at first intended erecting a new genus for it, but the characters of the hinge in this family are so variable and so little to be depended on, that I have thought it best to leave it in this genus. It can hardly be confounded with any of its congeners.

FAMILY PECTENIDÆ.

GENUS PECTEN.

P. MICROPLEURA, PL. 35. FIG. 32.

P. testâ longitudinaliter ovatâ, sub-inflatâ, crassâ, radiatim costatâ; costis parvis, crebris, regularibus, planis, lævibus; margine basali circulari; auribus æqualibus, costatis; natibus compressis, acutis.

Shell longitudinally ovate, somewhat inflated, thick, radiately costate; costæ small, numerous, regular, flat, smooth; basal margin circular; auricles equal, costate; beaks compressed, acute.

Diam. .30.

Length .60.

Breadth .58 of an inch.

Remarks.—The whole surface, from one auricle to the other, is covered with small, regular, smooth ribs, distant from each other about their own width. They are between thirty and forty in number, besides about ten on each auricle.

This shell may be distinguished from all its congeners of our Tertiary by its small and numerous costæ, and longitudinal form.

P. TENUIS, PL. 35. FIG. 33.

P. testâ sub-orbiculari, æquilaterali, convexâ, tenui, striatâ; striis radiantibus, crebris, tum magnis, tum parvis; lineis concentricis, minutis, raris; natibus acuminatis, sub-elevatis; auribus magnis, inæqualibus, striatis; testâ internè lævi.

Shell sub-orbicular, equilateral, convex, thin, striate; striæ radiating, numerous, sometimes large, sometimes small; a few minute concentric lines; beaks acuminate, somewhat elevated, auricles large, unequal, striate; shell smooth within.

Diam. .60.

Length 2.26.

Breadth 2.28 inches.

Remarks.—The striæ are very irregular as to size, and frequently are alternate. Near the base they are much smaller; and are decussated by numerous very minute, concentric lines. On the only valve now before me, they are about one hundred in number. The shell has been quite longitudinal when young, as may be seen from the lines of growth. Three or four of the longitudinal striæ are rather larger than the rest, particularly near the beaks.

This pretty shell was found at Shell Bank near Petersburg, the plantation of E. Ruffin, Esq., and sent by him to my father. It may be distinguished from *P. Clintonius*, Say, a species to which it is closely allied, by its unequal auricles and striæ, its more longitudinal form, and acuminate beaks.

GENUS PLICATULA.

P. RUDIS, PL. 35. FIG. 34.

P. testâ longitudinali, orbiculari, planâ, tenui, rugosâ; natibus prominulis, acutis; dentibus magnis; margine intus lato, nigrescente.

Shell longitudinal, orbicular, flat, thin, rugose; beaks prominent, acute; teeth large, internal margin wide and blackish.

Diam. .20.

Length .68.

Breadth .65 of an inch.

Remarks.—The surface is nearly covered with irregular longitudinal wrinkles, which render it very rugose. It is nearly flat and destitute of folds.

This shell may be distinguished from the *P. marginata*, Say, which it somewhat resembles, by its flat, orbicular form, rugosities, thinness and want of folds. It is much rarer than that species. I found but three or four specimens of it among more than a hundred of the other.

FAMILY PHYLLIDIDÆ.

GENUS CHITON.

C. TRANSENNA, PL. 35. FIG. 35.

C. testâ—, octovalvi? crassâ, costatâ, dorso valdè elevatâ et angulatâ; valvarum intermediarum areâ centrali costis longitudinalibus rectis, noduliferis, areâ laterali aut lævi aut nodulosâ; valvæ terminalis areâ centrali noduloso costatâ, areâ laterali nodulosâ.

Shell—, eight-valved? thick, costate, very much elevated and angular in the back; central area of the intermediate valves with straight, longitudinal, noduliferous ribs, lateral area smooth or nodulose; central area of the terminal valve nodulosely costate, lateral area nodulose.

Length of valve .15.

Breadth do. .50 of an inch.

Remarks.—The ribs of the central area are perfectly parallel, sometimes nearly smooth, and sometimes armed with large nodules in regular series, giving them the appearance of being transversely sulcate. The lateral area, in most of my specimens, is smooth, with the exception of two or three impressed lines of growth, but on some there are numerous spherical tubercles, placed without any apparent order. As these are easily removed, I think it probable that all have been furnished with them, but that, in general, they have been obliterated by attrition. They bear some resemblance to the remains of spines.

This well marked species differs in its sculpture and angulated back from all its congeners.

This shell is interesting as being the first of its genus found in a fossil state in this country. I believe that but one, the *C. Grignonensis*, Lam., has been described from the Tertiary of Europe.

The third figure is a terminal valve, most probably from a young specimen.

GENUS PATELLA.

P. ACINACES, PL. 35. FIG. 36.

P. testâ ovatâ, valdè compressâ, falcatâ, depressâ, crassâ, striis concentricis parvis; lineis radiantibus posticè quatuor; aperturâ lineari; apice angulato, recto.

Shell ovate, very much compressed, falcate, depressed, thick, with small concentric striæ, and four radiating lines posteriorly, mouth linear; apex angular, straight.

Height .15.

Length .55.

Breadth .10 of an inch.

Remarks.—The apex is bent forward a little, and somewhat rounded. Diverging from it posteriorly are four elevated lines, two on each side, which may be traced to the base. The aperture is very narrow, almost acute anteriorly and rounded posteriorly. The substance of the shell is extremely thick, particularly at the apex.

It is not without some hesitation that I have classed this little shell with the genus *Patella*. Its falcate, compressed shape appears hardly to belong to that genus, and yet is not sufficient to found a new one on. If, however, on farther examination, it should prove distinct, I propose the name of *Scaphidium** for it, from its peculiar canoe-like shape.

FAMILY CALYPTRÆIDÆ.

GENUS CEMORIA (LEACH.)

C. OBLONGA, PL. 35. FIG. 37.

C. testa conicâ, sub-elevatâ, tenui, diaphanâ, costatâ; costis longitudinalibus, noduliferis, alternantibus; apicè pro- ducto, incurvo, anfractu uno, sinistrorsum deflecto, lævi; foramine elliptico; aperturâ quadratâ, oblongâ.

* Α Σκαφιδιον, navigiolum.

Shell conical, somewhat elevated, thin, diaphanous, costate; costæ longitudinal, noduliferous, alternate; apex produced, incurved, with one whorl, deflected to the left; foramen elliptical; aperture quadrate, oblong.

Height .04.

Length .07.

Breadth .05 of an inch.

Remarks.—The nodules on the ribs are placed in regular series, giving the effect of cancellating transverse striæ. The ribs are alternately large and small, which, I believe, is the case with all our fossil species of these shells. The foramen is widely elliptical, approaching to circular, and placed at some distance posterior to the apex. The apex is large, bent to the left, and twisted into rather more than one whorl. The shell is not much elevated.

But two species of this interesting little genus have been hitherto described. One, the *C. noachina*, Leach, is from the coast of Great Britain, the other, *C. princeps*, Mighels and Adams, from that of New England. The one now before us is, I believe, the first fossil species. It differs from the others principally in its minute size, the absence of an internal plate, and the circular form of the foramen.

GENUS CALYPTRÆA.

C. PILEOLUS, PL. 35. FIG. 38.

C. testâ irregulariter conicâ, crassâ, sulcalâ; sulcis radiantibus, magnis, irregularibus; striis concentricis, parvis; apice lævi, contorto anfractibus duobus; aperturâ sub-rotundâ; cyatho magno, lato, angulato.

Shell irregularly conical, thick, sulcate; sulci radiating, large, irregular; concentric striæ minute, small; apex smooth, twisted into two whorls; aperture sub-rotund; cyathus large, wide, angular.

Diam. .80.

Height .40 of an inch.

Remarks.—This species varies very much both in outline and height, some specimens being nearly flat, while in others the perpendicular distance from the apex to the base is nearly as great as the diameter. The cyathus is large, bent at a right angle, and fastened to the sides of the shell by the two edges. The sulci vary very much in different specimens, both as to number and size.

In general outline, this shell is not unlike the *Dispotæa costata*, Say, but the form of the cyathus separates it from the *Dispotææ*, and it also differs in proportionate height. Young specimens are not unlike, in external appearance, the *Infundibulum concentricum*, herein described, as nearly the upper half of the shell is smooth.

The peculiar voluted form of the apex, which may also be observed in the *Dispotæa costata*, Say, and *D. ramosa*, Con., would almost seem to entitle them to a separate division, were it not that in this family the form of the shells is by no means a criterion for that of the animal, and therefore, until the latter has been examined, no separations should be made. M. Lesson and Mr. Owen, who have dissected the inhabitants of these shells, both say that the difference between the animal of *Calyptræa* and *Crepidula* is by no means sufficient to establish a generic distinction. Mr. Owen, in a paper read before the Zoological Society, observes, "The soft parts of *Crepidula* are the same with those of *Calyptræa*, in all essential points of structure, differing only in the proportionate extent of the anterior part of the foot, and dorsal groove of the mantle." M. Lesson,* as quoted

* Zoologie de la Coquille, Tom. II. p. 388.

by Mr. Broderip, says, "L'animal des Calyptrées et des Crèpidules nous parait ne differer en rien d'essentiel; et quant à la cloison du test, soit que cette cloison soit transversale, soit qu'elle ne consiste qu'en lamelles anexées au fond de la coquille, elle presente des passages de ces deux états, et ne peut servir qu'à établir des simples sous-genres, au grand genre Calyptræa ou Crepidula comme on voudrait l'appeler." I have therefore put the following shells as merely in sub-genera.

SUB-GENUS INFUNDIBULUM (DE MONTFORT.)

I. CONCENTRICUM, PL. 35. FIG. 39.

I. testâ patelliformi, depresso-conicâ, tenui, simplici; lineis minutis concentricis; apice centrali, anfractu parvo uno; aperturâ sub-rotundâ; cyatho recto, varice marginato.

Shell patelliform, depressed-conical, thin, simple; with minute concentric lines; apex central, with one small whorl; aperture sub-rotund; cyathus straight, margined with a varix.

Diam. .22.

Height .09 of an inch.

Remarks.—This shell is entirely simple and patelliform, with the exception of one small whorl at the apex. The cyathus is flat and straight, extending from the centre to the margin, with a thick varix at its outer edge.

The only Infundibulum, to which this is allied, is the I. centrale, Con., but that species is described as ovate, while this is conical, or even slightly concave.

This is one of the shells that show the gradual passage from the Infundibulum to the Crepidula, and the propriety of uniting these genera. Its want of whorls, and the concentric lines of growth, seem to place it in the Calyptrææ, while the cyathus constitutes it an Infundibulum.

SUB-GENUS CREPIDULA.

C. PONDEROSA, PL. 35. FIG. 40.

C. testâ sub-globosâ, crassissimâ, ponderosâ, convolutâ, rugosâ; sulco prope suturam lato, minimè profundo; suturâ parvâ; apice voluto, rotundato, anfractibus sesqui; aperturâ arcuata ellipticâ; cyatho crassissimo, undulato, acie flexuosâ, vix apertura dimidiam æquante.

Shell sub-globose, very thick, ponderous, whorled, rugose; with a wide, shallow sulcation near the suture; suture small; apex voluted, rounded, with a whorl and a half; mouth narrow-elliptical; cyathus very thick, undulate, with a flexuose edge; scarcely half the length of the mouth.

Height 1.15.

Length 1.90.

Breadth 1.50 inches.

Remarks.—There are occasional irregular lines of growth over the surface. The sulcation near the suture is sometimes scarcely perceptible. It usually continues for about one third of a whorl from the aperture, and then becomes obsolete. The mouth is sometimes very small and nearly round. The cyathus is extremely solid with two depressions on its surface and a waved edge. It is deeply set in the shell, and disappears gradually into the sides, so that its margin cannot be traced. The apex is more voluted than in any species of Crepidula that I have met with.

This fine shell has, most probably, been heretofore confounded with the *C. costata*, Morton, as it is too common and too conspicuous to have escaped observation, and as there are specimens of both under that name in the collection of the Academy of Natural

Sciences; but our shell is much larger, more ponderous, with the apex more twisted, and without the spines of the *C. costata*. I have a number of specimens of each now before me, and I find that these characters obtain at all ages.

C. CORNUCOPIÆ, PL. 35. FIG. 41.

C. testâ valdè elevatâ et convexâ, lævi, politâ, crassâ; apice terminali, valdè producto, voluto, supernè sub-angulato, sinistrorsum deflexo; aperturâ parvâ, ovatâ; cyatho profundo, plano, acie curvo.

Shell much elevated, very convex, smooth, polished, thick; apex terminal, very much produced, whorled, somewhat angular above, turned to the left; aperture small, ovate; cyathus deep, flat, with the margin curved.

Height .16.

Length .30.

Breadth .18 of an inch.

Remarks.—The apex is very far removed from the margin of the mouth; it is slightly turned to the left, and has about half a volution. The aperture is ovate, approaching to elliptical. The cyathus is situated deep in the shell, so that there is a large cavity under the apex. It is perfectly flat, and its outer margin has a gentle and regular incised curve.

I at first considered this curious little shell as identical with the *C. convexa*, Say, but the differences in the apex and cyathus render the separation necessary.

C. LAMINA, PL. 35. FIG. 42.

C. testâ, discoidale, planissimâ, tenui, lævi; apice elevato, polito, sinistrorsum deflexo, anfractibus sesqui; aperturâ magnâ, subrotundâ; cyatho parvo, tenui, convexo.

Shell discoidal, very flat, thin, smooth; apex elevated, polished, deflected to the left, with a whorl and a half; aperture large, subrotund; cyathus small, thin, convex.

Height .03.

Length .18.

Breadth .15 of an inch.

