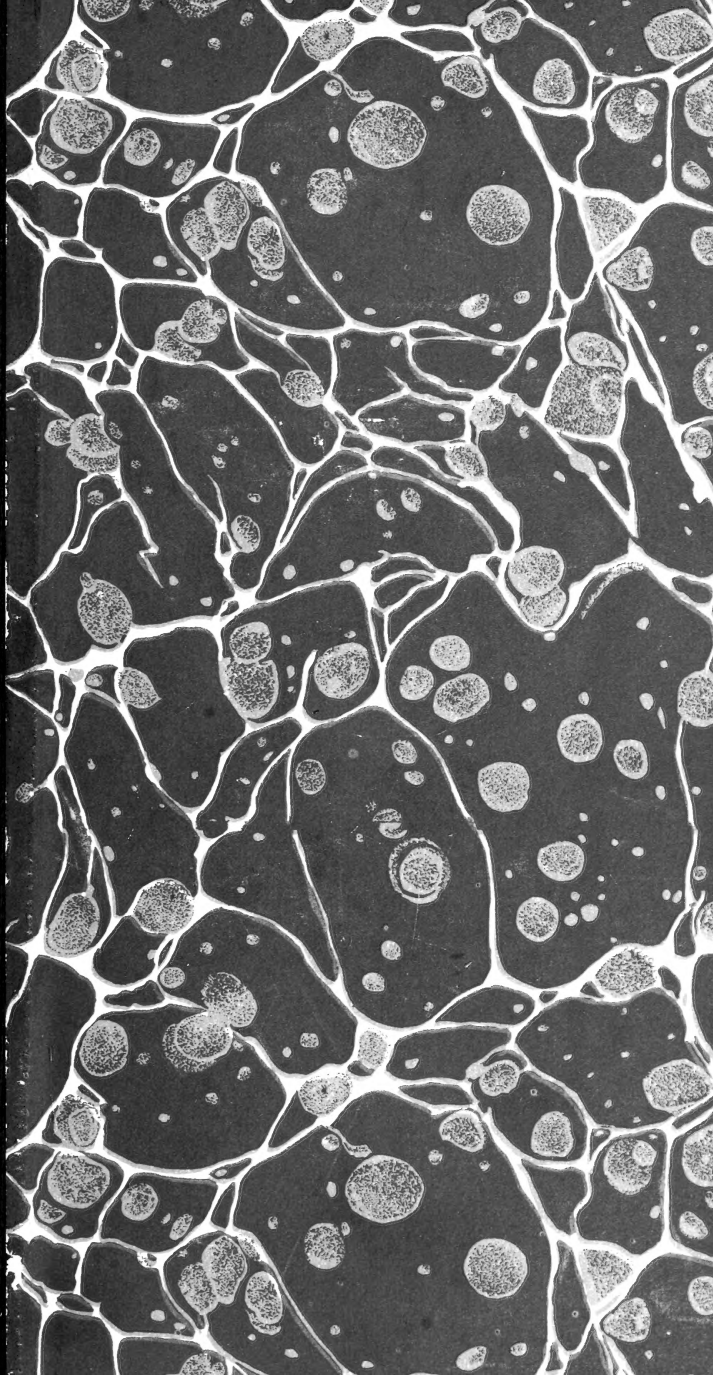

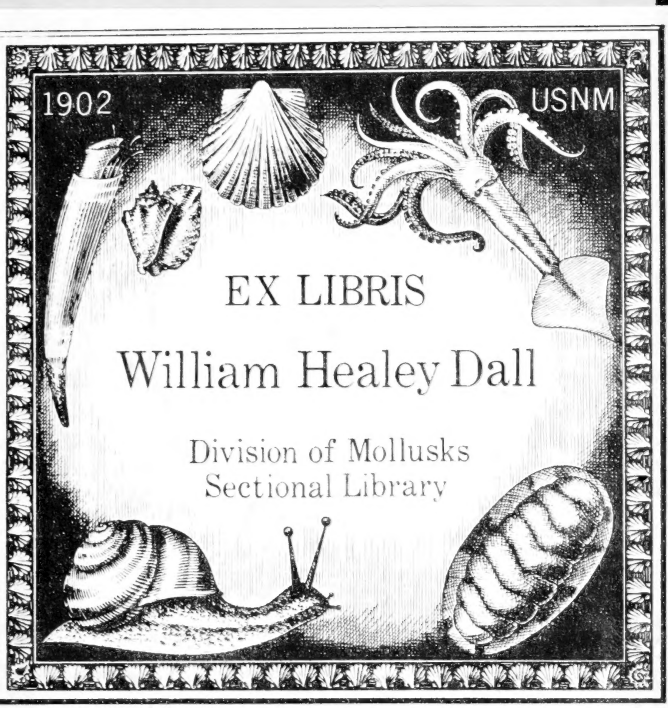
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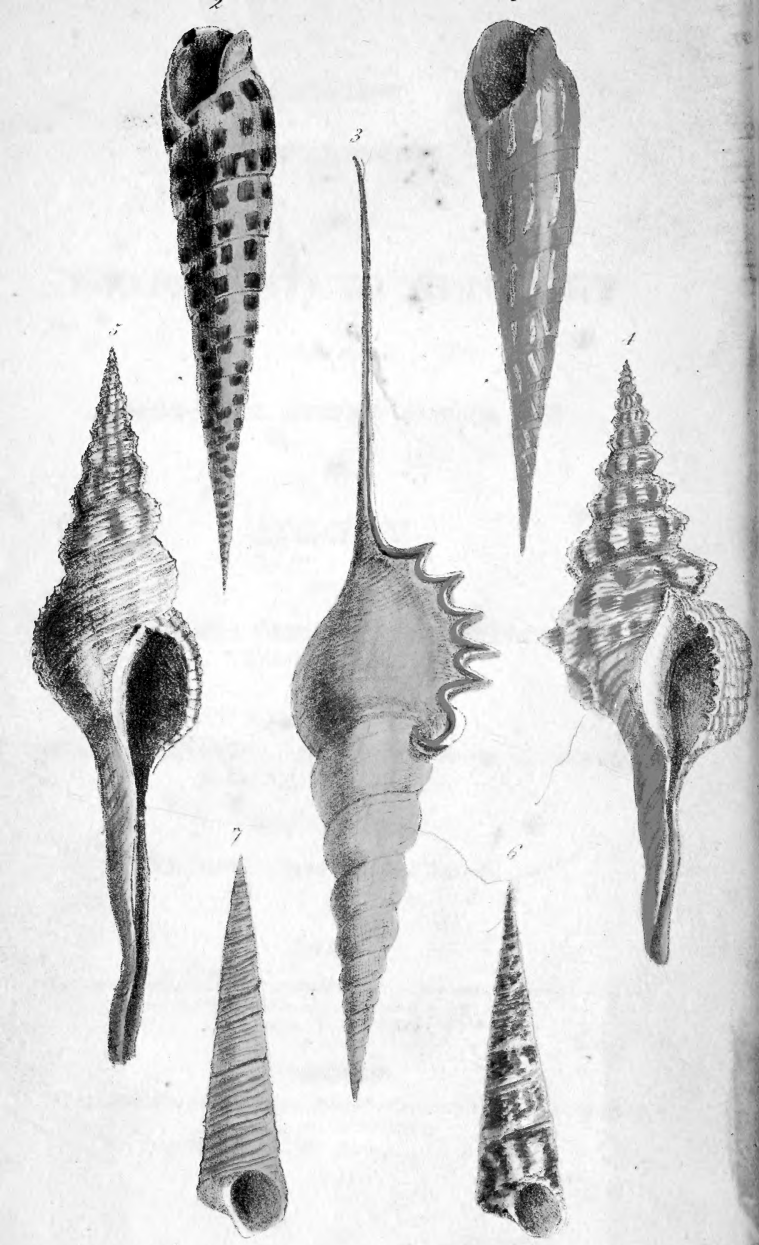

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WODARCH'S

INTRODUCTION

TO

THE STUDY OF CONCHOLOGY,

DESCRIBING

The Orders, Genera, and Species

OF

SHELLS;

WITH

OBSERVATIONS ON THE NATURE AND PROPERTIES OF THE ANIMALS;

AND

DIRECTIONS FOR COLLECTING, PRESERVING, AND CLEANING SHELLS.

SECOND EDITION,

Revised and considerably Enlarged

BY

J. MAWE.

Author of Familiar Lessons on Mineralogy and Geology; Treatise on Diamonds and Precious Stones; Travels in South America, and through the Gold and Diamond Districts of Brazil, &c. &c.

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ADVERTISEMENT

TO THE

SECOND EDITION.

THE alterations in this edition, consist in the introduction of some species which were unknown at the time of Linnæus; the division of the genera into classes, whereby the different characters of the genus may be more readily recognized; the addition of the English names to many of the species; a comprehensive nomenclature of the terms used in Conchology; and lastly, by the embellishment of three new plates: the Frontispiece shewing four genera of spiral shells; and the two others exhibiting the hinges of Bivalves, and displaying the peculiarities of some particular shells.

J. MAWE.

149, STRAND, FEB. 1822.

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III. UNIVALVES.

GLOSSARY

OF

TERMS USED IN CONCHOLOGY.

Acuminated, terminated in a sharp point.

Anterior, (in Univalves) the part which forms the spire, the summit: (in Bivalves), see *Margin*.

Aperture, the orifice or opening of the shell; it is called *bimarginated*, when the right lip forms a double margin: *coarctate*, contracted: *compressed*, flattened: *linear*, when narrow and the length greatly exceeds the breadth: *transverse*, when the breadth is greater than the length.

Apex, the tip or small end of a shell.

Articulated, (applied to Multivalves), when the different pieces of which the shell is composed are so strongly united, that they appear to form one shell: (when applied to Bivalves), see *Teeth*.

Auriculated, having ears.

Base, (applied to Multivalves), the part on which the shell is supported: (to Univalves), the most elevated part of the shell opposite to the spire.

Beak, Beaked, having the extremity of the base of the shell elongated and contracted in the form of a beak.

Bearded, when the epidermis is of a bristly or hairy nature, (*see plate* vi. *fig.* 3.)

Byssus, a hair-like substance formed by some of the animals of Bivalves, by which they attach themselves to extraneous bodies, (*see plate* vi. *fig.* 1.)

Canal, the prolongation of the mouth in a kind of groove or gutter, as in the Murex and Strombus.

Canaliculated, channelled or grooved.

Cardinal, see *Teeth.*

Carinated, having the form of the keel of a boat.

Cartilage, see *Ligament.*

Chambered, when the shell is internally divided by partitions, parallel to the mouth.

Ciliated, surrounded with parallel filaments.

Clavate, club-shaped.

Columella, is that part of the shell round which the whorls turn.

Compressed, (in Bivalves), when the valves are nearly flat, flattened.

Concamerated, see *Chambered.*

Convolute, when the whorls turn round a lengthened cone, nearly vertical to each other.

Cordiform, heart-shaped.

Coronated, having the apex surrounded with a row of spines.

Crenated, having blunt teeth.

Decollated, having the spire or upper part of the shell truncated transversely.

Decussated, striated transversely.

Dentated, having teeth.
Diaphanous, transparent.
Digitated, resembling the fingers.
Dorsal, belonging to the back.

Ears, external projections on the sides of the hinge, (*see plate* vi. *fig.* 5.)
Effuse, having the lips separated by a gutter.
Emarginate, having the margin excavated by a canal.
Epidermis, the outer skin or membrane of a shell.
Equilateral, when the anterior and posterior parts of a shell are exactly similar.
Equivalve, (applied to Multivalves) when the two principal valves have the same form, size, and position: (to Bivalves), when the two valves are exactly similar.
Exserted, very thin or slender.

Fissure, a notch or slit, as in the Patella Fissura.
Furrow, a gutter or groove running parallel to the hinge in Bivalves.
Fusiform, spindle-shaped.

Gaping, (in Bivalves), when the valves do not shut close: (in Univalves), when the lower part of the lips is distended.
Gibbous, swelled.
Glabrous, smooth.

Hinge, the part where the valves are united, and generally furnished with one or more teeth: it is said to be *compressed*, when it is formed of one compressed tooth: *lateral*, when placed on one side of the shell: *reflected*,

when its edges are folded over the exterior margin: *terminal,* if situated at the extremity of the shell: and *truncated,* if the beaks of the shell appear to have been transversely cut off and the teeth of the hinge fixed in this part.

Hispid, covered with hairs, as is the Helix Hispida.

Imbricate, when the surface is covered with scales overlapping each other.

Imperforate, having no umbilicus.

Inequilateral, when the anterior and posterior parts of the shell are dissimilar.

Inequivalve, when the valves are dissimilar.

Involute, without a spire, as in the Patellæ.

Keeled, see *Carinated.*

Labium, see *Lip.*

Lenticular, when the valves are round, and diminish in thickness from the centre towards the edges.

Lid, see *Operculum.*

Ligament, a membranous substance which connects the valves: and is *prickly: punctated,* marked with small cavities: *scaly:* or *smooth.* It is interior and exterior in the generality of Bivalves.

Linear, when the length of the shell is greater than its breadth, and its form not cylindrical.

Linguiform, tongue-shaped.

Lip, (in Univalves), the sides of the apertures: (in Bivalves), the exterior edge of the valves.

Lunar or *Lunate,* having a circular form.

Margin, the edge of the shell: *anterior,* the space in

which the ligament is situated: *posterior*, the space on the other side of the hinge: *superior*, the space between the anterior and posterior parts.

Marginate, (in Univalves), having the sides of the shell thickened; (in Bivalves), surrounded with an elevated margin.

Mouth, see *Aperture*.

Muscle, a fleshy, flexible organ by which the animal is attached to its shell.

Muscular Impressions, are the marks made by the muscles with which the animal adheres to the shell, as may be seen in the common oyster.

Obovate, nearly oval.

Obsolete, obliterated.

Obtuse, blunt pointed.

Operculum, (in Multivalves), the four stellular valves which shut up the superior orifice: (in Univalves), the part which exactly fits into the aperture and encloses the animal.

Papillary, having the apex rounded.

Papyraceous, of the thinness of paper.

Patulous, gaping.

Pectinated, when the longitudinal ribs on the anterior surface form acute angles with the transverse striæ.

Peduncle, is a tendinous substance belonging to some of the Multivalves, by means of which they adhere to solid bodies.

Pillar, see *Columella*

Pisiform, pea-like.

Plaited, when the columella is toothed, as in Volutes.

Posterior, see *Margin*.

Reticulated, like net-work.
Retuse, when the lower whorls are pressed into the body.
Rostrum, see *Beak*.
Rugose, wrinkled.

Scabrous, rough.
Serrated, toothed like a saw.
Semilunar, like a half-moon.
Sinuous, waved.
Sinus, a deep cut, as in the lip of the Murex Babylonius.
Slope, the side from the beaks, (*see plate* vi. *fig.* 6.)
Spinous, having prickles or thorns.
Spire, is formed by the whole of the upper whorls: it is *coronated*, when the outer edge of each whorl is furnished with a row of spines.
Striæ, lines, flat or raised: they are called *longitudinal*, when they run from hinge to margin: *transverse*, when in a contrary direction: and *concentric*, when they form segments of circles.
Subcordate, approaching the form of a heart.
Supellucid, not clear.
Subulate, tapering.
Superior, see *Margin*.
Suture, a toothed joint.
Syphon, a prolonged tube running through the partitions of chambered shells.

Teeth, (in Univalves), angular plaits on the pillar lip of Volutes: (in Bivalves), pointed protuberances within the hinge, by which the valves are united. They are called: *alternate*, when the teeth of one valve are received between the teeth of the other valve: *articu-*

lated, when the tooth is received into a corresponding cavity in the opposite valve: *cardinal*, the central tooth or teeth of the hinge: *compressed*, when flattened: *erect*, perpendicular to the plane of the hinge: *forked*, having the point divided into two: *longitudinal*, when it extends along the margin.

Tubercle, a protuberance or knob.

Tubular, (applied to Multivalves), when the greatest part of the shell is cylindrical.

Turbinated, when the belly of the shell is large in proportion to the spire, which seems to proceed from the centre.

Valves, the different pieces which compose the shell.

Ventricose, bellied.

Vermiform, having the form of worms.

Vertex, the top or point of a shell.

Umbilicated, having a hole in the base of the pillar.

Umbo, the summit.

Undulated, waved.

Whorl, a spiral convolution.

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INTRODUCTION.

THE division, or branch of natural history on which this work treats, is called Conchology, and comprehends the study and history of all animals which are testaceous, or with shell coverings; and not only includes those of the sea, but also those of rivers and land.

Testaceous animals are such as have a stone-like, calcareous covering or habitation, in which the animal, otherwise naked or fleshy, lives included and protected.

All animals inhabiting shells are exsanguinous, that is to say, they have no blood, like other animals; and, unlike them, are destitute of bones; but they are endowed with a heart, lungs, mouth, and other organs adapted to their nature.

It is perhaps necessary to prepare the young Conchologist with the knowledge, that all shells, in their various stages of growth, assume very different appearances: in the younger ones, the shell is usually fragile, thin, and semitransparent, and generally unprovided with those ribs, tubercles, ramifications, and denticulations, which are manifest in those of maturer growth; the adults, however, as they advance to old age, become more thick and ponderous, and are remarkable for the callosities which cover their surface; they also lose that brilliancy of ex-

ternal coloring and marking which had characterized their earlier periods. But although these differences, in some instances, are sufficient to excite a considerable degree of perplexity, yet there is always a certain appearance by which the Conchologist will be able to distinguish the genus and species by the shells alone; for every genus and species have their generic and specific characters, either in color, work, or substance, which the shells of that genus almost invariably retain in all their stages of growth and varieties of form, and consequently are thereby easily known and distinguished.

Properties of Animals inhabiting Shells.

THESE animals possess the power of extending or aggrandizing their calcareous habitation or shell, and are also enabled to repair whatever breaches this brittle dwelling may have sustained, by the turbulence of the tempestuous ocean. The operation of enlarging and repairing the shell is supposed to be effected by a peculiar endowment of the animal, which can at pleasure discharge a viscous humor, and which readily becomes hardened or consolidated, and soon acquires the consistence of the rest of the shell.

Many shells are covered with a cutaneous or skin-like substance, called the epidermis, which serves to protect the beautiful colors and workings which are frequently concealed beneath it.

Customary uses to which Shells and their Inhabitants are converted.

THE principal benefit derived by man from shell-fish, appears to be in the way of food. Whole countries are known to have no other sustenance for weeks together

but what is the produce of the sea; and shell-fish fill no unimportant station in the immense catalogue of its product.

The nutritive and delicious food afforded by oysters, scallops, muscles, and cockles, is too well known to require further detail.

In many countries which do not produce limestone, (as the coast of Brazil, &c.) shells are collected in great quantities, and after having been calcined, afford a most desirable substitute for that useful material; in this state they are also considered excellent as manure.

The Indians frequently convert shells into domestic and defensive implements; the South-sea islanders, for example, make fish-hooks, head their javelins with, and manufacture different sorts of tools of them. Their principal ornaments are also often studded or embossed with rows and groups of shells, artfully disposed, in regular order, and are worn as bracelets or armlets, and commonly form handsome appendages for the ears. A very extensive commerce is carried on in Ceylon with the *shank* shell, which is manufactured into these ornaments.

The Chinese convert shells, that are pearly when uncoated, into various articles of domestic economy, such as drinking cups, ewers, &c. &c. &c. and the Indian cabinets, so famous for their beauty and exquisite workmanship, are chiefly composed of iridescent shells, judiciously inlaid and blended with tortoise-shell and other substances.

Shells of the oyster and muscle genera, are famous for the production of pearls, the beauty and value of which can perhaps best be estimated by those who are in the habits of purchasing and wearing them.

There are many of the larger species of buccina and

strombi, which, after having had the apex, or extreme tip broken off, become excellent substitutes for a trumpet or horn, and are frequently used by the New Zealanders for that purpose.

The famous Tyrian dye, which did formerly, and perhaps does at present, give the luxuriant purple color to the robes of royalty, is an extract from a common shell-fish of the genus Murex, and commonly known under the appellation of purpura, or purple-fish. An interesting account of the method of using it in marking linen, &c. is given by Mr. Mawe in his Travels through the Gold and Diamond Districts of Brazil, 2*d edit.* p. 70.

Enemies to Shells and Shell-fish.

It appears that shell-fish, besides providing food for man, are destined to supply other creatures with nourishment also. It is said that monkies are particularly fond of some species of bivalves, and the mode they take to catch them is as follows: At low-water the monkey repairs to the shore, and searches for oysters and muscles that have been left by the tide; the fish, for want of water, generally have their shells partly open; the subtle animal, foreseeing the danger of trusting his paws between the shells, artfully drops a stone or two into them, which entirely prevents their being closed by the fish; the consequence is, he is enabled to extract his prey without danger or difficulty, and devours it at his leisure.

Tortoises and turtles consume great numbers of shell-fish, and the strength of their jaws (as reported) is such, as to macerate the strongest and roughest shells with the greatest facility.

Birds also (sea-fowl especially) are great devourers of shell-fish; and when they cannot penetrate the shells by

their beaks, they ascend with them to a considerable height, and then let them fall suddenly on some rough or craggy place, by which means the shells are broken, and the fish becomes an easy victim.*

Crabs and other crustaceous animals, are known to make serious attacks on the testaceous orders. The larger sort of crabs are able by their great strength to open the valves of most shells by main force; but those of smaller dimensions make their inroads in a different manner: the pea-crab, in particular, is very destructive to Bivalves, especially to muscles; it enters their shells whenever it has the opportunity of finding them open, and there remains preying upon the fish, till it has entirely consumed it; at which period the shell opens, the crab takes his departure, and proceeds to make similar depredations elsewhere.

Another species, called the hermit-crab, is also supposed to be implicated in similar offensive operations among Univalves, for it is frequently found housed in the vacant habitation of some buccinum or whelk, and is therefore suspected of having previously devoured the animal, and afterwards to have secured itself a retreat in the empty shell.

Shell-fish, however, are not only exposed to the vora-

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* Mr. Mawe states in his Travels in Brazil, that he saw a spot of bare granite, not more than one hundred yards square, covered with an immense number of mutilated shells; the whole neighbourhood was rich in wood and verdure, and the sea at least five miles distant. On enquiry he was informed, that large flocks of birds repaired every evening to this place with shells left by the tide, which they let fall on the rock, in order to obtain their contents.

city of other animals, but they frequently are assailed by, and fall victims to each other. The serpulæ, pholades, and anomiæ, are celebrated for affixing themselves to, and perforating other shells, in which they bore a small circular hole or aperture, that affords them access to the animal, which they feed upon and finally destroy.

Shell-fish, though they are the universal prey of animals, birds, and fish, yet, in their turn, have some opportunity of retaliation, by partially destroying the floating habitation of the universal despoiler, Man; for the pholas and teredo navalis frequently commit such serious injury on ships, by boring into their planks, as often to endanger the safety of the whole fabric, if not speedily prevented in their depredations.

Directions for collecting Shells, and arranging them systematically.

With regard to collecting shells, it is necessary to hint to those collectors, who, by a residence on the sea-coast, may have an opportunity of forming collections for themselves, that the best way is to select those shells which have the animals alive in them; for those that are found empty on the beach, are for the most part objectionable, as the shell becomes impaired, and the co-operation of the sun and waters greatly tends to destroy the beauty of the coloring and marking.

Besides, a double advantage is to be derived from having the animals alive, for, by keeping them a few days (not longer) in sea water, much useful information may be obtained, by an accurate observation of their structure and habits.

Storms frequently cast up live shells on the beach: such should be collected as soon as convenient, as they

frequently lose their delicate spines and foliations, by being suffered to remain beating about on the shore.

As land and river shells are seldom so beautifully formed, marked, or colored, as those of the sea, they are in consequence rarely so much prized; however, their presence is absolutely necessary in all collections.

The collector should keep the following objects in view, whenever he commences the arrangement of his shells:

First, the order to which they belong, that is, whether they are to class with the Multivalves, (i. e. shells of many valves); Bivalves, (shells of two valves); or Univalves, (shells of one part or piece only): which three grand divisions constitute the leading distinctions of shells.

Secondly, he should be careful in placing them in the proper genus of the order to which they belong. And

Thirdly, he should avoid misplacing or confusing the species which appertain to such genus; and if in the course of his studies he should be fortunate enough to obtain any hitherto undiscovered genus, species, or variety, he would do well to provide such an accurate description and drawing, as would, by submitting them to the opinion and judgment of the scientific, confirm him in the correctness of his own conclusions, and tend to promote the general advancement of conchological knowledge.

Methods commonly and successfully adopted for preserving and cleaning shells.

If the shell has the animal alive in it, and you would wish to kill it, nothing more is necessary than to place the shell and fish in boiling water, and after some minutes have elapsed, plunge them into cold water, which causes the animal to contract, and renders it easier to be extracted; crooked pins, and other sharp instruments, are

sometimes necessary to effect a perfect extraction. If a large quantity of shells is to be cleaned, dissolve half a pound of potash, and half a pound of soft soap, in two quarts of boiling water, stirring it until all the particles are dissolved, then pour it warm over the shells; let them remain in this liquid two or three days, frequently warming it, and pouring it over them; rinse them out of this with a brush, and cleanse them well in warm water. This method will generally be sufficient to clean all smooth shells, such as olives, cowries, cones, &c. When dry, brush them with a nail-brush; and if they are not dead shells, they will have a sufficient polish.

Rugged shells generally require a different process from the preceding, though it is prudent to try that method first. But when the shells are covered with adhesions, or the epidermis will not separate from the shell, it is necessary to use acid, which should always be applied by a careful and skilful hand. After the shells have undergone the foregoing process, and are dry, with a camel's hair pencil apply muriatic acid to the parts which require it, dipping the brush in sand, and using constant friction until the adhesions are removed. After this, cleanse them with warm water, and dip them in alkali, to neutralize the effects of any acid that may remain; and having again washed them in warm water, they may be coated with a weak solution of gum-arabic.

CLASSIFICATION.

LINNÆUS ranks Testacea as the third order in his sixth class of animals called Worms. He has made three principal or grand divisions, viz.

MULTIVALVES, BIVALVES, AND UNIVALVES.

The latter division he has subdivided, as will be seen in the sequel.—It may be proper to acquaint the reader, that, throughout this work, his system has been adopted.

TESTACEA.

MOLLUSCA COVERED WITH A SHELL.

I. MULTIVALVES.

Shells with many Valves.

1. Chiton: Valves placed in tranverse plaits down the back.
2. Lepas: Valves unequal; body sessile.
3. Pholas: Shell bivalve, with accessory valves at the hinge.

II. BIVALVES.

Shells with two Valves.—Conchs.