Remarks.—The most peculiar character in the species now before us, is in the shape of the apex. This is perfectly smooth and polished, rising suddenly from the flat back of the shell, and twisted into about a whorl and a half. The margin of the mouth projects anteriorly beyond it, so that it is invisible on a front view. There are small concentric lines of growth over the surface of the shell. The cyathus is slightly and regularly convex.

When very young, this species, from the peculiar formation of the apex, has a striking resemblance to a small *Natica*, and I have been for some time in doubt as to what genus a specimen of that age belonged.

This shell is closely allied to the *C. plana*, Say, but the peculiar apex and nearly flat cyathus at once distinguish it.

FAMILY BULLÆIDÆ.

GENUS BULLA.

B. CYLINDRUS, PL. 35. FIG. 43.

B. testâ sub-ellipticâ, supernè et infernè acuminatâ, crassâ, politâ, striatâ; spirâ umbilicatâ; anfractu ultimo ad basim et apicem striato; aperturâ falcatâ, infernè latâ; columellâ reflectâ.

Shell subelliptical, acuminate above and below, thick, polished, striate; spire umbilicate; last whorl striate at the base and apex; mouth falcate, wide below; columella reflected.

Length .21.

Breadth .10 of an inch.

Remarks.—Although this shell has no very peculiar characters, yet I cannot refer it to any described species. One or two species, the *B. St. Hillairii* and *Dekayi*, from Claiborne, are somewhat allied to it, but they are not identical.

FAMILY MELANIDÆ.

GENUS PASITHEA, (LEA.)

P. EXARATA, PL. 35. FIG. 44.

P. testâ subulatâ, acuminatâ, crassâ, imperforatâ, nitente, costatâ; spirâ valdè attenuatâ, mamillatâ, ad apicem lævi; suturis profundis, excavatis; anfractibus quindecim, planulatis, costis obliquè longitudinalibus crebris planis; anfractu ultimo angulato; basi lævi, politâ; aperturâ parvâ, sub-quadratâ, sub-effusâ.

Shell subulate, acuminate, thick, imperforate, shining, with costate; spire very attenuate, mamillate, smooth at the apex, sutures deep, excavated; whorls fifteen, flattened, with numerous flat obliquely longitudinal ribs; last whorl angulate; base smooth, polished; mouth small, sub-quadrate, somewhat effuse.

Length .35.

Breadth .07 of an inch.

Remarks.—The ribs are slightly oblique. They disappear at both sutures, which are triangular, smooth and deep. They extend, on the last whorl no farther than the angle, leaving the base perfectly smooth. The mouth is ovately quadrate, with sharp angles where the columella and outer lip join the preceding whorls.

This shell appears to resemble the *Turritella laqueata*, Con., but its larger size, mamillate apex, and angular mouth serve to distinguish it from that species.

P. SUBULA, PL. 35. FIG. 45.

P. testâ subulatâ, crassâ, imperforatâ, costatâ, striatâ; spirâ attenuatâ, obtusâ, mamillatâ, ad apicem politâ; suturis profundis; anfractibus octo, convexis; costis longitudinalibus magnis, crebris, propè basim obsoletis, planulatis, lævibus; striis transversis, parvis, crebris, interruptis; ultimo anfractu rotundato; basi lævi; aperturâ arctatâ, ellipticâ, subeffusâ.

Shell subulate, thick, imperforate, costate, striate; spire attenuate, obtuse, mamillate, polished at the apex; sutures deep; whorls eight, convex; costæ longitudinal, large, numerous, obsolete near the base, flattened, smooth; striæ transverse, small, numerous, interrupted; last whorl rounded; base smooth; mouth narrow, elliptical, sub-effuse.

Length .18.

Breadth .05 of an inch.

Remarks.—The costæ continue almost to the base, when they disappear suddenly, leaving a small place smooth immediately behind the columella. The first whorl of the spire is round, somewhat twisted, smooth and polished, forming a remarkable mamelon. The transverse striæ are very small and do not cross the costæ. The mouth is slightly angular above, and somewhat effuse at base.

This shell attains a greater size than that given above. I have several fragments of much larger specimens.

P. EBURNEA, PL. 35. FIG. 46.

P. testâ subulatâ, elongatâ, tenui, politâ, sub-perforatâ, costatâ, striatâ; spirâ attenuatâ, mamillatâ, conicâ; suturis linearibus, impressis; anfractibus duodecim, sub-convexis; costis longitudinalibus, magnis, planis, lævibus; prope suturam superiorem striis transversalibus parvis, crebris; prope suturam inferiorem striis transversalibus magnis, raris; anfractu ultimo rotundato; basi striatâ; perforationè pene obsoletâ; aperturâ ovalâ.

Shell subulate, elongated, thin, polished, sub-perforate, costate, striate; spire attenuate, mamillate, conical; sutures linear, impressed; whorls twelve, slightly convex; ribs longitudinal, large, flat, smooth; striæ transverse, near the upper suture small and numerous, near the lower suture large and unfrequent; last whorl rounded; base striate; perforation almost obsolete; mouth ovate.

Length .41.

Breadth .10 of an inch.

Remarks.—The transverse striæ do not cross the ribs, which are perfectly smooth and polished. The whorls are divided about the middle by a deep impressed line. Above it is a series of close, small striæ; below it the striæ are larger and more distant. On the body whorl they end at a rather deeper line about the middle. Here also the ribs end, and there is a smooth space before the striæ of the base commence. These are rather large and not numerous. The mouth is acutely angular above and rounded below. The outer lip is sharp.

This elegant little shell is remarkable for its ivory-like appearance. The peculiar arrangement of its transverse striæ distinguishes it from all other species.

P. LÆVIGATA, PL. 35. FIG. 47.

P. testâ elevato-conicâ, acuminatâ, imperforatâ, crassâ, lævi, eburneâ, nitente; spirâ attenuatâ, conicâ, aculâ; suturis linearibus, minimis; anfractibus —, planis; anfractu ultimo sub-angulato; basi lævi; aperturâ obliquè quadrilaterali, supernè et infernè acutè angulatâ, effusâ.

Shell elevated-conical, acuminate, imperforate, thick, smooth, ivory-like, shining; spire attenuate, conical, acute; sutures linear, very small, whorls — flat; last whorl somewhat angular; base smooth; aperture obliquely quadrilateral, acutely angular above and below; effuse.

Length .08.

Breadth .10 of an inch.

Remarks.—The whorls are perfectly flat, so that the outlines of the spire are straight. The surface of the shell is remarkably smooth and shining.

In my largest specimen the lower whorls have been broken off, so that I am unable to give their number. This fragment, however, has about eleven.

This shell bears some resemblance to the *P. aciculata*, Lea, from Claiborne, but it may readily be distinguished by its larger size, less attenuate shape, and flatter whorls.

P. OVULUM, PL. 35. FIG. 48.

P. testâ ovatâ, sub-elongatâ, tenui, imperforatâ, lævi, nitente; spirâ breviusculâ, ovatâ, obtusâ; suturis profundis, linearibus; anfractibus quatuor, convexis; anfractu ultimo rotundato; basi lævi; aperturâ ovatâ; columellâ crassâ, latâ; lævi.

Shell ovate, somewhat elongate, thin, imperforate, smooth, shining; spire rather short, ovate, obtuse; sutures deep, linear; whorls four, convex; last whorl rounded; base smooth; mouth ovate; columella thick, wide, smooth.

Length .15.

Breadth .08 of an inch.

Remarks.—The mouth is angular above and rounded below. The sutures are deep, owing to a slight conical depression of the whorls immediately at their junction with those above.

I know no species to which the above is allied.

P. DIAPHANA, PL. 35. FIG. 49.

P. testâ ovato-elongatâ, acuminatâ, tenui, sub-perforatâ, diaphanâ, striatâ; spirâ subattenuatâ, mamillatâ; suturis impressis, linearibus; anfractibus sex, convexis; striis minutis, transversalibus; anfractu ultimo rotundato; basi striatâ; aperturâ elongato-quadratâ, sub-effusâ.

Shell ovately elongate, acuminate, thin, sub-perforate, diaphanous, striate; spire somewhat attenuate, mamillate; sutures impressed, linear; whorls six, convex; striæ transverse, minute; last whorl rounded; base striate; mouth elongately-quadrate, sub-effuse.

Length .22.

Breadth .10 of an inch.

Remarks.—The striæ are very small and only to be seen with the aid of a microscope. The shell is very thin,—so much so as to be somewhat translucent. The mouth is angular above and below. There is a slight angle on the superior part of the whorls, immediately below the upper suture.

This pretty little shell has no decided resemblance to any of our fossil species. *P. sulcata*, Lea, approaches it more nearly than any other.

P. TURBINOPSIS, PL. 35. FIG. 50.

P. testâ ovato-conoidâ, sub-elevatâ, tenui, lævi, imperforatâ; spirâ breviusculâ, rotundatâ, obtusâ; suturis profundis; anfractibus quatuor, convexis, propè suturam superiorem sub-canaliculatis; anfractu ultimo rotundato; basi lævi; aperturâ magnâ, sub-rotundâ.

Shell ovately conoidal, somewhat elevated, thin, smooth, imperforate; spire rather short, rounded, obtuse; sutures deep; whorls four, convex, sub-canaliculate near the upper suture; last whorl rounded; base smooth; mouth large sub-rotund.

Length .10.

Breadth .05 of an inch.

Remarks.—The whorls have a small angle immediately at the upper suture, which gives them somewhat the appearance of being channelled. The mouth is oblique, nearly round, and has the lower margin produced obliquely, below the inner lip.

I have felt some doubts in placing this shell among the *Pasitheæ*, as it hardly has the effuse mouth of that genus, but its characters seem to agree better with it than with any other.

This little shell resembles some of our recent species of *Amnicola*;—it also approaches the *Turbo minutus*, Totten (*Cingula minuta*, Gould,) but it is more globose and differs in size.

P. ORNATA.

P. testâ ovato-subulatâ, crassâ, sub-perforatâ, costatâ, striatâ; spirâ elevatâ, mamillatâ, prope apicem lævi; suturis linearibus; anfractibus quinque, valdè convexis; costis transversalibus, latis, politis; striis longitudinalibus, minutissimis; anfractu ultimo rotundato; basi costulatâ; perforatione pene obsoletâ; aperturâ ovatâ, effusâ.

Shell ovately subulate, thick, sub-perforate, costate, striate; spire elevated, mamillate, smooth near the apex; sutures linear; whorls five, very convex; costæ transverse, wide, polished; striæ longitudinal, very minute; last whorl rounded; base costulate; perforation almost obsolete; mouth ovate, effuse.

Length —

Breadth —

Remarks.—On the upper whorls the costæ are five in number, on the last one they are much more numerous. Those on the base are smaller and closer together. Near the lower sutures, on the whorl next the last, is a rib larger than the rest, with an impressed line in its centre, making a kind of double rib. It may be traced round the middle of the last whorl. As I have but one specimen before me, I cannot decide whether this is a general character or not. The longitudinal striæ are only to be seen in the intervals of the ribs. They are very small and sometimes disappear.*

* I unfortunately lost my only specimen of this shell after describing, but before measuring or making a drawing of it. I am, therefore, unable to give either the dimensions or a figure. It was, however, not more than a quarter of an inch in length, at the utmost.

FAMILY NERITIDÆ.

GENUS NATICA.

N. APERTA, PL. 36. FIG. 51.

N. testâ obliquè ellipticâ, tenui, costulatâ, sub-striatâ, perforatâ; spirâ depressâ, ovatâ, obtusâ, propè apicem lævi; suturis parvis, linearibus; anfractibus quatuor, convexis; costulis transversalibus, crebris, planis, quadrangularibus; striis longitudinalibus, minutissimis; anfractu ultimo ovato; basi obliquè costulatâ; perforatione parvâ, angustâ; aperturâ maximâ, supernè sinuatâ, infernè ellipticâ.

Shell obliquely elliptical, thin, costulate, sub-striate, perforate; spire depressed, ovate, obtuse, smooth near the apex; sutures small, linear; whorls four, convex; costulæ numerous, transverse, quadrangular, flat; striæ longitudinal, very small; last whorl ovate; base obliquely costulate; perforation small, narrow; mouth very large, sinuate above, elliptical below.

Length .70.

Breadth .62 of an inch.

Remarks.—The costulæ are small, wider than the spaces between them, and very numerous. The longitudinal lines of growth are exceedingly minute; so much so as to be invisible to the naked eye. Both ribs and striæ become obsolete on the upper whorls, so that the two or three nearest the apex are smooth. The mouth is somewhat lunate, contracted above and expanded below. The umbilicus is small, and nearly concealed by the columella.

This shell is closely allied to the *N. fragilis*, Conrad, and it is with some hesitation that I separate it. It, however, differs in the ribs, the umbilicus, and the shape of the mouth.

N. SPHÆRULUS, PL. 36. FIG. 52.

N. testâ globoso-acuminatâ, obliquâ, tenui, lævi, politâ, imperforatâ; spirâ brevisculâ, sub-conicâ, acutâ; suturis parvis, impressis; anfractibus quatuor, sub-convexis; anfractu ultimo rotundato; basi lævi; umbilico occulto; callo semicirculari, lineâ impressâ marginato; aperturâ semi-ovatâ; columellâ rectâ, supernè incrassatâ.

Shell globosely acuminate, oblique, thin, smooth, polished, imperforate; spire rather short, sub-conical, acute; sutures small, impressed; whorls four, somewhat convex; last whorl rounded; base smooth; umbilicus hidden; callus semicircular, margined by an impressed line; mouth semi-ovate; columella straight, incrassated above.

Length .12.

Breadth .11 of an inch.

Remarks.—This shell is too small and perfect to be the young of so large a species as *N. duplicata*, which it resembles. Out of twenty or thirty specimens the admeasurements given above were the largest, the others decreasing to a size scarcely visible without a microscope. The only other species to which it is allied is the *N. percallosa*, Conrad, but the small size and more elevated spire distinguish it.

N. CRASSILABRUM, PL. 36. FIG. 53.

N. testâ transversè ellipticâ, depressâ, crassâ, lævi, politâ, imperforatâ; spirâ conicâ, obtusâ, valdè depressâ; suturis profundis, linearibus; anfractibus quatuor, convexis, supernè planulatis; anfractu ultimo rotundato; basi lævi; umbilico occulto, parvo; aperturâ sub-rotundâ; labro supernè valdè incrassato.

Shell transversely elliptical, depressed, thick, smooth, polished, imperforate; spire conical, obtuse, very much depressed; sutures deep, linear; whorls four, convex, flattened above; last whorl rounded; base smooth; umbilicus hidden, small; mouth sub-rotund; outer lip much thickened above.

Length .16.

Breadth .25 of an inch.

Remarks.—The flattened whorls and incrassated outer lip at once distinguish this shell from all its congeners.

FAMILY PLICACIDÆ.

GENUS ACTEON.

A. GRANULATUS, PL. 36. FIG. 54.

A. testâ subulatâ, crassâ, sub-perforatâ, noduloso-costatâ; spirâ elevatâ, obtusâ, mamillatâ, ad apicem politâ; suturis impressis; anfractibus sex, convexis; costis transversalibus, planis, regulariter nodulosis, unâ lavi prope suturam inferiorem; anfractu ultimo rotundato; perforatione minimâ; basi costatâ; aperturâ ovatâ, supernè angulatâ, sub-effusâ; plicâ columellari magnâ, acutâ.

Shell subulate, thick, sub-perforate, nodulously costate; spire elevated, obtuse, mamillate, polished at the apex; sutures impressed; whorls six, convex; ribs transverse, flat, regularly nodulous, a smooth one near the lower suture; last whorl rounded; base costate; perforation very small; mouth ovate, angular above, somewhat effuse; fold on the columella large, acute.

Length .18.

Breadth .08 of an inch.

Remarks.—The nodules on the ribs are small and in regular order, giving the shell a granulate and cancellated appearance. The fold on the columella is placed about the middle, and is quite large. The mouth is rounded below and acutely angular above. On the body whorl the ribs are about eight in number, while there are five on those of the spire. The basal costæ are smooth and smaller.

Judging from description, this shell is not unlike *A. pomilius* and *A. idoneus*, Conrad; but may be distinguished by the perforation, mamillate apex, and the smooth rib near the lower suture.

A. GLOBOSUS, PL. 36. FIG. 55.

A. testâ ovatâ, crassâ, cancellatâ, umbilicatâ; spirâ brevi, ad apicem lavi et politâ; suturis parvis; anfractibus tribus, convexis, rapidè crescentibus, supra planulatis; costis octo, transversis, magnis; striis longitudinalibus, parvis, irregularibus; anfractu ultimo rotundato; basi cancellatâ; umbilico magno; aperturâ magnâ, sub-ellipticâ; columellâ rectâ; plicâ columellari magnâ, acutâ.

Shell ovate, thick, cancellate, umbilicate; spire short, smooth and polished at the apex; sutures small; whorls three, rapidly increasing, convex, flattened above; costæ eight, transverse, large; striæ longitudinal, small, irregular; last whorl rounded; base cancellate; umbilicus large; aperture large, sub-elliptical; columella straight; fold on the columella large, acute.

Length .10.

Breadth .08 of an inch.

Remarks.—The longitudinal striæ occasionally do not cross the ribs, which, in that case, are rounded and polished. The mouth is somewhat semicircular, with the columella for a base. On the upper whorls there are but four ribs, the rest being concealed by the succeeding growth. About a whorl and a half near the apex, are perfectly smooth.

This is a very pretty little shell, and bears no decided resemblance to any of our fossil species. It is unusually globose for an Acteon, but can hardly be placed in the kindred genus *Tornatella*.

A. TURBINATUS, PL. 36. FIG. 56.

A. testâ ovato-conicâ, crassâ, lævi, sub-perforatâ; spirâ breviusculâ, conicâ, obtusâ; suturis parvis, linearibus; anfractibus quinque, planulatis; anfractu ultimo sub-angulato; basi lævi; perforatione minimâ; aperturâ ovatâ, sub-effusâ; plicâ columellari magnâ, acutâ.

Shell ovately conical, thick, smooth, sub-perforate; spire rather short, conical, obtuse; sutures small, linear; whorls five, flattened; last whorl somewhat angular; base smooth; perforation very small; mouth ovate, sub-effuse; fold on the columella large, acute.

Length .12.

Breadth .08 of an inch.

Remarks.—The fold on the columella is placed about the middle. It can scarcely be seen on a front view; but when the shell is placed obliquely, it appears very large. The mouth is acutely angular above, and rounded and somewhat effuse below. On one specimen I have observed a small impressed transverse line near the upper suture, but my other ones want it.

This little shell, though without any conspicuous characteristics, does not resemble any of our described species.

A. ANGULATUS, PL. 36. FIG. 57.

A. testâ subulatâ, infernè ovatâ, crassâ, imperforatâ, lævi; spirâ attenuatâ, conicâ, mamillatâ; suturis profundis; anfractibus sex, planulatis, propè suturam inferiorem angulatis; anfractu ultimo angulato; basi lævi; aperturâ parvâ, subellipticâ; plicâ columellari obtusâ, obliquâ.

Shell subulate, ovate below, thick, imperforate, smooth; spire attenuate, conical, mamillate; sutures deep; whorls six, flattened, angulate near the lower suture; last whorl angular; base smooth; mouth small, sub-elliptical; fold on the columella obtuse, oblique.

Length .12.

Breadth .05 of an inch.

Remarks.—The mouth is nearly elliptical. The angle on the lower part of the whorls is only visible on the inferior ones. Nearer the apex, it becomes obsolete, or is covered by the succeeding whorls.

This shell is not unlike the *A. melanellus*, Lea, but differs from that species in the angular whorls, smaller size, and want of an umbilicus.

A. GLANS, PL. 36. FIG. 58.

A. testâ sub-ovatâ, tenui, imperforatâ, lævi, glabrâ; spirâ ovato-conicâ, brevi, mamillatâ; suturis profundis; anfractibus quatuor, minimè convexis, ad suturam superiorem sub-canaliculatis; anfractu ultimo rotundato; basi lævi; aperturâ ovatâ, valdè effusâ; plicâ columellari parvâ, obliquâ.

Shell sub-ovate, thin, imperforate, smooth, glabrous; spire ovately-conical, short, mamillate; sutures deep; whorls four, very slightly convex, sub-canaliculate at the upper suture; last whorl rounded; base smooth; mouth ovate, very effuse; fold on the columella small, oblique.

Length .10.

Breadth .05 of an inch.

Remarks.—The mouth is very effuse below; so much so, indeed, that it appears to have the rudiments of a canal. It is acutely angular above. The fold on the columella is obtuse, rising abruptly on the upper part and declining gradually on the lower.

This little shell, from its ovate outline, and the form of its fold, should perhaps be placed in the *Tornatella*, but the limits of these two genera are so indistinct that it is difficult to decide where the boundary between them exists. I have felt the same doubt with respect to several of the following species, as the *A. sculptus*, *nitens*, &c.

A. SCULPTUS, PL. 36. FIG. 59.

A. testâ ovato-acuminatâ, crassâ, sub-perforatâ, cancellatâ; spirâ brevi, conicâ, mamillatâ, ad apicem lævi; suturis profundis; anfractibus quinque, convexis, ad suturam superiorem sub-canaliculatis; striis transversis, crebris, magnis; sulcis longitudinalibus, parvis, propè suturam inferiorem obsoletis; anfractu ultimo rotundato; basi striatâ; perforatione minimâ; aperturâ ovatâ, effusâ; plicâ columellari obliquâ, obtusâ.

Shell ovate-acuminate, thick, sub-perforate, cancellate; spire short, conical, mamillate, smooth at the apex; sutures deep; whorls five, convex, sub-canaliculate near the upper sutures; striæ transverse, numerous, large; sulci longitudinal, small, nearly obsolete at the lower suture; last whorl rounded; base striate; perforation very small; mouth ovate, effuse; fold on the columella oblique, obtuse.

Length .11.

Breadth .05 of an inch.

Remarks.—The transverse striæ are extremely numerous. Near the base they become alternate. The longitudinal sulcations are small; they are very perceptible near the superior suture, but gradually become obsolete as they approach the lower part of the whorls. The perforation is extremely minute,—so much so as to be almost obsolete. The margin of the mouth is continuous round the inner lip. This character is wanting in young and unfinished specimens. The fold on the columella can scarcely be seen on a front view. The upper side of it is perpendicular, the lower very oblique.

This shell and the last are almost too bullate to be classed with the Acteons. They may, perhaps, more properly belong to the Tornatellæ.

A. NITENS, PL. 36. FIG. 60.

A. testâ ovato-acuminatâ, crassâ, perforatâ, lævi, politâ; spirâ subulatâ, mamillatâ; suturis impressis, profundis; anfractibus quinque, convexis; anfractu ultimo rotundato; basi lævi; perforatione parvâ; aperturâ ovatâ, elongatâ, effusâ; plicâ columellari obtusâ, crassâ.

Shell ovate-acuminate, thick, perforate, smooth, polished; spire subulate, mamillate; sutures impressed, deep; whorls five, convex; last whorl rounded; base smooth; perforation small; mouth ovate, elongated, effuse; fold on the columella obtuse, thick.

Length .18.

Breadth .10 of an inch.

Remarks.—The mouth is large, acute above and rounded and effuse below. The last whorl expands rather suddenly beyond the line of the rest, and is more than half the length of the shell. The fold on the columella is broad at base, but slightly elevated, and obtuse. The surface of the shell is remarkably glabrous and shining.

The external outline has more the aspect of a Phasianella than that of an Acteon. I know none of its congeners to which it is allied.

A. MILIUM, PL. 36. FIG. 61.

A. testâ ovato-conicâ, crassâ, perforatâ, striatâ, politâ; spirâ sub-attenuatâ, conicâ, obtusâ, ad apicem lævi; suturis linearibus, impressis; anfractibus quinque, planulatis; striis transversalibus, raris, impressis; anfractu ultimo rotundato; basi crebrè striatâ; perforatione parvâ; aperturâ ovatâ, integrâ; plicâ columellari magnâ, acutâ, ad basim latâ.

Shell ovately conical, thick, perforate, striate, polished; spire somewhat attenuate, conical, obtuse, smooth at the apex; sutures linear, impressed; whorls five, flattened; striæ transverse, few, impressed; last whorl rounded; base closely striate; perforation small; mouth ovate, entire; fold on the columella large, acute, wide at base.

Length .10.

Breadth .04 of an inch.

Remarks.—On the upper whorls the striæ are three in number. On the last whorl they are much more numerous, particularly towards the base, where they become

smaller and closer. The mouth is not effuse, acutely angular above and rounded below. The fold on the columella is unusually large, and is very wide at base.

The only species of Acteon, with which this little shell could be confounded, is the *A. melanoides*, Conrad, but its smaller size, more ovate shape, and greater number of striæ on the body whorl, sufficiently distinguish it from that species.

A. SIMPLEX, PL. 36. FIG. 62.

A. testâ elevato-conicâ, acuminatâ, crassâ, lævi, perforatâ; spirâ attenuatâ, mamillatâ; suturis excavatis, profundis; anfractibus sex, planis, ad suturam inferiorem angulatis; anfractu ultimo angulato; basi lævi; perforatione parvâ; aperturâ quadratâ, effusâ; plicâ columellari lamellari, acutâ.

Shell elevately conical, acuminate, thick, smooth, perforate; spire attenuate, mamillate; sutures excavated, deep; whorls six, flat, angulated at the lower suture; last whorl angular; base smooth; perforation small; mouth quadrate, effuse; fold on the columella lamellar, acute.

Length .12.

Breadth .05 of an inch.

Remarks.—The mamelon of the apex is large and very irregular in its shape. The angle on the whorls is very near the lower suture, which gives them somewhat the appearance of being canaliculate. The fold on the columella is acute and very thin. The mouth is angular above and below.

This shell bears a general resemblance to some of the smooth Acteons from Claiborne, without being sufficiently allied to enable me to class it with any of them. It also closely approaches the *A. angulatus*, herein described, but the umbilicus of this species readily distinguishes it.

GENUS PYRAMIDELLA.

P. SUTURALIS, PL. 36. FIG. 63.

P. testâ turratâ, elevatâ, crassâ, lævi, nitente, perforatâ, sulcatâ; spirâ conicâ, attenuatâ; suturis linearibus; anfractibus octo, planis; anfractu ultimo angulato, medio sulcato; sulco uno, parvo, transverso; basi carinatâ; perforatione minimâ; aperturâ quadratâ, valdè effusâ; columellâ triplicatâ, plicâ unâ maximâ acutâ, duobus parvis; labro dentibus magnis internis, aut duobus aut tribus.

Shell turrited, elevated, thick, smooth, shining, perforated, sulcate; spire conical, attenuate; sutures linear; whorls eight, flat; last whorl angular, sulcate in the middle; sulcus transverse, small; base carinate; perforation very small; mouth quadrate, very effuse; columella with three folds, one very large and acute, the others small; outer lip with two or three large teeth internally.

Length .20.

Breadth .08 of an inch.

Remarks.—The sulcation on the last whorl is seen at the upper part of those of the spire, forming an apparently double suture. This sulcation is triangular, with one side perpendicular and the other very sloping. Immediately above it is a little raised ridge, or small carina. The sulcation is placed directly on the angle of the last whorl. Of the folds on the columella, the upper one is large and horizontal, situated immediately at its junction with the preceding whorl. The two lower ones are smaller and oblique. The teeth on the outer lip are generally two, placed close together near the middle, but there is sometimes a third, smaller one, below them. The carina on the base is broad and little elevated, immediately surrounding the umbilicus. The mouth is acutely angular above and below. This shell attains a greater size than that mentioned above, as I have an imperfect specimen larger than the one whose dimensions and figure are given.