4. MYA: Hinge with generally a broad thick tooth, not let into the opposite valve.
5. SOLEN: Shell open at each end; hinge with a single or double subulate reflected tooth, not let into the opposite valve.
6. TELLINA: Hinge with the lateral teeth of one valve not let into the other.
7. CARDIUM: Hinge with remote penetrating lateral teeth.
8. MACTRA: Hinge with a complicated triangular middle tooth, and an adjoining hollow.
9. DONAX: Hinge with a generally remote lateral tooth, not let into the opposite valve.
10. VENUS: Hinge with generally three approximate divaricate teeth.
11. SPONDYLUS: Hinge with two teeth, separated by a small hollow.
12. CHAMA: Hinge in one shell, with two oblique obtuse teeth.
13. ARCA: Hinge with numerous penetrating teeth.
14. OSTREA: Hinge without teeth, but an ovate hollow.
15. ANOMIA: Hinge without teeth, but generally a linear depression on the rim, the beak of one valve curved over the hinge.
16. MYTILUS: Hinge without teeth, with a subulate depression, and generally fixed by a silky beard.
17. PINNA: Hinge without teeth, valves united at one end, and open at the other.

III. UNIVALVES.

1. *With a regular Spire.*

18. ARGONAUTA: Shell with one cell, spiral, involute.
19. NAUTILUS: Shell with many cells, with a hole of communication.
20. CONUS: Aperture effuse, longitudinal, without teeth.
21. CYPRÆA: Aperture effuse, linear, longitudinal, toothed on each side.
22. BULLA: Aperture a little contracted, and placed obliquely.
23. VOLUTA: Aperture effuse, the pillar plaited.
24. BUCCINUM: Aperture with a small canal leaning to the right.
25. STROMBUS: Aperture with a small canal leaning to the left.
26. MUREX: Aperture with a small straight canal.
27. TROCHUS: Aperture contracted, and somewhat square.
28. TURBO: Aperture contracted and orbicular.
29. HELIX: Aperture contracted, lunate on the inner side.
30. NERITA: Aperture contracted, and semiorbicular.
31. HALIOTIS: Shell with a row of orifices along the surface.

2. *Without a regular Spire.*

32. PATELLA: Shell conic, the aperture widened like a basin.

33. DENTALIUM: Shell slender, subulate, open at both ends.
34. SERPULA: Shell tubular, mostly serpentine, adhering to other bodies.
35. TEREDO: Shell thin, penetrating wood.
36. SABELLA: Shell composed of agglutinated grains of sand.

CONCHOLOGY.

TESTACEA, or SHELLS.

ANIMALS, SOFT, OF A SIMPLE STRUCTURE; COVERED WITH A CALCAREOUS HABITATION OR SHELL.

I.

Multivalves.

CHITON.—Coat of Mail.

Animal inhabiting the shell—a Doris; shell consisting of several segments of valves disposed down the back.

THE genus Chiton ranks first in the classification of Testacea, or Shells; and no less than twenty-eight species are described, some of which are exceedingly beautiful and uncommon. It is next to impossible to confuse this genus with any other of the shell tribes, for all its species and varieties coincide so nearly in their general formation and attributes, as to decide at once upon the precise situation in which they ought to be placed.

The most distinguishing character of the Chiton is, that of bearing a strong resemblance to a small vessel or boat,

high built at the stern, and turned upside down; and this peculiar form is constituted by the attachment of six or seven, but generally of eight moveable valves,* which are connected by a cutaneous or cartilaginous substance, and, when the animal is alive, is capable of sufficient distention and contraction, to admit of considerable action or play on the part of the valves; so much so, that the animal can at pleasure convert its shell into the form of a ball, and thereby assume the appearance of a little insect, well known as an inhabitant of old and decayed wood, and which, when in danger, rolls itself up in its steel-colored armour, and thereby defeats the various assaults of its enemies.

The covering and coloring of the valves serve to create distinctions; some being perfectly smooth, others nodulous, or knobbed; some beset with spines, prickles, or hairs; and others, again, are striated, dotted, and rayed, as in the Chiton hispidus, squamosus, and marmoratus.

The color of the exterior is frequently of a dusky-brown, often varying into different shades of olive-green: others partake of a reddish or pinkish tint; whereas some specimens are of an ochreous or yellowish-white complexion; and many have their valves adorned with elegant designs and marblings (not unlike tattooing) in the liveliest colors imaginable.

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* An experienced conchologist has never met with a Chiton with less than eight valves, without being able to discover an imperfection in the margin; which renders it extremely probable that those with five or six valves owe their variation from the usual number to the art and ignorance of the dealer, who has cemented the valves together, without attending to the number in the natural state.

The interior also admits of much variation with regard to color; however, the most prevalent is that of a blueish-white, often beautifully diversified with cloudings of yellow, brown, light green, and pink.

The margin, which confines the valves in their proper situations, differs materially in the various species; in some instances, it is smooth and of a yellowish brown color: generally, however, it is beset with fine scales, of a green or olive color; frequently it is of a reddish tint, and some species have it of a dusky-brown, and even black.

The situation and formation of the valves throughout the genus resemble the plates which constitute a suit of armour or coat of mail, and it is perhaps from this marked resemblance that the Chiton has derived its name.

The habitat or place of residence of these shells seems to appertain, indiscriminately, to all parts of the globe.—America affords the most, several are from the East Indies, Africa supplies a few, and the Northern seas contribute their portion of the remainder.

The Chiton is frequently found adhering to other substances, as shells, stones, madrepores, corals, &c. &c.; and some of the northern species frequent the roots of ulvæ, &c.

The following is a list of the different species, taken from Linnæus's Systema Naturæ, with the addition of some species which have been discovered since the publication of that work.—A similar list will follow the general description of each genus.

☞ *Those names that are preceded by an Asterisk, describe Species found on the British coasts; and those which are printed in Italic characters are the corresponding English names.*

CHITON.—*(Coat of Mail.)*

Hispidus.	Fuscus.
Thalassinus.	Maculatus.
Tuberculatus.	Marmoratus.
*Crinitus.	Granulatus.
Aculeatus.	Piceus.
*Fascicularis.	Indus.
Squamosus.	Minimus. *(Mealy C.)*
Punctatus.	Cimex.
Ruber.	Asellus. *(Millipede.)*
Albus.	Gigas.
Cinereus.	Islandicus.
Bicolor.	*Marginatus.
Cerasinus.	*Lævis.
Magellanicus.	Amiculatus.

LEPAS.—Acorn Shell, or Barnacle.

Animal—a Triton. Shell affixed at the base, and consisting of many unequal, erect valves.

The genus Lepas includes thirty-two species, and which, for the most part, bear strong resemblance to each other, at least with regard to their general formation and outline.

The most prominent feature of these shells is their be-

ing (with few exceptions) of a more or less conical shape, which is acquired by a number of valves being placed perpendicularly on a base, broad at the lower margin, and gradually tapering towards the summit, which is closed by other smaller valves, placed horizontally, thereby serving as a lid or covering to the animal within.

The perpendicular valves are capable of no motion; whereas, on the contrary, the horizontal ones are moveable at the pleasure of the animal; who, through their medium, performs those functions which are necessary to its existence.

The Lepas is never found independent or isolated, as most other shells are; on the contrary, all its species are known to affix or attach themselves by their base or fleshy stalk to other bodies; they adhere in clusters or groups, to rocks, coral reefs, ships' bottoms, and shell-fish: even fish themselves, while swimming, are not exempt from their encroachments, for instance, the whale, and others, are frequently found laden with them; and even tortoises are often encrusted with groups of the Lepas species. It would therefore appear, that the genus is merely capable of motion, and in case of their being transported from one place to another, it is to the exertion of other bodies that they must be indebted for their migration.

The exterior of the shell is often varied in form, covering, and coloring; the usual outline is conical; in others, it resembles a pyramid, and, in some instances, is parabolical, and even hemispherical: the Lepas diadema partakes of the latter form, and somewhat resembles a divided globe. The number of valves which constitute the shell is often very indefinite, their usual amount is six; but the Lepas palmipes has sometimes only four;

and other species possess the intermediate gradations of number, as far as twenty-four, which amount is not unfrequent in the Lepas Pollicipes.—The valves, of whatever number they consist, are variously diversified with striæ, ridges, and grooves.

The ridges are mostly longitudinal; the striæ, on the contrary, are transverse, and not unfrequently beset with rough projections and acute spines, as is the case in the Lepas spinosa.

The color also differs considerably, though the most usual complexion is of a blueish, purplish, or reddish cast, intermixed with a whitish hue. However, some are pied with black and green alternately, and others are of a greyish-white, or dirty-yellow tint, as may be observed in the Lepas mitella and others.

The valves which compose the lid or operculum, often vary in their number and shape; sometimes they only consist of two, at others, of three and four, and not unfrequently of a far greater number. They are usually attached to a ligament, and sometimes present a pointed or acute form, while in other species they are perfectly blunt or obtuse.

The interior of many of this genus is a mere vacuum, but in others it is either filled up with tubular pores, as in the Lepas Porosa, or else is divided into separate compartments or chambers.

Notwithstanding the great affinity which exists throughout the Lepas tribe, yet there are a few exceptionable species, in which a resemblance is difficult to be traced; as, for example, in the Lepas scalpellum, anserifera, anatifera, and varieties emanating from them.

These three species are closely allied to each other, but exceedingly dissimilar to the rest of their genus, for the

generality of Lepades are affixed to other bodies or substances, by their own proper base, or lower part of their shells; whereas, these are attached by a stalk, stem, or pedicle, which proceeds from the base of the shell to the substance which sustains it.

This peculiar structure engenders the idea of comparing them to the form of certain dwarf plants, as the crocus, and others of the like description, to which, in appearance, they bear considerable analogy.

The stem which supports the shells often differs exceedingly in quality and substance; sometimes it appears like a smooth, film-like tube, of a texture finer and thinner than gold-beater's skin, though somewhat lighter colored, and not unfrequently tinted with bright red or orange; and often, it is of a dark or blueish-brown, much coarser, and wrinkled or granulated with little warts.

The Lepas anserifera and anatifera, are almost invariably composed of five valves; they are supplied with beautiful feathery tentacula of a brown color, and elegantly curled: from this circumstance, probably, they were supposed to be the origin of the Barnacle or Brent-geese, and are, therefore, commonly known by the name of goose-shells or duck-barnacles. The Lepas anserifera is sometimes found in a fossil state.

The Indian, American, Atlantic, and Arctic Oceans, alike provide a habitat for the species of this genus; and no less than eleven of them are to be occasionally met with on the British coasts.

The Lepas, in all probability, derives its name from its custom of adhering to the crags of rocks, and other projections in the sea.

LEPAS.—*Acorn Shell or Barnacle.*

A. *Affixed at the base to other substances.*

*Balanus. *(Common A. S.)*
*Balanoides. *(Small striated A. S.)*
*Intertexta.
*Cornubiensis.
*Tintinnabulum (*Tulip A. S.*)
*Diadema (*Turban A. S.*)
*Balænaris. (*Whale A. S.*)
*Costata.
*Conoides.
*Testudinaria.
*Galeata.
*Palmipes.
*Tulipa.
Minor.
Verruca.
Angustata.
Porosa.
Elongata.
Patellaris.
Spinosa.
Violacea.
Cylindrica.
Crispata.
Cariosa.

Stræmia.

B. *Affixed by a peduncle.*

Mitella.
Scalpellum.
Anserifera (*Striated A. S.*)
*Anatifera (*Barnacle, Goose-shell.*)
Aurita.
Psittacus.
Pollicipes (*Cornucopia.*)

PHOLAS.—Stone-piercer.

Animal—an Ascidia: shell bivalve, divaricate, with several smaller, differently-shaped accessory valves at the hinge: —hinges recurved, united by a cartilage; in the inside, beneath the hinge, is an incurved tooth.

It appears that hitherto only twelve species of this genus have been enumerated, and some of those are so alike,

that in many instances, they might be considered as mere varieties rather than different species; however, they all possess sufficient determinate characters, to prevent any admixture with the genera of Bivalves.

The form of the Pholas is in most species ovate or oblong, which is constituted by two large valves, being situated opposite to each other, and to which is attached, in the vicinity of the beaks, a number of smaller ones, which serve as substitutes for a hinge, which, in Bivalves, or shells of two opposite parts only, often determines their generic character.

It is from the circumstance of the Pholas possessing more than two valves that it is distinguished, and, consequently classed among the Multivalves, or many shelled genera, and not among the Bivalves, or shells of two valves*.

Another character of the Pholas is, that the valves, (i. e. the two large ones) never shut close, they invariably are open at one end, and, in most instances, at both.

In the interior of the shell, in each valve, nearly under the beak, is an incurved tooth, sometimes of considerable length, and which may certainly be considered as a peculiarity of the genus.

The exterior of the Pholas is mostly destitute of all color; sometimes, however, it partakes of a brownish cast, but, generally, the shell is of a calcareous appearance,

* It was perhaps unnecessary to have been thus explicit, with regard to this distinction; but as the Pholas is by no means unfrequently seen without the accessory valves, the young collector might, under such circumstances, be deceived, and be induced to place them among the Bivalves, instead of the Multivalves.

and either inclines to a pure or dusky-white, or else a sort of blueish or yellowish-brown tint is spread over it: however, the absence of color is amply compensated for by the beautiful fret-work with which shells of this genus are adorned.

In some species the reticulations are so delicate in their fabric, as to resemble the finest lace; in others the texture is coarser, and approaches nearer to small basket-work; and in the Pholas costata, the shell is covered with regular, elevated, jagged, or scolloped ribs, so elegantly disposed as to render it no less desirable for its beauty than its scarcity.

The Pholades are found in company, but not in groups or clusters, as in the Lepades; for each individual Pholas is detached from its neighbour, and occupies a separate and distinct habitation, which it forms for itself, by expressing a corroding juice, in any substance which accident or intent had made most eligible.

Stone, clay, wood, sponge, coral, equally serve as habitations for the Pholades; even the stoutest oak planks of ships' sides are pierced by them with the greatest facility: and as they advance in growth, they enlarge their habitation within, leaving the small aperture, by which they originally entered, of its primitive dimensions, thereby precluding all possibility of a retreat.

The animal possesses the property of emitting a phosphorescent liquor, which shines with brilliancy in the dark, and illuminates whatever it touches.

The American, Indian, and European seas supply the few species that are known.

Late discoveries have proved the existence of fossil Pholades, called Pholadites.

PHOLAS.—*Stone Piercer.*

*Dactylus (*Prickly Piercer*)
Costata (*American Pholas*)
Striata (*Goose-winged Ph.*)
*Candida. (*White Piercer*)
Pusilla.
*Crispata.
Orientalis.
Campechensis.
Cordata.
Chiloensis.
Teredula.
Hians.

II.

Bivalves.

MYA.—Truncate Trough-shell or Gaper.

Animal—an Ascidia: Shell bivalve, generally gaping at one end; hinge with broad, thick, strong teeth, seldom more than one, and not inserted into the opposite valve.

THIS genus may properly be called the first on the list of Bivalves; its species, however, are by no means numerous, their number being limited to twenty-six.

The principal characteristic of the Mya consists in its gaping at one end: the next general distinguishing mark is, its having a single, broad, patulous tooth, proceeding from beneath the beak. This tooth differs from that of the foregoing genus, in as much as it is otherwise shaped; for, in the pholas, it is long and slender, and almost of equal size throughout; whereas, in the Mya, it is much wider and broader at one end than the other; and the broadest end has an excavation, which gives it the appearance of the bowl of a spoon or ladle.

However, this sort of tooth is not always discernible in every species of the Mya, for some are entirely without

it; others, again, have two or three teeth, and, in some instances, small crenulations supply the place of a regular hinge.

The form of the Mya varies exceedingly, some are oblong and truncate, as if part of the shell had been chopped off; others, again, are more orbicular or round, and many are angular and eared.

With regard to their general coloring, little can be said, for the greatest part of them are covered with a thick brown or green epidermis; which, when removed, seldom exhibits any other appearance than that of a livid or wan-colored surface; except in those cases whe e the substance composing the shell is of a pearly nature, then the removal of the epidermis exposes the hidden beauties of the shell, which, when polished, affords the most brilliant mother-of-pearl imaginable.

The Mya margaritifera is famous for the production of the finest pearls, and used formerly to be found in great quantities in the river Conway, in Wales.

The creation of pearls is said to originate in a disease of the animal.

Some species of this genus grow to a large size, the Mya glycemeris, for instance, is often found from ten to twelve inches broad. Others, again, as the Mya crassa, &c. are remarkable for their excessive weight and thickness; and their weight often appears out of proportion to their dimensions. Rivers and cataracts afford heavy and thick specimens; but they are, for the most part, more fragile, and less weighty than those of the sea.

In some places the Mya constitutes a considerable portion of food, not only for man, but also for aquatic birds, &c. &c. They have a propensity to burrow in the sand and mud, and are wholly or partially concealed therein.

They also frequent algæ, &c. adhering to them by a byssus or beard.

Some species of the Mya inhabit the East Indian seas; others are found on the coast of Africa; and several are common in the European and Northern seas; some species are also to be found in the South seas. Mr. Mawe has found Myæ in considerable abundance in the neighbourhood of Sheerness and Sandgate Creek.

MYA.—*Gaper.*

*Truncata.
*Declivis.
*Arenaria.
*Pictorum *(Pearl Muscle.)*
*Margaritifera *(Pearl G.)*
Aurita.
Perna *(Smooth M.)*
Vulsella.
Arctica.
Edentula.
Radiata.
Oblonga.
Anatina.
Nicobarica.
Australis.
Gaditana.
Corrugata.
Rugosa.
Nodosa.
Norwegica.
Spuria.
Glycemeris *(Great M.)*
Syrmatophora *(Angular G.)*
Nitida.
Membranacea.
Byssifera.
*Dubia.

SOLEN.—Razor-sheath or Knife-handle.

Animal—an Ascidia: Shell bivalve, oblong, open at both ends: hinge with a subulate reflected tooth, often double, and not inserted in the opposite valve.

Although the number of species in this genus are but few, viz. twenty-three, yet their shapes, and general appearance, are exceedingly varied.

In some of the species, as in the Solen siliqua, vagina, &c. &c. the breadth of the shell is in the proportion of about seven to one of its length, thereby giving it a resemblance to the handle of a knife, or sheath of a razor-strop; some, on the contrary, though possessing nearly the same proportions, are curved or bent, like the scabbard of a scimitar, as the Solen ensis, &c. &c.

In others, the form approaches nearer to some of the truncated species of the preceding genus, being swollen or puffed-up like a bladder; and other specimens afford a likeness to a cockle or cardium. However, the surest criterion how to class the Solen, is by observing both ends of the shell, which invariably will be found open or gaping.

The next characteristic is derived from the hinge, which usually is supplied with one subulate tooth; yet it often occurs that this tooth is found double, though not always inserted in the opposite valve.

The genus Solen, for the most part, contains but little beauty; there are, indeed, some few exceptions—such as the Solen radiatus, roseus, &c. &c. these, from being rayed with purple and white, or having a fine pink co-

lor, may perhaps claim admiration; but whatever beauty they may possess, they are infinitely surpassed by innumerable species in the other genera of Bivalves.

Most of the species of Solen are found covered with a thin cuticle or epidermis, which, if not removed, renders the colors beneath very obscure, and, in some instances, undiscoverable. There is one species only which is said to produce pearls, viz. Solen macha.

The European and Northern Seas afford by far the greatest proportion of shells of this genus. However, the Indian, American, and Mediterranean seas, are by no means remiss in producing their supplies also. The river Tees affords one species, viz. Solen crispus. They often reside among zoophites.

SOLEN—*Razor Sheath.*

*Vagina.
*Siliqua *(Long Brown R. S.)*
*Ensis *(Scimitar S.)*
*Pellucidus.
*Legumen.
*Cultellus *(Kidney R. S.)*
Radiatus *(Violet or radiated R. S.)*
Strigilatus *(Black R. S.)*
Anatinus.
Macha.
Bullatus.
Minutus.
Virens.
Diphos.
Minimus.
Maximus.
Coarctatus.
Roseus.
Sanguinolentus.
Striatus.
Oriens.
Occidens.
*Crispus.
Spengleri.

TELLINA.—Tellen.

Animal—a Tethys: Shell bivalve, generally sloping on one side: in the fore part of one valve there is a convex, and in the other, a concave fold; hinge with usually three teeth, the lateral ones smooth in one valve.

Amongst all the different genera of Bivalves, there are none, except the Venus, which can vie with the Tellinæ in point of beauty, variety, or number, which amounts to no less than ninety-four species: and whether the attention be directed to their elegance of form, brilliancy of color, or delicacy of structure, the eye is equally astonished and delighted with the infinity of beauties which incessantly crowd on the sense. Yet, amidst this display of beauty and magnificence, considerable relief is derived from the modest unassuming appearance of several of the more subordinate and common species. The usual form of the Tellina is something resembling a long pear, being broad at one end, and gradually tapering to the other; in some cases so much so, that the pointed termination of the shell forms a perfect beak or proboscis, as is the case in the Tellina rostrata, virgata, &c. &c. &c. Others, on the contrary, are more of an orbicular, or spherical form, as the Tellina scobitina, &c. and some again, as the Tellina radiata, &c. &c. are nearly allied to species of the Solen genus, with which (from their near resemblance) they are sometimes confounded; however, from the general propensity of all Tellinæ to terminate in a more or less acute beak, much inaccuracy cannot well be committed. At the same time, the hinge of the Tellina will remove any

doubts that may have originated from the simple observance of the exterior; for it is usually furnished with three teeth, the middle one often cleft; the lateral teeth are most commonly smooth, the interior margin rarely, if ever, crenulate.

The outside of the shells is surprisingly varied, some being perfectly smooth and polished, whilst others are covered with minute striæ and undulations. In some instances the whole suface is beset with coarse imbrications or scales; but the more elegant species of the Tellinæ are chiefly remarkable for their beautiful radiations, the colors of which are rarely to be equalled in any of the other genera.

As the Tellinæ are most important among the Bivalves, so the sources from whence they are derived, usually abound in the different varieties they afford. The Mediterranean, Baltic, and Adriatic Seas, give being to many; the American and Atlantic Oceans produce numbers; and the European and Northern seas by no means contribute an inferior portion. The rivers, pools, ponds, and marshes of Europe and America, supply only a few. The finest varieties are found in the pearl fisheries of Ceylon. It is said, that Tellinæ are very speedy in their growth.

TELLINA.—*Tellen.*

A. *Ovate and thickish.*

Gargadia *(Toothed T.)*
Lingua-felis.
Virgata *(Tulip Wedge.)*
Angulata.
Gari *(Varying T.)*
*Fragilis.
*Depressa.
*Crassa.

Rugosa.
Inflata.
Multangulata.
Papyracea.
Gibbosa.
Inequilatera.
Knorrii.
Bornii.
Pusilla.
*Maculata.
*Rivalis

B. *Ovate and compressed.*

Albida.
Foliacea.
*Planata.
*Variabilis.
Lævigata.
*Radiata.
Rostrata.
*Inequivalvis.
*Trifasciata.
*Incarnata.
Donacina.
Truncata.
Trilatera.
Oblonga.
Spengleri.
*Rugosa.
*Cornubiensis.
*Fervensis.
Operculata.
Hyalina.
Vitrea.
Lanceolata.
Apelina.
Coccinea.
Virginica.
Alata.
Pectinata *(Lister's T.)*
Angustata.
Variegata.
Madagascariensis.
Purpurescens.
Aspera.
Triangularis.
Lata.
Jamaicensis.
*Rhomboides.
*Vinacea.
Zonata.
Albicans.
Rufescens.
Plana.
Striata.
Rosea.
Punicea.
Complanata.
*Fabula.
Adansoni.
Cancellata.
Strigosa.

C. *Sub-orbicular.*

Balaustina.
Remies *(Waved T.)*

Reticulata.	Fluminalis.
Scobitina.	Fluminea.
Lactea.	Fluviatilis.
*Carnaria.	Iberica.
*Bimaculata.	Adriatica.
Balthica.	Sinuosa.
Pisiformis.	Purpurata.
Divaricata.	Candida.
Digitaria.	Gallica.
*Cornea.	Senegalensis.
*Lacustris.	Anguiosa.
Amnica.	Polygona.

Papyracea.

CARDIUM.—Cockle or Heart-shell.

Animal—a Tethys: Shell bivalve, nearly equilateral, equivalve, generally convex, longitudinally ribbed, striated, or grooved, with a toothed margin; hinge with two teeth near the beak, and a larger remote lateral one on each side, each locking into the opposite.

This genus, though not so numerous as the last, contains great variety of structure and coloring. There are fifty-two species.

The valves of the Cardium are for the most part of a convex, swollen, or gibbous construction, and often spherical; yet, in some instances, their form is elongated

and compressed. In other species the contour exhibits the figure of a perfect heart, as in the Cardium cardissa, &c. &c.

The shells are usually equivalve, and have their outsides adorned with longitudinal ridges and grooves, crossed by transverse striæ, something in the manner of the common cockle, only much more articulate.

In others, again, the ridges are beset with rows of acute spines, as in the Cardium aculeatum and echinatum; but the exteriors of some, on the contrary, exhibit a perfectly smooth and polished surface, as in the egg-cockle, &c.

The Cardium fragum and unedo exhibit a peculiar formation, for they are sub-angular, and are only heart-shaped when seen in one particular position. A similar coincidence is observable in the Cardium retusum, though, in other respects, it differs; for the fragum and unedo have their ridges covered with crowded pink or yellow elevated lunules or crescents, whereas, the retusum has nodules rather than imbricate scales. The interior margin of this genus is almost universally crenate or toothed.

The hinge is furnished with two teeth, and a larger remote lateral one on each side of it, each locking into its opposite.

The Cardium edule, or common cockle, is found in great abundance beneath the sand on sandy coasts; the fish afford a wholesome and nourishing food.

The most rare and valuable species of the genus Cardium, is the costatum or pipe-ridged cockle, which has rows of white hollow elevated ribs, situated at regular distances on its surface, and proceeding in a longitudinal direction from the beaks to the margin; the inter-

stices, or spaces between these ribs, are (in perfect specimens) of a fine dark-brown color, which gives the shell a great boldness of character.

A great part of this genus inhabits the European and Northern seas; however, many are collected from the American, African, and Indian oceans; the Mediterranean, likewise, produces some of the species, and the mouths of rivers, as the Tees, Thames, &c. &c. also supply specimens, though rarely. One species is mentioned as sometimes being found in a fossil state, viz. Cardium lithocardium.

CARDIUM.—*Cockle or Heart-shell.*

Costatum *(White fluted H.)*	Flavum.
Cardissa *(Venus H.)*	*Lævigatum.
Roseum *(Smooth-edged V. H.*	Serratum.
Retusum *(Diana H.)*	*Edule *(Common C.)*
Hemicardium.	Islandicum.
Lithocardium.	Grœnlandicum.
Lineatum.	Rusticum.
*Medium *(Marbled H.)*	Glaucum.
*Aculeatum *(Knotted H.)*	Pectinatum.
*Echinatum *(Rake H. Shell)*	Virgineum.
*Ciliare.	Trilaterum.
Ciliatum.	Auricula.
*Tuberculatum.	Triste.
Isocardia *(Rasp C.)*	Monstrosum.
Fragum *(White Strawb. C.)*	Lima.
Unedo *(Strawberry C.)*	Ringens.
Muricatum.	Papyraceum,
Magnum *(Yellow ribbed C.)*	Æolicum *(Janus.)*

Oblongum.	Brasilense.
Crassum.	Amboinense.
Latum.	Squamosum.
*Pygmæum.	Cancellatum.
Maculatum.	Rubiginosum.
Flexuosum.	Albidum.
*Fluviatile.	Virescens.
Gaditanum.	Fasciatum.