Judging from description, this shell is not unlike the *P. larvata*, Con., from Claiborne, but that species is not mentioned as having three folds on the columella, or the teeth on the outer lip.

P. ELABORATA, PL. 36. FIG. 64.

P. testâ elevato-conicâ, crassâ, imperforatâ, costatâ, striatâ; spirâ minimè ovatâ, mamillatâ; suturis linearibus, impressis; anfractibus sex, convexis; costis longitudinalibus, crebris, planis, lævibus, politis; striis transversis, parvis; anfractu ultimo rotundato; aperturâ ellipticâ; columellâ plicis tribus magnis.

Shell elevately conical, thick, imperforate, costate, striate; spire slightly ovate, mamillate; sutures linear, impressed; whorls six, convex; costæ longitudinal, numerous, flat, smooth, polished; striæ transverse, small; last whorl rounded; mouth elliptical; columella with three large folds.

Length .15.

Breadth .08 of an inch.

Remarks.—The transverse striæ are very small and do not cross the ribs. The folds on the columella are of nearly equal size, but the upper one is rather larger than the others.

As the only two specimens of this shell in my possession have had the lower whorl broken off, I am unable to give the full size or number of whorls, as well as to determine whether there are teeth on the outer lip or not.

I have never seen a *Pyramidella* with a sculpture as elaborate as this. The genus mostly contains plain species.

FAMILY SCALARIDÆ.

GENUS SCALARIA.

S. ACICULA, PL. 36. FIG. 65.

S. testâ turrîtâ, crassâ, imperforatâ, costatâ; spirâ attenuatâ, ad apicem vix lævi; suturis profundis; anfractibus septem, valdè convexis; costis longitudinalibus, lamellaribus, acutis, ad basim decrescentibus; anfractu ultimo rotundato; basi carinâ minimâ transversâ; aperturâ rotundâ.

Shell turrited, thick, imperforate, costate, spire attenuate, nearly smooth at the apex; sutures deep; whorls seven, very convex; costæ longitudinal, lamellar, acute, decreasing at the base; last whorl rounded; base with a very small transverse carina; mouth round.

Length .20.

Breadth .10 of an inch.

Remarks.—The carina on the base is small and does not interfere with the ribs, which continue to the columella. The whorls are perfectly smooth with the exception of the ribs, which, on the body whorl are fifteen in number.

S. CORNIGERA, PL. 36. FIG. 66.

S. testâ elevato-conicâ, scalariformi, imperforatâ, crassiusculâ, costatâ; spirâ attenuatâ, obtusâ, conicâ; suturis valdè impressis; anfractibus sex, convexis, supernè valdè angulatis; costis sub-tenuibus, planis, supernè valdè productis et acutè angulatis; basi lævi; aperturâ rotundatâ, minimè effusâ.

Shell elevately conical, scalariform, imperforate, rather thick, costate; spire attenuate, obtuse, conical; sutures very much impressed; whorls six, convex, very angular above; costæ rather thin, flat, very much produced and acutely angled above; base smooth; mouth round, slightly effuse.

Length .16.

Breadth .08 of an inch.

Remarks.—On the upper part of the spire the angle of the whorls is near their middle. Below, it is close to the superior suture. The ribs rise, near the upper part of the whorls, to a short spine, and descend rapidly to the suture, where they become obsolete. The mouth is small and nearly round.

This little shell I at first thought to be merely the young of *S. pachypleura*, Conrad; but, as it is but one fifth the size of that species, with the same number of whorls, they cannot be identical.

S. MICROPLEURA, PL. 36. FIG. 67.

S. testâ elevato-pyramidali, tenui, imperforatâ, costulatâ; spirâ attenuatâ, conicâ, obtusâ; suturis parvis, linearibus; anfractibus sex, convexis; costis minutis, creberrimis; anfractu ultimo rotundato; basi lævi; aperturâ ovatâ, marginibus superne disjunctis; labro acuto.

Shell elevately pyramidal, thin, imperforate, costulate; spire attenuate, conical, obtuse; sutures small, linear; whorls six, convex; ribs very small and numerous; last whorl rounded; mouth ovate, with the margins disunited above; outer lip acute.

Length .10.

Breadth .05 of an inch.

Remarks.—I have felt some hesitation in placing this shell among the *Scalariæ*, as the small costæ and inconspicuous peritreme of the mouth seem scarcely to warrant it.

S. MICROSTOMA, PL. 36. FIG. 68.

S. testâ subulato-conicâ, tenui, imperforatâ, costatâ; spirâ conicâ, valdè attenuatâ, obtusâ; suturis impressis, interruptis; anfractibus septem, valdè convexis; costis raris, elevatis, reflexis; anfractu ultimo rotundato; basi sub-carinatâ; aperturâ parvâ, obliquâ, sub-rotundâ; labro valdè incrassato.

Shell subulate-conical, thin, imperforate, costate; spire conical, very attenuate, obtuse; sutures impressed, interrupted; whorls seven, very convex; costæ few, elevated, reflexed; last whorl rounded; base sub-carinate; mouth small, oblique, sub-rotund; outer lip very much thickened.

Length .28.

Breadth .12 of an inch.

Remarks.—The carina of the base is very small; it does not cross the costæ, which continue to the columella. The mouth is unusually small and nearly round. The costæ are ten in number on the last whorl, quite prominent, and reflexed. In full grown specimens the one which forms the outer lip is much thicker than the rest. The ribs of one whorl do not join those of the next, but lap over very closely. This causes the sutures to be continually interrupted.

This shell bears a close resemblance to *S. acicula*, herein described, but differs in being more subulate, having fewer and reflected ribs, and a smaller basal carina.

GENUS DELPHINULA.

D. COSTULATA, PL. 36. FIG. 69.

D. testâ orbiculari, depressâ, crassâ, costatâ, striatâ; spirâ brevissimâ, acuminatâ, acutâ; suturis linearibus; anfractibus sex, valdè convexis, suprâ planulatis et lævibus; costis parvis, crebris, transversis, politis; striis longitudinalibus, obliquis, minutissimis; anfractu ultimo rotundato; basi costatâ; umbilico magno, profunda, intus lævi; aperturâ rotundâ, supra sub-canaliculatâ.

Shell orbicular, depressed, thick, costate, striate; spire very short, acuminate, acute; sutures linear; whorls six, very convex, smooth and flattened above; costæ transverse, small, numerous, polished; striæ longitudinal, oblique, very minute; last whorl rounded; base costate, umbilicus large, deep, smooth within, mouth round, sub-canaliculate above.

Length .08.

Breadth .15 of an inch.

Remarks.—The longitudinal striæ are so minute as to escape observation, unless assisted by a powerful microscope. They do not cross the ribs. The mouth is smooth within, and almost exactly round, except at its junction with the preceding whorl, where there is a small channel.

This shell bears some resemblance to the *Turbo lineatus*, Lea, but is separated from that shell by its entire mouth, larger umbilicus, &c.

I have felt some doubt in placing this and two or three of the following shells in the genus *Delphinula*. Their general appearance would seem rather to make them approach the *Turbo*, but their entire mouths constitute them true *Delphinulæ*. The genus *Skenea*, Fleming, seems well fitted to receive them, but it is described as having the "aperture dilated," a character which is wanting in the shells at present under consideration.

D. CONCAVA, PL. 36. FIG. 70.

D. testâ concavâ, orbiculari, depressâ, supra planulatâ, tenui, nitente, sub-striatâ; spirâ brevissimâ, obtusâ; suturis linearibus; anfractibus quatuor, rapidè crescentibus, planulatis; striis longitudinalibus, parvis, rarissimis; anfractu ultimo sub-angulato; basi striatâ; umbilico magno, profundo, intus striato; aperturâ magnâ, ovatâ.

Shell concave, orbicular, depressed, flattened above, thin, shining, sub-striate; spire very short, obtuse; sutures linear; whorls four, rapidly increasing, flattened; striæ longitudinal, very few, small; last whorl somewhat angular; base striate; umbilicus large, deep, striate within; mouth large, ovate.

Length .08.

Breadth .20 of an inch.

Remarks.—The umbilicus is wide and open, exposing the spire, nearly to the apex. The lines of growth are very infrequent and irregular, both as to size and direction.

This little shell has no very decided character, and yet it cannot be placed with any species hitherto described. Its nearest analogue is the recent *Planorbis parvus*, Say, which it much resembles in general outline.

D. LIPARA, PL. 36. FIG. 71.

D. testâ orbiculari, depressâ, sub-planulatâ, crassiusculâ, lævi, nitente; spirâ brevissimâ, rotundatâ; suturis impressis; anfractibus quinque, convexis, politis; anfractu ultimo rotundato; basi lævi; umbilico latissimo, profundo; aperturâ rotundâ.

Shell orbicular, depressed, somewhat flattened, rather thick, smooth, shining; spire very short, rounded; sutures impressed; whorls five, convex, polished; last whorl rounded; base smooth; umbilicus very wide, deep; mouth round.

Length .05.

Breadth .10 of an inch.

Remarks.—In this shell the umbilicus is wider than in most of those herein described. The mouth is small and very nearly round. The surface has a very high polish, and a somewhat greasy look.

This species is very much like the *Skenea depressa*, a recent shell from the coast of England, but it is much larger, and differs in the shape of the aperture.

D. OBLIQUE-STRIATA, PL. 36. FIG. 72.

D. testâ orbiculari, depressâ, crassâ, diaphanâ, sub-cancellatâ; spirâ brevissimâ, ovatâ, propè apicem longitudinaliter et profundè sulcatâ; suturis impressis, linearibus; anfractibus quatuor, convexis; sulculis longitudinalibus, ad suturam inferiorem pene obsolete; striis obliquè transversis, parvis, crebris; anfractu ultimo tum carinato tum angu-

lato, ad suturam lævi; basi striatâ, profundè sulcatâ; umbilico magno, profundo, carinâ marginato, intus lævi; aperturâ rotundâ.

Shell orbicular, depressed, thick, diaphanous, sub-cancellate; spire very short, ovate, longitudinally and deeply sulcate near the apex; sutures impressed, linear; whorls four, convex; sulculi longitudinal, nearly obsolete at the lower suture; striæ obliquely transverse, small, numerous; last whorl sometimes carinate, sometimes angulate, smooth near the suture; base striate, deeply sulcate; umbilicus large, deep, margined with a carina, smooth within; mouth round.

Length .04.

Breadth .10 of an inch.

Remarks.—The longitudinal sulci are quite large on the upper whorls, but become smaller and closer as they approach the last whorl, while on the base they again increase. The striæ are very oblique, but are more nearly transverse than longitudinal. On the last whorl, they form cancellations with the sulci, and are obsolete near the suture as they approach the mouth. The umbilicus is carinate and scalariform, decreasing from whorl to whorl in rectangular steps. The periphery of the last whorl is extremely variable, being in some specimens almost round, and in others angular and carinate. The mouth is almost a perfect circle.

The carinate umbilicus and oblique striæ separate this pretty little shell from all its congeners.

D. TROCHIFORMIS, PL. 36. FIG. 73.

D. testâ conicâ, sub-lenticulari, crassâ, striatâ; spirâ sub-ovatâ, obtusâ, depressâ; suturis canaliculatis; anfractibus tribus, sub-convexis; striis transversis, parvis, raris; anfractu ultimo acutè angulato, duplicè carinato; basi striatâ; umbilico parvo, profundo, striis magnis marginato; aperturâ sub-triangulari; labro crassissimo.

Shell conical, somewhat lenticular, thick, striate; spire sub-ovate, obtuse, depressed; sutures canaliculate; whorls three, rather convex; striæ transverse, few, small; last whorl acutely angular, doubly carinate; base striate; umbilicus small, profound, margined with large striæ; mouth sub-triangular; lip very thick.

Length .08.

Breadth .09 of an inch.

Remarks.—The striæ on the upper part of the last whorl are few in number and very faint; on the base, however, they are more numerous and deeper. There are usually two or three of larger size round the umbilicus. The periphery of the last whorl has two carinæ, one upon the angle, and one immediately above it. On the superior whorls these are both hidden.

This shell, in outline, seems rather to be a Trochus than a Delphinula. Its spire is very much elevated, and its umbilicus unusually small for this genus, but the entire margin of the mouth is a character too well marked to be neglected.

D. GLOBULUS, PL. 36. FIG. 74.

D. testâ transversè sub-globosâ, crassâ, cancellatâ; spirâ planulatâ, obtusâ, ad apicem lævi; suturis vix obsoletis; anfractibus tribus, rapidè crescentibus, supra angulatis et planulatis; costis transversis, octo, magnis; striis longitudinalibus, parvis, irregularibus; anfractu ultimo rotundata; basi costatâ et striatâ; umbilico parvo, arcuato; aperturâ sub-rotundâ, integrâ.

Shell transversely sub-globose, thick, cancellate; spire flattened, obtuse, smooth at the apex; sutures nearly obsolete; whorls three, rapidly increasing, angular and flattened above; costæ transverse, eight, large; striæ longitudinal, small, irregular; last whorl rounded; base costate and striate; umbilicus small, narrow; mouth sub-rotund, entire.

Length .15.

Breadth .18 of an inch.

Remarks.—The longitudinal striæ, or lines of growth very frequently do not cross the ribs. The mouth is slightly quadrate. The sculpture is not unlike that of the *Acteon globosa*, herein described.

This shell may be identical with the *D. lyra*, Conrad, but its ribs are entire and its aperture is not dilated. It is also much smaller.