MACTRA.—Kneading-trough.

Animal—a Tethys: Shell bivalve, unequal sided, equivalve; middle tooth of the hinge complicated, with a small hollow on each side; lateral ones remote, and inserted into each other.

The genus Mactra has little to boast of, either in regard to beauty or variety. The number of species amounts but to twenty-seven, and in those no great difference of coloring or form is manifested.

The shape of the Mactra is usually inclined to be somewhat triangular; however, in some instances, it is more oblong.

The surface of the exterior is generally smooth, or minutely striate; some exceptions, however, may be found, as in the mactra plicataria, and others, which exhibit a wrinkled or ribbed appearance, similar to that observed in the different species of the cardium, but in a reverse

direction; they being ridged or plaited longitudinally, whereas in the Mactra, the elevations and their adjacent grooves are placed transversely.

The generality of Mactræ are of a delicate construction, and afford a semipellucid appearance. They are, for the most part, thin, brittle, and remarkably light; and in some species the valves are open or gaping.

The most prevailing color is blueish or yellowish-white, but some have, upon a brown ground, delicate rays of purple, heightened with rich tints of the same color: others, again, are of a brilliant lilac, passing into a delicate blue.

The hinge of the Mactra is its best distinction from all the other genera of Bivalves, for the middle tooth is almost invariably complicated, and of a triangular form, having a small hollow on each side of it; the lateral teeth are remote from the beaks and inserted into each other. The hinge of the Mactra, though very articulate, is remarkably thin and delicate; in some cases, the teeth which compose it are much thinner than paper. The Mactræ are mostly equivalves; the interior margin is rarely crenate or toothed.

The Northern and European seas supply many of the species of Mactra.

The Indian and American oceans also produce them; some are found in the Mediterranean, and others are indebted to the Cape of Good Hope and African shores for their subsistence. They are also frequently found at the mouths of rivers.

MACTRA.

Spengleri.
Plicataria.
Papyracea.
Striatula.
Striata.
Rotundata.
Glabrata.
Nitida.
Corallina.
Lactea.
*Stultorum.
Grandis.
*Solida.
*Lutraria (*Large M.*)
Cygnus.
Maculata.
Turgida.
Violacea.
Cuneata.
Glauca.
Pellucida.
Fragilis.
Rugosa.
Nicobarica.
Complanata.
*Listeri.
Piperita.

DONAX.—Wedge-shell.

Animal—a Tethys: Shell bivalve, with generally a crenulate margin, the frontal margin is very obtuse; hinge with two teeth, and a single marginal one placed a little behind, rarely double or triple.

The most leading characteristic of the Donax is derived from its form, which (throughout the nineteen species) is similar to that of a wedge, being very broad and thick at one extremity, and gradually narrowing and lessening to

the other. The frontal margin is generally very obtuse, and the anterior slope is not unfrequently furnished with a sort of fissure or gape; near to which is situated a cartilaginous ligature or ligament, which prevents the two shells from separating when the animal has occasion to open them.

Some of this genus, however, are a little ambiguous in their external appearance; so much so, that they frequently hold forth an inducement to rank them among the species of the Venus; but in these cases the hinge alone must be the guide, which in the Donax is furnished with two teeth, and a single marginal one placed somewhat behind, not often doubled or tripled.

The exterior of the Donax is mostly of a smoothish surface, though many are covered with nearly obsolete longitudinal striæ, being embellished at the same time with numerous reddish or purple rays, diverging from the beaks to the margin. Other species are perfectly rough on their outside, which is caused by crowded striæ crossing each other in a longitudinal and transverse direction; this disposition of the striæ gives the shell a foliated and even a spiny appearance, as in the Donax scortum and pubescens.

A very prevalent color in this genus is a fine rich purple, or purple rays on a white ground; however, many of the species are of an olive-yellow cast, which not unfrequently inclines to a bright orange; others, again, have a pink hue, and are finely lettered with brown zigzag markings, as is the case in the Donax scripta, &c. and in some instances the shells have a banded appearance. The interior almost always partakes of the coloring of the exterior; and the margin, which is generally of a high color, is almost invariably crenulate or beset with

small contiguous teeth. Although the species and varieties of this genus are but few, yet these few are thinly scattered over most parts of the globe; however, some coasts (the European in particular) supply a profusion, but not attended by any great variety: they are mostly found buried in the sand.

The Indian, Atlantic, American, and Northern seas, have also their share, and the Mediterranean is not exempt from the general contribution. It is not exactly ascertained that any of this genus are natives of rivers.

The Donax derives its name, in all probability, from its shape, which resembles the barbed head of a javelin or dart.

DONAX.—*Wedge-shell.*

Scortum *(Beaked W.)*
Pubescens.
Rugosa.
*Trunculus *(Yellow W.)*
Striata.
*Denticulata.
Cuneata.
Faba *(Bean-shaped W.)*
Scripta.
Muricata.
*Irus *(Foliated W.)*
Lævigata.
Spinosa.
Incarnata.
Argentea.
Bicolor.
Radiata.
Straminea.
Candida.

VENUS.—Venus.

Animal—a Tethys: Shell bivalve, the frontal margin flattened with incumbent lips: hinge with three teeth, all of them approximate, the lateral ones divergent at the tip.

It has already been observed, that this genus, with regard to beauty, bears a decided pre-eminence over all the other genera of Bivalves: and it is in all probability from this very circumstance that it has obtained the title it bears. In point of number it exceeds all other genera of Bivalves; for it contains no less than one hundred and fifty-three species; among these the variety in formation and coloring is almost infinite: however, one of the leading features of this genus is, that many of its species have the frontal margins of their shells somewhat flattened, and not unfrequently with the lips incumbent. The elongated, compressed, angular, and orbicular forms, equally find a place in this genus, as may be observed on inspecting the four following species: viz. Venus literata, compressa, scripta, and tigerina.

In some, the form is very much inflated, gibbous, or swollen, as in Venus verrucosa, fimbriata, and reticulata.

Many of this genus are famous for their smoothness, and the brilliant lustre of their surfaces, such as the Venus Ericina, maculata, Chione, &c. these at the same time are remarkable for their high and rich coloring. Others, again, have less of color and polish, but more of carved work or reticulations about them, as in the Venus Paphia, reticulata, &c. and one species is even spinous, viz. Venus Dione.

In many specimens the exterior surface is covered with

longitudinal or transverse striæ, sometimes with both, which not unfrequently terminate in foliations near the margins.

The interior of the shells of this genus is often adorned with rich coloring, as in the Venus mercenaria or wampum clam, which in fine specimens is of a rich purple. It is from these shells that the North American Indians make their wampum or money. The same shell, in a fossil state, is often found in the Swedish mountains.

The hinge of the Venus, with scarce any exception, contains three teeth, all approximate or close to each other; besides these three, there is a lateral tooth, not unfrequently divergent at the tip, the inner margin of the shell is sometimes crenulate. Some of the species, though rarely, gape.

Almost all parts of the world supply specimens of this genus. The American, African, Eastern, and Western Oceans abound with them. The Mediterranean, Caspian, and Southern Seas likewise produce some species; as also do the European and more northern oceans.

Several species are found in a fossil state.

VENUS.

A. *Shell somewhat heart-shaped.*

Dione *(Prickly mouthed V.)*	Lapicida.
Paphia	Divergens.
Marica.	*Casina *(Broad ribbed.)*
Dysera.	Cancellata.
Bajana.	*Gallina.
Excavata.	Guineensis.
*Verrucosa *(Old woman.)*	Petulca.

Flexuosa.
Erycina *(Polished V.)*
*Mercenaria.
*Islandica.
*Chione *(Smooth brown V.)*
Maculata.
Meretrix.
Læta.
Castrensis.
Phryne.
Meroe.
Minuta.
*Deflorata *Purple streaked V.*
Fimbriata *(Cancellated V.)*
Reticulata.
Squamosa.
Puerpera *(Spotted V.)*
Tripla.
Plicata.
Rugosa.
Caliste.
Granulata.
Imbricata.
Divaricata.
Contraria.
Gallus.
Flamea.
Corbicula.
*Sinuosa.
Hermaphrodita.
Coaxans.
Casta.
Affinis.
Opima.
Triradiata.
Nebulosa.
Contempta.
Japonica.
Striata.
Textile. [*V.*)
Corrugata (*Wrinkled*
Monstrosa.
Ponderosa.
Subviridis.
Rostrata.
Fusca.
Lusitanica.
Punctulata.
Fasciata.
Carnea.
Virgata.
Versicolor.
Variegata.
Amethystina.
Calipyga.
Senegalensis.
Matadoa.
Succincta.
Compressa.
Australis.
Gigantea.

B, *Orbicular.*

Tigerina.
Prostrata.
Pensylvanica.
Spuria.
Incrustata.
Punctata.
*Exoleta(*Painted V. Cockle*)
*Undata.
Tumidula.
Sinensis.
Sinuata.
*Borealis.
Pectinata.
Scripta.
Edentula.
Concentrica.
Juvenilis.
Histrio *(Map V.)*
Globosa.
Pectunculus *(Painted V.)*
Albida.
Campechensis.
Crassa.
Purpurescens.
Rubra.
Pusilla.
Violacea.
Spadicea.
Cancellata.
Bengalensis.
*Aurea.
Obscura.
Purpurata.
Nux.
Rugata.
Gibbula.
Stellata.
Italica.
Brasiliana.
Pellucida.
Holosericea.
Macassarica.
Aurantia.
Fulva.
Candida.
Albicans.
Undulata.
Lineata.
Lævis.
Cornea.
Guttata.
Rufescens.
Virens.
Maculosa.
Costata.
Wauaria.
Tumens.
Diaphana.
Dura.
Eburnea.
Lucida.
Discors.

Aculeata.

C. *Ovate, a little angular near the beaks.*

*Literata *(Camp lettered V.)*	Cruentata.
*Geographica.	Lutescens.
Rotundata.	Sanguinolenta.
*Decussata.	Argentea.
Virginea.	Donacina.
Virginica.	Afra.
*Rhomboides.	Dealbata.
Lithophaga.	

SPONDYLUS.—Thorny Oyster or Artichoke-head.

Animal—a Tethys: Shell hard, solid, with unequal valves; one of the valves convex, the other rather flat · hinge with two recurved teeth separated by a small hollow.

This genus, though containing innumerable varieties, is divided into no more than four distinct species, and even these, from their extreme irregularity of formation and great difference of appearance, are often confounded with each other. However, the usual character of the Spondylus is to have its valves something similar to those of the common oyster, viz. one convex, the other a little flattish, having their outsides covered with longitudinal rows of erect spines or ramifications. The spines are usually tubular or round, ending in a point; the ramifications or branchings, on the contrary, are flat, jagged,

and patulous at their extreme terminations. Those Spondyli that are spined, as the Gædaropus, &c. are mostly of one color, as orange-red, purple, white, brown, and yellow; which colors, in fine specimens, are exceedingly brilliant.

Those which have branches or plaits, (as the Spondylus plicatus, &c.) have, on the contrary, a ground color of either of the above-mentioned tints, and the ramifications are left entirely white.

In some instances there is a compound of coloring, as white and brown, purple and white, &c. &c. which gives the shell a pied or brindled appearance; and in others (especially those which have a tendency to being foliated as well as branched) the upper valve is of one color, as purple or brown, having the lower valve perfectly white.

The Spondyli generally have unequal valves, the lower one protruding much beyond the other, and which not unfrequently terminates in a curved and lengthened beak.

The hinge is furnished with two recurved teeth, which are very strong and articulate, and separated by a small but deep hollow; the inner margin is mostly crenulate, and highly colored with orange or purple. Some of this genus are surmounted with ears on each side the beaks, similar to the manner of escallops; others, on the contrary, are perfectly earless.

They are found adhering to rocks, corals, &c. in groups more or less numerous, often forming large masses; others are also found attached to shells. They are to be met with in the American, Indian, Mediterranean, and other seas.

SPONDYLUS.

Gædaropus *(Thorny Oyster.)*
Regius.
Plicatus *(Cat's Paw.)*
Citreus.

CHAMA.—Clamp, Clam, or Gaper.

Animal—a Tethys: Shell bivalve, rather coarse: hinge with a callous gibbosity, obliquely inserted in an oblique hollow; anterior slope closed.

This genus is by no means numerous, as it only contains twenty-five species, and they, for the most part, are rough and uncouth looking shells. The Chama cor is, however, an exception; it being usually smooth, and from its beauty and peculiarity of structure, is signalized from every shell in the numerous catalogue of Bivalves. This shell, which varies in size from two to five inches in diameter, is invariably a true fac simile of a perfect heart; its top being surmounted by the beaks which wind round towards the hinge in the most graceful curvature possible.

The genus Chama affords a subject for amazement rather than admiration, for some of its species grow to an uncommon size; the Chama hippopus, for instance, (or Bear's-paw clam), is a specimen, of the general propensity to unusual aggrandizement: the shell is usually of a yellowish cast, with pink spots and murications, and is found

from one inch to near a foot long. But this dimension appears nothing when compared to the monstrosity of the Chama gigas or giant clam, which, from a quarter of an inch, will advance to the enormous size of four and a half feet in breadth; and two valves frequently weigh between five and six hundred pounds.

Of this species there are many varieties, they are mostly, however, more or less ribbed and foliated, sometimes imbricate or scaly; the usual color of the commoner sorts is a dirty white, but the rarest are those which have a fine red-pink, or yellow tinge. Some of them, when perfect, are highly prized. The cartilage of the hinge has a dull brown color, but when polished and cut in ovoid, its iridescence is so brilliant that it rivals the opal in beauty, and has even been sold for it.

A grand mark of distinction in this genus is, that the posterior slope is usually open or gaping, not unfrequently having its margin crenulate. The valves are mostly inequilateral, one protruding beyond the other, and often appearing as if deformed. The hinge has usually a callous gibbosity, inserted in an oblique hollow.

The anterior slope is usually closed. There is one species of the Chama, the concamerata, which is in itself a curiosity; for, in the interior of each valve, there is placed an additional one of smaller dimensions, which gives the shell an appearance of being double.

The more beautiful species of this genus are those which are richly foliated or spined,—as the Chama lazarus, gryphoides, and arcinella; the varieties of which are sometimes highly worthy of admiration.

It seems a principle with the Chamæ, (like the spondyli), to affix themselves to any extraneous substance accident throws in their way. They often adhere to rocks,

stones, and various shells; however, they in many instances seem to give a preference to some particular genus of shells, for the Chama arcinella is more commonly found affixed to that species of murex called the thorny woodcock, than to any other body known. However, it retains a partiality for others of the murices, especially those often known under the name of triplices. The American, Indian, and Atlantic Oceans; and the Mediterranean, Caspian, and Adriatic Seas, all produce infinite varieties of this genus. The Chama Foliacea is found fossil in Campania.

CHAMA.—Clam.

A. *Closed.*

*Cor. *(Fool's Cap C.; Cockle.)*	Bicornis.
Moltkiana.	Arcinella (*Hedge-Hog*)
Hippopus *(Bear's Paw Clamp.)*	Concamerata.
Antiquata.	Macerophylla.
Trapezia,	Foliacea.
Semiorbiculata.	Arata.
Calyculata.	Fusca.
Cordata.	Citrea.
Satiata.	Thaca.
Oblonga.	Rugosa.
Lazarus.	Gryphica.
Gryphoides.	Coralliophaga.

B. *Gaping.*

Gigas (*Furbelow'd Clamp, Giant Clam.*)

ARCA.—Ark.

Animal—a Tethys? Shell bivalve, equivalve; hinge with numerous sharp teeth, alternately inserted between each other.

The Arca, of which there are forty-three species, are readily distinguished from the other Bivalves, by the peculiarity of the hinge; which, without exception, is composed of numerous sharp teeth, alternately inserted into or between each other. The line of direction of the hinge admits, however, of two variations: in some species, as the Arca Noæ, barbata, &c. it is perfectly straight; in others, as the Arca pectunculus, pilosa, &c. &c. it is arched or curved. However, in all the species, the same description of hinge exists, though in some it may be differently situated.

The forms of the Arks vary exceedingly; some are elongated, as the tortuosa, Noæ, and barbata, and are usually covered with a brown epidermis; in the barbata or bearded ark, the greater part of the surface of the shell is concealed by a thick bristly or hairy covering. There are many arks which gape at the outer margin; others, on the contrary, are perfectly close. Some have the margin entire; others, again, are crenulate, and several have prominent angular slopes, which give the shell an appearance of being eared; the anterior slope is, however, far the most prominent of the two. The next variation of form is manifest in the Arca senilis, granosa, and rhomboidea, which rather partake of the shape of a heart, than of any other form. They are, besides, somewhat gibbous, and usually covered with

smooth or muricate grooves, not unfrequently having their whole surface covered with a brownish or greenish-black epidermis.

The next form that the ark presents itself in, is that of a roundish or suborbicular description. The Arca Glycymeris and pilosa are sufficient examples; they are for the most part smooth on the outside, except where the longitudinal striæ are placed; which striæ are frequently more articulate in the interior than on the exterior, and often terminate at the inner margin, in determined elevated teeth.

This genus contains but little beauty, though some of its species are considered rare.

The Ark is found in the European, Indian, American, and Atlantic oceans: the Baltic, Northern, and Red seas also produce some species.

The Arca nucleus is found fossil, as is also the Arca fossilis, in the Duchy of Limbourg.

ARCA.

A. *Margin very entire, beaks recurved.*

Tortuosa.

B. *Margin entire, beak inflected.*

*Noæ (*Noah's Ark.*)	Striata.
*Barbata (*Bearded A.*)	Pulchella.
Modiolus.	Afra.
Pella.	Fossilis.
Ovata.	Cancellata.
Pellucida.	Minuta.
Rostrata.	

C. *Margin crenate, beaks recurved.*

*Lactea.
Nodulosa.
Antiquata.
Senilis.
Granosa.
Corbicula.
Decussata.
Æquilatera.
Pallens.
Cucullus (*Chambered A.*)
Magellanica.
Reticulata.
Candida.
Indica.
Jamaicensis.
Campechensis.
Lata.
Senegalensis.

D. *Margin crenate, beaks inflected.*

Undata (*Lettered A.*)
Pectunculus (*Spotted A.*)
Pectinata.
*Glycymeris (*Orbicular A.*)
Pilosa.
Nummaria.
*Nucleus (*Silvery A.*)
Rhomboidea.
Marmorata.
Angulosa.
Scapha.

OSTREA.—Oyster and Scallop.

Animal—a Tethys: Shell bivalve, generally with unequal valves, and slightly eared; hinge without teeth, but furnished with an ovate hollow, and mostly lateral transverse grooves.

There are no fewer than one hundred and thirty-six species in this genus, and which constitute an inexhaustible mine of endless beauty and variety.

The Ostreæ may be divided into two classes: the first is that which comprises the innumerable varieties of escallops or scallop shells; the second (and much the least numerous) is that which includes the species somewhat resembling the common oyster. The former division is, for the most part, composed of very elegant specimens; their form is usually regular, and their surface is adorned with elevated divergent ribs, in number from five to forty, which proceed from the tip of the beaks, to the extremity of the margins, and there terminate in a fine scalloped or vandyked outline, describing in their course the most graceful expansion possible. It usually happens that the Ostreæ are inequivalve, that is, the degree of convexity often differs in the two shells of the same animal, as in the Ostrea ziczac, jacobæa, &c. &c. which invariably have the upper valve flat, while the lower one remains of a convex form. However, in other species, as the Ostrea pallium, (ducal mantle), &c. &c. the shells are equivalve, or both possessing the same degree of rotundity and gibbosity.

It is remarkable that many of the Ostreæ have the upper valve adorned with bright colors, and the lower paler: this occurrence is particularly observable in the Ostrea pleuronectes, known by the name of the compass or flounder Pecten, which has one valve perfectly white, and the other of a brownish or reddish cast. This species is also in possession of another peculiarity, which is, that it invariably gapes at both ends; whereas, in other species, the gape is only at one end.

The situation of the beaks often varies considerably among the Ostreæ; some, as the maxima, jacobæa, &c. &c. having them placed in the centre; whereas, in the Ostrea Lima, glacialis, &c. they are situated obliquely or

on one side, which gives the outline of the shell an appearance of slight distortion, occasioned by one margin being straight and flattened, while the other remains round and inflated. There is also considerable variation in the size and form of the ears, which in some species are nearly of the same dimensions, but in others are unequal, having one much larger than the other; and some are so small as hardly to be discernible.

The ears of many of the scallops are almost smooth on the outside, whilst others have them rough, and even spined. The Ostrea pallium, and others, have one ear ciliate, and are spined within. The exterior of the shells, as has been before observed, is usually covered with elevated longitudinal ribs and grooves, which are variously diversified with beautiful colors and fine chequer-work. The ribs are mostly covered with undulate and transverse striæ, not unfrequently assuming the appearance of elevated scales, as in the Ostrea imbricata and dubia. In others again the striæ are crenate, as in the Ostrea radula; and some, as the Ostrea nodosa, &c. have large knobs or tubercles raised upon the ribs. The margins of the interior of the Ostreæ are mostly crenate or toothed, and are often beautifully colored.

The hinge is universally without teeth, and is furnished with an ovate hollow; in the vicinity of which are placed lateral transverse grooves, which run in a parallel direction in each valve, but do not lock into each other, as in the genus Arca. This division of the Ostreæ, viz. the scallops, have the faculty of leaping out of the water, even to the height of half-a-yard, or more; and, opening their shells, they eject the water contained within them; after which, sinking under water, they suddenly close their shells with a loud snap.

The common scallop, Ostrea maxima, is found in most European seas, in large beds, from which they are dredged-up by the fishermen, and afterwards pickled and barrelled for sale; in some instances also they are brought to market in the state they are caught, and are eaten fresh.

These shells were formerly worn by pilgrims, on their hat or coat, as a mark of their having crossed the sea, for the purpose of paying their devotions at the holy shrine, in Palestine: in commemoration of which, they are still preserved in the armorial bearings of many families of distinction. Scallops delight in harbouring among fuci and zoophites.

The second class or division of Ostreæ consists of those which in construction, substance, and coloring, are more nearly allied to that sort of shell so universally known by the name of the common or eatable oyster. The species of this division are mostly of a much more irregular form than the scallops, and are usually very rugged, unfinished looking shells. The hammer oyster (Ostrea malleus) is perhaps the most remarkable of all this tribe, its form resembling that of a long headed hammer, or more properly a pick-axe; there are two distinguishable varieties of it, viz. the white and the black, both of which, when in fine preservation, are considered rare and valuable. These shells are rough and plaited on the outside, but their inside is smooth and glossy, having a steel-blue color or metallic lustre diffused over the surface.

The hinge of some of the species, as the Ostrea perna and isognomon, has a perpendicular grooved line attached to it. Some, again, as the Ostrea vulsella, &c. gape at the hinge; others terminate in a long beak from the hinge upwards, as is the case in the Ostrea cornucopiæ (horn of plenty) and virginica. Some species have all

the appearance of a dried leaf, such as the Ostrea folium, &c. &c. which often grows to the roots and stumps of trees, especially the magnifera; they are also often found affixed to the Gorgoniæ.

The common oyster (Ostrea edulis) is too well known for its nutritious and palatable properties to require much description; suffice it to say, that the exterior of the shell is usually covered with undulate and imbricate scales, of a yellowish or pinkish olive cast, and the old shells are often covered with various adhesions, such as anomiæ, serpulæ, lepades, sertulariæ, and other marine productions. The interior of the shell has generally a pearly appearance, and specimens are often found containing pearls.

They are to be met with in most seas, affixed to rocks; and in some places are considered so profitable a branch of traffic, that the greatest care is taken to promote their generation and growth. By proper management their multiplication becomes immense. They are formed into large layers or beds, extending many miles: these beds generally, in favorable seasons, prove a submarine mine of wealth to their proprietors.

Almost all seas abound with Ostreæ. The Ostrea diluviana is found fossil in the calcareous mountains of Sweden.

OSTREA.

A. *Valves furnished with ears, and radiated.* — Scallop.

a. *equilateral; ears of the valves equal.*

*Maxima. (*Common Scal.*) Striatula.
*Jacobæa (*Mediterranean S.*) Minuta.
Ziczac. Pleuronectes (*Compass S.*)

Laurentii.	Lutea.
Japonica.	Muricata.
Magellanica.	Conspersa.
Hybrida.	Nodulosa.
Radula (*Royal Mantle*)	Radiata.
Imbricata.	Punctata.
Subrotunda.	Aculeata.
Plica.	Plana.
Crenata.	Pusilla.
*Sinuosa.	Flavescens.
Squamosa.	Flabellum.
Dubia.	Spondyloides.
*Subrufa.	Violacea.
Versicolor.	Aurantia.
Rosea.	Vittata.
Fusca.	Miniata.
Tenuis.	Inflata.

b. *Ears unequal; one of them generally ciliated, with spines within.*

Pallium (*Ducal Mantle.*)	Gibba.
Sanguinolenta.	Sulcata.
Maculosa.	Histrionica.
Nodosa (*Duck's Foot.*)	Islandica.
Pes-felis (*Cat's Foot.*)	Triradiata.
Pellucens.	Fuci.
Obliterata.	Tigerina.
Sanguinea.	Septemradiata.
*Varia.	Arata.
*Pusio (*Wrinkled S.*)	Senatoria.
*Obsoleta.	Citrina.
*Lævis.	Turgida.
*Glabra.	Sulphurea.
*Opercularis (*Painted S.*)	Porphyria.

Vitrea.
Tranquebaria.
Sauciata.
Crenulata.
Innominata.
Rufescens.
Squamata.
Anonyma.
Decemradiata.
Tenuis.
Valentii.
Media.
Crocea.
Florida.
Ochroleuca.
Mustelina.
Flammea.
Incarnata.
Guttata.
Depressa.
Regia.
Palliata.
Seminuda.
Modesta.
Principalis.
Versicolor.

c. *Valves more gibbous on one side.*

Flavicans,
Fasciata.
Fragilis.
Lima (*File.*)
Glacialis.
Hians.
Excavata.

B. *Rough and generally plaited on the outside.*—Oyster.

Malleus (*Hammer O.*)
Vulsella (*Tongue Shaped O.*)
Anatina.
Diluviana.
Folium (*Leaf O.*)
Orbicularis.
*Edulis (*Common O.*)
Semiaurata.
*Striata.
Fornicata.
Sinensis.
Spondyloidea.
Forskahlii.
Plicatula.
Rostrata.
Virginica.
Cornucopiæ (*Horn of plenty.*)
Parasitica.
Exalbida.
Cristata.
Senegalensis.
Stellata.
Ovalis.
Papyracea.
Annulata.
Retusa.

C. *Hinge with a perpendicular grooved line.*

Perna (*Oblong O.*)	Legumen.
Isognomon (*Rudder O.*)	Alata.
Ephippium (*Saddle O.*)	Mytiloides.
Picta.	Torta.

Pes-lutræ.

ANOMIA.—Anomia or Antique Lamp.

Animal—an emarginated, ciliated, strap-shaped body; with bristles or fringe affixed to the upper valve; arms two, linear, longer than the body; connivent projecting, alternate on the valve, and ciliate on each side, the fringe affixed to each valve: shell bivalve, inequivalve, one of the valves flattish, the other gibbous at the base, with a produced beak, generally curved over the hinge: one of the valves often perforated near the base: hinge with a linear, prominent cicatrix, and a lateral tooth placed within, but in the flat valve, on the very margin: two bony rays for the base of the animal.

Of this curious genus of Bivalves, there are fifty-one species described; however, several out of that number have hitherto only been found in a fossil or petrified state.

Those which are recent, or found alive in the sea, are frequently rare and valuable. The shells are usually inequivalve, one of them often flattish, the other gibbous at the base, terminating in a produced beak, which curves upwards over the hinge, and frequently has a small perforation in it, near the base; through which the animal

thrusts a strong ligament, by which it affixes itself to different marine substances, as fuci, crabs, spines of echini, and especially to the stars of the madrepora prolifera.

The form of the Anomia differs materially, some resembling the shape of an oyster, as the Anomia cepa, ephippium, &c. &c. all of which have a large hole in their flat valve. Others, again, are nearly orbicular, as the Anomia craniolaris, placenta, &c. &c. and some are oblong, like the Anomia pectinata, &c. &c. and many of them, when looked at in profile, nearly resemble the form of an antique lamp, as the Anomia caput-serpentis, &c. &c. and others bear a strong affinity to the hooked or curved beaks of a parrot, as is manifested in the Anomia psittacea, &c. &c.

The prevailing color in this genus is that of a dirty yellow, or dusky white; however, some are bright yellow, as the Anomia electrica.

The Anomia cepa (the onion peel), and the Anomia sella (the saddle oyster), have a fine coppery or bronze-like appearance; and the Anomia capensis and sanguinolenta have a fine pink or red coloring. The Anomia flexuosa, and other similar species, have their shells of a smoke color, or olive black, and some are found of a perfect shining jet black.

Some of the Anomiæ are almost smooth, while others, on the contrary, are ribbed and striated; others, again, decline on the fore-part, and have a groove or channel running down the middle of the shell.

The Anomiæ are for the most part thin, delicate shells, and usually semitransparent. The Anomia placenta (the cake) but commonly called the Chinese window oyster, is, when in a young state, almost transparent, and is by some trifling polishing process, reducible to a state nearly

resembling glass; and, as is reported, frequently made use of by the ingenious Chinese as a substitute for it.

The hinge of the Anomia admits of considerable variation; but its most prominent feature is that of being furnished with a linear prominent cicatrix, and a lateral tooth placed within; and in the flattest valve, quite on the margin, are placed two bony rays, or linear callosities, which serve as a base for the animal. However, some have only one tooth or ray in each valve. The interior of these shells is often silvery, and the margin is frequently crenate, notched, or toothed, but in many it is perfectly entire. Although the generality of Anomiæ are moderately smooth on the outside, yet there are two exceptions to be found in the Anomia spinosa and muricata, both of which are covered with striæ, which terminate in scales and hollow spines, almost as long as the shells.

The European, Indian, American, and African oceans, supply many species of the Anomia, as also do the Mediterranean and Northern seas.

There are no less than fifteen or sixteen species to be met with in a fossil state. England, Germany, and Switzerland produce most of them.

ANOMIA.—*Anomia.*

Craniolaris.
*Pectinata.
*Ephippium (*Green Onion-rind*)
*Cepa (*Onion-peel.*)
Electrica (*Small amber A.*)
*Squamula.
Patelliformis.
Scobinata.
Aurita.
Retusa.
*Gryphus.
*Pectens.
Striatula.
Dorsata.

Psittacea.	Flexuosa.
Tridentata.	Rugosa.
Spondyloides.	Placenta (*Chinese window O.*)
*Truncata.	Sella (*Saddle O.*)
Reticularis.	*Spinosa.
Plicatella.	Aculeata.
*Crispa.	Muricata.
*Lacunosa.	Squama.
Pubescens.	Punctata.
*Cuspidata.	Undulata.
Farcta.	Capensis.
Caput-serpentis.	Detruncata.
*Terebratula.	Sanguinolenta.
Angulata.	Vitrea.
Hysterita.	Cranium.
Biloba.	Cylindrica.
Ventricosa.	Nucleus.
Gryphoides.	Avenacea.

Sandalium.

MYTILUS.—Muscle.

Animal allied to an Ascidia: shell bivalve, rough, generally affixed by a byssus or beard of silky filaments; hinge mostly without teeth, with generally a subulate excavated longitudinal line.

Of the genus Mytilus there may be enumerated sixty-four species; though some of these are a little indistinct,

yet the greatest proportion of them bear a near alliance to the general form and character of the common or eatable muscle. There are, indeed, some exceptions, such as may be observed in the Mytilus crista-galli (cock's-comb oyster), and the Mytilus margaritiferus (true mother-of-pearl shell,) and others of a similar description; most of which give strong evidence of belonging to the ostrea or oyster, rather than Mytilus or muscle genus. However, the hinge seems to regulate the arrangement in most instances, and in the Mytilus it is usually without teeth, having generally a subulate excavated line in place of them. However, some have little denticulations with alternate grooves, which amount in number from ten to fifty in different species. The Mytilus niger has the greatest number of any, viz. one hundred. The Mytilus crista-galli and the like, affix themselves to Gorgonia and other bodies, not by a beard or byssus, as is usual with other muscles, but by a formation of the shell itself, which assumes the appearance of several distinct claws or hands, by which the shell is secured to whatever body it may have selected for its basis.

The greatest part of this genus exhibit internally a pearly appearance, and some (when uncoated and polished) afford the brightest radiance possible. The Mytilus margaritiferus is renowned for the iridescent colors it displays, and is, moreover, famous for the fine and valuable pearls it engenders within its silvery valves. The young shells of this species, are sometimes so different to the adults in appearance, that they can scarcely be recognized for the same. Some of this genus possess the faculty of penetrating and eating away coral-rocks, hard marble, and limestone; into which they insinuate and immure themselves so artfully, that it becomes ne-

cessary to break the stone before there is a possibility of withdrawing the shell and its inhabitant. Of this description are the Mytilus lithophagus and rugosus. The latter is sometimes found in lakes as well as seas.

There are some muscles, which, on a superficial glance, might be mistaken as belonging to the genus Mya; such are the Mytilus versicolor, discors, and afer; but, by a minute inspection of the hinge, the error would soon be discovered. The general appearance of muscles differs greatly, some being perfectly smooth, and beautifully marbled and variegated with fine coloring; others are elegantly radiated with purple and white, like a tulip; and some again are coarsely ribbed and grained with minute tubercles, making the shell quite rough, and of one color only, such as black, blue, green, yellow, and brown. But they are most of them indebted to their epidermis for whatever outward color they may possess; which, when removed, often presents so different a surface, that even an adept might be puzzled to recognize two shells of the same species. Some of the cuticles or skins are often bearded or shaggy, and, in some instances, the valves gape, as in the Mytilus bilocularis, and other similar species.

However, almost the whole of the different species of muscles, seem to accord with the habits of the common or eatable muscle (Mytilus edulis), which invariably affixes itself to other bodies, by means of its silky byssus; and is found in immense beds or layers, consisting of many myriads.

The Mytilus cygneus and anatinus, (both fresh-water species), frequently become the food of ducks and crows; the latter of which, when they find the shell too hard, mount with it into the air, and then letting it fall, they pick out the fish from the broken shell.

The Indian, Atlantic, American, and Northern oceans, produce many species; some are also from New Zealand, the Red Sea, Mediterranean, and Russian seas.

The Mytili from the rivers in Africa, are often of great beauty when polished, and exhibit fine colors.

MYTILUS.—*Muscle.*

A. *Parasitical, affixed by claws.*

Crista-galli (*Cock's-comb Oyster*) Hyotis (*Gt. finger M.*)
Frons.

B. *Flat, or compressed: slightly eared.*

Margaritiferus (*Mother of Pearl M.*) Unguis.

C. *Ventricose or convex.*

Lithophagus (*Burrowing M.*) Ater.
Rugosus.
Bilocularis.
Exustus.
Barbatus.
*Edulis.
*Incurvatus.
Pellucidus.
*Umbilicatus.
*Curtus.
Ungulatus
Bidens (*Furrow-cap M.*)
*Modiolus (*Smooth M.*)
*Cygneus.
*Anatinus.
Viridis.
Ruber.
Albus.
*Discors.
Hirundo (*Swallow M.*)
Pholadis.
Striatulus (*Cross Beak M.*)
Vulgaris.
Plicatus.
Niveus.
Afer.
Smaragdinus.
Versicolor.
Coralliophagus.
Lineatus.
Faba (*Bean M.*)
Fluviatilis.
Fuscus.
Mammarius.
Persicus.

Pictus.	Cordatus.
Fasciatus.	Stagnalis.
Undatus.	Zellensis.
Purpureus.	Roseus.
Saxatilis.	Puniceus.
Argenteus.	Niger.
Fulgidus.	Lævigatus.
Azureus.	Dubius.
Murinus.	Polymorphus.
Testaceus.	Canaliculatus.
Virgatus.	Rostrum.

Camellii.

PINNA.—Fin Shell or Nacre, also Sea-Wing.

Animal—a Limax; Shell bivalve, fragile, upright, gaping at one end, and furnished with a byssus or beard; hinge without teeth, the valves united into one.

The number of species contained in this genus is limited to eighteen, and some of those are so alike, as barely to admit of being called distinct.

The usual form of the Pinnæ is something allied to that of the larger species of muscles, being long tapering shells, narrow at the beaks, and gradually expanding to a considerable breadth to the opposite extremity: however, there are instances where the form is more compressed.

The Pinnæ are by no means such entire or solid shells as the muscles, for they are (with few exceptions) exceed-

ingly brittle or fragile in substance, and almost invariably gape at one end. The greatest portion of the Pinnæ have longitudinal ribs, and on them are placed elevated transverse striæ, often terminating in imbricate arched scales, and prominent canaliculate tubular spines.

Such is the case with the Pinna rudis and muricata: in the younger shells of these two species, the spines appear but as minute prickles. In other specimens, as the Pinna saccata (satchel), &c. &c. the ribs are not so articulate, but more undulate, and are perfectly free from scales or spines. The colors of Pinnæ admit of some variation, though they usually have a horn-like appearance, which is often overcast with a steel-blue or copper-colored gloss. The hinge of the Pinnæ is invariably without teeth, notwithstanding which, the valves adhere so closely in the region of the beaks, that they appear as if united in one. There are some of the young shells of this genus that do not exceed an inch in length, whereas some of the adults grow to more than three feet.

This genus is famous for producing a very fine sort of byssus or beard, which it affords in large quantities; and the Italians frequently convert it into sundry articles of wearing apparel, which in appearance vie with the finest silk. These shells are usually found in smooth water and bays, with the smaller end sticking in the mud or sand, and the wide end somewhat open. The animal, in some instances, is accounted excellent and luxurious food.

The Mediterranean produces Pinnæ in great number: they are also to be found in the Indian, American, Atlantic, and European oceans. The Adriatic and Red seas also supply some species. The Pinna, probably, derives its name from its resemblance to a wing, or fin of a fish.

PINNA.—*Sea Wing.*

Rudis.	Lobata.
Pectinata.	Vitrea.
Nobilis.	Incurva.
*Muricata (*Red Sea Wing.*)	Bicolor.
Rotundata (*Giant S. W.*)	Exusta.
Squamosa.	Vexillum.
Carnea.	Papyracea.
Saccata (*Satchel.*)	Sanguinea.
Digitiformis (*White S. W.*)	Bullata.

III.

Univalves.

SHELLS OF ONE PART ONLY, AND HAVING A REGULAR SPIRE.

ARGONAUTA.—Paper Sailor.

Animal—a Sepia or Clio: Shell univalve, spiral, involute, membranaceous, one-celled.

THE genus Argonauta contains but five species; and, in so small a number, much variety is not to be expected.

The form throughout is generally like that of a scroll, with a very large aperture, and mostly a double carinated outer margin. However, in the Argonauta vitreus (the glassy nautilus) the margin is but single: this rare and beautiful species is by far the most costly of any.*

The shells of this genus are remarkable for their exces-

* There are only three shells of this species known; one in the possession of the Earl of Mountnorris, another in the Public Collection at Paris, and a third in the private collection of a French gentleman.

sive thinness, brittleness, and lightness. The Argonauta argo, usually known by the name of the paper nautilus, is the identical shell supposed in the early ages of society to have first taught men the use of sails.

A mucilaginous animal, called poulpe*, is often mistaken for the paper-nautilus; it is seen sailing on the ocean with its arms erect, and a membrane thrown out between them, by which means it is driven forward, like a vessel under sail. The Mediterranean often has whole fleets of these diminutive navigators floating on its calm surface.

The color of the Argonautæ is mostly blueish, or yellowish white, having the keel often tinged with a brownish hue. As to size, the Argonautæ differ greatly; the argo, for instance, will often grow to ten or twelve inches in width; whereas the cornu and arctica seldom exceed three or four lines in diameter.

The Mediterranean and Indian seas produce some varieties; others are from the Cape of Good Hope, and some inhabit the Northern and Greenland seas.

None of this genus have hitherto been found fossil.

They are supposed to have derived their name from the Argonautæ.

ARGONAUTA.—*Paper Sailor.*

Argo (*Paper Nautilus*) Cymbium (*Minute P. S.*)
Vitreus. Cornu.
Arctica.

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* Mr. Mawe in his "Shell Collectors' Pilot" has given an account of this animal, which had before been supposed to belong to the Argonauta Argo.

NAUTILUS.—Pearly Sailor.

Animal—(vide Rumpf. Mus. tab. 17. *fig.* B.) *Shell univalve, divided into several departments, communicating with each other by an aperture.*

This genus contains no less than thirty-one species. They are nearly allied in point of general formation and structure; but the most prominent mark of distinction is, that most of the species have their whorls divided into separate compartments or chambers, which are connected by a little tube or pipe (syphon), which runs spirally throughout the shell. This syphon is sometimes central in the shell, and sometimes contiguous to the surface.

The Nautilus Pompilius, when bisected, exhibits in an eminent degree the pearly concamerations for which this genus is famous. The inhabitants of the East often convert fine specimens of the above species into drinking cups, whose surface they carve into various devices and ornaments; they also frequently remove the outer coating entirely, and thereby bring the shell to a beautiful pearly mass. The umbilicated varieties of this species are accounted exceedingly scarce.

The general form of the Nautili is mostly spiral or scroll-like, some having their whorls contiguous, as the Pompilius, calcar, crispus, &c. and others having them detached or separated, as the spirula, &c. But others, again, have a very different formation, being tooth or funnel-shaped, almost like some of the Dentalia; such are the fascia, legumen, obliquus, &c.

The size of the Nautili differs exceedingly; some are so small as only to be defined by the microscope, while

others, on the contrary, (especially some of the fossil species), have been known to exceed two feet in diameter.

Some species of this genus are found adhering to coral rocks, the siphunculus for instance, is often brought from the coral reefs on the Sicilian shores. Among the three or four fossil species, the Nautilus helicites is worthy of notice, as coming from St. Peter's Mountain at Maestricht.

The Nautilus belemnita, or thunder-stone, is also remarkable, on account of its being considered by the vulgar as a thunder-bolt, and only to be found after a storm. They are found fossil in most parts of Europe, and, when burnt or rubbed, smell like rasped horn.

The American and Indian Oceans produce some of the species of the Nautili, as also do the Mediterranean, Adriatic, and Red Seas; but by far the greater number are found on the European and British coasts. Most of the species are minute.

NAUTILUS.—*Sailor.*

A. *Spiral, rounded, with contiguous whorls.*

Pompilius (*Gt. chamber'd S.*) *Crassulus.
*Calcar. *Lobatulus.
*Crispus. *Carinatulus.
*Beccarii. *Subarcuatulus.
*Lævigatulus. Balthicus.
*Depressulus. Helicites.
*Umbilicatulus. Rugosus.
Umbilicatus.

B. *Spiral, rounded, with separate whorls.*

Spirula (*Ram's Horn.*) Spengleri.
Unguiculatus.

C. *Elongated and nearly straight.*

Semilituus.
Lituus *(Crozier.)*
Obliquus.
Raphanistrum.
Raphanus.
Granum.
Radicula.
Fascia.
Inæqualis.
Siphunculus.
Legumen.
Orthocera.

*Belemnita.

CONUS.—Cone.

Animal—a Limax: Shell univalve, convolute, turbinate: aperture effuse, longitudinal, linear, without teeth, entire at the base; pillar smooth.

Of this beautiful and valuable genus there are but eighty-three described as distinct species; however, that number is certainly very much under the real amount. The general form of cones is very similar; their principal differences consist in the coloring, marking, and banding, though form sometimes assists their arrangement in classes; as for instance, those shaped like the Conus marmoreus and imperialis, make one division. Another division is formed of those species which are similar to the Conus betulinus or butter-firkin, Conus glaucus, &c. all of which are of very broad and thick structure, quite the reverse to the Conus generalis or flambeau cone, which is very long and narrow, having its spire very acute and prominent.

The Conus textile (the embroidered or cloth of gold cone), and Conus aulicus or courtier cone, have their shapes something like a cylinder, contracted at each end, and nearly resembling the three following species, viz. Conus tulipa, geographicus, and bullatus; though they are distinguished by their wide mouths and inflated or bellied sides.

There perhaps is no genus throughout the whole of the shell tribes, which holds so important a station in collections as the cones; and it is difficult to decide whether they are most to be valued for their rarity or beauty.

The mention of a few of the most beautiful and valuable species, will be sufficient to give an idea how they are to be appreciated.

The Conus ammiralis or admiral cone, ranks first among the beauties and rarities of this genus. Of the high-admiral alone the varieties are incalculable; next come the vice-admirals, guinea-admirals (Conus genuanus), and others equally rare; most of which, when fine, are frequently valued at from five to twenty guineas. But this valuation appears trifling when compared to the sum that has been set upon the cedo-nulli; which, incredible as it may appear, amounted to no less than three hundred guineas!

Among the other rarities of the cone genus, the Conus arausiacus is much valued, as is also the Conus glaucus (the blue or grey cone), Conus magus (magician), Conus nobilis (yellow tiger), Conus arachnoideus (spider's-web), the Conus cingulum (box-wood cone), with an elevated girdle round it, from the Friendly Isles; and the varieties of the zebra cones from the South Seas.

The generality of cones have a smooth surface, and in most instances bear a high natural polish; however,

some, as the Conus nussatella and granulatus, are covered with granulated trrnsverse striæ, and even globular tubercles.

There is perhaps no other genus which affords so much beauty and diversity of coloring aud marking as the Conus; the Conus literatus, for instance, has its spots arranged in such a manner as often to resemble Hebrew, Greek, or Arabic characters. The Conus Ebræus is likewise subject to similar appearances. In other species the colors are arranged into different shades of cloudings, veins, marblings, dots, stripes, bands, and reticulations; each surpassing the other in point of beauty and elegance.

The far greater number of species come from the Indian Ocean, though some are brought from the shores of Africa and America, and others again from the South Seas.

CONUS.—*Cone.*

A. *Spire or turban nearly truncated.*

Marmoreus (*Black Tiger C.*) Virgo (*Virgin C.*)
Imperialis *Imperial crown C.* Capitaneus (*Captain C.*)
Literatus (*Alphabet C.*) Tribunus (*Tribune C.*)
Generalis (*Flambeau C.*) Miles (*Girdle; Sergeant.*)
Cingulum (*Box-wood C.*)

B. *Pyriform, with a rounded base; cylinder half as long again as the spire.*

Princeps.
Ammiralis (*Admiral C.*)
1 Larvatus.
2 Americanus.
a Anglicus.
b Coronatus.

a Regius.
a Ordinarius.
b Guineensis.
c Surinamensis.
a Summus.
Occidentalis.
a Cedo nulli.
Vicarius.
Senator.
Nobilis (*Yellow Tiger.*)
Genuanus (*Guinea Admi.*)
2 Papilio *Butterfly's wing C.*
Glaucus (*Blue or Grey C.*)
Monachus.
Minimus.
Rusticus.
Mercator (*Net-work C.*)
Betulinus (*Butter Firkin*)
Figulinus (*Oak-bark C.*)
Ebræus (*Hebrew C.*)

Stercus-muscarum *Fly-spot.*
Varius.
Achatinus (*Agate C.*)
Radiatus.
Leoninus (*Lion Rampant.*)
Jaspideus.
Nebulosus.
Oculatus.
Coffeæ.
Amadis (*False Admiral.*)
Fulmineus.
Arachnoideus (*Spider's web*)
Costatus.
Leucostictus.
Citrinus.
Insularis.
Coronatus.
Punctatus.
Zeylanicus.
Solidus.

C. *Elongated and rounded at the base; cylinder as long again as the spire.*

Clavus.
Nussatella.
Terebellum.
Coccineus.
Lætus.
Ochroleucus.
Lævis.
Affinis.
Violaceus.
Granulatus.

Polyzonias.
Bifasciatus.
Niveus.
Arausiacus.
Magus (*Magician.*)
Striatus (*Great Spectre.*)
Textile (*Gold Brocade C.*)
Aulicus (*Courtier C.*)
Thomæ.
Sinensis.

Spectrum (*Spectre C.*)
Bullatus.
Tulipa (*Tulip C.*)
Geographicus.
Nubicula.
Spurius.
Vexillum. (*Flag C.*)
Ventricosus.

CYPRÆA.—Cowry or Gowrie.

Animal—a Slug: Shell univalve, involute, subovate, smooth, obtuse at each end; aperture effuse at each end, linear, extending the whole length of the shell, and toothed on each side.

This beautiful genus contains no less than a hundred and twenty species, and these may again be subdivided into many hundred varieties. The Cyprææ are, however, much of the same formation, though their colorings, markings, and workings, are amazingly dissimilar; the greater part of them are smooth glossy shells, of exquisite brilliancy of color, and elegantly marked with dots, zigzag lines, undulations, streaks, &c. Such are the Cypræa mappa (map cowry), the Cypræa Argus (thousand eyes), and the Cypræa testudinaria (tortoise-shell cowrie). To these may be added the Cypræa vitellus (fallow-deer cowrie), the carneola (carnelian), the talpa (mole), and others of the like description.

There are other smaller sorts of Cyprææ, however, which are completely opposed to the last mentioned, except in the general form, and in having their mouth run the whole length of the shell: those which come under

this denomination are such as the Cypræa nucleus, cicercula, staphylæa, &c. &c. all of which have but little coloring, and are completely rough, from having their surfaces covered with small globular tuberculations or warts.

In the Cypræa pediculus, the shell, though rough, is not indebted to tuberculations for its rugæ, but to approximate parallel elevated ribs or striæ, which cover the whole of the shell.

There are four divisions in the Cypræa; the first includes those that have a manifest spire, such as the Cypræa Arabica (the nutmeg cowry), Cypræa amethystea (the young of Arabica); Cypræa exanthema, Cypræa plumbea (the young of exanthema); Cypræa oculata, and others.

Those, on the contrary, which are without a manifest spire, class with such as the Cypræa caput-serpentis (the serpent's head), Cypræa Mauritiana and moneta; the last of which, the Cypræa moneta, is fished-up by the negro women, three days before or after full-moon, and transported into Bengal, Siam, America, and the adjacent islands; where it is used by the native blacks in commerce, instead of money.

The third division is composed of the umbilicated or perforated varieties; such as the Cypræa ziczac, asellus, &c. And those species which are marginated form the fourth class: as for instance, the Cypræa moneta, annulus, &c.

One of the rarest, most valuable, and largest cowries is the Cypræa aurantium, or orange cowry, which is found, though very rarely, at the Friendly Isles. One of the raritics of the smaller sorts of cowries is the Cypræa rubiginosa, or iron-mould cowry.

The grand mark of distinction in the cowries is, that,

when arrived at maturity, the two lips on each side of their mouths are always beset with strong articulate teeth.

The greater proportion of the Cyprææ are from the Indian ocean; many, however, come from the American, African, and Mediterranean shores; some also from the South seas.

CYPRÆA.—*Cowry or Gowrie.*

A. *With a manifest spire.*

Exanthema (*False Argus.*)	Livida.
Mappa (*Map C.*)	Gibba.
Arabica (*Nutmeg C.*)	Turbinata.
Argus (*Eyed C.*)	Venerea.
Testudinaria (*Tortoise-shell C.*)	Purpurescens.
Stercoraria.	Albida.
Carneola (*Carnelian C.*)	Rufescens
Zebra.	Translucens.
Talpa (*Burnt-mouth C.*)	Punctulata.
Amethystea.	Tigrina.
Lurida.	Dubia.
Venelli.	Trifasciata.
Lota.	Conspurcata.
Fragilis.	Bifasciata.
Guttata.	Cylindrica.
Cinerea.	Teres.
Plumbea.	Ovata.
Oculata.	Minuta.
Histrio (*Harlequin C.*)	Sanguinolenta.
Aurantium (*Orange C.*)	Fasciata.
Ferruginosa.	Regina.
Undulata.	

B. *Obtuse, without a manifest spire.*

Caput-serpentis (*Viper's-head.*)
Reticulum.
Mauritiana (*Surinam Toad.*)
Vitellus (*Fallow Deer C.*)
Mus (*Mouse C.*)
Tigris (*Leopard C.*)
Flammea.
Olivacea.
Fœminea.
Lynx.
Isabella (*Orange-tipt C.*)
Ambigua.
Scurra (*Green-spot C.*)

C. *Umbilicated or perforated.*

Onyx.
Clandestina.
Succincta.
Zieczac.
Hirundo.
Asellus (*Wasp.*)
Erronea.
Ursellus (*Great Bear.*)
Pyrum.
Maculosa.
Pulla.
Indica.
Ovum.
Felina.
Atomaria.
Nebulosa.
Ochroleuca.
Stellata.
Subflava.
Leucogasta.
Variolosa.
Fulva.
Leucostoma.
Lincata.
Cancellata.
Lutea.
Badia.
Punctata.
Zonaria.
Conoidea.

D. *Margined.*

Cribraria (*Sieve C.*)
Moneta (*Money C.*)
Annulus (*Ring C.*)
Caurica (*Dark-spotted C.*)
Erosa (*White-spotted C.*)
Derosa.
Flaveola.
Spurca.
Oblonga.
Stolida.

Helvola.	Cruenta.
Ocellata.	Reticulata (*Netted C.*)
Poraria.	Rubiginosa *Iron-mould C.*
*Pediculus (*Sea Louse.*)	Miliaris.
Nucleus (*Wrinkled C.*)	Acicularis.
Madagascariensis.	Crassa.
Staphylæa.	Vinosa.
Cicercula.	Angustata.
Globulus (*Pearl C.*)	Similis.
Affinis.	Striata.
Squalina.	Chinensis.
Fimbriata.	Pusilla.

BULLA.—Dipper or Bubble.

Animal—a Limax: Shell univalve, convolute, unarmed with teeth: aperture a little straitened, oblong, longitudinal, verg entire at the base; pillar oblique, smooth.