D. APERTA, PL. 36. FIG. 75.

D. testâ rotundato-conicâ, sub-elevatâ, tenui, sulcatâ; spirâ brevi, obtusâ; suturis linearibus; anfractibus tribus, convexis, rapidè crescentibus; sulcis longitudinalibus, minutis, irregularibus, penè obsoletis; anfractu ultimo sub-angulato; basi sub-sulcatâ, umbilico magno, lato, profundo; aperturâ ovato triangulari, integrâ.

Shell rounded-conical, somewhat elevated, thin, sulcate; spire short, obtuse; sutures linear; whorls three, convex, rapidly increasing; sulci longitudinal, minute, irregular, almost obsolete; last whorl sub-angular; base slightly sulcate; umbilicus large, wide, profound; mouth ovately triangular, entire.

Length .05.

Breadth .08 of an inch.

Remarks.—The longitudinal sulci are very variable. The apex is almost mamillate. The whorls are very much separated from each other by their convexity and the size of the umbilicus.

This is the most elevated species of the genus that I have met with.

D. NATICOIDES, PL. 36. FIG. 76.

D. testâ discoidêâ, crassissimâ, lævi; spirâ planulatâ; suturis linearibus; anfractibus tribus, convexis; anfractu ultimo maximo, rotundato; basi lævi; umbilico parvo, minimè profundo; aperturâ parvâ, ovatâ; labro supernè valdè incrassatâ.

Shell discoidal, very thick, smooth; spire flattened; sutures linear; whorls three, convex; last whorl very large, rounded; base smooth; umbilicus small, shallow; mouth small, ovate; outer lip very much thickened above.

Length .07.

Breadth .12 of an inch.

Remarks.—The last whorl almost covers those of the spire. The surface seems somewhat roughened. The mouth is nearly round.

In general outline, this shell bears a strong resemblance to some species of *Natica*. In this it differs from all the *Delphinulæ* I have met with.

FAMILY TURBINIDÆ.

GENUS ROTELLA.

R. SUB-CONICA, PL. 36. FIG. 77.

R. testâ orbiculari, sub-depressâ, crassâ, lævi; spirâ brevi, obtusâ; suturis linearibus; anfractibus quatuor, planulatis; anfractu ultimo sub-angulato; basi lævi; callo lato, medio crasso; aperturâ ovato-quadratâ; columellâ curvatâ.

Shell orbicular, somewhat depressed, thick, smooth; spire short, obtuse; sutures linear; whorls four, flattened; last whorl sub-angulate; base smooth; callus wide, thick in the middle; mouth ovately quadrate; columella curved.

Length .05.

Breadth .07 of an inch.

Remarks.—This little shell has no very striking characteristics, and yet cannot be confounded with any other of its congeners. It is unusually elevated for a *Rotella*.

R. CARINATA, PL. 36. FIG. 78.

R. testâ lenticulari, valde depressâ, tenuissimâ, lævi, politâ; spirâ brevissimâ, sub-ovatâ, obtusâ; suturis minimis, linearibus; anfractibus tribus, convexis, supernè planulatis; anfractu ultimo acutè angulato, carinato, basi lævi, politâ; callo parvo; aperturâ transversâ, ovali; columellâ latissimâ, curtâ.

Shell lenticular, very much depressed, very thin, smooth, polished; spire very short, sub-ovate, obtuse; sutures very small, linear; whorls three, convex, flattened above; last whorl acutely angulate, carinate; base smooth, polished; callus small; mouth transverse, oval; columella very wide, short.

Length .04.

Breadth .11 of an inch.

Remarks.—The carina on the last whorl is very large. There is a corresponding depression in the interior of the mouth. Occasionally, there is an angulated line near the suture of the last whorl, but this is not a constant character. The carina is rather nearer the apex than the base of the shell. The substance is exceedingly thin, and has somewhat the appearance of ivory. On a front view, the general outline of the shell has a remarkably rhomboidal shape.

I know of no species of *Rotella*, except the following, which resembles this beautiful little shell.

R. LENTICULARIS, PL. 36. FIG. 79.

R. testâ lenticulari, depressâ, tenui, lævi, politâ; spirâ brevissimâ, sub-ovatâ, obtusâ; suturis parvis, linearibus; anfractibus quatuor, convexis; anfractu ultimo angulato; basi lævi; callo parvo; aperturâ sub-rotundâ; columellâ latâ, curvatâ.

Shell lenticular, depressed, thin, smooth, polished; spire very short, sub-ovate, obtuse; sutures small, linear; whorls four, convex; last whorl angulate; base smooth; callus small; mouth sub-rotund; columella broad, curved.

Length .04.

Breadth .09 of an inch.

Remarks.—The angle on the last whorl is very variable. It sometimes amounts almost to a carina. The mouth is nearly round. The callus is slightly depressed below the surrounding surface.

This shell is, in part, allied to both the preceding species, but differs in the number of whorls, shape of the columella and spire, and the angle on the last whorl. They also differ much in thickness.

R. UMBILICATA, PL. 36. FIG. 80.

R. testâ orbiculari, valdè depressâ, crassâ, lævi, politâ; spirâ umbilicatâ; anfractibus occultis; anfractu ultimo rotundato, spiram tegente, ad suturam superiorem lineâ parvâ impressâ transversâ; basi lævi; callo magno, tenui, medio depresso; aperturâ rotundâ; columellâ latissimâ, subsulcatâ.

Shell orbicular, very much depressed, thick, smooth, polished; spire umbilicate; whorls concealed; last whorl rounded, covering the spire, with a small impressed transverse line near the superior suture; base smooth; callus large, thin, depressed in the middle; mouth rotund; columella very wide, sub-sulcate.

Length .05.

Breadth .10 of an inch.

Remarks.—The columella has a shallow groove in its centre. The mouth is almost round.

This little shell, in general outline, is not unlike the *R. nana*, Lea, but the peculiar umbilicated spire will at once distinguish them.

This genus is quite rare in a fossil state. I believe that but one, the *R. suturalis*, has been found in the Tertiary beds of Europe. In this country the species appear to be more numerous.

GENUS TROCHUS.

T. ARMILLUS, PL. 37. FIG. 81.

T. testâ conicâ, elevatâ, crassiusculâ, imperforatâ, costatâ, striatâ; spirâ conicâ, acuminatâ; suturis minimis; anfractibus quinque, planis; costis transversis, tribus, noduliferis, alternantibus striis minimis; anfractu ultimo acutè angulato, carinato; basi valdè planulato, striis magnis et parvis; aperturâ quadrilaterali.

Shell conical, elevated, rather thick, imperforate, costate, striate; spire conical, acuminate; sutures very small; whorls five, flat; costæ transverse, three, noduliferous, alternating with very small striæ; last whorl acutely angular, carinate; base very much flattened, with large and small striæ; mouth quadrilateral.

Length .15.

Breadth .18 of an inch.

Remarks.—The transverse ribs are generally noduliferous, but, in some cases, they are partially or even entirely smooth. The carina, on the last whorl, is always smooth. The striæ which alternate with the ribs are exceedingly small, so as to be invisible except with the aid of a powerful microscope. Those on the base are of various sizes. There are generally two large ones near the columella, and near the periphery, while those between are smaller. The base is unusually flat, and the mouth is quadrangular.

T. CONUS, PL. 37. FIG. 82.

T. testâ conicâ, crassâ, umbilicatâ, striatâ; spirâ sub-ovatâ, depressâ, obtusâ, ad apicem lævi; suturis latis, impressis; anfractibus sex, planulatis, ad suturam superiorem subcanaliculatis; striis transversis, impressis, parvis, crebris; anfractu ultimo angulato; basi striatâ; umbilico parvo, valdè profundo, striis duobus marginato; columellâ rectâ; aperturâ quadrilaterali, obliquâ.

Shell conical, thick, umbilicate, striate; spire sub-ovate, depressed, obtuse, smooth near the apex; sutures wide, impressed; whorls six, flattened, sub-canaliculate near the upper suture; striæ transverse, impressed, small, numerous; last whorl angulate; base striate; umbilicus small, very profound, margined with two striæ; columella straight; mouth oblique, quadrilateral.

Length .25.

Breadth .35 of an inch.

Remarks.—The striæ of the base are rather larger than those on the upper part of the whorls. They increase as they approach the umbilicus, which is margined by two or three much deeper than the rest. They gradually become obsolete as they approach the apex, which is smooth. The umbilicus is not large, but very deep, so much so, indeed, as, apparently, to extend to the apex of the shell. It is continued downwards in a groove behind the columella. The mouth is nearly rhomboidal.

This species is closely allied to the *T. eboreus*, Wagner, from the Tertiary of S. Carolina, but the umbilicus and numerous striæ are sufficient to distinguish it.

T. LENS, PL. 37. FIG. 83.

T. testâ lenticulari, infernè et supernè depresso-conicâ, crassiusculâ, politâ, umbilicatâ, striatâ; spirâ brevissimâ, conicâ, minimè obtusâ; suturis latis, sub-profundis; anfractibus quatuor, planulatis, ad suturam superiorem canaliculatis; striis transversis, impressis, parvis, raris; anfractu ultimo acutè angulato, carinato; basi conicâ, striatâ; umbilico parvo, profundo, striis duobus profundis marginato; aperturâ quadrato-ovatâ.

Shell lenticular, depressed-conical above and below, rather thick, polished, umbilicate, striate; spire very short, conical, slightly obtuse; sutures wide, rather deep; whorls four, flattened, canaliculate at the upper sutures; striæ few, transverse, impressed, minute; last whorl acutely angular, carinate; base conical, striate; umbilicus deep, small, margined with two deep striæ; mouth quadrately ovate.

Length .10.

Breadth .15 of an inch.

Remarks.—The unusually long base gives the shell the appearance of a double cone. The angle on the last whorl is about half way between the apex and the base. On the whorls of the spire, the striæ are two in number. There are three on the upper part of the last whorl, the lowest of which is the deepest. There is also a rib margining the lower part of the carina, making it appear double. The outer lip appears to be very fragile, as, out of four or five specimens now before me, not one has the mouth perfect. The whorls are perfectly flat, or even sometimes a little concave.

The peculiar lenticular form of this shell will at once distinguish it from all our other fossil species. The only one, indeed, to which it bears any resemblance is the *T. reclusus*. From this it differs chiefly in size, umbilicus, and columella.

T. TORQUATUS, PL. 37. FIG. 84.

T. testâ conicâ, acuminatâ, crassâ, politâ, perforatâ, crenulato-costatâ; spirâ sub-conicâ, depressiusculâ, obtusâ; suturis parvis; anfractibus quatuor, sub-convexis; costis transversis, quatuor, noduliferis; anfractu ultimo acutè angulato, carinato; basi crebrè et profundè striatâ; perforatione parvâ; aperturâ quadrangulâri.

Shell conical, acuminate, thick, polished, perforate, crenulately costate; spire somewhat conical, rather depressed; obtuse; sutures small; whorls four, nearly flat; costæ transverse, four, noduliferous; last whorl acutely angular, carinate; base closely and profoundly striate; perforation small; mouth quadrangular.

Length .13.

Breadth .12 of an inch.

Remarks.—The carina on the periphery of the last whorl is round and polished. There are three large, and one small nodulose costæ, the small one being next to the one nearest the upper suture.

This much resembles the *T. armillus*, herein described, but may be readily distinguished from that shell by its umbilicus, more ovate shape, and more striate base.

T. ARATUS, PL. 37. FIG. 85.

T. testâ ovato-conicâ, crassâ, politâ, imperforatâ, costatâ; spirâ depressâ, sub-ovatâ, obtusâ, ad apicem lævi; suturis parvis, linearibus; anfractibus tribus, sub-convexis; costis transversis, tribus, magnis, sub-noduliferis; anfractu ultimo angulato, costis quatuor; basi sulcatâ; aperturâ rotundâ.

Shell ovately conical, thick, polished, imperforate, costate; spire depressed, sub-ovate, obtuse, smooth near the apex; sutures small, linear; whorls three, slightly convex; costæ transverse, three, large, sub-noduliferous; last whorl angular, with four ribs; base sulcate; mouth round.

Length .08.

Breadth .08 of an inch.

Remarks.—In the only specimen of this shell now before me, the two upper ribs are a little nodulous, while the two lower ones are smooth. As this is a variable character, it is probable that they may all be nodulous in other specimens. The additional one on the last whorl is almost large enough to be called a carina. The base is closely and deeply grooved. The mouth is perfectly round.

This shell is somewhat similar to the *T. armillus*, herein described, but is sufficiently distinguished by its more ovate form and round mouth.

T. RUFFINII, PL. 37. FIG. 86.

T. testâ conicâ, crassâ, costatâ, imperforatâ; spirâ elevatâ; suturis minimis, linearibus; anfractibus —, infernè carinatis et sulcatis, supernè concavis et costatis; costis transversis, tribus, noduliferis, alternantibus striis minutissimis; anfractu ultimo angulato, bicarinato, carinâ superiore sub-crenulatâ; basi lævi; aperturâ transversâ, quadrilaterali; columellâ rotundatâ, lineâ impressâ marginatâ.

Shell conical, thick, costate, imperforate; spire elevated; sutures very small, linear; whorls —, carinate and sulcate below, concave and costate above; costæ three, transverse, noduliferous, alternating with very minute striæ; last whorl angular, bicarinate; upper carina sub-crenulate; base smooth; mouth transverse, quadrilateral; columella rounded, margined by an impressed line.

Length —.

Breadth .38 of an inch.

Remarks.—The edge of the last whorl has two carinæ, or perhaps, more strictly speaking, a large carina with a deep groove in its centre. On the superior whorls, the upper carina and groove are alone visible. The transverse striæ are almost invisible to the

naked eye. The base is smooth, with the exception of two or three small striæ, immediately below the periphery of the whorl. As my only specimen is imperfect, I am unable to determine the dimensions or number of whorls.

The smooth base and peculiar rounded columella distinguish this shell from our other tuberculated fossil Trochi, some of which it much resembles.

This pretty little shell was sent to my father from the neighbourhood of Petersburg by E. Ruffin, Esq., whose name I have great pleasure in affixing to it as a slight token of respect for his zeal in elucidating the Geology of Virginia.

GENUS TURBO.

T. GLABER, PL. 37. FIG. 87.

T. testâ ovato-turbinatâ, elevatâ, tenui, umbilicatâ, lævi, nitente; spirâ elevatâ, rotundatâ; suturis parvis, linearibus; anfractibus —, valdè convexis; anfractu ultimo rotundato; basi lævi; umbilico parvo; aperturâ ovatâ, supernè angulatâ, infernè rotundatâ; labro acuto.

Shell ovately turbinate, elevated, thin, umbilicate, smooth, polished; spire elevated, rounded; sutures small, linear; whorls —, very convex; last whorl rounded; base smooth, umbilicus small; mouth ovate, angular above, rounded below; outer lip acute.

Length —.

Breadth .80 of an inch.

Remarks.—The umbilicus is small, and partially covered by an extension of the columella. The surface of the shell is glabrous, but not perfectly smooth, owing to inequalities in the growth, with occasional faint longitudinal lines. The mouth has a small internal channel-like impression where it meets the preceding whorl.

Having but one specimen of this shell, and that imperfect at the apex, I am unable to give its length or number of whorls. Of the latter, a little more than two remain, and about two or three must have been removed.

This shell bears so strong a resemblance to the recent *Paludina vivipara*, Auct., that were it not found among oceanic shells, I should have little hesitation in considering it as a variety of that species.

This shell is by far the largest of the genus as yet discovered in our Tertiary. It is unusually elevated in the spire for a Turbo.

T. RUSTICUS, PL. 37. FIG. 88.

T. testâ globoso-conicâ, crassâ, perforatâ, cancellatâ; spirâ conicâ, depressâ, acutâ; suturis parvis, linearibus; anfractibus quinque, planulatis; striis transversis crebris, magnis; striis longitudinalibus crebris, parvis; anfractu ultimo rotundato; basi striatâ transversè et alternatim; perforatione parvâ, angustâ; aperturâ quadrato-rotundatâ.

Shell globosely conical, thick, perforate, cancellate; spire conical, depressed, acute; sutures small, linear; whorls five, flattened; transverse striæ numerous, large; longitudinal striæ numerous, small; last whorl rounded; base striate transversely and alternately; umbilicus small, narrow; mouth quadrately rounded.

Length .12.

Breadth .11 of an inch.

Remarks.—The transverse striæ on the upper part of the last whorl show a slight disposition to be alternate, and on the base they become entirely so. The whorls are sub-canaliculate at the upper sutures. The columella has a very slight incrassation at the base, but not sufficient to constitute the shell a *Monadonta*. The mouth is angular at the upper part of the columella, and round at the outer lip.

I can find none of our species of Turbo to which this pretty little shell can be referred. With the same number of whorls, it is hardly more than a fourth the size of the *T. caperatus*, Con., which it in some degree resembles. And, in our species, the transverse striæ are large, almost deserving the appellation of ribs, while in the *T. caperatus* they are described as small.

FAMILY CANALIFERIDÆ.

GENUS CERITHIUM.

C. CLAVULUS, PL. 37. FIG. 89.

C. testâ turritâ, valdè elevatâ, crassâ, costatâ, striatâ; spirâ acutâ, conicâ, valdè attenuatâ, mamillatâ; suturis linearibus, sub-obsoletis; anfractibus —, planis; costis tribus, transversis, magnis, sub-acutis, lævibus; striis longitudinalibus, raris, parvis; anfractu ultimo angulato; basi lævi; aperturâ quadratâ; canali brevi, minimè profundo.

Shell turrited, very elevated, thick, costate, striate; spire acute, conical, very attenuate, mamillate; sutures linear, almost obsolete; whorls —, flat; ribs three, transverse, large, sub-acute, smooth; striæ longitudinal, small, infrequent; last whorl angular; base smooth; mouth quadrate; canal short, shallow.

Length —.

Breadth .15 of an inch.

Remarks.—The longitudinal striæ, from their size, although they do not cross the ribs, give the shell a cancellated appearance under the microscope. The mouth is nearly square. The body whorl has four instead of three striæ, a very small one being placed immediately below the angle.

This species bears a strong resemblance to the *C. terebrale*,* Adams, a recent shell from our coast, but it may be distinguished by having the transverse ribs fewer and more acute, the longitudinal striæ less frequent and larger, and the canal longer and less profound. It also approaches the *Terebra constricta*, Nob., but the ribs are more flattened, and the striæ less numerous and larger.

Although not thin, this shell is extremely fragile, as out of about fifty specimens I have not one full-grown one with the apex perfect. It attains a much larger size than that shown in the figure.

C. CURTUM, PL. 37. FIG. 90.

C. testâ elevato-conicâ, tenui, sub-cancellatâ, carinatâ, sub-perforatâ; spirâ brevisculâ, acutâ, ad apicem lævi; suturis excavatis; anfractibus sex, medio carinatis; striis transversis et sulcis longitudinalibus variabilibus; ultimo anfractu angulato; basi minutè striatâ; perforatione minimâ, aliquando obsoletâ; aperturâ ovatâ, supernè angulatâ, infernè valdè effusâ.

Shell elevated conical, thin, sub-cancellate, carinate, sub-perforate; spire rather short, acute, smooth at the apex; sutures excavated; whorls six, carinate in the middle; transverse striæ and longitudinal sulci variable; last whorl angular; base minutely striate; perforation very small, sometimes obsolete; mouth ovate, angular above, very effuse below.

Length .15.

Breadth .06 of an inch.

Remarks.—The longitudinal sulci are very variable, being sometimes almost obsolete, while at others they give the shell a completely cancellate appearance, cutting the striæ

* As the name of this shell has been preoccupied, by Lamarck, for a fossil species from Grignon, I propose that the name of the discoverer be affixed to it, changing it to *C. Adamsii*. I find also that the name of the *C. cancellatum*, Nob., has been used by the same author. I, therefore, change it to *C. spina*.

and carina at right angles. The carina is placed immediately below the middle of the whorls, and, in some specimens, between it and the lower suture is another smaller one. When this latter is not present, it is replaced by a stria. Between the carina and upper suture there are generally two striæ, which vary in size. Those on the base are much smaller than those on the whorls. The sutures are small and triangular.

This shell is unusually short and thick for a *Cerithium*, and its effuse mouth has hardly the character of the canal of that genus.

C. DÆDALEUM, PL. 37. FIG. 91.

C. testâ subulatâ, tenui, imperforatâ, costatâ, striatâ; spirâ attenuatâ, sub-ovata, mamillatâ, ad apicem lævi et politâ; suturis linearibus, parvis; anfractibus septem, planulatis; costis longitudinalibus, crebris, lævibus, planulatis; striis transversis, crebris, profundis; ultimo anfractu rotundato; basi striatâ, politâ; aperturâ arctatâ, sub-quadratâ, supernè angulatâ, infèrnè effusâ; labro acuto.

Shell subulate, thin, imperforate, costate, striate; spire attenuate, sub-ovate, mamillate, smooth and polished near the apex; sutures small, linear; whorls seven, flattened; striæ transverse, numerous, deep; costæ longitudinal, numerous, smooth, flattened; last whorl rounded; base striate, polished, mouth narrow, sub-quadrate; angulate above, effuse below; outer lip acute.

Length .15.

Breadth .05 of an inch.

Remarks.—The sculpture of this shell is not unlike that of the *Pasithea subula*, herein described.

With this shell, as with the preceding, I feel in some doubt as to the genus to which it properly belongs.

C. MONILIFERUM, PL. 37. FIG. 92.

C. testâ subulatâ, sinistrali, crassâ, imperforatâ, costatâ; spirâ attenuatâ, conicâ; suturis minimis; anfractibus decem, planis; costis tribus, transversis, noduliferis, duabus extremis magnis, unâ medio parviore; anfractu ultimo rotundato; basi costis tribus, lævibus, transversis; aperturâ elongato-quadratâ; columellâ lævi, politâ; canale profundo, brevi.

Shell subulate, sinistral, thick, imperforate, costate; spire attenuate, conical; sutures very small; whorls ten, flat; costæ three, transverse, noduliferous, two extreme ones large, the middle one smaller; last whorl rounded; base with three transverse, smooth ribs; mouth elongately quadrate; columella smooth, polished; canal deep, short.

Length .22.

Breadth .09 of an inch.

Remarks.—The middle costa is smaller than the two outer ones; it gradually decreases on the upper whorls, and finally becomes obsolete near the apex. The sutures are very small, and the whorls perfectly flat, so that it is difficult to determine their number.

This shell approaches the *C. nigrocinctum*, Adams, a recent species from our coast, but may be distinguished by its greater proportionate length, flatness of the whorls, and the difference between the size of the ribs. It is also allied to the *C. perversum*, another recent shell, but it is much smaller, and the ribs are strictly noduliferous, while in the *C. perversum*, they intersect longitudinal sulci. The three smooth basal costæ constitute another character peculiar, I believe, to this shell.

GENUS PLEUROTOMA.

P. LUNATUM, PL. 37. FIG. 93.

P. testâ elongato-fusiformi, crassâ, glabrâ, nitente, imperforatâ, costatâ; spirâ attenuatâ, mamillatâ, ad apicem lævi; suturis flexuosis, minimis; anfractibus decem, medio angulatis, infèrnè convexis et costatis, supernè concavis et

sub-tuberculatis; costis longitudinalibus, sub-obliquis, magnis, rotundatis; anfractu ultimo rotundato; basi striis parvis, longitudinalibus; aperturâ arcuato-ovatâ; columellâ rectâ, crassâ, politâ, superne valdè incrassatâ; sino profundo, lunato; canale brevi, inciso.

Shell elongately fusiform, thick, glabrous, shining, imperforate, costate; spire attenuate, mamillate, smooth at the apex; sutures flexuose, very small; whorls ten, angular near the middle, below convex and costate, above concave and subtuberculate; costæ longitudinal, somewhat oblique, large, rounded; last whorl rounded; base with small longitudinal striæ; mouth narrowly ovate; columella straight, thick, polished, very much incrassated above; sinus deep, crescent-shaped; canal short, incised.

Length 1.60.

Breadth .50 of an inch.

Remarks.—The upper concave part of the whorls, near the suture, has a series of indistinct tubercles, generally large and but very little elevated. The costæ end a little below the middle of the last whorl, and the base is smooth, with the exception of a few longitudinal raised lines, and an indistinct oblique stria, which marks the growth of the canal. Behind the columella is a small groove, caused by its elevation above the neighbouring surface. The incrassation at the upper extremity of the columella forms a large callus, at the mouth of the sinus, and almost fills it up. This gives it its peculiar lunate appearance. There is, properly speaking, no canal. The base of the mouth is deeply incised, as in the genus *Oliva*, without cutting off the end of the columella as is usual in this class of shells.

This beautiful species agrees pretty well with the description and figure of *P. limatula*, Conrad, (*Journal of the Academy*, Vol. VI.) but is larger, tuberculate near the suture, and has the ribs more strongly developed. In addition to this, Mr. Conrad makes no mention of the peculiar lunate sinus which characterizes the shell now before us.

GENUS FASCIOLARIA.

F. PARVULA, PL. 37. FIG. 94.

F. testâ fusiformi, crassâ, imperforatâ, nitente, sulcatâ, striatâ; spirâ elevatâ, obtusâ, ad apicem lævi; suturis profundis, arctatis; anfractibus septem, sub-convexis; sulcis longitudinalibus, magnis, crebris; striis transversis, parvis, raris; anfractu ultimo rotundato; basi profundè striatâ; aperturâ longâ, arctatâ, supra acutè angulatâ; columellâ multiplicatâ, canale longo, profundo, sub-curvato.

Shell fusiform, thick, imperforate, shining, sulcate, striate; spire elevated, obtuse, smooth near the apex; sutures deep, narrow; whorls seven, somewhat convex; sulci longitudinal, large, numerous; striæ transverse, small, few; last whorl rounded; base deeply striate; mouth long, narrow, acutely angular above; columella with many folds; canal long, deep, slightly curved.

Length .20.

Breadth .08 of an inch.

Remarks.—On the superior whorls there are three small transverse striate near the upper suture, which cross the sulcations. The one nearest the suture is the largest and deepest. On the last whorl the sulcations end about the middle, and then, after a narrow interval, commence deep transverse striæ which increase as they approach the base. The folds on the columella are but continuations of these striæ. The aperture is very narrow and somewhat sinuous, gradually decreasing to the canal. The sutures are quite narrow and deep.

GENUS FUSUS.

F. PYGMÆUS, PL. 37. FIG. 95.

F. testâ ovatâ, sub-fusiformi, crassâ, lævi, politâ; spirâ ovatâ, valdè obtusâ, breviusculâ; suturis linearibus; anfractibus quatuor, planulatis; anfractu ultimo rotundato; basi lævi; aperturâ sinuosâ, arctatâ; columellâ angulatâ; canale torto, longo.

Shell ovate, somewhat fusiform, thick, smooth, polished; spire ovate, very obtuse, rather short; sutures linear; whorls four, flattened; last whorl rounded; base smooth; mouth sinuose, narrow; columella angled; canal long, twisted.

Length .08.

Breadth .05 of an inch.

Remarks.—This minute species is remarkably ovate. The canal is very long, and bent at several places. The apex is obtuse and sub-mamillate.

This shell, most probably, attains a greater size than that mentioned above, as the only specimen in my possession, bears evident marks of having had part of the last whorl broken off. This may also have given it its peculiar twisted canal.