This genus, which contains fifty-two species, is in some instances so nearly allied to the latter, i. e. the Cypræa, that much caution is necessary in order to prevent confusion in the classification; for many of the Cyprææ, when young, so nearly resemble some of the Bullæ, that authors have actually intermixed the genera. However, one grand mark of distinction in this genus is, that, in whatever stage of growth its species are found, they never have teeth on both their lips; the pillar-lip being invariably free from all sorts of denticulations or crenulations;

whereas, in the Cyprææ, both the pillar and outer lips are strongly mounted with articulate and prominent teeth. There is also a greater variety of form in the Bullæ than in the Cyprææ; as, for instance, the Bulla volva, or true weaver's shuttle, is of an elongated form, having its length much increased by two long beaks: this shell, though far from beautiful, is accounted a great rarity, and when fine bears a high price; it is from Jamaica and the parts adjacent. There is also a variety of this shell known by the name of the false weaver's shuttle.

The next variation of form is discernible in the Bulla ovum or poached egg, of which there are two varieties: the common sort (from Amboyna) is white without, and yellow within; the rarer sort (from the Friendly Isles) is white without, and pink within. These shells are less beaked and more gibbous than the latter species, and lead into the following orbicular or swollen species, such as the Bulla naucum, physis, ampulla or lapwing's-egg, &c. &c. These are without teeth, and somewhat umbilicated.

There is a curious exception to the general form of the Bullæ in the Bulla terebellum or auger dipper, whose shape is remarkably long and slender, and appears more like a lengthened olive than what it really is.

Some of the Bullæ, as the ficus, and rapa or turnip, are very similar to the genus murex; the latter species, i. e. the Bulla rapa, is esteemed a rarity. The former, on the contrary, is common, and very much resembles the shape of a fig.

The Bulla zebra, bifasciata, achitina, and others similar to those, are land species; they are in form nearly allied to the genus helix: and what is worthy of remark, the animals which inhabit them are oviparous, their

young being produced from eggs. The reverse varieties (that is to say, those having their whorls or spires twisted contrary to the usual direction, and having, at the same time, their mouths placed on the opposite side) are highly valued. The Bulla purpurea inhabits Africa, and is found in rice-fields.

The snail-shaped Bullæ, such as the fasciata, virginea, &c. &c. are most beautifully banded with parti-colored streaks; they are found in the rivers of Asia. The Bulla gelatinosa, is an inhabitant of the rivers of Denmark; the fontinalis is found in the Danube, and other species inhabit various lakes and rivers of Europe: in wet meadows, among moss, they are also to be met with. Some species of this genus are remarkable for the brittleness and lightness of their shells; such are the Bulla velum, vesica, &c. &c.

The inhabitant of one of the species, Bulla lignaria, and, in all probability, those of most of the genus, is furnished with an organ resembling the gizzard of a fowl, and which it appears to use for the purpose of masticating its food.

The different species of this genus are to be found in the Mediterranean, African, American, Indian, European, and Northern seas.

The Bulla, probably, derives its name from some of the lesser species resembling a dew-drop, or bubble of water caused by the rain.

BULLA.—*Dipper.*

Ovum (*Poached Egg.*)
Volva (*Weaver's Shuttle.*)
Birostris (*False Weaver's S.*)
Spelta (*Oblong D.*)

Verrucosa (*Warted D.*)
Gibbosa (*Gondola; Camel.*)
Naucum (*Sea Nut.*)
*Aperta (*Open D.*)
*Hydatis (*Paper D.*)
*Ampulla (*Lapwing's Egg.*)
*Lignaria (*Wood D.*)
*Regulbiensis.
Physis (*Striped D.*)
Amplustra (*Rose-bud D.*)
Ficus (*Fig.*)
Rapa (*Turnip.*)
Canaliculata.
Conoidea.
*Fontinalis (*Fresh-water D.*)
*Hypnorum.
Turrita.
Gelatinosa.
Terebellum (*Auger D.*)
Cypræa.
Virginea (*Orange Flag.*)
Fasciata.
Strigata.
Striatula.

Exarata.
Bifasciata.
Ambigua.
Zebra. [*Chersina.*)
Achatina (*Pink Mouthed*
Hyalina.
Ovata.
Ferruginosa.
Velum.
Vesica.
*Cylindrica.
Oliva.
Voluta.
Dominichensis.
Purpurea.
Spreta.
Solida.
Stercus-pulicum.
Scabra.
Akera (*Elastic D.*)
Soluta.
Truncata.
Carnea.
Patula.

VOLUTA.—Volute or Wreath.

Animal—a Limax: Shell one-celled, spiral; aperture without a beak, and somewhat effuse; pillar twisted or plaited, generally without lips or perforation.

It is far from an easy task to determine whether, in point of beauty or rarity, the genus conus, or the genus Voluta, should have the precedence. However, the latter would seem to have a right to claim it, for its species are principally admired for the elegance and variety of their forms; whereas the shape of the cones is so similar as to afford little or no material variation.

The one hundred and forty-four species of the Volutes are more or less celebrated for their beauty or scarcity, and are easily distinguished from all other Univalves, by having several teeth or plaits on the columella or pillar-lip. In some species, the number of teeth or plaits amounts but to four or five; whereas, in others, as in the olives, it is unlimited, and frequently extends to as many as thirty or forty. However, they are then much smaller and less articulate than when fewer. Among the innumerable varieties of the olives, the camp or panama (Voluta castrensis) is most conspicuous, not only from its peculiarity and beauty of marking, but also from the considerable magnitude it attains. The rest of the species of the olives, as the Voluta oliva, ispidula, and utriculus, &c. &c. are not remarkable for their scarcity, but for their astonishing beauty and variety, which is indeed infinite. Some of the rarer sorts of Volutes are the produce of the land, and are curiously distinguished from the rest of their genus by having their mouths shaped ex-

actly like a human ear; such are the Voluta auris-Midæ (Midas' ear), auris-Sileni, Judæ, Malchi, &c. The three first are found in the fens, marshy-woods, and swamps of India, and are numbered among the varieties of the genus. The last is an inhabitant of New Caledonia, and is also rare. The fusiform or spindle-shaped volutes constitute a large portion of the genus, and are usually known by the name of mitres; some of them are very elegantly formed and finely tinted in their coloring.

The species most generally known among these are the Voluta patriarchalis, the Voluta cardinalis, papalis (pope's mitre), and episcopalis or bishop's mitre, which is frequent in India; but the inhabitant or fish is said to be of a poisonous nature, if eaten, and to wound with a kind of pointed trunk those who touch it. The natives of the island of Tanna fix the shells in handles, and use them as hatchets. Among the rest of the elongated form may be enumerated the Voluta sanguisuga, caffra, vulpecula, plicaria, and others, some of which are considered rare.

The Voluta musica, or music shell, though not rare is very interesting, from the circumstance of having its markings arranged in parallel lines, like the five lines or a stave in music, upon which are placed small dots or punctures, in exact resemblance of the notes and other characters used in music. The wild music or bat Volute (Voluta vespertilio) is a curious variety of the above; as is also the Voluta Hebræa, which is esteemed a rarity.

Among the more beautiful species of the Volutes, the Voluta vexillum or orange flag Volute, is most conspicuous, and, in point of rarity, it yields to few. The Voluta lapponica, scapha, and Magellanica, also are in great esteem.

The Volutes, with few exceptions, are shells of a smooth

and polished surface; among the exceptions may be reckoned the Voluta turbinellus, ceramica, capitellum, and many of the mitres. The species of Volutes called melons, are mostly of large size; and some of them, as the Voluta Æthiopica or Ethiopian crown, and its varieties, have their whorls or spires surrounded with elevated hollow spines, forming a perfect coronation or thorny crown: most of this division are papillary at the tip, and among which may be classed the Voluta cymbium, olla, Neptuni, &c. &c.

There are many rare and valuable Volutes, one especially, which comes from Gamberoon, is in very high repute.

The Voluta fossilis has hitherto only been found in a fossil state.

The heavy and angulated turnips are worthy of notice among the Volutes, not only on account of the size they arrive at, but for their excessive weight, which, in comparison to most other shells, is really immense.

The different species of Volutes are found in various parts of the world; but, in all probability, the Indian seas produce the most; though the Atlantic, Pacific, Northern, and European oceans, also yield their supplies.

VOLUTA.

A. *Aperture entire.*

Auris-Midæ (*Midas' ear*)	Minuta.
Flammea.	Pusilla.
Sulcata.	Glabra.
Bifasciata.	Auris-Sileni.
Flava.	Auris-Judæ (*Judas' ear.*)

Auris-Malchi.
*Tornatilis.
*Jonensis.
*Alba.
Solidula.
Livida.
Coffæa.

B. *Subcylindrical, emarginated.*

Porphyria (*Camp Olive.*)
Oliva (*Olive.*)
Annulata.
Utriculus (*Quaker O.*)
Hiatula.
Jaspidea.
Nivea.
Ispidula (*Enamelled O.*)
Carneolus.

C. *Oboval, effuse, emarginated.*

Dactylus (*Six-plaited O.*)
Miliaria.
Monilis.
Exilis.
Persicula.
*Pallida.
Faba.
Glabella.
Prunum.
Reticulata.
Mercatoria.
Rustica.
Paupercula (*Zebra Rhomb.*)
Mendicaria.
Cancellata.
Elegans.
Ovum.
Marginata.
Nucea.
Conus.

D. *Fusiform.*

Tringa.
Cornicula.
Virgo.
Scabriuscula.
Ruffina.
Nubila.
Sanguisuga.
Caffra.
Morio.
Acus.
Vulpecula.
Plicaria.
Bullata.
Crenulata.
Scutulata.
Nigra.
Subdivisa.
Cruentata.

Exasperata.
Granosa.
Casta.
Leucozonias.
Maculosa.
Nodulosa.
Spadicea.
Aurantia.
Decussata.
Polygona.
Acuminata.
Biplicata.
Turricula.
Lineata.
Discors.
Striata.
Sulcata.
Lævigata.
Ocellata.
Nasuta.
Marmorea.
Barbadensis.
Clathrata.
Tricolor.
Turrita.
Syracusana.
Nitens.
Citrina.
Mucronata.
Rugosa.
Strigosa.
Fossilis.
Leucosticta.
Clathrus.
Virgata.
Leucostoma.
Variegata.
Filaris.
Volva.
Ziervoyclii.
Rhinoceros.
Costata.
Spuria.
Pertusa.
Cardinalis(*Cardinal'sMitre.*)
Episcopalis(*Bishop's Mitre.*)
Papalis (*Papal Mitre.*)
Patriarchalis.
Musica (*Music Shell.*)
Vespertilio (*Bat Music.*)
Arabica.
Hebræa (*Oriental Music.*)
Turbinellus (*Devil.*)
Capitellum.
Ceramica (*Larger Devil.*)
Pyrum (*Turnip.*)
Laponica (*Spotted Music.*)
Vexillum (*Orange Flag.*)
Flavicans.
Rupestris (*Lightning Music.*)
Nassa.
Craticulata.
Spiralis.
Magellanica.
Filosa.
Fuscata.

E. *Ventricose; the spire papillary at the tip.*

Æthiopica (*White mouthed Melon; Ethiopian Crown*)
Cymbium (*Clouded or Boat* [*Melon*)
Olla (*Melon.*)
Ampla.
Neptuni.
Navicula (*Gondola*)
Papillaris.
Indica (*Spotted Melon.*)
Scapha (*Lightning.*)
Cymbiola.
Præputium.
Glans.
Reticulata.
Spectabilis.

BUCCINUM.—Whelk.

Animal—a Limax: *Shell univalve, spiral, gibbous; aperture ovate, terminating in a short canal, leaning to the right, with a retuse beak or projection; pillar-lip expanded.*

This genus, which comprises two hundred species, is remarkable for the great and beautiful variety it affords, and by its resemblance is rendered difficult to separate from the genus murex; however, the leading distinction given to the Buccinum is, that its beak or canal is usually much shorter than that of the murex, and instead of leaning to the left, it inclines to the right. Besides which, the Buccinum is generally more gibbous or bellied than the Murex, especially when those species called tuns and helmets are referred to. The tuns are for the most part of a brittle and light fabric, and although some of them

grow to a large size, yet even the adults retain their characteristic fragility and thinness; their form is almost invariably very globose, but the mouth, unlike the helmets, is rarely beset with teeth.

The Buccinum dolium or spotted tun, and the Buccinum galea or ribbed tun, are the most abundant species; the Buccinum perdix or partridge tun is also well known to most collectors. It is perhaps worthy of remark, that the Buccinum galea has been known to attain the size of a man's head.

The species nearest allied to the tuns, are the helmets, but they are distinguished from them by having their two lips, with few exceptions, beset with a number of strong and articulate teeth; at the same time having their outsides covered with strong and prominent protuberances or knobs. Among the species of this description may be enumerated the three following, viz. Buccinum plicatum or plaited helmet, Buccinum cornutum or horned helmet, and Buccinum rufum or bull's-mouth, which is easily distinguishable by its nodulous or knotty belts and the fiery-red glow of its mouth.

There are also other well known helmets, as the draft-board, zebra, pin-cushion, and peacock species; the two latter of which are considered rare. However, one of the rarest species of the Buccina is to be met with in that division of the genus which contains the sort of shells usually called harps, of which there are several exceedingly beautiful and elegant varieties: the principal of which are the tortoise-shell, David's, bleeding, painted, and many-ridged harps; the latter of which is the Buccinum costatum of Linnæus, but is more generally known as the many-ridged harp; it surpasses all other varieties in point of elegance and scarcity, and of course is sought

after with great avidity by the collector. It is from the Isle of France, and has been sold for as large a sum as fifty pounds.

Among the other species of Buccina, the scoops may be considered of some importance. The most usual species are the Buccinum patulum (the common or wide-mouthed scoop), Buccinum monodon or the unicorn scoop, and Buccinum Persicum or the necklace, of which there are two varieties, and by no means common. The next formation that the Buccina take, is that which resembles, in some degree, the shape of the common English Whelk or Buccinum undatum; such are the Buccinum spiratum or joppa whelk, (which has the peculiarity of having its whorls channelled or spirally grooved), Buccinum scala or pulley whelk, and Buccinum lapillus or stone shell, whose animal yields a fine durable purple die. The inhabitant of the English whelk is often eaten.

One species of the Buccinum genus is remarkable for having its whorls surmounted with rows of foliations; it is, therefore, generally called the foliated bulb, and is the Buccinum bezoar of Linnæus.

The Buccinum tuba and spadiceum are so nearly allied to the genus murex, that it remains still a matter of doubt where they really out to be classed.

The division of Buccina which is more distinct than any hitherto enumerated, comprises those shells which are usually known by the name of needles; they are remarkable for their sharp, lengthened, and spiral form; which, added to the beautiful delineations that adorn some of the species, constitutes them elegancies, rather than rarities in the collections. The most common species of this sort of structure is the Buccinum maculatum

or marlin-spike, which often grows to nine or ten inches in length: there are other species, such as the Buccinum subulatum, crenulatum, &c. &c. &c. some of which are very beautiful.

The Buccinum fossile is found in a petrified state in Germany.

It appears that the Buccina are not confined to the sea only, for the Buccinum fluviatile is known to frequent the mouths of muddy rivers in India.

The Buccinum flumineum is also a fresh-water species, as is the Buccinum virgineum, which inhabits the rivers of Virginia.

The African, American, Indian, European, and Southern oceans, produce the greater part of the species; and many are found on the British shores, also some few in the Mediterranean.

This genus in all probability derives its name from some of its species being formed like a trumpet, cornet, or horn.

BUCCINUM — *Whelk.*

A. *Inflated, rounded, thin, subdiaphanous, and brittle.*

Olearium (*Clouded Tun.*)
Galea (*Brown Tun.*)
Perdix (*Partridge Tun.*)
Pomum.
Dolium (*Spotted Tun.*)
Caudatum.
Niveum.
Clathratum.
*Lineatum.
*Breve.
*Minimum.
*Obtusulum.

B. *With a short exserted, reflected beak; lip outwardly unarmed.*

*Minutum.	Pennatum.
*Læve.	Maculosum.
*Obtusissimum.	Bi ineatum.
Echinophorum.	Gibbum.
Plicatum (*Plaited Helmet.*)	Ventricosum.
Cornutum (*Horned Helmet.*)	Strigosum.
Rufum (*Bull's Mouth H.*)	Rugosum
Tuberosum (*Casket.*)	Ponderosum.
Flammeum (*Triangular C.*)	Recurvirostrum.
Testiculus (*Purse H.*)	Trifasciatum.
Decussatum (*Pincushion.*)	Senegalicum.
Arcola.	Ochroleucum.
Tigrinum.	Striatum.
Undulatum.	Cassis.
Cicatricosum.	Strigatum.
Tessellatum (*Dice C.*)	Tyrrhenum.
Abbreviatum.	

C. *Lip prickly, outwardly, on the hinder margin.*

Erinaceus.	Nodulosum.
Glaucum (*Bezoar Helmet.*)	Fimbria.
Vibex (*Agate C.*)	Papillosum.
Tessellatum.	Glans.

D. *Pillar lip dilated and thickened.*

Arcularia (*Fingers & Thumbs*)	Mutabile.
*Pullus.	Neriteum.
Gibbosulum.	

E. *Pillar lip appearing as if worn flat.*

Harpa (*Musical Harp.*)	Persicum (*Necklace Scoop.*)
Costatum (*Many ridged H.*)	Monodon (*Unicorn S.*)

Patulum (*Open S.*)
Hæmastoma.
*Lapillus (*Purple Staining* [*Whelk or Stone Shell.*)
Smaragdulus.
Tuba.
Pyrum.
Spadiceum.
Fossile.
Umbilicatum.
Candidum.
Scala (*Pully W.*)
Crassum.
Marginatum.
Labarynthus.
Rusticum.
Varium.
Filosum.
Coronatum.
Squalidum.
Crassum.
Fornicatum.

F. *Smooth and not included in the former divisions.*

Spiratum (*Joppa Whelk.*)
Pyrozonias.
Læviusculum.
Ocellatum.
Pyramidale.
Glaberrimum.
Strigosum.
Trifasciatum.
Leucozonias.
Cancellatum.
Obtusum.
Glabratum.
Stromboides.
Prærosum.
Australe.
Orbita.
Turgitum.

G. *Angular, and not enumerated in the former divisions.*

Undosum.
Affine.
Tranquebaricum.
Versicolor.
Cruentatum.
Sulcatum.
Rumpfii.
Bezoar (*Foliated Bulb.*)
Glaciale.
*Undatum (*English. W.*)
*Striatum.
Ciliatum.
Viridulum.
Carinatum.
Solutum.
Tænia.

Lineatum.
Macloviense.
Foliorum.
Textum.
Strigosum.
*Anglicum.
*Porcatum.
Lævissimum.
Igneum.
Plumatum.
Lyratum.
Clathratum.
*Reticulatum.
*Minutum.
Niveum.
Scalare.
Indicum.
Nodulosum.
Piscatorium (*Knobbed W.*)
St. Mauritii.
Armillatum.
Plicatulum.
*Vulgatum.
Stolatum.
Nanum.
Exile.
Chalys.
Verrucosum.
Alatum.
Nigropunctatum.
Nitidulum.
Lævigatum.
Lamellosum.
Scutalatum.
Haustorium.
Ventricosum.
Testudineum.
Catarrhacta.
Tahitense.
Lamellatum.

H. *Tapering, subulate, smooth.*

Maculatum (*Marlinspike.*)
Subulatum (*Tiger Spire.*)
Crenulatum.
Hecticum.
Vittatum.
Strigilatum.
Duplicatum (*Press Screw.*)
Lanceatum.
Dimidiatum.
Murinum.
Tigrinum.
Acus. (*Needle.*)
Succinctus.
Commaculatum.
Hastatum.
Aciculatum.
Phallus.
Flumineum.
Asperum.
Muricinum.
Tuberculatum.
Punctulatum.

Acicula.	Pugio.
Fasciolatum.	Canaliculatum.
Niveum.	Varicosum.
Mucronatum.	Cuspidatum.
Digitellus.	Cinereum.
Obliquum.	Virgineum.
Chalybeum.	Proximatum.
Fluviatile.	Monile.
Radiatum.	Cingulatum.
Lividulum.	Geminum.
Edentulum.	*Obtusulum.

STROMBUS.—Winged or Claw-Shell.

Animal—a Limax: Shell univalve, spiral; aperture much dilated; the lip expanding, and produced into a groove leaning to the left.

The distinguishing character of this genus, of which there are fifty-three species, consists in the position of its beak, which inclines to the left, instead of the right; however, as the younger shells of the genus are sometimes wholly destitute of any beak whatsoever, a confusion with many other genera has often taken place.

Almost the whole of this genus seem to have a propensity to extend their outer lip, either into the form of an expanded wing, (hence called alatæ or winged shells), or to continue it, in distinct situations, into long and

pointed spikes or claws; however, these appearances are only manifest in adults, the very young shells being totally without wings or claws.

The most prominent species of the division which has the lips terminated by claws or legs, are as follow: viz. Strombus chiragra or Devil's claw, Strombus scorpius or scorpion, Strombus lambis or spider-shell, and Strombus millepeda or thousand-feet. The number of claws, in the different species, varies from six to ten, and the Strombus pes-pelicani (the pelican's or cormorant's foot) has only four palmated claws, of a pale complexion. The claws in some species are nearly straight, and often smooth, whereas in others they are very much curved and covered with wavy nodules or knobs. The progressive growth of these shells is particularly worthy of notice: it has already been stated that the very young shells have no appearance of claws; however, when somewhat older, they begin to shew themselves in the form of short and open spouts; when farther advanced, they assume the shape they are to retain, but still they remain thin, hollow, and imperfectly closed; but when arrived at their destined or full growth, they become perfectly filled up and solid, and have a thick, strong, and heavy horn-like appearance.

Among those Strombi that are not ornamented by a decided wing, may be included the Strombus fasciatus, pugilis, and lentiginosus. The Strombus oniscus is totally destitute of any wing-like appearance; but those that have that feature most prominent, are the Strombus gallus or plough-alatus, Strombus auris-Dianæ (the ass's or Diana's ear,) Strombus latissimus, (a very rare species,) and Strombus gigas or the West India conch shell. There are others also that have nearly the same

peculiarity, such as the Strombus epidromis or mainsail alatus, the Strombus vittatus, canarium, &c. &c. &c. Though these latter species never grow to any magnitude, some of the former, as the latissimus and gigas, frequently attain a considerable size.

Among the oddities of this genus may be included the Strombus luhuanus, gibberulus, &c. which, from having some part of their whorls more gibbous or swollen than others, are generally known by the name of pouter alati, and are with great propriety called so, on account of their resemblance to that species of columbæ, or pigeons, called pouters. There are a great many beautiful varieties, some having scarlet, pink, or orange mouths, whereas others have the interior of their shells of a rich blue, purple, or yellow color.

The Strombus fusus or spindle, of which there are two varieties, nearly resembles a Murex, in having the beak rather straight, but approaches nearer to the genus Strombus, in being smooth, and having the lip toothed. The first variety of this shell has a short subulate beak, but the second variety (known by the name of the long-beaked spindle) is easily distinguishable from it, as the shell altogether is much more tapering and delicate, and its beak, when perfect, is nearly as long as all the rest of the shell. It is considered as one of the great rarities in collections, and is from the Straits of Sunda.

Among the Strombi which are differently formed to those already mentioned, the Strombus Tuberculatus, and the three following species, may prove sufficient examples: viz. Strombus palustris or ladle, from the meadows or Savannahs of the Indian Ocean; Strombus ater or black Strombus, from the fens of Amboyna; and Strombus aculeatus, or black Hercules' club, from the marshes of Africa.

It may be observed, that the three last are land species, and are characterized by their elongated or turretted shape, and having their whorls more or less beset with sharp knobs or prickly spines. One species of Strombus is remarkable for having its whorls turned contrary, it is the Strombus sinister, or left-handed Strombus, and is found fossil in Helvetia.

The Strombus spinosus is also found fossil. The Strombus fissurella is sometimes to be met with in India in a recent state, but is more frequently found fossil in Campania and in England.

The African, Indian, American, and European oceans alike furnish their supplies of this genus, and some few are indebted to the Mediterranean, Red, and Arctic seas for their existence.

STROMBUS.—*Screw.*

A. *The lip projecting into linear divisions or claws.*

Fusus (*Spindle.*)	Scorpius (*Scorpion.*)
*Pes-pelicani(*Pelican's foot.*)	Lambis (*Spider.*)
Chiragra (*Devil's claw.*)	Millepeda (*Millepede.*)

Clavus.

B. *Lobed.*

Lentiginosus (*Frog.*)	Pugilis.
Fasciatus.	Alatus.
Raninus.	Marginatus.
Gallus (*Plough.*)	Luhuanus.
Auris Dianæ (*Ass's Ear.*)	Gibberulus (*Powter.*)

Oniscus.

C. *Dilated.*

Lucifer (*Spiked Whelk.*)
Gigas (*Pink Conch.*)
Latissimus.
Epidromis (*Main Sail.*)
Minimus.
Canarium (*Partridge.*)
Vittatus.
Succinctus.
Spinosus.
Fissurella.
Urceus (*Pitcher.*)
Tridentatus.
Dentatus.
Costatus.
Bryonia.
Affinis.
Latus.
Lævis.
Vexillum.
Norwegicus.

D. *Tapering, with a very long spire.*

Tuberculatus.
Palustris (*Ladle.*)
Ater.
Lineatus.
Punctatus.
Vibex.
Auritus.
Aculeatus (*Black Hercules Club.*)
Agnatus.
Dealbatus.
Fuscus.
Marginatus.
Lividus.
Striatus.
Sinister.

MUREX.—Rock or Trumpet-Shell.

Animal—a Limax: Shell univalve, spiral, rough, with membranaceous sutures; aperture oval, ending in an entire, straight, or slightly ascending canal.

The most prominent character which distinguishes the one hundred and eighty-two species of this genus from

those of the two preceding genera, consists in the beak; which, unlike them, neither inclines to the right nor left, but is almost invariably straight, and very much produced, sometimes turning a little upwards.

The murices are mostly shells of unequal form, arising from their surfaces being usually covered with spines, knobs, striæ, or foliations. There is one division which is peculiar for the uncommon length of beak, which most of its species are remarked for; the principal of which is the Murex haustellum or snipe's-head, and the Murex tribulus, of which there are two varieties, the commoner sort being called the thorny woodcock, and the rarer, after the French, peigne de Venus, or Venus's comb, which is not only considered a rarity, but is perhaps one of the most elegant shells throughout the genus. To this same division belong also the Murex cornutus or horned snipe's-head, and Murex brandaris or thorny snipe's head; the former of which grows to a considerable size, and is by no means common.

The Venus' comb, when perfect, is most beautifully adorned with thin and delicate spines, exquisitely adjusted in regular order, and placed in rows down the shell. The name it bears is exceedingly applicable. The next division includes those that have a much shorter beak, and are not spinous; such are the Murex trunculus, Murex pomum, Murex decussatus and radix; the latter of which is very highly rated, it grows to a considerable size, and its shell is beset with numerous rows of frondose, black, undulate spines; which, being contrasted with opaque-white, renders it at once an object of great beauty and magnificence.