F. ANOMALUS, PL. 37. FIG. 96.

F. testâ ovatâ, sub-fusiformi, perforatâ, tenui, lævi, politâ; spirâ sub-ovatâ, elevatâ, acutâ; suturis excavatis, latis; anfractibus quinque, convexis; anfractu ultimo rotundato; basi lævi; perforatione parvâ, arcuâ; aperturâ sub-ellipticâ; columellâ brevi, tortâ; canale longo, minimè profundo, sinistrorsim reflecto.

Shell ovate, sub-fusiform, perforate, thin, smooth, polished; spire sub-ovate, elevated, acute; sutures excavated, wide; whorls five, convex; last whorl rounded; base smooth; perforation small, narrow; mouth sub-elliptical; columella short, twisted; canal long, very shallow, bent backwards towards the left.

Length .18.

Breadth .10 of an inch.

Remarks.—There is a small canaliculation on the whorls near the upper part, which makes the sutures quite wide and deep. The umbilicus is very narrow, and almost hidden behind the columella. The canal is very peculiar, being folded round the base of the columella, until it extends nearly a third round the shell. There are faint traces of transverse striæ to be seen on some parts of the whorls.

It is not without some hesitation that I place this shell among the Fusi. It has not the straight deep canal which usually characterizes that genus, but in other respects it approaches it more nearly than any other. It may, perhaps, prove the type of a new genus.

FAMILY PURPURIDÆ.

GENUS BUCCINUM.

B. TUOMEYI, PL. 37. FIG. 97.

B. testâ ovato-fusiformi, crassâ, imperforatâ, striatâ; spirâ elevatâ, scalariformi; suturis impressis, profundis; anfractibus —, sub-convexis, ad suturam superiorem angulatis; striis transversis, duplicatis, parvis, crebris; anfractu ultimo rotundato, infernè striis magnis et parvis alternantibus; basi longitudinaliter sulcatâ; aperturâ quadrangulari; canale longo, retorto; columellâ flexuosâ, infernè plicâ magnâ unâ.

Shell ovately fusiform, thick, imperforate, striate; spire elevated, scalariform; sutures impressed, deep; whorls —, somewhat convex, angulate at the upper suture; striæ transverse, double, numerous, small; last whorl rounded, with large and small alternating striæ below; base longitudinally sulcate; mouth quadrangular; canal long, retorted; columella flexuose, with one large fold below.

Length —.

Breadth 1.40 inches.

Remarks.—On the upper part of the last whorl the striæ are in pairs with a minute impressed line between them having the appearance of double striæ. These, as they approach the base, pass gradually into alternating ones. The base, immediately behind the lower part of the columella, is marked with deep, somewhat semicircular, sulcations pointing the successive growth of the canal. The upper part of the columella is marked

by faint continuations of the striæ, not entirely obliterated by a thin deposit of callus. The canal is longer than is usual with the *Buccina*, and is bent somewhat backwards. The columella is much twisted. Close to the upper suture the whorls are bent, first at a right angle, and then downwards, descending gradually to the suture. Near the middle of the whorl, the striæ are faintest. As my only specimen is quite imperfect, I am unable to give the length or number of whorls; of these latter, portions of three remain, and there have probably been three or four more.

This fine shell is the largest of our fossil *Buccina*. Judging from description, it may bear a distant resemblance to the *B. multirugatum*, Conrad, but it differs in its straight striæ, size, want of an umbilicus, &c. It is quite rare. Mr. Tuomey whose name I have great pleasure in affixing to it, tells me that he has met with but two specimens of it, both imperfect.

B. PUSILLUM, PL. 37. FIG. 98.

B. testâ ovatâ, sub-conicâ, crassâ, sub-perforatâ, lævi; spirâ ovatâ, brevi, obtusâ; suturis parvis, linearibus; anfractibus quinque, sub-convexis; anfractu ultimo rotundato; basi lævi; perforatione minimâ; aperturâ ovatâ; columellâ rectâ.

Shell ovate, somewhat conical, thick, sub-perforate, smooth; spire ovate, short, obtuse; sutures small, linear; whorls five, slightly convex; last whorl rounded; base smooth; perforation very small; mouth ovate; columella straight.

Length .08.

Breadth .04 of an inch.

Remarks.—This little shell bears a strong affinity to the recent *B. lunatum*, Say, but it is less ovate, and hardly a fifth the size of that shell.

B. FRUMENTUM, PL. 37. FIG. 99.

B. testâ ovato-fusiformi, acuminatâ, crassâ, perforatâ, lævi; spirâ conicâ, elevatâ, obtusâ; suturis parvis, linearibus; anfractibus quinque, convexis; anfractu ultimo rotundato, prope aperturam sub-undulato; basi lævi; perforatione parvâ; aperturâ acuminato ovatâ; canale brevi, obliquo; columellâ tortâ.

Shell ovately fusiform, acuminate, thick, perforate, smooth; spire conical, elevated, obtuse; sutures small, linear; whorls five, convex; last whorl rounded, slightly undulate near the mouth; base smooth; perforation small; mouth acuminate-ovate; canal short, oblique; columella twisted.

Length .15.

Breadth .10 of an inch.

Remarks.—The undulations on the last whorl near the aperture are scarcely visible, and may be accidental.

This little shell has no very peculiar characteristics, but I cannot refer it to any described species.

B. QUADRULATUM, PL. 37. FIG. 100.

B. testâ ovato-conicâ, crassâ, imperforatâ, sulcatâ, costatâ; spirâ conicâ, sub-elevatâ, obtusâ, prope apicem lævi et politâ; suturis parvis, flexuosis; anfractibus sex, valdè convexis, prope suturam superiorem pene lævibus; sulcis longitudinalibus, latis, profundis; costis transversis, parvis, quadrangularibus, planulatis; anfractu ultimo rotundato; basi costatâ; aperturâ penè ellipticâ; columellâ curvatâ, truncatâ, infernè plicâ parvâ; canale obliquo.

Shell ovately conical, thick, imperforate, sulcate, costate; spire conical, somewhat elevated, obtuse, smooth and polished near the apex; sutures small, flexuose; whorls six, very convex, nearly smooth at the upper suture; sulci longitudinal, wide, deep; costæ transverse, small, quadrangular, flattened; last whorl rounded; base costate; mouth nearly elliptical; columella curved, truncate, with a small fold below; canal oblique.

Length .20.

Breadth .12 of an inch.

Remarks.—The sulcations are unusually wide and close together, rendering the elevations between them acute. The ribs are four in number on the upper whorls, be-

sides a smaller one near the superior suture. They are perfectly quadrangular, having perpendicular sides and a flat top. When they cross the sulcations, they appear slightly nodulous. The spaces between them are about equal to them in width. Those on the base are closer and more acute. About three whorls of the apex are perfectly smooth.

This little species can be readily distinguished from its congeners by the peculiar shape of its transverse ribs.

GENUS NASSA.

N. IMPRESSA, PL. 37. FIG. 101.

N. testâ elongato-ovatâ, crassâ, imperforatâ, costatâ, striatâ; spirâ attenuatâ, conicâ, obtusâ, prope apicem lævi et politâ; suturis impressis, flexuosis; anfractibus septem, convexis, ad suturam superiorem angulatis; costis longitudinalibus, latis, rotundatis; striis transversis, parvis, flexuosis; anfractu ultimo rotundato; basi striatâ; aperturâ sub-ellipticâ; canale brevi, obliquo; labro intus minutè dentato.

Shell elongately ovate, thick, imperforate, costate, striate; spire attenuate, conical, obtuse, smooth and polished near the apex; sutures impressed, flexuose; whorls seven, convex, angular near the upper suture; costæ longitudinal, wide, rounded; striæ transverse, flexuose, small; last whorl rounded; base striate; mouth sub-elliptical; canal short, oblique; outer lip minutely dentate within.

Length .20.

Breadth .11 of an inch.

Remarks.—The transverse striæ are small and abrupt; they cross the ribs. There is one rather deeper than the rest on the angle of the whorls, above this is a very small one, and between this and the suture the surface is smooth. The costæ are very large and wide, generally rounded, but occasionally somewhat angular. The three first whorls of the spire are smooth. There are two or three teeth of various sizes on the inside of the outer lip.

This little shell differs in various respects from all of our other species of *Nassa*. It is more elevated than is usual with the genus. The striæ are fewer and the costæ larger than in the recent *N. alba*, Say, to which, in sculpture, it bears some resemblance.

FAMILY COLUMELLIDÆ.

GENUS MARGINELLA.

M. CONULUS, PL. 37. FIG. 102.

M. testâ obovatâ, conoidali, crassâ, lævi, politâ; spirâ conicâ, obtusâ; suturis sub-obsolete; anfractibus tribus, planis; anfractu ultimo rotundato; basi lævi; aperturâ longâ, arctatissimâ; columellâ infernè plicis tribus; labro incrassato, rotundato, lævi.

Shell obovate, conoidal, thick, smooth, polished; spire conical, obtuse; sutures nearly obsolete; whorls three, flat; last whorl rounded; base smooth; mouth long, very narrow; columella with three folds near the base; outer lip thickened, rounded, smooth.

Length .12.

Breadth .08 of an inch.

Remarks.—The whorls of the spire are very small, and the sutures almost obliterated, so that they can scarcely be seen except on a perpendicular view. The folds on the columella are very near the base, and quite small. The shape of the mouth is almost linear.

This shell is more nearly allied to the *M. incurva*, Lea, than to any other, but differs in the number of the folds on the columella, and the incrassation of the outer lip.

M. EXILIS, PL. 37. FIG. 103.

M. testâ acuminato-ellipticâ, compressâ, tenui, lævi, politâ; spirâ attenuatâ, obtusâ, ovatâ; suturis obsolete; anfractibus —, planis; anfractu ultimo rotundato; basi lævi, acuminatâ; aperturâ angustâ, ovatâ; columellâ plicis quatuor; labro acuto, intus costâ longitudinali.

Shell acuminate elliptical, compressed, thin, smooth, polished; spire attenuate, ovate, obtuse; sutures obsolete; whorls —, flat; last whorl rounded; base smooth, acuminate; mouth narrow, ovate; columella with four folds; outer lip acute, with a longitudinal costa within.

Length .18.

Breadth .10 of an inch.

Remarks.—The spire is covered with a smooth porcelain-like deposit, which obliterates the sutures, and renders it impossible to determine the number of whorls. The most peculiar character about this shell is the internal rib, near the edge of the outer lip.

FAMILY CONVOLUTIDÆ.

GENUS OLIVA.

O. CANALICULATA, PL. 37. FIG. 104.

O. testâ cylindræâ, crassâ, lævi, nitidâ; spirâ exsertâ, obtusâ, scalariformi; anfractibus quinque, angulatis, prope suturam inferiorem incrassatis; suturis valdè profundis, latis, canaliculatis; basi acuminatâ, striis raris, parvis, transversis; aperturâ lineari, supernè valdè incisâ, infernè emarginatâ; columellâ multiplicatâ; labro acuto.

Shell cylindrical, thick, smooth, shining; spire exerted, obtuse, scalariform; whorls five, angular, incrassated near the lower suture; sutures very deep, wide, canaliculate; base acuminate, with a few small transverse striæ; mouth linear, deeply incised above, emarginate below; columella with many folds; outer lip acute.

Length 1.60.

Breadth .70 of an inch.

Remarks.—The line of incrassation on the lower part of the whorls, is wanting on the last one. To those of the spire, it gives a peculiar bullate appearance. The sutures are larger and deeper than in any other of the genus. The outer lip is attached to the body of the shell only by a small transverse plate, near its upper extremity, which causes the peculiar suture. This plate does not extend to the edge of the lip.

There is a specimen of this shell, without a name, in the collection of the Academy of Natural Sciences of Philadelphia. I am surprised that it has not been heretofore described, as it is a remarkable shell and by no means rare. It has hitherto, I believe, been confounded with one of our recent species, which it distantly resembles.

O. ANCILLARIÆFORMIS, PL. 37. FIG. 105.

O. testâ ovato-cylindræâ, tenui, lævi, politâ; spirâ subulatâ; suturis canaliculatis; anfractibus —, planis; anfractu ultimo rotundato; basi lævi; aperturâ sub-triangulari, effusâ, minimè incisâ; columellâ striis nullis, infernè varicè parvo; labro acuto.

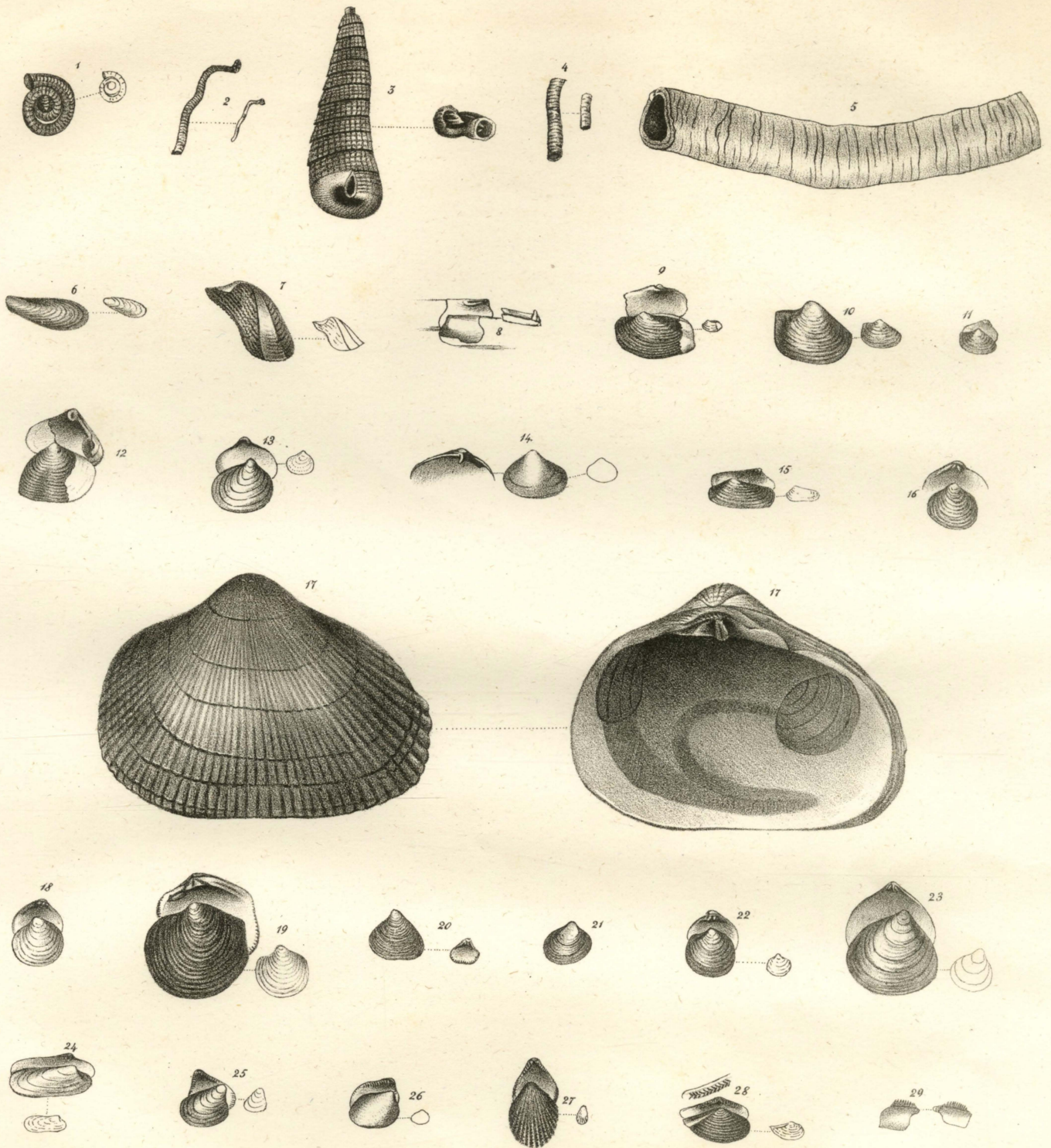
Shell ovate-cylindrical, thin, smooth, polished; spire subulate; sutures canaliculate; whorls —, flat; last whorl rounded; base smooth; mouth sub-triangular, effuse, very slightly incised; columella with no striæ, a small varix below; outer lip acute.

Length .25.

Breadth .10 of an inch.

Remarks.—On one of my specimens there is a deep narrow groove immediately below the upper suture. As it exists only on this specimen, and there but at intervals, I suppose it to be merely a fortuitous character. The mouth is acutely angular above and wide below.

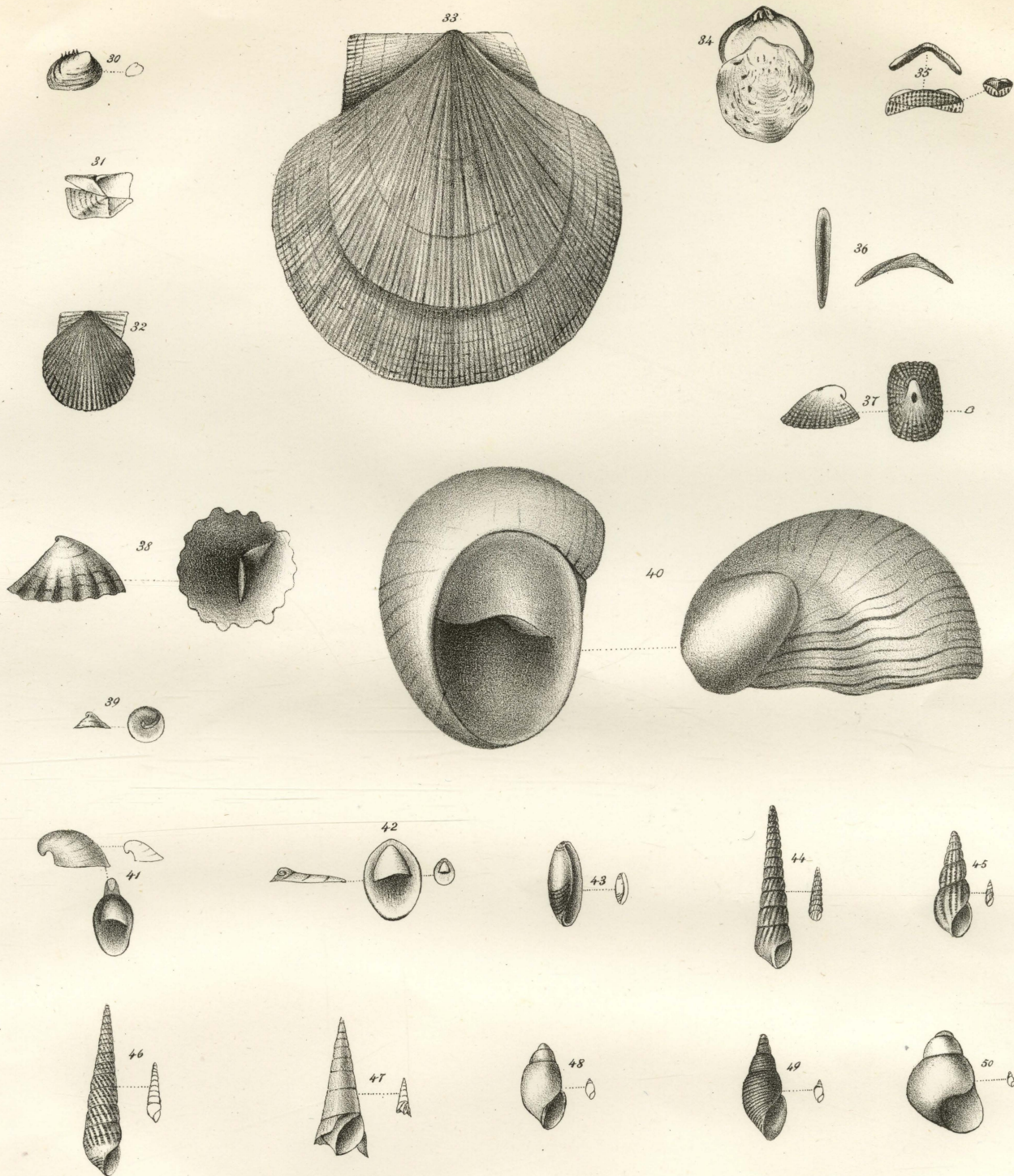
The peculiar conformation of the columella and base of the mouth seem to place this shell among the Ancillariæ, but its sutures and naked spire separate it from that genus.



- 1 *Serpula convoluta*
- 2 " *anguina*
- 3 *Potaleconchus sculpturatus*
- 4 *Teredo calamus*
- 5 " *fistula*
- 6 *Gastrochaena ligula*
- 7 *Pholas rhomboidea*
- 8 *Solen magnodentatus*
- 9 *Panopaea dubia*
- 10 *Mya reflexa*

- 11 *Thracia transversa*
- 12 *Anatina tellinoides*
- 13 *Aligena striata*
- 14 " *laevis*
- 15 *Petricola compressa*
- 16 *Psammocola lucinoides*
- 17 " *regia*
- 18 *Lucina punctulata*
- 19 " *lens*
- 20 *Astarte lineolata*

- 21 *Cytherea elevata*
- 22 " *sphaerica*
- 23 *Venus ascia*
- 24 *Hiatella lancea*
- 25 *Nucula dolabella*
- 26 " *diaphana*
- 27 " *aquilatera*
- 28 " *carinata*
- 29 " *acutidens*



- 30. *Modiola spinigera*
- 31. *Avicula multangula*
- 32. *Pecten microplicata*
- 33. " *tenuis*
- 34. *Plicatula rudis*
- 35. *Chiton transenna*
- 36. *Patella acinaces*

- 37. *Cemoria oblonga*
- 38. *Calyptrea pileolus*
- 39. *Infundibulum concentricum*
- 40. *Crepidula ponderosa*
- 41. " *cornucopiae*
- 42. " *lanina*
- 43. *Bulla cylindrus*

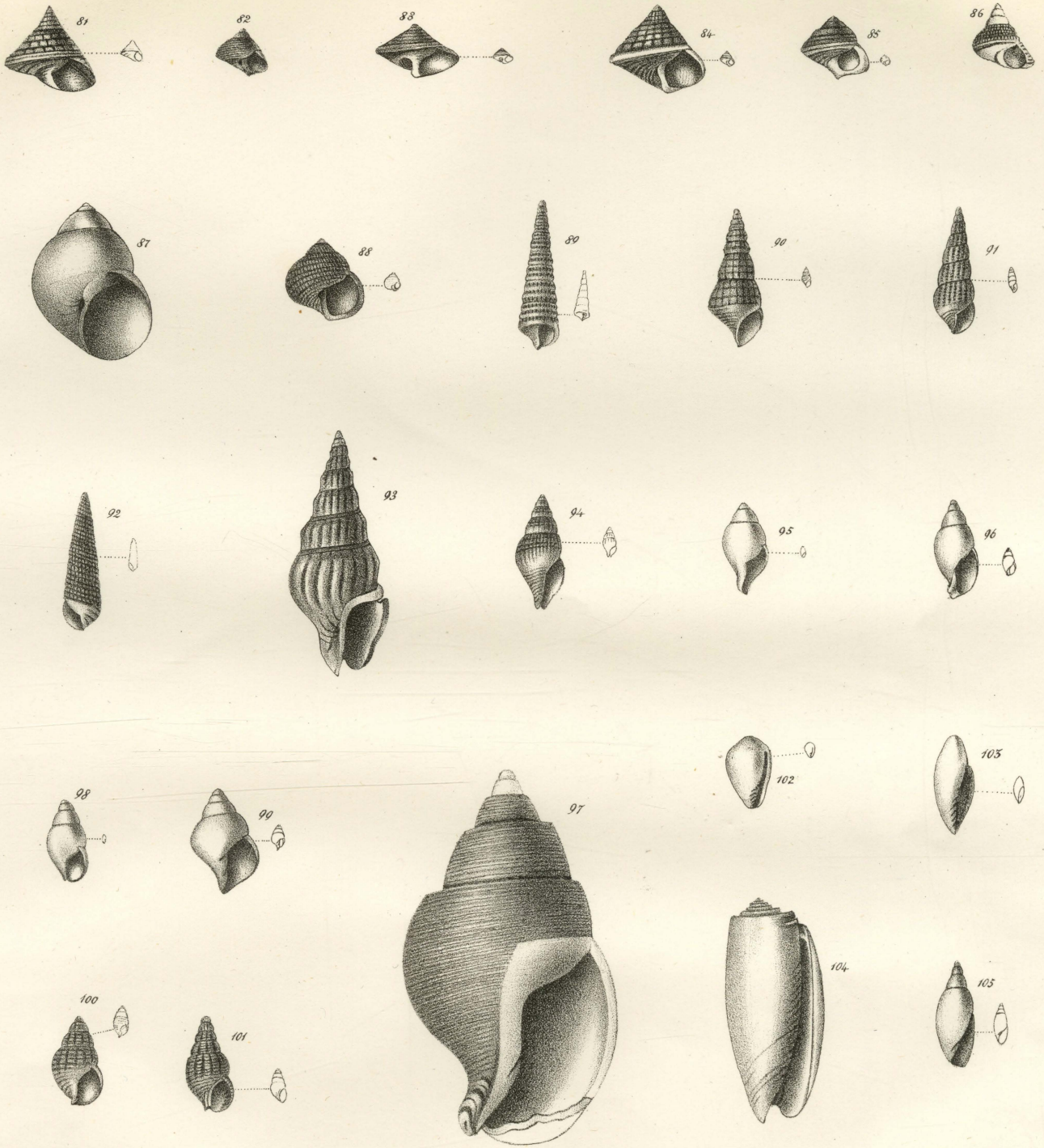
- 44. *Pasithea exarata*
- 45. " *subula*
- 46. " *eburnea*
- 47. " *laevigata*
- 48. " *ovulum*
- 49. " *diaphana*
- 50. " *turbinopsis*



- 51 *Natica aperta*.
- 52 " *sphaerulus*
- 53 " *crassilabrum*
- 54 *Actæon granulatus*
- 55 " *globosus*
- 56 " *turbinatus*
- 57 " *angulatus*
- 58 " *glans*
- 59 " *sculptus*
- 60 " *nitens*

- 61 *Actæon milium*
- 62 " *simplex*
- 63 *Pyramidella suturalis*
- 64 " *elaborata*
- 65 *Scalaria acioula*
- 66 " *cornigera*
- 67 " *micropleura*
- 68 " *microstoma*
- 69 *Delphinula costulata*
- 70 " *concaua*

- 71 *Delphinula lipara*
- 72 " *oblique-striata*
- 73 " *trochiformis*
- 74 " *globulus*
- 75 " *aperta*
- 76 " *naticoides*
- 77 *Rotella subconica*
- 78 " *carinata*
- 79 " *lenticularis*
- 80 " *umbilicala*



- 81 *Trochus armillas*
- 82 " *conus*
- 83 " *lens*
- 84 " *torquatus*
- 85 " *aratus*
- 86 " *Ruffinii*
- 87 *Turbo glaber*
- 88 " *rusticus*

- 89 *Cerithium clavulus*
- 90 " *curtum*
- 91 " *Dadaleum*
- 92 " *moniliferum*
- 93 *Pleurotoma lunatum*
- 94 *Fasciolaria parvula*
- 95 *Fusus pygmaeus*
- 96 " *anomalus*
- 97 *Buccinum Tuomeyi*

- 98 *Buccinum pusillum*
- 99 " *frumentum*
- 100 " *quadrulatum*
- 101 *Nassa impressa*
- 102 *Marginella conulus*
- 103 " *exilis*
- 104 *Oliva canaliculata*
- 105 " *ancillariformis*