The next class or division of the Murices, comprises those species which are commonly known as triplices, or

more properly purpuræ, as the animals inhabiting most of the shells of this division are known to possess the property of affording a rich purple juice or liquid; hence the whole genus has by some been called Purpura. The species of this division, and of which there are almost endless varieties, have their sutures composed of crisped foliations, and acute angular ramifications; among those best known are the pink and yellow-mouthed varieties of the endive purpura, the rose-bush triplex, and the water-wheel triplex, all of which are exceedingly rare and beautiful. The number of rows in the foliated sutures, differs considerably, some (as the Murex ramosus, &c. &c.) have but three, the Murex scorpio has four, the saxatilis five, and the diaphanus six.

The next division is composed of those species, that, instead of having their sutures foliated and crisped, have them thick, protuberant, and rounded; such are the Murex lyratus, Murex rana or thorny toad, Murex lampas or Swiss trowsers, Murex lotorium or hog's snout, and Murex femorale, or gadroon-whelk, which is remarkable for the circumstance of its outer lip having furnished silversmiths with the idea of imitating it, in their borders or rims of massy silver plate, well known by the name of the gadroon border. The two curious species of shells called the grimace whelks, belong to this division.

The next variation of form is perceptible in those species which are more abbreviated and gibbous, being at the same time more or less spinous, and without a manifest beak. Such are the Murex ricinus, Murex hippocastanum or horse-chesnut, and all the varieties of Murex Neritoideus or mulberry, most of which are beset with black tubercles and spines, some having purple, others yellow mouths.

The next and very prominent division of Murices is composed of such shells as have a long, straight, subulate, closed beak, and unarmed with spines: such are the Murex colus or crane, of which there are many large and beautiful varieties: Murex Babylonius or tower of Babel, and many other towers, all of which have a peculiarity which appertains solely to them, and which consists in a small fissure or incision placed on the extremity of the outer lip, close to the termination of the first whorl.

The Murex rapa resembles bulla rapa exceedingly; a similar resemblance is manifest between the Murex ficus and the bulla ficus. The reverse variety of the Murex ficus is called Murex perversus, or the reverse fig, and is a very rare species. The Murex antiquus is also sometimes found contrary or reversed. The animal of the Murex despectus is often eaten, but is more generally used as a bait for cod and ray.

The Murex Tritonis, or triton's trumpet, is an inhabitant of the Mediterranean and Indian seas; and a third variety comes from the South Seas. This is the species which is used by the natives of New Zealand as a musical shell, and by the Africans and many nations of the east as a military horn. It sometimes exceeds two feet in length. The Murex gigas also often measures twenty one inches.

The last division of the Murices includes those that are tapering and subulate, having a short beak. Among them may be noticed, the Murex vertagus, Murex aluco, &c. &c. The Murex fasciatus and fluviatilis are inhabitants of the American rivers; and the Moluccaanus is found in the marshes of the Molucca islands.

One of the reverse species of Murices is the Murex

contrarius. And among the rarer sorts may be classed the Murex perversus, prismaticus, stramineus, radix, and aruanus or aru trumpet, which comes from New Guinea. The fossil Murices are as follow, viz. Murex tripterus, costatus, lævigatus, fossilis, and Campanicus; they are mostly from Campania. The animal of the Murex loco is eaten by the Chinese, it has a small vescicle in the neck, which contains a purple liquor.

The numerous species and varieties of the Murices are from the following places, viz. Pulo Condore, Guinea, Senegal, Straits of Magellan; the European, northern, and southern seas; India, the Mediterranean, Adriatic, and Atlantic.

This genus derives its name from many of its species being rough, like the sharp crags of a rock; and also from others bearing a resemblance to a trumpet.

MUREX.

A. *Spinous, with a produced beak.*

Haustellum (*Snipe's Head.*)	Pomum.
Tribulus (*Thorny Woodcock; Venus' Comb.*)	Decussatus.
Cornutus (*Horned Snipe.*)	Triacanthus.
Brandaris (*Thorny Snipe's Head.*)	Melanamathos.
Trunculus (*Antique Purpura.*)	Radix.
Candidus.	Fasciatus.

B. *Suture expanding into crisped foliations; beak abbreviated.*—PURPURA.

Ramosus.	Scorpio (*Skeleton.*)
Foliatus.	Saxatilis (*Endive Shell.*)

Diaphanus.
Cichoreum.
Versicolor.
*Erinaceus (*Urchin.*)
Striatus.
Tripterus.
Sacellum.
Motacilla.
Triqueter.

C. *With thick, protuberant, rounded sutures.*

Lyratus.
Rana (*Thorny Toad.*)
Gyrinus.
Affinis.
Lampas (*Swiss Trowsers.*)
Olearium (*Oil Jar.*)
Femorale (*Gadroon-whelk.*)
Cutaceus.
Lotorium (*Hog's Snout.*)
Pileare.
Bufonius.
Pyrum.
Caudatus.
Rubecula.
Scrobiculator.
Reticularis.
Lamellosus.
Nodatus.
Anus (*Grimace.*)
Miliaris.
Senegalensis.
*Carinatus.

D. *More or less spinous, and without manifest beak.*

Ricinus (*Spur Shell.*)
Nodus (*Chesnut.*)
Neritoideus (*Mulberry.*)
Fucus (*Old Maid.*)
Loco.
Hystrix.
Mancinella.
Hippocastanum(*HorseChesnut.*
Senticosus.
Melongera (*Open mouthed M.*)
Consul.
Lima.

E. *With a long, straight, subulate, closed beak, and unarmed with spines.*

Cariosus.
Babylonius (*Tower of Babel.*)
Javanus.
Sinensis.
Straminius.
Australis.
Uncinatus.
Turris.

Costatus.
Asper.
Colus (*Crane.*)
Morio (*Moor.*)
Cochlidium.
Spirillus.
Canaliculatus(*Bottle Whelk*)
Ficus.
Carica.
Rapa.
Niveus.
Granum.
Aruanus (*Aru Trumpet.*)
Perversus (*Reverse Fig.*)
*Antiquus.
*Despectus.
Fornicatus.
Incrassatus.
*Truncatus.
*Acuminatus.
Argus.
Maculosus.
Magellanicus.
Cancellatus.
Scolopaceas.
Literatus.
Trigonus.
Semilunaris.
Costatus.
Sulcatus.
Fusiformis.
Tritonis (*Triton's Trumpet.*)
Pusio (*Wreath.*)
Tulipa.
Clathratus.
Nassa.
Plicatus.
Scala.
Fiscellum.
Corona.
Dolarium.
*Corneus.
Ligharius.
Trapezium (*Persian Robe.*)
Vespertilio (*Bat.*)
Scolymus.
Harpa.
Tuba.
Syracusanus.
Craticulatus.
Scriptus.
Ternatanus.
Infundibulum.
Polygonus.
Islandicus.
Lævigatus.
Fossilis.
Candidus.
Ansatus.
Undatus.
Longissimus.
Lancea.
Angustus.
Versicolor.
Verrucosus.
Striatulus.

Pardalis.
Gigas.
Lignosus.
Gibbulus.
Granularis.
Vexillum (*American Flag.*)
Vulpinus.
Afer.
Campanicus.
Arenosus.
Maroccensis.
Lineatus.
Perron.
Larva.
Neritoideus.
Prismaticus.
Columbarium.
Asperrimus.
Undulatus.

F. *Tapering, subulate, with a very short beak.*

Vertagus (*Raven's beak.*)
Aluco (*Hercules' Club.*)
Annularis.
Plicatulus.
Sordidus.
Cingulatus.
Fuscus.
Fasciatus.
Fluviatilis.
Alatus.
Nodulosus.
Terebella.
Fuscatus.
Torulosus.
Radula.
Asper.
Granulatus
*Decollatus.
Moluccanus.
Minimus.
Strigilatus.
Tuberculatus.
Gibbosus.
Atratus.
*Contrarius.
Eburneus.
Conditus.
Clava.
Hexagonus.
*Minutissimus.

TROCHUS.—Top-Shell.

Animal—a Limax: Shell univalve, spiral, more or less conic; aperture somewhat angular or rounded; the upper side transverse and contracted; pillar placed obliquely.

The genus Trochus contains one hundred and thirty-three species. Among so large a number, considerable differences may naturally be expected; however, the leading characteristic, which in the Trochi consists in the shape, is more or less retained throughout the major part of the species. Yet, in many instances, some of them are so very nearly allied to the following genus, turbo, that frequent mistakes arise in their classification.

The form of the Trochi is invariably conical, though some are much more obtuse than others; all, however, have a broad base, the whorls gradually tapering upwards to the apex or tip, thereby assuming the shape of a pyramid.

Among those Trochi which have their pillar perforated or umbilicated, may be mentioned the Trochus Niloticus, Trochus maculatus, Trochus perspectivus (stair-case), Trochus Hybridus, and Pharaonis, &c. &c.

Though some of this genus have their surfaces almost smooth, yet a far greater number may be found that are covered with knobs, spines, tuberculations, or undulations. The Trochus solaris or golden sun, and the Trochus imperialis or imperial sun, from the South seas, may perhaps be sufficient examples. The former has its margin beset with long spines, placed at regular distances, and which, when the shell is perfect, resemble very nearly

the manner in which the rays of the sun are often represented in carved work, &c. &c. Added to which, there is a most beautiful gold color, which occasionally shines forth through the ochreous surface of the shell, and which of course adds materially to the similitude, in as much as it approaches nearer to the gilded radiance of the splendid orb it is compared with. The Trochus imperialis, however, has no pretension to a similar appearance, for it is mostly of a dull olive color, though there is a rare variety of it, which has a pinkish cast, and is known by the name of the pink sun. They are both rare shells, and from the South seas.

Among those Trochi which are imperforate, or in other words, those that have their umbilicus closed, may be included the Trochus vestiarius, Trochus labio, and Trochus tuber, the latter of which very much resembles a turbo.

The Trochus iris, (commonly called the ear-drop snail), is celebrated, when uncoated, for the splendid metallic lustre which illumines its surface; and when held in different positions and lights, exhibits all the varied tints of the rainbow, blended with the richest gold color imaginable.

The Trochus Cookii, from Cooke's Bay, has its aperture closed with a horny lid or operculum, an appendage not unfrequent in many of the Univalve tribes; its use is to secure the inhabitant when retired within its shell: it is affixed to the animal, and as that retreats into the spiral whorls of its shell, it draws the operculum in along with it, till arrived at one particular situation of the aperture or mouth; where, from the extreme accuracy of its adjustment, it perfectly closes the orifice, thereby forming a complete barrier against any outward attacks, that may be made on the animal.

The operculum often varies in shape, according to the form of the mouth it has to close: in some instances it is elongated, and has a horny appearance; in others it is circular, and of a very compact testaceous substance; some are perfectly smooth, others strongly granulated.

The Trochus conchyliophorus, or carrier Trochus, is a very curious and remarkable species; for it is invariably covered with other substances, strongly adhering to the whorls of the shell. There are two distinct varieties: one of which is called the Conchologist, from its being loaded with parts or fragments of shells, and other testaceous substances; the second variety is very properly named the mineralogist, as its burthen consists of stones, earths, pebbles, ores, &c. When the former variety is loaded with corals only, it is called the zoologist or coral-carrier. They are considered, when heavily laden, as rarities.

Some species of Trochi are much elongated, and greatly resemble screw or needle shells. Unlike the rest of the genus, they have an exserted pillar; and, when placed on their base, they fall on one side. The most prominent species are the Trochus telescopium or telescope Trochus, and the Trochus dolabratus.

The greater part of the Trochi present a brilliant mother-of-pearl, when uncoated; others have only their aperture pearly or silvery; whereas some again are of a hue something resembling bronze.

There are several reverse varieties of Trochi: the principal are—Trochus perversus, undulatus, ventricosus, annulatus, and pusillus; the latter of which is found within larger shells, among the sands of India.

The flumineus is a river species, and the hortensis is an inhabitant of the gardens in warmer climates. The terrestris is also a land species, and frequents the mountains of Cumberland.

Amongst the fossil species, there are two with the whorls contrary, viz. Trochus ferrugineus, and Trochus novus: the former of which is found near Staphusia, converted into iron-ore. The Trochus Schrœteri is also found fossil in Campania.

The following are the places which yield specimens of the Trochi, viz. Asia, Africa, America, Friendly Isles, New Zealand, Red Sea, Mediterranean, the European and British seas, &c. &c. &c.

TROCHUS.—*Top Shell.*

A. *Erect, with the pillar perforated.*

Niloticus (*Marbled Trochus.*)
Maculatus (*Spotted Trochus*)
Perspectivus (*Staircase.*)
Hybridus.
Cruciatus.
Pharaonis (*Strawberry T.*)
*Magus.
Modulus.
Muricatus.
Scaber.
Varius.
*Cinerarius.
Divaricatus.
*Umbilicaris.
Solaris (*Golden Sun.*)
Tectum.
Conus.
Spinosus.
Jujubinus.
Alveare (*Bee-hive.*)
Concavus.
Vernus.
Conspersus (*Poppy.*)
Tentorium.
Ochroleucus.
Stellatus.
Spengleri.
Costatus.
Inæqualis.
Regius.
Verrucosus.
Cylindricus.
Radiatus.
Viridis.
Rusticus.
Nigerrimus.

Fanulum (*Pagoda.*)
Strigosus.
Pyramis.
Capensis.
Ægyptius.
Depressus.
Lævigatus.
Grœnlandicus.
Roseus.
Petholatus.
Viridulus.
Urbanus.
Guineensis.
Nodulus.
Carneus.
*Tessellatus.
Croceus.
Obliquatus.
Vittatus.
Schrœteri.
Indicus.
Infundibuliformis.
Stramineus.
Variegatus.
Areola.
Inermis.
Imperialis (*Imperial Sun.*)
Planus.
Albidus.
Fuscatus.
Fasciatus.
Corallinus.
Griseus.
Ferrugineus.
Novus.
Fragilis.
Callosus.
Afer.
Neritoideus.
Perlatus.
*Terrestris.
*Fuscus.

B. *Imperforated, erect; umbilicus closed.*

Vestiarius.
Labio (*Double-lipped T.*)
Tuber.
Striatus.
*Conulus.
*Zizyphinus (*Livid T.*)
Obeliscus.
Distortus.
Virgatus.
Foveolatus.
Diaphanus.
Iris (*Ear-drop Snail.*)
Rostratus.
Notatus.
Elegans.
Melanostoma.
Erythroleucos.
Punctulatus.
Imbricatus.
Americanus.

Cœlatus.
Purpureus.
Cookii.
Nodulosus.
Mauritianus (*Gt. toothed T.*)
Fenestratus.
Helicinus.
Argyrostomus (*Ink-horn.*)
Sinensis.
Lugubris.
Asper.
Tessellatus.
Citrinus.
Granatum.
Crocatus.
Conchyliophorus (*Carrier.*)
Pantherinus.
Grandinatus.
Inæqualis.
Tigris (*Tiger.*)
Pulligo.
*Parvus.

C. *Tapering, with an exserted pillar, and falling on the side when placed upon the base.*

Telescopium (*Telescope T.*)
Dolabratus.
Perversus.
Pusillus.
Undulatus.
Ventricosus.
Annulatus.
Flumineus.
Punctatus.
Striatellus.
Ziczac.
Lunaris.
Hortensis.

TURBO.—Wreath.

Animal—a Limax: Shell univalve, spiral, solid; aperture contracted, orbicular, entire.

There are no less than one hundred and fifty-one species of this beautiful genus; they are, for the most part, solid

and ponderous shells, and very many are of a pearly nature when uncoated. The first division has the pillar margin of the aperture dilated, and the pillar imperforate. Amongst the leading species may be reckoned the Turbo obtusatus, Turbo neritoides, and Turbo littoreus, or common periwinckle, a shell well known to most persons. Its fish, when boiled, is not unfrequently eaten; it is an inhabitant of most European shores; and it is said of them by sailors, that, if seen crawling high up the rocks, it is an indication of the approach of stormy weather; if, on the contrary, they descend, a calm is sure to follow.

The next class or division is that whose shells are solid and imperforate; among the principal species are the Turbo petholatus or ribband Turbo, Turbo chrysostomus or gold mouth, Turbo pagodus or Chinese pagoda, Turbo calcar or the spur, and Turbo smaragdus or the emerald Turbo; to which may be added, the Turbo cochlus, cornutus, nigerrimus, marmoratus, and olearius, the two latter of which sometimes attain a gigantic size.

The next palpable variation consists in the pillar of some species being perforated or umbilicated. The Turbo pica or magpye Turbo (as being the most known and easiest procured) will be the best to refer to as an example. The Turbo margaritaceus or pearly Turbo, the Turbo argyrostomus or silver mouth, and the Turbo delphinus or dolphin shell, also belong to this division.

A further alteration or variation takes place in those species that are less solid, at the same time that they are cancellate. The wentle-trap (from the German windle-treppe, or winding-staircase) as being one of the most beautiful as well as rarest shells known, will, with its op-

posite variety, suffice to exhibit the peculiarities of this division. The true wentle-trap (so called to distinguish it from the false) is a turbinate or spiral conical shell, varying in size from a quarter of an inch to upwards of two inches. The small and young shells are remarkably thin, brittle, and transparent; and they generally possess more color than those farther advanced. The form of this shell is extremely elegant; its whorls, which are always gibbous or inflated, are beset, at regular distances, with numerous, elevated, carinated, suboblique, longitudinal, continued ribs, evidently the remains of former mouths, the color usually of a yellowish or pinkish white: however, in very young shells, the ribs are of a blueish semipellucid appearance, having the interstices between them of a deep brown cast, which, probably, proceeds from a sort of epidermis, rather than a local coloring. There are said to be two varieties of the real wentle-trap, one having only eight whorls, and perforated; the other having ten whorls, and imperforate: they also inhabit different places, one, it is said, coming from Barbary, the other from Coromandel. The value of these shells varies in proportion with their degree of perfection and size, and they have been sold from ten shillings to fifty pounds.

This shell possesses a striking peculiarity, which consists in its being entirely destitute of a pillar or columella to connect its whorls; a circumstance so thoroughly opposed to the regular structure of all other turbinate shells, must, of course, have created considerable doubt as to which genus it ought to be classed in; and some authors have made no scruple to place it among the serpulæ or worm shells.

The false wentle-trap, Turbo clathrus, is easily dis-

tinguished from the true, by its being much more taper or elongated and is in reality a very common shell; it is usually placed in collections very close to the true one, and thereby more clearly demonstrates the difference. It is not umbilicate, and the whorls are more closely connected. There are three varieties of this species: one is pellucid with very thin ribs; the other has its lip produced into a beak; and some are spotted or dotted with brown. They are found in the European and Indian seas, in great plenty, from half an inch to two inches in length. It is said, that, from the animal inhabiting these shells, the ancients extracted a purple dye.

Among the other rarities of this genus, the pheasant and beauty varieties must not be omitted; they are both exceedingly scarce, and are mostly from Van Diemen's Land, and other islands of the South Seas. There is perhaps, no species of shells throughout the genera of Univalves, which admits of so much real beauty and variety as is manifest in the pheasants.

Many shells of this genus (commonly known as needles or screws) are exceedingly beautiful; their shape is that of a well proportioned spire, with thirty or forty whorls gradually tapering or diminishing from the base to the very extreme tip or apex of the shell, and there ending in a most acute point, forming in their course the most elegant and graceful spiral the imagination can suggest. The shells of this form are distinguished from those something similar among the strombi and buccina, by their having a circular or orbicular mouth, which is indeed the leading characteristic of all the species throughout this genus.

Among the species of the tapering or elongated Turbines, may be mentioned the Turbo imbricatus, replica-

tus, acutangulus, duplicatus, and terebra, which are the principals of the division.

The Turbo ulyæ is found adhering to the ulva lactuca. The Turbo perversus has its whorls contrary, and dwells among moss on old walls in Europe, as does also the Turbo muscorum; and the Turbo tumidus is often found in the woods of England. Among the fresh-water species the Turbo Nautileus stands conspicuous; it is often affixed to plants in stagnant waters.

The species from the ocean are principally from the South seas, and among them some of the rarest are found; others are from the American and African oceans, whilst others are the produce of the Indian and Northern seas: and several species are to be met with in the Mediterranean and European seas.

TURBO.— *Wreath.*

A. *Pillar margin of the aperture dilated and imperforate.*

Obtusatus.
Neritoides.
*Littoreus (*Periwinckle.*)
*Tumidus.
*Rudis.
*Lineatus.
Muricatus.
Lituus.
Punctulatus

B. *Solid, imperforated.*

*Cimex.
*Pullus (*Painted W.*)
*Fasciatus.
Personatus.
Petholatus (*Ribband T.*)
Cochlus (*Spotted Silver Mouth.*)
Chrysostomus (*Gold Mouth.*)

Echinatus.
Tectum-persicum.
Pagodus (*Chinese Pagoda.*)
Sulcatus.
Calcar (*Spur.*)
Rugosus.
Marmoratus (*Green W.*)
Sarmaticus(*PomegranateT.*)
Olearius.
Cornutus (*Horned T.*)
Radiatus.
Imperialis.
Coronatus.
Canaliculatus.
Setosus (*Leopard.*)
Sparverius.
Spinosus.
Moltkianus.
Spenglerianus.
Castanea.
Crenulatus.
Smaragdus (*Emerald T.*)
Papyraceus.
Æthiops.
Nicobaricus.
Cidaris (*Turban.*)
Nigerrimus.
Helicinus.
Punctatus.
Hæmastomus.
Torquatus.
Undulatus.
Niveus.
Helicoides.
*Nitidus.
*Scriptus.
*Costatus.
*Subluteus.
*Albulus.
*Reticulatus.
*Ruber.
*Interstinctus.
*Striatus.
*Subarcuatus.
*Æreus.
*Elegans.
*Pellucidus.
*Canaliculatus.
*Divisus.

C. *Solid, perforated.*

Pica (*Magpye T.*)
Sanguineus. [*W.*)
Argyrostomus(*Silver Mouth*
Margaritaceus (*Pearly T.*)
Versicolor.
Delphinus (*Dolphin Shell.*)
Nodulosus.
Distortus.
Stellaris.
Aculeatus.

Stellatus.
Mespilus.
Granulatus.
Ludus.
Atratus.
Dentatus.
Diadema.
Cinereus.
Carinatus.
Afer.
Planorbis.
Marginellus.
Helicoides.
Foliaceus.
Anguis (*Mackerel T.*)
Porphyrites.
Smaragdus.

D. *Cancellated.*

Crenellus.
Thermalis.
Scalaris (*Wentle Trap.*)
*Clathrus (*False Wentle Trap.*)
*Tuberculatus.
Ambiguus.
Crenatus.
Lacteus.
Striatulus.
Uva.
Corneus.
Lincina.
Lunulatus.
Labio.
*Striatus.
Reflexus.
Dubius.
Limbatus.

E. *Tapering.*

Imbricatus.
Replicatus.
Acutangulus (*Press Screw.*)
*Duplicatus.
*Cinctus or Exoletus (*Ribbed Screw.*)
*Terebra (*Tambour Needle.*)
*Lævis.
*Albus.
Variegatus.
Ungulinus.
Crystallinus.
Albulus.
Annulatus.
*Bidens.
*Perversus.
Fusulus.
Fusus.
Sulcatus.
Quadridens.
Tridens.
*Muscorum.
*Ulvæ.

*Trifasciatus.
*Membranaceus.
*Interruptus.
*Subrufus.
*Strigatus.
*Albidus.
*Carinatulus.
*Clathratulus.
*Crassus.
*Punctatus.
*Sheppeianus.
*Sandvicensis.
Obtusus.
Auriscalpium.
Politus.
Nautileus.
Obsoletus.
Quinquedentatus.
Pyramidalis.

HELIX.—Snail or Spiral.

Animal—a Limax; Shell univalve, spiral, subdiaphanous, brittle; aperture contracted, semilunar, or roundish.

The genus Helix is the most numerous of any; it contains no less than two hundred and sixty-seven species, among which, some are of great beauty and rarity. By far the greater proportion of species are the produce of the land: many of the rest are the inhabitants of rivers and fresh-waters, leaving but a very small residue natives of the ocean.

The Helices are, for the most part, shells of delicate and brittle structure, and remarkable for their lightness; their general form is closely allied to that of the common garden or hedge-snail, except in those species which are tapering or elongated. Among the carinated Helices, or

those with an acute margin, may be reckoned the Helix lapicida, marginata, cicatricosa, and scarabæus; the last of which is said to be found in the Friendly Isles, and on the mountains of Asia. These shells were formerly supposed to have fallen in showers from the clouds.

The more compressed or flattened species of this genus are those commonly known by the name of antique lamps, in consequence of their great resemblance to that utensil. There are many rare and beautiful shells in this division: among those best known are the Helix lucerna, lampas, carocolla, &c. &c. &c. The rarest specimens, however, are the Helix ringens or grinner, the Helix Gualteriana or Gualtieri's snail (so called after the chonchologist of that name), and the Helix tricarinata or triple-keeled snail. There are other species which have their whorls more produced, and altogether are much more globose or inflated in their forms; such are the Helix ampullacea, Helix glauca (a very rare shell) and Helix pomatia; the latter snail is an inhabitant of the woods of Europe, and was introduced into England by Sir Kenelm Digby, for medical purposes. The animal is used in many parts of Europe as an article of food during Lent; and it was a favorite dish with the Romans. It is oviparous, very tenacious of life, and, towards winter, covers its aperture with a calcareous lid.

The animal of the Helix ampullacea is also eaten, it grows to an immense size. It deposits its eggs in clusters, on the bark of trees, or rushes, &c. they have sometimes a pink tinge, but are generally dull white.

The innumerable varieties of the Helix citrina, or citron land snail, are uncommonly beautiful.

There are some of the Helices which closely resemble shells classed with the Volutes; the two principal species

are the Helix ovalis, and Helix oblonga; they are land shells, and their eggs resemble those of a common sparrow, but perfectly elliptical.

Among the Helices which are rounded and imperforate, or without an umbilicus, may be reckoned the Helix dextra and perversa; they are both the same kind of shell, only one has its whorls turned contrary to the other: they are rare shells, and have their surfaces covered with a beautiful citron color, variegated with green, and striped or banded with brown.

The Helix ianthina has the property of shining by night, and the animal, when alive, stains the hand of a purple color, not easily removed; they are found in great numbers, floating on marine substances, on the surface of the water.

Amidst the infinite variety of terrestrial shells there is, perhaps, no species so well known as the Helix hortensis or common garden snail; it is an inhabitant of European gardens and orchards, and is (it hardly need be stated) very destructive to fruit, and tender leaves. Their eggs are perfectly round, and about the size of small peas.

The Helix nemoralis, which is an inhabitant of the woods, partakes of the same nature with the last, as also does the Helix lucorum.

One of the scarcest and most beautiful species of Helix, is the Hæmastoma, which is famous for its elegant bandings and rose colored lips.

The division of elongated or tapering Helices, includes the following species, viz. Helix decollata or truncated snail, Helix scalaris, and Helix circinata, which has some resemblance to turbo scalaris, Helix columna, and the Helix stagnorum, a fresh-water species.

Those Helices which are ovate and imperforate or non-umbilicate, may be classed with the following species, viz. Helix pupa, Helix barbara, Helix amarula or the black spiny mitre from the Ganges, Helix stagnalis, found in the still waters of Europe, and Helix fragilis, palustris, &c. &c. &c.

There are many of this genus which inhabit aquatic plants in standing-waters, lakes, ponds, and ditches: others are found on trees and shrubs in Asia, and in the woods of Denmark, Sweden, and Germany; some frequent the water-falls of Lombardy; many harbour among rotten wood; others again are the produce of America, Africa, India, Italy, Portugal, China, New Zealand, and Otaheite; and many are found in, Britain, and on its coasts, though they are mostly minute.

HELIX,—*Snail.*

A. *Whorls with a carinated acute margin.*

Scarabæus (*Cockchafer*)
*Lapicida (*Rock S.*)
Marginata.
Cicatricosa.
Ægophthalmos.
Oculus-capri.
*Albella.
Maculata.
Albina.
Striatula.
Algira.
Leucas.
Lævipes.
Exilis.
Vermiculata.
Candida.
Spadicea.
Incarnata.
Sericea.
Crenulata.
*Planorbis.
Complanata.
Ringens (*Grinner.*)
Sinuata.
Lucerna (*Lamp.*)
Lampas.

Carocolla.
Lychnuchus.
Cepa.
Cornu-militare.
Pellis-serpentis (*Serpent.*)
*Vortex.
Scabra.
Gothica.
Gualteriana (*Gualtieri's S.*)
Tricarinata (*Triple-keeled S.*)
Isognomostomos.
Oculus-communis.
Affinis.
Marginella.
Sinuosa.
Maculosa.
Punctata.
Vitrea.
Annulata.
Rhenana.
Nævia.
Corrugata (*Wrinkled S.*)
Faba.
Crenata.
Carinata.

B. *Umbilicated; whorls rounded.*

*Cornea.
Spirorbis.
Contorta.
Nitida.
Alba.
Similis.
Cornu-arietis (*Ram's Horn*)
*Hispida.
Ampullacea (*Apple S.*)
Piscinalis.
Pusilla.
Sphærica.
*Pomatia
Glauca.
Citrina (*Citron S.*)
Castanea.
Rapa.
Globulus.
Lactea.
Incisa.
*Arbustorum.
Fulva.
Epistylium.
Cincta.
Ligata.
Aspersa.
Extensa.
Pisana.
Strigata.
Nemorensis.
*Zonaria (*Ribband S.*)
Striata.
*Ericetorum.
*Nitens.
Costata.
Pulchella.

Rotundata.
Cellaria.
Obvoluta.
Strigosula.
Radiata.
Crystallina.
Ungulina.
Varica.
Fruticum.
Lucena.
Vittata.
Rosacea.
Itala.
Lusitanica.
Mammillaris.
Hispana.
Lutaria.
Ovalis (*Egg S.*)
Oblonga (*Cherry lipped S.*)
Flammea.
Pileus.
Nucleata.
Volvulus.
Involvulus.
Neritina.
*Turturum.
Olivetorum.
Badia.
Cretacea.
Pileata.
Polygyra.
Fuscescens.
Terrestris.
Nivea.
Media.
Tenella.
Crepuscularis.
Hyalina.
Avellana (*Hazel Nut.*)
Rufescens.
Pervia.
Lævissima.
Fascicularis.
Holosericea.
Turgida.
Tenuis.
Coriacea.
Cornu-venatorium.
Elegans.
Cookiana.
Bidentata.
Turbo.
Trifasciata.
Bontia.
Trochoides.
*Tomentosa
*Tubulata.
*Fasciata.
*Nitidissima.
*Bicolor.
*Spinosa.
*Reticulata.

C. *Rounded and imperforated.*

Perversa (*Reverse S.*)
Dextra.
Recta.
Inversa.
Interrupta.
Contraria.
Læva.
Arenaria.
Jamaicensis.
Rhodia.
Labiosa.
Pudica.
Ianthina (*Violet S.*)
Gigantea.
*Vivipara.
Fasciata.
Dissimilis.
*Nemoralis.
*Hortensis (*Garden S.*)
*Lucorum.
Grisea.
Hæmastoma (*Red lipped brunette.*)
Pulla.
Venusta.
Picta.
Variegata.
Solida.
Aperta.
Versicolor.
Afra.
Nucleus.
Coccinea.
*Variegata.
*Fulgidi.
*Striata.

D. *Tapering.*

*Decollata (*Truncated S.*)
Scalaris.
Circinata.
Subcylindrica.
Stagnorum (*Barley Corn.*)
*Octona.
Tenera.
Columna.
Pella.
Plicaria.
Undulata.
Fuscata.
Pripus.
Folliculus.
Sepium.
Splendidula.
Mitra.
Atra.
Cuspidata.
Crenata.
Carinula.
Crocea.
Lanschaurica.
Obtusata.
Purpurea.

E. *Ovate, imperforated.*

Pupa.
Barbara.
Amarula.
Nævia.
Aspera.
*Stagnalis.
*Fragilis.
Glabra.
*Palustris.
Truncatula.
Peregra.
Glutinosa.
*Putris.
Acuta.
Papilla.
Minuta.
Detrita.
Ventricosa.
*Obscura.
*Lubrica.
Limosa.
Contortuplicata.
Angularis.
*Tentaculata.
*Auricularia.
*Lævigata.
Balthica.
Neritoidea.
Perspicua.
Haliotoidea (*Venus's Ear*)
Muralis.
Vertigo.
Carychium.
Ambigua.
Corvus.
Pyrum.
Marmorata.
Achatina.
Lugubris.
Minima.
Inflata.
Albicans.
Repanda.
Opaca.
Turgida.
Cœrulescens.
Cinerea.
Undata.
Teres.
Substriata.
Trigonostoma.
Tumida.
Acicula.
Peregrina.
Danubialis.
Turbinata.
Curvata.
Exilis.

NERITA.—Nerite or Hoof-Shell.

Animal—a Limax: Shell univalve, spiral, gibbous, flattish at bottom; aperture semiorbicular or semilunar; pillar-lip transversely truncate, flattish.

There are a few out of the seventy-six species which compose this genus that have some claim to beauty, though none can boast of great rarity or value.

There is considerable variation in the form and markings of the Neritæ: some are spiral, with prominent whorls; others have their whorls partly or wholly concealed; some are greatly umbilicate or perforate; others are perfectly entire and solid; and many have the umbilicus partially covered by a repand lip, or fissurated nodule. The interior of the mouth and lips is, in many species, toothless; whereas, in others, both lips are beset with strong, prominent, and articulate teeth, often terminating in disjointed, elevated striæ, or protuberant granulations.

In most species the back of the shell is covered with strong, elevated ribs, sometimes nodulous and imbricate; in others the shell is only minutely striate; and in many the surface is so perfectly smooth as to afford a brilliant polish.

Among those species which are umbilicate the following may be quoted: viz. Nerita canrena or tabby-cat Nerite, (of which there are many beautiful varieties), Nerita cancellata, Nerita glaucina, Nerita vitellus, and Nerita mammilla, commonly known by the name of the

breast snail. The most usual variety of this shell is that which is entirely white, having a china-ware-like appearance; but the rarer sorts are those which incline to a brownish orange, having their lips surmounted with a black margin or border.

The Nerita stercus-muscarum, or fly spot Nerite, is beautifully dotted with brown, or rufous, on a clear white ground. The Nerita fulminea, instead of being dotted, is striped angularly, something in resemblance of forked lightning. The Nerita rugosa is rough or wrinkled, and the Nerita sulcata has its whorls obliquely plaited.

The next species of Nerites are those which are imperforate, being at the same time toothless; among them may be ranked the Nerita corona, or crowned Nerite: this shell is often of a blackish color, and has its whorls crowned with shorter or longer spines. The Nerita fluviatilis also belongs to this division; it is an inhabitant of the rivers of Europe and Barbary, and is usually marked with scaly spots, sometimes rugged, streaked, or reticulate. The Nerita littoralis is found on the rocks of most European shores; and the Nerita lacustris delights in the still waters and warm springs of Europe.

Those Nerites which come next in succession, are such as are imperforate, yet have their lips toothed; the principal of them are the Nerita pulligera, Nerita aterrima, Nerita undulata, Nerita larva, and Nerita virginea; the latter of which is an inhabitant of the rivers of South America and India; it has, like many other species of the Neritæ, teeth on the inner lip only: its varieties are infinite, and most excessively beautiful. They are, by many, called the Guinea-hen or Guinea-fowl Nerites, from some of the varieties resembling the plumage of the

bird so named. The bleeding-teeth Nerite is a well known and beautiful species.

The Nerita polita, or polished Nerite, is most certainly surpassed by none in point of beauty, or extent of its variety; they are smooth shells, and display a brilliant lustre, under which are discoverable the most superb party-colored markings, bandings, and dottings, that can possibly be imagined; they are mostly clouded with green, having intermediate maculate bands of pale pink; but those are considered the rarest, and certainly the most beautiful, which are of a perfect jet black, having three or four bright scarlet bands, which run in a parallel direction with the convolutions of the shell. Some are from India, but those most valued, are from the South Seas; the aperture or mouth is of a pure white, sometimes having the throat of a beautifully delicate pale yellow.

Among those Nerites which are strongly ribbed or grooved, may be included the Nerita histrio, Nerita plicata, Nerita grossa, Nerita pica or the magpie Nerite, and the Nerita chamæleon or changeable Nerite, which is varied with alternate, undulate, black and white rays, or yellowish, undulate with black and white; the grooves generally about twenty.

Amongst the fresh-water species may be reckoned the Nerita turrita, which is an inhabitant of the Antilly Isles; the Nerita aculeata also frequents the rivers of India; the Nerita clathrata and perversa, are found fossil in Campania.

The following places produce the different species of Neritæ: viz. the African, American, Indian, and European seas; the Southern and Northern oceans, the Mauritius, the Cape of Good Hope, New Zealand, and the Red Sea.

NERITA.—*Nerite or Hoof Shell.*

A. *Umbilicated.*

Canrena (*Tabby-cat N.*)
Cancellata.
*Glaucina.
Vitellus.
Albumen.
Mammilla (*Breast Snail.*)
Leucozonias.
Spadicea.
Rufa.
Fulminea.
Stercus-muscarum (*Fly-spot N.*)
Orientalis.
Cruentata.
Rugosa.
Marochiensis.
Sulcata.
Arachnoidea.
Vittata.
Melanostoma.
*Pallidula.
Papilla.
Clathrata.
Valvata.
Islandica.
Affinis.

B. *Imperforated; lip toothless.*

Corona (*Coronated N.*)
Radula.
Cornea.
*Fluviatilis.
*Littoralis.
*Lacustris.
Magdalenæ.
Marginata.
Dubia.
*Pellucida.
*Alba.

C. *Imperforated; lips toothed.*

Pulligera (*Red N.*)
Undulata.
Aterima.
Larva.
Pupa.
Bidens.
Viridis.
Virginea (*Guinea-hen N.*)
Polita (*Polished N.*)
Peloronta(*Bleeding tooth N.*)

Albicilla.
Histrio.
Plicata.
Grossa.
Chamæleon (*Changeable N.*)
Undata.
Exuvia (*Deep ridged N.*)
Maxima.
Textilis.
Atrata.
Ascensionis.
Lineata.
Versicolor.
Pica (*Magpie N.*)
Costata.
Quadricolor.
Malaccensis.
Antillarum.
Flammea.
Fulgurans.
Tessellata.
Bifasciata.
Literata.
Violacea.
Senegalensis.
Promontorii.
Tricolor.
Perversa.
Turrita.
Aculeata.

HALIOTIS.—Sea-ear or Ear-Shell.

Animal—a Limax: Shell univalve, dilated, ear-shaped, with a longitudinal row of orifices along the surface; spire lateral, and nearly concealed.

Of this beautiful genus there are but nineteen species; and their general form and appearance are so similar, that it often becomes a matter of difficulty to distinguish the one from the other. All the Haliotides are shaped something like the human ear, except one, which by way of distinction is called the Haliotis asinum, or ass's-

ear, on account of its being much more elongated or distended than any of the other species.

There are three reasons which operate to create difficulty in the arrangement of the different species of this genus:—First, the outside of the shell is generally loaded with marine substances, or else is so much decayed or worn, as not to offer a lineament of the original texture; thereby precluding all possibility of judging by the work or color to what species it appertains. Secondly, as the interior of all Haliotides is enamelled with a magnificent surface of iridescent pearl, no great distinction can be made by a reference to that part of the shell. Thirdly, as the beauty of the shell is considerably increased by being uncoated and polished, so is it also customary to submit it to some such beautifying operation; which, however, with the surface, at once removes all clue to the attainment of the generic character.

The exterior of the sea-ears is generally composed of rugæ or tuberculations, over which pass approximate elevated striæ. In some species, foliations supply the place of tuberculations, as is the case in the Haliotis Midæ or Midas' ear, the outside of which is wrinkled, and of a dirtyish white complexion; but the inside is of the most beautiful pearl. It grows to eight or nine inches long.

The back of almost the whole of the Haliotides is furnished with a row of orifices near the margin; their number varies from eight to thirty-eight; and out of that number from three to seven are generally open, the rest are perfectly closed. There are, however, two exceptions to this general appearance; for the Haliotis imperforata is entirely void of any orifices whatever, as is also the Haliotis perversa, whose spire is turned contrary. The former is deemed one of the great rarities; its shell is of

an ovate form, imperforate, with an exserted spire, and prickly ribs.

The Haliotis tuberculata is the common ear, found on the British coasts. The Haliotis parva, is remarkable for its red or scarlet color, and from its having but one large elevated rib or angle on its back. The Haliotis bistriata is, on the contrary, peculiar for having a succession of double elevated striæ, placed in a transverse direction on the back. The Haliotis pulcherrima is a beautiful and rare shell, and is from the South Sea.

The Haliotis iris, or iris ear, (from New Zealand), is celebrated for the superb radiance of its pearl, which is composed of the brightest iridescent colors imaginable, finely contrasted with a green and gold bronze-like lustre. The splendid ear from California, is equally to be admired for the exquisite beauty of its varied colors; added to which, its magnitude renders it if possible a more magnificent shell than the former. The size of the Haliotis gigantea, or gigantic ear, from New Holland, is also worthy of notice, as it sometimes will exceed a foot in length.

There are two species found in a fossil state; one is the Haliotis perversa, the other, the Haliotis plicata, which is found near Hildesia. The rest of the species are from the shores of Europe, Africa, and India, where they adhere to the rocks like limpets, and are with difficulty removed.

HALIOTIS — *Sea Ear.*

Midæ (*Midas's Ear.*)
*Tuberculata (*Common E.*)
Striata.
Varia.
Marmorata.
Asinum (*Ass's Ear.*)

Parva.
Bistriata.
Australis (*Quilted Ear.*)
Guineensis.
Imperforata.
Perversa.
Plicata.
Glabra.
Pulcherrima (*Byron E.*)
Virginea.
Ovina.
Gigantea (*Gigantic Ear.*)
Iris (*Iris' Ear.*)

Univalves.

WITHOUT A REGULAR SPIRE.

PATELLA.—Limpet or Dish-Shell.

Animal—a Limax: Shell univalve, subconic, shaped like a bason, without a spire.

This numerous genus contains no fewer than two hundred and forty species. The variety in so great a number is of course immense; however, the Patellæ, with some few exceptions, generally retain their leading characteristics throughout the genus. Their form is invariably more or less conical, but with regard to the colors and workings, which cover their surface, they differ exceedingly: some being perfectly smooth, others deeply striate; many are covered with elevated tuberculate rays, whilst others are strongly granulate and spinous. There are some few species which are perforated in the region where the beak is usually situated, these are commonly called key-hole limpets.

Among those species which are furnished with an internal lip, and whose shells are entire, may be included the Patella equestris, Patella Sinensis, and Patella neritoidea, some of them are rough and scaly, whilst others are perfectly smooth and polished; they are known by the name of cup-and-saucer limpets.

There are other species which are as it were chambered or vaulted, having something of the appearance of a slipper; such are the Patella porcellana, Patella fornicata, and Patella trochiformis, from the Falkland Isles. It must be observed that the two former species very closely resemble nerites, and it is doubtful whether they ought to be classed with this genus or not.

There are some species which are more compressed, having their margins angularly or irregularly toothed; such are the Patella laciniosa, Patella saccharina, Patella granulatus or granulated limpet, and Patella granatina commonly called the garnet limpet. The Patella vulgata or common limpet, is the species so abundantly found on the British shores.

The Patella lepas, usually known by the name of concha lepas, is one of the rarities and curiosities of this genus; there are two varieties of it, one from Chili, the other from the Falkland Isles. There are some species of limpets, as the Patella magellanica, and Patella argentea, which have a sort of metallic gloss diffused over their surfaces, they are therefore called bronze limpets. The two varieties are distinguished by the one being called the silver bronze, and the other the golden bronze; some of them are flat and compressed, whereas others are exceedingly conical and erect.

The Patella Sinica, usually named the umbrella or parasol limpet, is another of the rarities of the genus; it sometimes grows to a large size, it is a flat, broad, expanding shell, of a blueish white color, having its interior of a glossy yellowish or brownish cast, and the tip generally of a beautiful orange color; the margin is often circularly scalloped.

The next division comprehends such as are cap-shaped,

having a recurved tip or crown. The Patella Hungarica is the most remarkable of them, and is a beautiful shell; it is, from its similarity of shape, called the fool's cap. The outside is usually of a pale fawn color, and the outer margin is bordered with a fine bristly epidermis; when the interior is of a very bright pink color, it renders this limpet more valuable.

The Patella lutea is something like an haliotis. The Patella pectunculus is covered with spines, and the patella perversa is remarkable for having its crown recurved, and turned towards the hind part of the animal. There are many limpets which are very entire, and are not pointed at the tip or crown.

Amongst those most worthy of notice are the Patella afra, Patella Lusitanica, Patella areolata, Patella flammea, Patella Indica, Patella sanguinolenta or bleeding limpet, and Patella testudinaria or tortoise-shell limpet; the latter is rather a rare species, and generally has its interior of a silvery hue. The Patella compressa is remarkable for its narrow and lengthened form, which gives it the appearance of having been squeezed or pinched.

The last division of the Patella includes those which have their tip or crown perforated: the principal species are the Patella fissura, Patella Græca, Patella nimbosa, Patella Jamaicensis, Patella Caffra, Patella perforata, and Patella personata or the radiated-mask limpet, which, when in fine preservation, is considered a rarity; it grows to a considerable size, and is from the Falkland Isles, and the Straits of Magellan.

The Patella mytiliformis very much resembles a mytilus or muscle; it is from Ferroe Island. The Patella lacustris and Patella fluviatilis, may be ranked among the fresh-water species.

The Patella Hungarica is sometimes found in a fossil state, as is also the Patella echinata or spiny limpet, which is from the neighbourhood of Crignou.

The Patellæ are usually found adhering by their base to rocks, stones, fuci, and other marine substances, from which they are with much difficulty removed. They inhabit the following places, viz. the Indian, Southern, European, Northern, and Mediterranean seas; the American and Indian islands; the Atlantic, and the shores of China, Greenland, and Iceland.

The Patellæ probably derive their name from their resemblance to a little dish or bason reversed.

PATELLA.—*Limpet.*

A. *Having an internal lip; shell entire.*

Equestris (*Cup & saucer L.*) Rugosa.
Neritoidea (*Chambered L.*) Goreensis (*Sandal.*)
Sinensis (*Chinese bonnet L.*) Contorta.
Porcellana. Explanata.
Fornicata (*Slipper L.*) Plicata.
Aculeata. Striata.
Trochiformis. Solea.
Auricula. Echinata.

B. *Margin angular or irregularly toothed.*

Crepidula (*Transparent L.*) *Vulgata (*Common L.*)
Laciniosa (*Double-eyed L.*) *Depressa.
Saccharina (*Star L.*) Cœrulea.
Barbara (*Toothed L.*) Tuberculata.
Granularis (*Granulated L.*) Lepas.
Granatina (*Garnet L.*) Tricostata.

Mytilina.
Ovata.
Stellata.
Islandica.
Cypria.
Costata.
Leucopleura.
Striatula.
Octoradiata.
Rubra.
Hepatica.
Badia.
Fuscescens.
Maculosa.
Rotundata.
Pecten.
Corrugata.
Alboradiata.
Olivacea.
Cerea.
Impressa.
Aurantia.
Cingulum.
Oculata.
Magellanica (*Golden Bronze*)
Ochroleuca.
Dentata.
Nodosa.
Cinerea.
Exalbida.

Cancellata.
Lævis.
Argentea (*Silver Bronze.*)
Cyprea (*Mushroom L.*)
Rubida.
Glabra.
Flaveola.
Infundibulum.
Cyathus.
Sinica (*Parasol L.*)
Punctata.
Lugubris.
Ulyssiponensis (*Buckler.*)
Umbella (*Umbrella S.*)
Crenata.
Ferruginea (*Bronze L.*)
Melanogramma.
Repanda (*Small Sun.*)
Angulosa.
Tigrina.
Monopis.
Chlorosticta (*Pigeon's throat*)
Margaritacea (*Great Sun.*)
Tenuissima.
Mitrula (*Cap L.*)
Plicaria.
Pentagona.
Ænea.
Conchacea.
Stannea.
Candidissima.

C. *Tip or crown-pointed and re-curved.*

*Hungarica (*Fool's-cap L.*)
Imbricata. [*streak L.*)
*Mammillaris (*Black-hair-*
Tricarinata.
Pectinata.
Lutea.
Cristata.
*Lacustris.
*Fluviatilis.
Cæca.
Virginea.
Tessellata.
Fulva.
Subspiralis.
Ambigua.
Rubicunda.
Borniana.
Calyptra (*Helmet.*)
Melanoleuca.
Pectunculus.
Fasciata.
Elegans.
Squamosa.
Squalida.
Crocea.
Candida.
Trigona.
Minima.
Tranquebarica.
Perversa.
Cernua.
Incurva.
Interrupta.

D. *Entire, and not pointed at the tip or crown.*

Afra.
Lusitanica (*Auricula.*)
Radiata.
Areolata.
Flammea.
Indica.
Surinamensis.
Vitellina.
Sanguinolenta (*Beauty L.*)
Lævigata.
Punctulata.
*Pellucida (*Blue-rayed L.*)
Testudinaria (*Tortoise-shell*)
Testudinalis.
Compressa (*Dutch bonnet.*)
Rustica
Fusca.
Notata.
Cruciata.
Reticulata.
Deaurata.
Stellifera.
Radians.
Rota.
Umbellata.
Pustulata.

Symmetrica.
Citrina.
Capensis.
Anomala.
Guttata.
Mytiliformis.
Scutiformis.
Cochlear.
Craticulata.
Cruentata.
Papyracea.
Cylindrica.
Decussata.
Hematosticta.
Asteroides.
Ovalis.
Rubella.
Spectabilis
Conspurcata.
Melanosticta.
Atra.
Specularis.
Canescens.
Virescens.
Pulla.
Revoluta.
Squamata.
Testacea.
Capillaris.
Glauca.
Obscura.
Exoleta.
Affinis.
*Rotalis.
Fuscata.
Mellia.
Anceps.
Guineensis.
Complanata.
Virgata.
Nivea.
Grisea.
Navicula.
Cingulata.
Scapha.
*Parva.

E. *With the crown or tip perforated.*

*Fissura (*Cracked L.*)
Fissurella.
Pustula.
*Græca.
Nimbosa.
Nubecula.
Picta.
Barbadensis.
Jamaicensis.
Caffra.
Perforata.
Porphyrozonias.
Rosea.
Scutellum.
Avellana.
Spinosa.

Denticulata.
Nodulosa.
Angusta.
Inæqualis.
Minuta.
Conspersa.
Rubescens.
Sanguinea.
Ventricosa.
Triradiata.
Tenuis.
Melanozonias.
Effusa.
Punicea.
Rufescens.
Dimidiata.
Lactea.
Pyramidalis.
Bicolor.
Erythrocephala.
Verrucosa.
Contaminata.
Atrata.
Candicans.
Succincta.
Pusilla.
Flavescens.
Antiquata.
Galeata.
Personata (*Radiated-mask L.*)

DENTALIUM.—Tooth or Tusk-Shell.

Animal—a Terebella: Shell univalve, tubular, straight, or slightly curved, with an undivided cavity open at both ends.

Of this singular genus there are but twenty-two species; in their general form they are very similar, and represent an excellent fac-simile of an elephant's tusk in miniature.

The chief variations which they seem subject to are: in magnitude, and in the number of ribs and grooves that some of the species are supplied with; some trifling distinction may also be made with regard to the de-

gree of curvature which many of them possess. One of the largest and most valuable species is the Dentalium elephantinum or elephant's tusk, it is often three or four inches long, is slightly curved, has generally ten strong elevated ribs, which are encircled by dark green bands on a greenish ground; it inhabits the Indian and European seas.

The Dentalium aprinum very much resembles the last, but it is usually much smaller and perfectly white.

The Dentalium striatulum or striated tooth-shell also resembles the Dentalium elephántinum, but it is much longer and narrower in proportion, and the larger aperture is angular, whereas the smaller is very contracted and round; besides, it is supplied with eight ribs and eight striæ; and it is more uniformly green than the elephantinum.

The Dentalium rectum, though nearly allied to the elephantinum, is easily distinguished from it by its being straight instead of curved. It is, moreover, adorned with doubled, or tripled longitudinal striæ, which at the same time are encircled with annular ones. The Dentalium fasciatum is a small species, finely striate, and is encircled with four or five brown bands on a greyish ground.

The next division of the Dentalia comprehends those which are striate annularly instead of longitudinally, and those which are scarcely striate at all, at least so imperceptibly as to demand the aid of a glass to prove whether they are in reality striate or perfectly smooth, so even and polished is their surface.

Those species which answer to this description are the Dentalium politum or polished tooth-shell, which is finely pointed, solid, and often of a rosy or pinkish color, the Dentalium eburneum or ivory tusk, and the Den-

talium entalis or dog's-tooth-shell, which is an inhabitant of the Indian and European shores, and is generally an inch and a half long, of a reddish or pale yellow color, with the tip often tinted with orange or pink. The Dentalium pellucidum is of a horny or pale honey color, very narrow and thin, and does not effervesce with acids. It is an inhabitant of the North seas, and about two inches and a quarter long.

The Dentalium minutum inhabits the Mediterranean; it is a round, straightish, smooth shell, and so very minute as scarcely to be discernible by the naked eye; it resembles a small bristle, or one of the spines of an echinus.

The Dentalium imperforatum (from Sandwich and its neighbourhood) is also a minute species, and is by no means common.

The fossil species of the Dentalia are as follow, viz. Dentalium sexangulum, and Dentalium fossile, both from Loretto; and the Dentalium annulatum, radula, interruptum, and vitreum, are the sub-terrestrial products of Piedmont.

The recent species are mostly from the Indian and European oceans; though some few are from the Mediterranean and Northern seas, and one species inhabits the shores of Africa.

DENTALIUM.—Tooth-Shell.

Elephantinum (*Elephant's-tooth Shell.*)
Aprinum.
Arcuatum.
Striatulum (*Striated T. S.*)
Sexangulum.
Dentalis.
Fasciatum.
Rectum.
Fossile.
Annulatum.
Radula.
Interruptum.

Politum (*Polished T. S*)
Eburneum (*Ivory Tusk.*)
*Entalis (*Dog's-tooth Shell.*)
Arietinum.
Corneum.
Nebulosum.
Pellucidum.
Vitreum.
Minutum.
*Imperforatum.

SERPULA.—Worm-Shell.

Animal—a Terebella: Shell univalve, tubular, generally adhering to other substances; often separated internally by divisions at uncertain distances.

The genus Serpula contains forty-eight species; their form throughout is (with few exceptions) exceedingly irregular; they are moreover generally found in groups or clusters, adhering to other substances, such as rocks, stones, roots of trees, sides of ships, zoophites, sertulariæ, fuci, shells, and corals, &c. &c. They almost all agree in being tubular or pipe-shaped, and are generally twisted or twined into all sorts of spiral and grotesque figures: some, on the contrary, are nearly straight, and consist of a single tube; whilst others are collected into large masses, containing many hundred spiral and twisted tubes, curiously interwoven or interlaced with each other.

Amongst those species which are spiral and single (having their whorls nearly contiguous, something like a Helix) may be included the Serpula spirillum, Serpula spirorbis, and Serpula afra.

Those species that are single, and nearly straight, are

the following: viz. Serpula protensa, and Serpula polythalamia. The latter of which most probably belongs to the genus teredo; it is remarkable for having its interior separated by imperforate, convex, and concave divisions, making the shell appear as if it consisted of numerous united tubes. The smaller end of this shell is also peculiar for being terminated by two distinct or separate small tubular pipes, which are jointed in the same manner as the main stem from which they spring; the shell, in this state, looks something like a two-pronged fork. It is an inhabitant of the Mediterranean and Indian seas, and is often found concealed under the sands: it sometimes arrives at the extraordinary size of three feet.

To this same division belongs the well known but rare shell, the watering-pot Serpula. The larger end of this shell is closed by a convex disk, which is beset with numerous small perforations, and a longitudinal one in the middle, the whole encircled by a dilated margin of elegant papyraceous tubes, exactly resembling a beautifully plaited ruff or frill; the smaller end is open. In point of size, it seldom exceeds five inches. The Indian ocean is its birth place, and, when perfect, it is highly valued.

The Serpula gigantea sometimes grows to half-a-foot high, and about the thickness of a finger. The Serpula lumbricalis, or cork-screw shell, is flexuous, and has a spiral acute tip, very much resembling the article after which it is named. The Serpula filograna is branched and complicate, and is adorned with a beautiful kind of net-work.

One of the remarkable species of this genus is the Serpula anguina, which has a split or long-jointed cleft, all along the spiral convolutions of its shell. The Serpula echinata has its shell beset with a succession of spines or

prickles; it is usually of a rosy or pink color, and sometimes has its aperture margined.

The Serpula cornucopiæ, or horn of plenty, is, in all probability, only a dropped helix hortensis, or common garden snail, and of course not belonging to this genus. The Serpula infundibulum appears as if its first bend was composed of five funnels, inserted within each other. The Serpula denticulata is sometimes found in the lepas tintinnabulum; and the Serpula sulcata adheres to the roots of the fucus digitatus. The Serpula lagena is exactly like an oil-flask, and the Serpula retorta is retort-shaped; the latter is scarce. The Serpula incurvata something resembles the nautilus semilituus, but it wants the internal concamerated structure. The Serpula nautiloides is a spiral shell, flattish, minute, and is furnished with thin, semilunar, internal divisions.

The colors of the Serpulæ are various; the most general, however, are brown, purple, yellow, tawny, pink, and white, sometimes a little greenish. The Serpula semilunum, and Serpula Melitensis, are found fossil; the latter in Malta.

The Indian, African, American, and Northern oceans, supply many species; as also do the European, Mediterranean, Adriatic, and Red seas.

SERPULA.—Worm-Shell.

Nautiloides.	*Triquetra.
Semilunum (*Small Seed.*)	*Intricata.
Planorbis.	Filograna.
Spirillum.	Granulata.
*Spirorbis.	*Contortuplicata.

Glomerata.
Lumbricalis (*Cork-screw S.*)
Polythalamia.
Arenaria.
Anguina (*Serpent.*)
*Vermicularis.
Aquaria (*Watering-pot.*)
Echinata.
Ocrea (*Boot.*)
Protensa.
Decussata.
Proboscidea.
Afra.
Cereolus.
Cornucopiæ (*Horn of Plenty.*)
Goreensis.
Intestinalis.
Infundibulum.
Pyramidalis.
Denticulata.
Melitensis.
Norwegica.
Porrecta.
Vitrea.
Cancellata.
Stellaris
Gigantea.
Cinerea.
*Sulcata.
*Ovalis.
*Reflexa.
*Cornea.
*Bicornis.
*Perforata.
*Lactea.
*Lagena.
*Retorta.
*Incurvata.

TEREDO.—Ship-Worm.

Animal—a Terebella, with two calcareous hemispherical valves cut off before, and two lanceolate ones: Shell tapering, flexuous, and capable of penetrating wood.

There are but three species of this genus: the first is the Teredo navalis, or common ship-worm, it is very thin, cylindrical, and smooth, and is more or less twisted, ra-

ther obtuse or blunt at the tip; it varies in length from four to six inches. This is the worm which was originally imported from India, it has the faculty of boring through, or penetrating the stoutest oaken planks of ships' sides; and is thought to effect as much destruction in the water, as the termes or white ant on land.

The Teredo utriculus is also cylindrical, undulate, and solid; it is mostly found in wood that has lain some time under water. It is white, subpellucid, very much bent, and gradually tapering, with an oval aperture, divided in the middle by a partition. It is about seven inches in length.

The next and last species is the Teredo clava, which is found in the seminal vessels of the xilosteum granatum; one end is clavate, the other incurved, narrower, obtuse, and perforated in the middle: the shell is rough, and brownish on the outside, but within it is smooth, and more or less flexuous. It is nearly two inches long, but not half an one wide.

TEREDO.—*Ship-worm.*

*Navalis (*Common S. W.*) Utriculus.
Clava.

SABELLA.—Sabella.

Animal — a Nereis, with a ringent mouth, and two thicker tentacula behind the head: Shell tubular, composed of particles of sand, broken shells, and vegetable substances, united to a membrane by a glutinous cement.

This very extraordinary genus contains no less than twenty-five species. The membrane which composes the basis in these animals, is covered with various fragments and particles of different marine productions; some are covered with sand, others with minute fragments of shells mixed with the sand; many are covered with parts of shells only; and one, the Sabella vegetabilis, is covered with fragments of twigs, the bark of stems, and broken pieces of tellina cornea. The Sabella ammoniata is also composed of fragments of the cornu-ammonis.

The Sabella Indica is composed of capillary sub-cylindrical agglutinated crystals of quartz, the Sabella clavata of various sized stones, and the Sabella arundinacea of fragments of the bark of reeds, placed on each other.

Some of the species, as the Sabella scruposa, Sabella chrysodon, &c. &c. are solitary, whereas the Sabella scabra is affixed by the base.

The Sabella alveolata has numerous parallel tubes, communicating by an aperture, forming in the mass the appearance of honey-combs. It is an inhabitant of the European coasts, and covers the rocks for a considerable space, and is easily broken under the feet. The tubes are straightish, and from two to three inches long. The Sabella rectangula is one of the largest of the genus, and often measures nine inches in length.

There are no less than fourteen or fifteen species, which inhabit rivers and fresh-waters; and most of them are from the waters of Thuringia and Belgium, where they reside, affixed to stones, &c. The other species are from the Indian, American, Northern, and European seas.

SABELLA.

Scruposa.
Scabra.
*Alveolata.
Chrysodon.
*Belgica (*Granulated S.*)
Rectangula.
Capensis.
Nigra.
Stagnalis.
Conica.
Uncinata.
Sabulosa.
Vegetabilis.
Ammoniata.
Helicina.
Dimidiata.
Fixa.
Clavata.
Corticalis.
Arundinacea.
Aculeata.
Marsupialis.
Norwegica.
Lumbricalis
Indica.

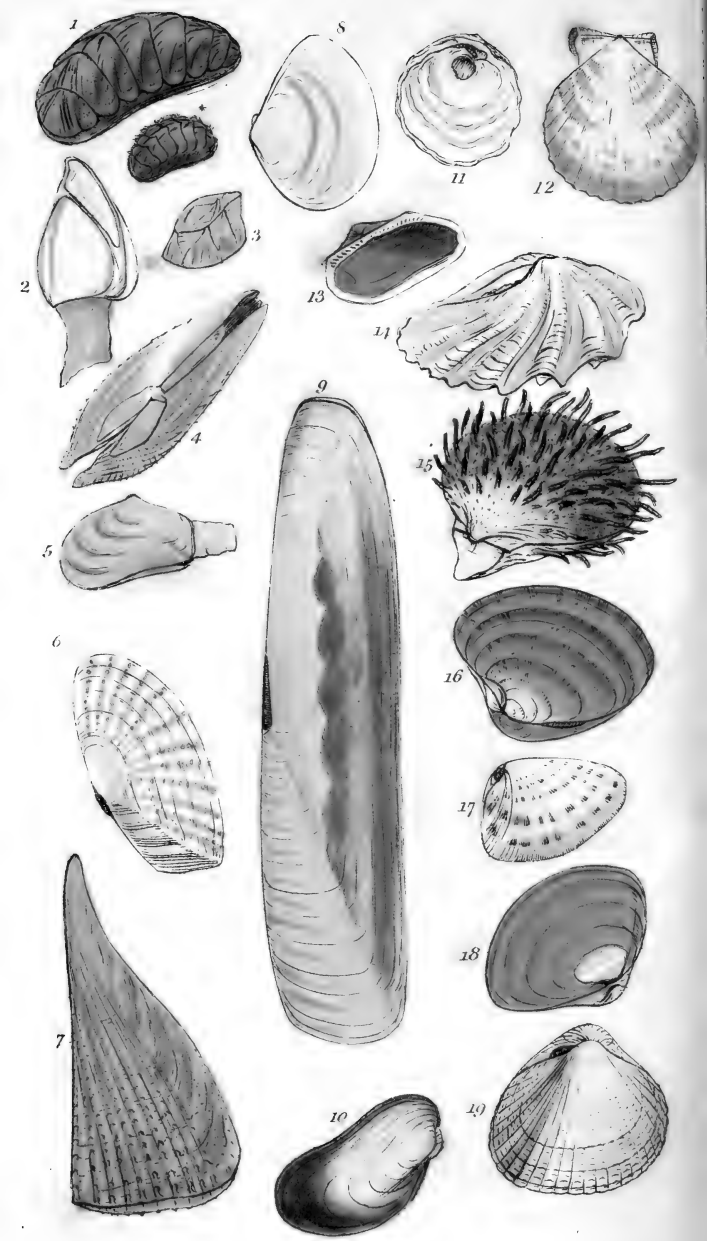
THE END.

INDEX.

FRONTISPIECE.

Shewing four different genera of SPIRAL SHELLS.

Fig.		
1	Buccinum Dimidiatum ...	Fawn Needle.
2	Buccinum Subulatum.....	Tiger Spire.
3	Strombus Fusus	Spindle.
4	Murex Colus Nicobaricus .	Embroidered Crane.
5	Murex Colus	Crane.
6	Turbo Imbricatus	Rusty Screw.
7	Turbo Exoletus, or Cinctus .	Ribbed Screw.



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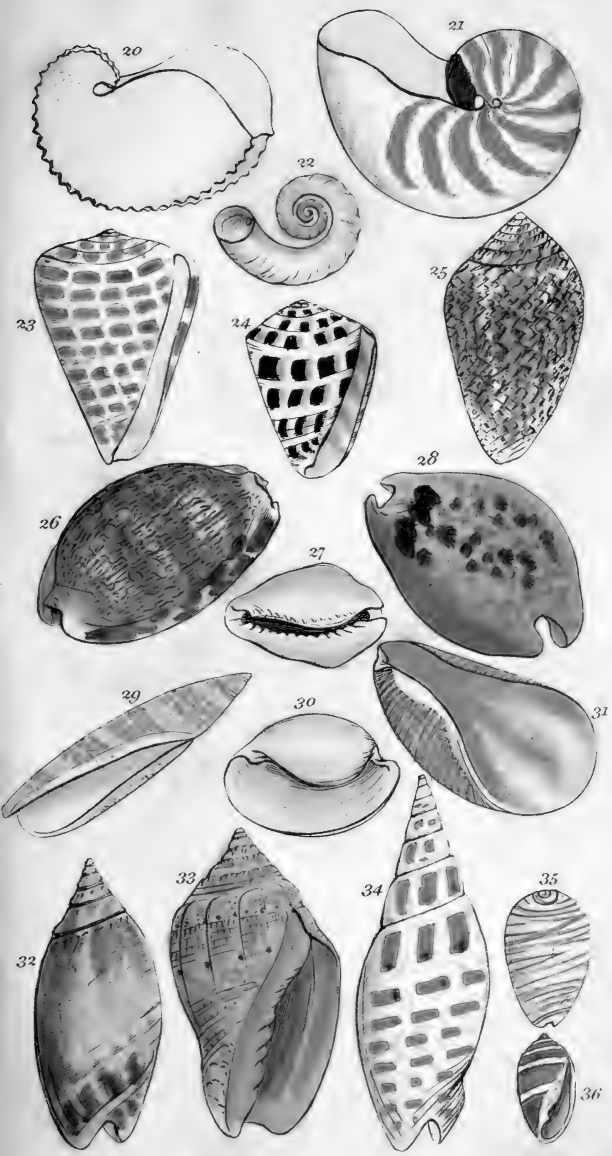
EXPLANATION OF THE PLATES.

PLATE I.

Fig.		
1	Chiton Squamosus	Scaly Chiton.
2	Lepas Anatifera	Duck Barnacle.
3	Lepas Balanoides	Smooth Acorn Shell.
4	Pholas Dactylus	Prickly Piercer.
5	Mya Truncata	Abrupt Gaper.
6	Tellina Feroensis	Brindled Tellen.
7	Pinna Pectinata	Muricated Pinna.
8	Solen Sanguinolentus	Pink or Rosy Solen.
9	Solen Legumen	Pease-pod Razor Shell.
10	Mytilus Modiolus	Tulip Muscle.
11	Anomia Ephippium	Common English Anomia.
12	Ostrea Opercularis	Common English Pecten.
13	Arca Noæ	Noah's Ark.
14	Chama Gigas	Furbelowed Clam.
15	Spondylus Gædaropus	Thorny Oyster.
16	Venus Chione	Smooth Brown Venus.
17	Donax Denticulata	Toothed Wedge Shell.
18	Mactra Stultorum	Common English Mactra.
19	Cardium Edule	Common Eatable Cockle.

PLATE II.

Fig.		
20	Argonauta Argo	Paper Nautilus.
21	Nautilus Pompilius	Chambered Nautilus.
22	Nautilus Spirula	Spiral, or Crozier-headed Nautilus.
23	Conus Virgo, or Tessellatus.	Mosaic, or Tessellated pavement Cone.
24	Conus Ebræus	Hebrew Cone.
25	Conus Textile	Embroidered, or Cloth of Gold Cone.
26	Cypræa Arabica	Nutmeg Cowry.
27	Cypræa Moneta	Trussed-fowl, or Black-a-moor's-tooth Cowry.
28	Cypræa Mus	Mouse Cowry.
29	Bulla Terebellum	Auger, or Borer Bulla.
30	Bulla Naucum	White Bulla, or Dipper.
31	Bulla Lignaria	Wood-grain Bulla.
32	Voluta Utriculus	Common Olive.
33	Voluta Musica	Music Volute.
34	Voluta Episcopalis	Bishop's Mitre.
35	Voluta Persicula	Pigmy Volute.
36	Voluta Tornatilis	Mouse-ear Volute.



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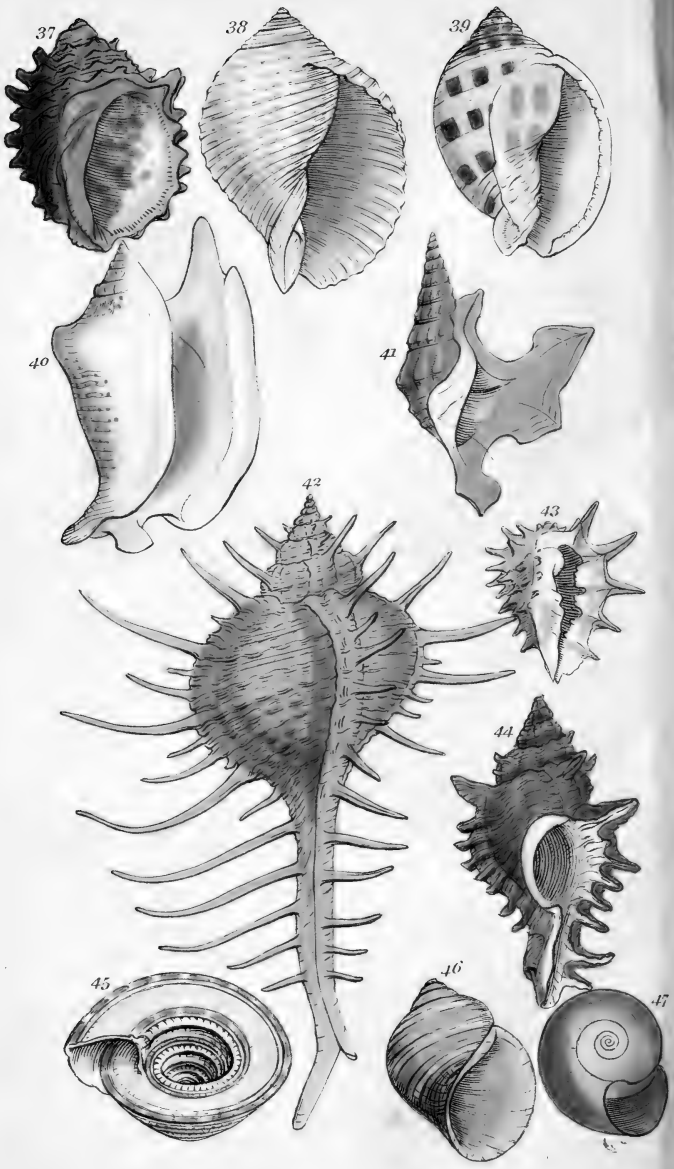

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PLATE III.

Fig.		
37	Buccinum Patulum	Common, or Wide-mouthed Scoop.
38	Buccinum Dolium	Ribbed Tun.
39	Buccinum Areola	Draft-board Helmet.
40	Strombus Auris Dianæ .	Ass's-ear Alatus.
41	Strombus Pes-Pelicani .	Pelican's-foot Alatus.
42	Murex Tribulus	Thorny Woodcock.
43	Murex Neritoideus	Mulberry.
44	Murex Ramosus	Aculeated Triplex.
45	Trochus Perspectivus ..	Staircase Trochus.
46	Helix Ampullacea.....	Apple Snail.
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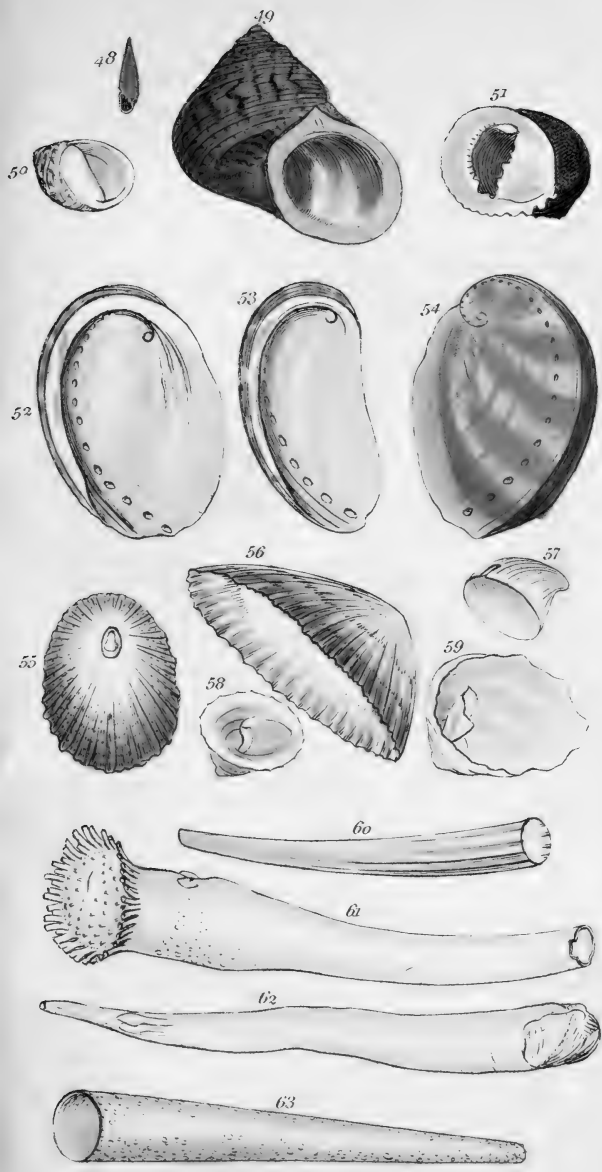
PLATE IV.

Fig.		
48	Turbo Bidens	Two-toothed Turbo.
49	Turbo Petholatus	Ribband Turbo.
50	Nerita Virginea	Guinea-hen Nerite.
51	Nerita Plicata	Plaited Limpet.
52	Haliotis Tuberculata	Common Ear Shell.
53	Haliotis Asinum	Ass's Ear Shell.
54	Haliotis Tuberculata	Outside view of fig. 52.
55	Patella Perforata	Perforated, or Key Hole Limpet.
56	Patella Vulgata	Common Limpet.
57	Patella Fissura	Cracked Limpet.
58	Patella Chinensis	Chinese-bonnet Limpet.
59	Patella Equestris	Cup-&-saucer Limpet.
60	Dentalium Striatulum	Striated Tooth Shell.
61	Serpula Aquaria	Watering-pot Serpula.
62	Teredo Navalis	Common Ship Worm.
63	Sabella Belgica	Granulated Sabella.



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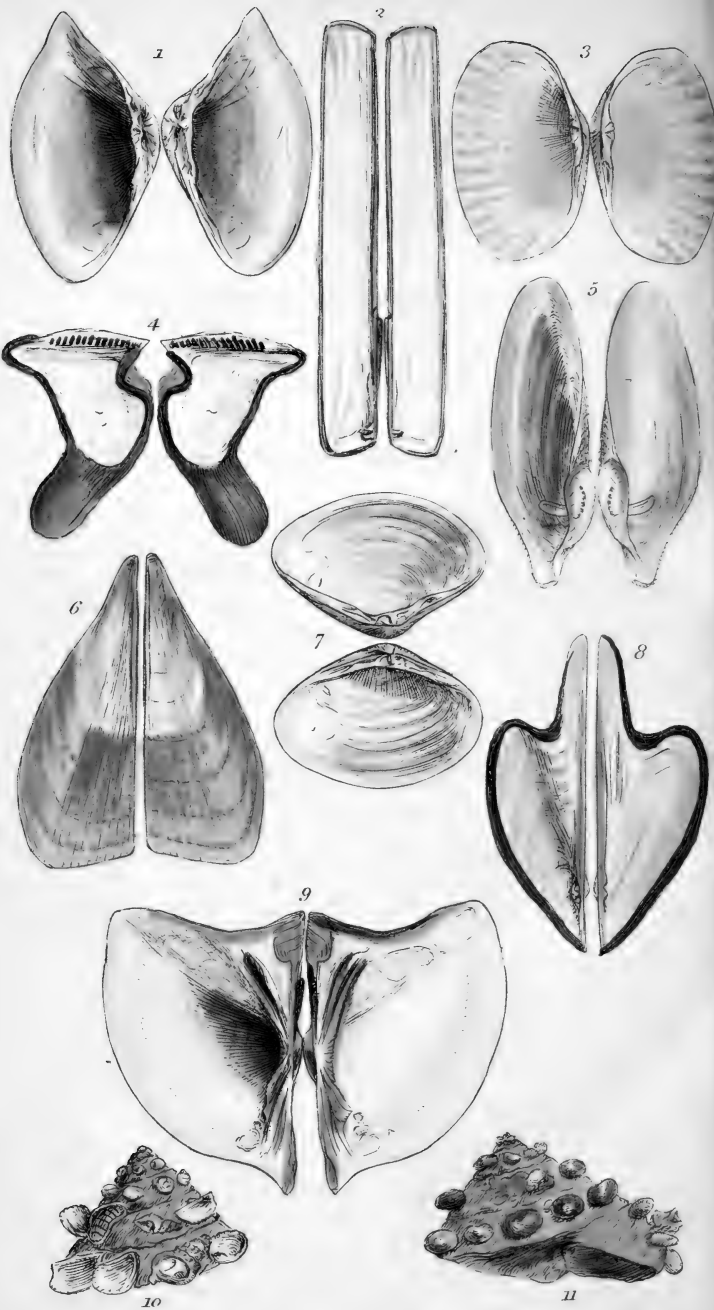

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PLATE V.

Shewing the HINGES *of Bivalves, and other Peculiarities.*

Fig.

1 Internal view of the Donax Scortum, shewing the hinge.
2 Internal view of the Solen Siliqua, shewing the hinge.
3 Internal view of the Solen Vespertinus, shewing the hinge.
4 Internal view of the Ostrea Isognomon, shewing the hinge,
5 Internal view of the Pholas Dactylus, shewing the teeth.
6 Internal view of the Pinna Pectinata.
7 Internal view of the Mactra Stultorum, shewing the hinge.
8 Internal view of the Mytilus Hirundo.
9 Internal view of the Mya Aurita, shewing the hinge.
10 Trochus Conchyliophorus, shewing its singular propensity of collecting and affixing shells to itself.
11 Variety of the above, sometimes called the Mineralogist, because it collects stones.

PLATE VI.

Fig.

1 Mytilus Edulis, shewing the beard or byssus.
2 Teredo Navalis, shewing the shells imbedded in the wood, which they have perforated.
3 Variety of the Murex Lotorium, shewing its hairy epidermis.
4 Helix Ampullacea, partially covered with its epidermis.
5 Variety of Ostrea Varia, shewing a Serpula adhering to it.
6 Venus Meretrix, shewing the anterior slope.
7 Arca Glycymeris, shewing the inside and the hinge.
8 Cardium Lineatum, shewing the inside and the hinge.
9 Internal view of the Anomia Sella, (in a young state), shewing the triangular hinge.
10 Internal view of the Tellina Virgata, shewing the hinge.
11 Internal view of the Spondylus Gædaropus, shewing the hinge.
12 Internal view of the Chama Cor, shewing the hinge.
13 A group of Lepas Tintinnabulum.
14 A group of Lepas Anatifera, shewing the peduncles and tentacula.

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